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The Development of the Indo-European *-*wr̥*-/-*wen*-Heteroclites in Sanskrit and Beyond

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by

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ABSTRACT OF THE DISSERTATION

The Development of the Indo-European *-*wr̥*-/-*wen*-Heteroclites in Sanskrit and Beyond

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The heteroclitic nominals of Indo-European retain one of the oldest types of inflection in the family, one with suffix-final -*r*- in certain cases and -*n*- in others. This alternation finds no parallel elsewhere in Indo-European morphology and has been considered one of the characteristic traits of an archaic Indo-European language. This dissertation examines a subcategory of these nominals, the *-*wr̥*-/-*w*(*e*/*o*)*n*-heteroclites in the Sanskrit language with comparative phonological, morphological, and mythopoetic evidence from the other Indo-European languages. This study finds that numerous *-*wr̥*-/-*w*(*e*/*o*)*n*-heteroclites has gone unnoticed because of the obscuring effects of the metathesis rule **wr̥* > **ru*. The resulting Sanskrit -*ru*- and -*lu*- nominals could be built either to verbal roots or to *-*éh*$_2$-abstracts and frequently functioned as animate adjectives. The discovery of these -*ru*- and -*lu*- adjectives provides new insight into the morphophonological system of Indo-European and demonstrates the predictive power of the compositional method, which models Indo-European morphology with discrete, accentually tagged morphemes, over the older Erlangen model, which applies abstract templates or vowel melodies over strings of morphemes. These heteroclitic adjectives also represent a morphological innovation within the Indo-European family that does not appear in the earliest attested branch of the family, Anatolian. A large class of *-*wr̥*-/-*w*(*e*/*o*)*n*-heteroclitic nominals attaches to inherited *-*éh*$_2$-abstracts—a pattern examined in Sanskrit and throughout the other Indo-European languages. These *-*éh*$_2$-*wr̥*-/-*w*(*o*)*n*-constructions are shown to be an archaic feature of the family with reflexes throughout the nominal and verbal systems of various daughter branches including Indo-Iranian, Anatolian, Ancient Greek, Latin, and Tocharian.

The dissertation of John Bunyan Clayton V is approved.

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pī́vānam meṣám apacanta vīrā́ ' nⁱyùptā akṣā́ ánu dīvá āsan |

dᵘvā́ dhánum bṛ̊hatī́m apsú antáḥ ' pavítravantā carataḥ punántā ||

‘The heroes cooked a fat ram; there were dice strewn down for gaming.

Two roam the lofty steppe, provided with filters, purifying in the waters.’

— *RV* 10.27.17 (after *J&B*)

Ὣς φάτο, Πάτροκλος δὲ φίλῳ ἐπεπείθεθ’ ἑταίρῳ.

αὐτὰρ ὅ γε κρεῖον μέγα κάββαλεν ἐν πυρὸς αὐγῇ,

ἐν δ’ ἄρα νῶτον ἔθηκ’ ὄϊος καὶ πίονος αἰγός

ἐν δὲ συὸς σιάλοιο ῥάχιν τεθαλυῖαν ἀλοιφῇ.

τῷ δ’ ἔχεν Αὐτομέδων, τάμνεν δ’ ἄρα δῖος Ἀχιλλεύς.

‘Thus Achilles spoke, and Patroclus trusted his dear companion.

Then he threw down a butcher board in the light of the fire,

And on it he put the loin of a lamb and of a fat goat,

And on those, the rack of a porky sow swelling with lard.

And Automedon steadied for him, and shining Achilles began to cut.’

— *Il.* 9.205–209

To my family,

who have always

slain the fatted calf for me.

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List of Linguistic Symbols

Where possible, the Leipzig Glossing Rules (https://www.eva.mpg.de/lingua/resources/glossing-rules.php) are followed.

'	caesura, pada-boundary
‿'	pada-boundary with sandhi undone
X	a form *X* proposed by comparative reconstruction
****X***	a form *X* proposed by internal reconstruction
X*	a form *X*, which is unattested but paradigmatically certain given a related attested form
ˣ***X***	an unattested form *X* that would have occurred if diachrony were different
°***X***, ***X***°	a compound boundary
ˀ***X***	a form *X* may not be certainly reconstructed
ᵍ***X***	form *X* is attested only in the grammatical tradition
X⁺	The text must be amended
>	becomes by regular sound change
<	derives by regular sound change from
→	becomes by synchronic phonology
←	derives by synchronic phonology from
»	becomes by analogical change
«	derives by analogical change from
⇒	morphologically derives into
⇐	morphologically derives from
⇝	changes semantically to

↜	changes semantically from
-→	is borrowed into
←-	is borrowed from
~	alternates morphophonologically with
≈	corresponds to approximately
⸗	a clitic boundary
|	Half verse line
‖	End verse line
∅	morphology: zero-grade; phonology: nothing
1	first person
2	second person
3	third person
A&A	the system of accent and ablaut
ABL	ablative
ACC	accusative
ACT	active
ADJ	adjective
ANIM	auxiliary
AOR	aorist
BAP	the Basic Accentuation Principle
C	any consonant
CAUS	causative
COL	collective
DAT	dative
DU	dual

ERG	ergative
F	any fricative
F	feminine
GEN	genitive
H	any laryngeal
IMP	imperative
IND	indicative
INF	infinitive
INJ	injunctive
INS	instrumental
INTR	intransitive
ITER	iterative
L	any liquid
LOC	locative
M	masculine
MID	middle
N	any nasal
N	neuter
NOM	nominative
OBL	oblique
OPT	optative
PF	perfect
PL	plural
PoD	Post-tonic */o/ Deletion Rule
POSS	possessive

PRS	present
PST	past
PTCP	participle
R	any sonorant ($W + L + N$)
SG	singular
STAT	stative
T	any coronal
TR	transitive
U	any high vowel
V	any vowel
VB	verbal
v.l.	*varia lectio* 'variant reading'
VOC	vocative
W	any glide
ZGR	the Zero-Grade Rule

List of Language Abbreviations

Ak.	Akkadian	**Bret.**	Breton
Alb.	Albanian	**BSog.**	Buddhist Sogdian
AMāg.	Ardhamāgadhī Prākrit	**Car.**	Carian
Arc.	Arcadian	**Celtib.**	Celtiberian
Arm.	Armenian	**Cl.Arm.**	Classical Armenian
Att.	Attic	**CLuw.**	Cuneiform Luwian
Att.-Ion.	Attic-Ionic	**Corn.**	Cornish
Av.	Avestan	**Cyp.**	Cypriot Greek

Dor.	Doric Greek
Eng.	English
G	Gujarātī
Gaul.	Gaulish
Goth.	Gothic
Gō.	Gōṇḍī
Gr.	Ancient Greek
H	Hittite
Hind.	Hindī
HLuw.	Hieroglyphic Luwian
Hom.	Homeric Greek
Ion.	Ionic
Ir.	Irish
It.	Italian
Ka.	Kannaḍa
Khot.	Khotanese
Kui	Kui
L	Latin
Lt.	Lithuanian
Luw.	Luwian
Lv.	Latvian
Lyc.	Lycian
Lyd.	Lydian
M	Marāṭhī Prākrit
Ma.	Malayāḷam
Mess.	Messapic
MHG	Middle High German
Mi.	Milyan
MIA	Middle Indo-Aryan
MLG	Middle Low German
MP	Middle Persian
MPth.	Middle Parthian
MSog.	Manichaean Sogdian
MW	Middle Welsh
Myc.	Mycenaean Greek
NHG	New High German
Nor.	Norwegian
NP	Modern Persian
OAv.	Old Avestan
OCS	Old Church Slavonic
OE	Old English
OF	Old Frisian
OH	Old Hittite
OHG	Old High German
OIc.	Old Icelandic
OIr.	Old Irish
OKhot.	Old Khotanese
OL	Old Latin
OLt.	Old Lithuanian
ON	Old Norse

OP	Old Persian	**Pk.**	Prākrit
OPrus.	Old Prussian	**PNIE**	Proto-Nuclear-Indo-European
Or.	Oṛiyā Prākrit	**Pras.**	Prasun
OS	Old Saxon	**PT**	Proto-Tocharian
Oss.D.	Digor Ossetic	**S**	Sindhī
Oss.I.	Iron Ossetic	**Skt.**	Sanskrit
PA	Proto-Anatolian	**Sog.**	Sogdian
Pā.	Pāli	**TA**	Tocharian A
PArm.	Proto-Armenian	**Ta.**	Tamiḻ
PBS	Proto-Balto-Slavic	**TB**	Tocharian B
PC	Proto-Celtic	**Te.**	Telugu
PDrav.	Proto-Dravidian	**Tib.**	Tibetan
PGerm.	Proto-Germanic	**U**	Umbrian
PGr.	Proto-Greek	**Ved.**	Vedic Sanskrit
PIA	Proto-Indo-Aryan	**Ven.**	Venetic
PIE	Proto-Indo-European	**W**	Welsh
PIIr.	Proto-Indo-Iranian	**WGr.**	West Greek
PIr.	Proto-Iranian	**YAv.**	Young Avestan
PIt.	Proto-Italic	**ZPahl.**	Zoroastrian Pahlavī

List of Text Abbreviation

A	*Āfrīnagān*
A.*A*	Aeschylus, *Agamemnon*

Aesop. Aesop, *Fabulae*

Ak. *Amarakoṣa*

AP *Anthologia Palatina*

Apollod.Dam. Apollodorus Damascenus, *Commentarius poliorceticus*

A.*Pr.* Aeschylus, *Prometheus vinctus*

ĀpŚS *Āpastambha Śrauta Sūtra*

Ar.*Ra.* Aristophanes, *Ranae*

ĀśvŚr. *Āśvalāyana Śrauta Sūtra*

A.*Th.* Aeschylus, *Septem contra Thebas*

AV *Atharvaveda*

AVP *Atharvaveda Paippalāda Saṃhitā*

AVŚ *Atharvaveda Śaunaka Saṃhitā*

B.*Ep.* Bacchylides, *Epigrams*

BhāgP *Bhāgavata Purāṇa*

Bhaṭk *Bhaṭṭikāvya*

CarS *Caraka Saṃhitā*

Divyāv. *Divyāvadāna*

GobhGS *Gobhila Gṛhya Sūtra*

Gv. *Gaṇḍavyūha Sūtra*

H Hemacandra, *Abhidhānacintāmaṇikośa*

Hār. Puruṣottamadeva, *Hārāvalī*

Hdn. Aelius Herodianus

Hes.*Sc.* Hesiod, *Scutum*

Hsch. Hesychius

h.Ven. *Homeric Hymn to Aphrodite*

Il.	*Iliad*
Kathās.	Somadeva Bhatta, *Kathāsaritsāgara*
Kāty.*Śr.*	Kātyāyana, *Śrauta Sūtra*
KauśS	*Kauśika Sūtra*
KBo	*Keilschrifttexte aus Boghazköi*
KpS	*Kapiṣṭhala Kaṭha Saṃhitā*
KS	*Kāṭhaka Saṃhitā*
KUB	*Keilschrifturkunden aus Boghazköi*
Kumāras.	Kālidāsa, *Kumārasaṃbhava*
Lyc.*Alex.*	Lycophron, *Alexandra*
MBh.	*Mahābhārata*
MS	*Maitrāyaṇī Saṃhitā*
M.*Śpv.*	Māgha, *Śiśupālavadha*
MVyutp.	*Mahāvyutpatti*
Naiṣ.	Śrīharṣa, *Naiṣadhacarita*
Od.	*Odyssey*
P	Pāṇini, *Aṣṭādhyāyī*
Pat.	Patañjali, *Vyākaraṇamahābhāṣya*, comm. on Pāṇini, *Aṣṭādhyāyī*
PB	*Pañcaviṁśa Brāhmaṇa*
Pi.*N*	Pindar, *Nemean*
Pi.*P*	Pindar, *Pythian*
Pl.*Phdr.*	Plato, *Phaedrus*
Pt.	*Pañcatantra*
R	Vālmīki, *Rāmāyaṇa*
Rājan.	*Rājanighaṇṭu*

Rājat. Kalhaṇa, *Rājataraṃgiṇī*

ṚV *Ṛgveda Saṃhitā*

Sarasv. Bhoja Deva, *Sarasvatī Kaṇṭhābharaṇa*

ŚārṅgS *Śārṅgadhara Saṃhitā*

ŚB *Śatapatha Brāhmaṇa, Mādhyandina Recension*

ŚBK *Śatapatha Brāhmaṇa, Kāṇva Recension*

Śc. *Śabdacandrikā*

Śkdr. Rādhākāntadeva, *Śabdakalpadruma*

Soud. *Souda*

Suśr. *Suśruta Saṃhitā*

TA *Taittirīya Āraṇyaka*

TB *Taittirīya Brāhmaṇa*

Theoc. Theocritus, *Bucolici Graeci*

Thphr.*HP* Theophrastus, *Historia plantarum*

Trik. Puruṣottamadeva, *Trikāṇḍaśeṣa*

TS *Taittirīya Saṃhitā*

Ujjv.*Uṇādis.* Ujjvaladatta's comm. on *Uṇādisūtras*

Uṇādik. *Uṇādikoṣa*

Uṇādis. *Uṇādisūtras*

Var.*Bṛ.* Varāhamihira, *Bṛhajjātaka*

Var.*BS* Varāhamihira, *Bṛhat Saṃhitā*

Vikr. *Vikramorvaśī*

Vop. Vopadeva, *Mugdhabodha Vyākaraṇa*

VS *Vājasaneyī Saṃhitā, Mādhyandina Recension*

Y *Yasna*

YājñS *Yājñavalkya Smṛti*

Yt. *Yašt*

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PUBLICATIONS AND PRESENTATIONS

John Clayton. 2020b. Rhinoglottophilia in Avestan: *h > [$\tilde{\text{h}}$] and Its Orthographic and Phonological Consequences. In *Proceedings of the 31st Annual UCLA Indo-European Conference,* edited by David M. Goldstein, Stephanie W. Jamison, and Brent Vine, 79–93. Hamburg: Buske

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CHAPTER 1

Introduction

1.1 Hetroclites and their history

From the earliest human prehistory, fire and water have played a dominant role in daily life and survival—providing heat and cooling, illumination and reflection, sustenance and refreshment, destruction and growth, purification and ablution. It is no wonder, then, that these concepts were central to Indo-European religion and that the names of the raw substances in Proto-Indo-European, **péh₂wr̥* and **wódr̥*, are inherited into the Present-Day English words *fire* and *water* with relatively few complications. But the inflection of these Proto-Indo-European words was by no means simple and have represented a central crux of the Indo-European nominal system. Morphologists use the term "heteroclisis" (literally 'different inflections') to describe paradigms either where the multiple inflectional categories appear together (Table 1.1) or where multiple stems appear together (Table 1.2).

Table 1.1: L *epulum* 'feast'

	N.SG	F.PL
NOM	*epulum*	*epulae*
ACC	*epulum*	*epulās*
GEN	*epulī*	*epulārum*
DAT/ABL	*epulō*	*epulīs*

Table 1.2: L *femur* 'thigh(bone)'

	N.SG	N.PL
NOM/ACC	*femur*	*femora*
GEN	*feminis*	*feminum*
DAT	*feminī*	*feminibus*
ABL	*femine*	*feminibus*

In the case of *epulum*, the stem remains the same throughout, but the category of endings changes between the singular and plural, going from neuter second-declension endings to feminine first-

declension endings. This type of heteroclisis may submit to a different type of analysis, however: it could easily be argued that *epulum* only changes gender between the singular and plural and that each gender selects its default inflectional endings. For *femur*, on the other hand, the inflectional endings come from one inflectional category, but the final *-r-* of the stem in the nominative, accusative, and vocative becomes an *-n-* in the other paradigmatic cells. Unlike the *epulum* type, this paradigm cannot be explained by simply appealing to a change in gender or inflectional category; instead, the change between *femur* and *femin-* requires suppletive stem morphemes. The Proto-Indo-European words **péh₂wr̥* 'fire' and **wódr̥* 'water' fall into this latter category and show the same **-r-* ~ **-n-* alternation seen in *femur*:[1]

Table 1.3: PIE **péh₂wr̥* 'fire'

	N.SG	N.PL
NOM/ACC	**péh₂wr̥*	**ph₂wṓr*
GEN	**ph₂wén(o/e)s*	**puh₂nóh₁/₃om*
DAT	**ph₂wéney*	**puh₂nós*

Table 1.4: PIE **wódr̥* 'water'

	N.SG	N.PL
NOM/ACC	**wódr̥*	**wédōr*
GEN	**wédn(o/e)s*	**wédnoh₁/₃om*
DAT	**wédney*	**wédnos*

It is this latter category of heteroclites, and specifically those that show a stem-final **-w(o/e)r-* ~ **-w(o/e)n-*[2] alternation in Indo-European, that shall be the focus of this dissertation. Crucially, this heteroclitic stem allomorphy does not have a synchronic phonological basis within any attested language or even a widely accepted explanation within the prehistory of the Indo-European language family. The inflectional peculiarity of these forms seems to lie squarely in the domain of the morphology; were the alternation synchronically derivable from a single underlying form, the category would not be considered heteroclitic.

[1] The reconstructions are based mainly on Yates (2021a).

[2] Where notations like **-w(o/e)n-* appear, the (o/e) indicates cases where various vowels may be reconstructed within a given morpheme. This variation may occur for several reasons. For instance, the daughter languages may irreconcilably disagree about the reconstruction of a given morpheme, as in the athematic GEN.SG ending, which may be reconstructed as **-s*, **-es*, or **-os* depending on the daughter language under investigation. On the other hand, some

1.1.1 The importance of heteroclisis to Indo-European studies

The heteroclites have often been acknowledged as one of the hallmarks of an ancient Indo-European language. The characteristic look of an *r* (or *l*) in the strong cases beside *n* in the weak cases was identified by Hrozný (1915, 1917) as one of the most important pieces of evidence that helped him to identify Hittite and prove its status as an archaic Indo-European language.

(1.1) a. "Sehr wichtig war die Feststellung einer Deklination, die gerade für die indogermanischen Sprachen und nur für sie besonders charakteristisch ist. Dem Verfasser gelang es zunächst in dem Worte *wa-a-tar* mit ziemlicher Wahrscheinlichkeit das hethitische Wort für „Wasser" festzustellen, das natürlich mit altsächs. *watar*, ahd. *waʒʒar*, gr. *ὕδωρ* usw. „Wasser" identisch ist. Es gelang aber weiter festzustellen, daß von diesem Worte der Gen. sg. nicht etwa **wa-a-tar-aš* o. ä., sondern überraschenderweise wohl *ú-e-te-na-áš*, der Abl./Instr. *ú-e-te-ni-it/d* usw. lautet; statt des *-r* des Nom. und Akk. (vgl. die Identität des Nom. und Akk. bei dem indogermanischen Neutrum!) bieten die übrigen Kasus des Sg. ein *-n-*. Denselben Wechsel zwischen *-r-* und *-n-* weist aber das entsprechende indogermanische Wort auch z. B. im Griechischen auf, wo zu *ὕδωρ* der Gen. *ὕδα-τος* lautet, wobei das *α* dieser Form bekanntlich aus *n̥* entstanden ist! Es ist die bekannte höchst eigenartige Deklination, die auch z. B. im lat. *femur*, Gen. *feminis* vorliegt. Einen stärkeren Beweis für den Indogermanismus des Hethitischen kann man sich wohl kaum wünschen." (Hrozný 1915: 24–25)

'Very important was the discovery of a declension that is particularly characteristic precisely of the Indo-European languages and only of them. The author first managed to discover with considerable likelihood the Hittite word for "water" in the word *wa-a-tar*, which naturally is identical to OS *watar*, OHG *waʒʒar*, Gr.

vowel variation stems from the Indo-European system of accent and ablaut explained in §1.3.1, whereby the mid vowels **ĕ* and **ŏ* may alternate or delete according to incompletely understood morphophonological principles. When (*o*/*e*) or similar appears in an uninflected morpheme or stem, this indicates that various vocalisms may appear depending on the specific morphophonological context.

ὕδωρ, etc. Even further he managed to discover that the GEN.SG of this word is not something like ×*wa-a-tar-aš vel sim.* but surprisingly *ú-e-te-na-áš*, the ABL/INS *ú-e-te-ni-it/d* etc; instead of the *-r* of the NOM and ACC (cf. the identity of the NOM and ACC in the Indo-Euorpean neuter!), the remaining cases of the SG provide an *-n-*. The same alternation between *-r-* and *-n-* is displayed, however, by the corresponding Indo-European word also, for example in Greek, where ὕδωρ has the GEN ὕδα-τος, where the α of this form famously has arisen from *n̥*! It is the famous, extremely peculiar declension that is also present e.g. in L *femur*, GEN *feminis*. One can hardly wish for a stronger argument for the Indo-Europeanism of Hittite.'

b. "Wichtig ist auch, daß das Hethitische diese Deklination in einer seltenen Reinheit erhalten hat. . . ; darin ist wohl ein altertümlicher Zug dieser Sprache zu erblicken." (Hrozný 1917: 64)

'It is also important that Hittite has retained this declension in a rare purity. . . ; therein must be glimpsed an archaic trait of this language.'

Likewise, one can hardly wonder why Benveniste (1935) chose the heteroclites as the primary topic for his work on the "origins of the formation of the nouns in Indo-European", whose opening paragraph appears in (1.2).

(1.2) "On s'accorde à tenir le type nominal dit en *r/n* pour le vestige le plus archaïque de l'ancienne flexion indo-européenne. Sa singularité même, la rareté des formes qui l'attestent, le caractère élémentaire des notions qu'il traduit, l'éviction ou la normalisation auxquelles il a été soumis de bonne heure, autant de preuves que ce type est une survivance d'un système aboli et que, contrastant par son anomalie avec les formations courantes, il rélève d'une structure plus ancienne." (Benveniste 1935: 4)

"There is agreement in taking the nominal type, which are said to be in *r/n*, as the most archaic vestige of ancient Indo-European inflection. Its very singularity, the rarity of the forms that attest it, the elementary character of the notions that it translates, the elimination or normalization to which it has been subjected at an early stage: so

many proofs that this type is a legacy of a discarded system and that, as it contrasts with the common formations because of its anomaly, it pertains to a most ancient structure."

1.1.2 A brief history of Indo-European scholarship on heteroclisis

Indeed, since their discovery by de Saussure (e.g. 1879: 223–228), the Indo-European heteroclitic nominals have never wanted for attention with Schmidt (1889: 172–218) analyzing their plural formation, Meringer (1891) wrestling with the Vedic inflection of the word **wódr̥*, and Pedersen (1893) providing an early survey of potential heteroclitic forms and struggling with the **-t-*formant that pervasively appears in the inflection of the **-r-/-n-*heteroclites. Not all the forms adduced in this early literature would stand up to muster, as de Saussure identified three categories of heteroclites (**-∅-/-n-*, **-r-/-n-*, and **-i-/-n-*), of which only the **-r-/-n-*heteroclites are now widely accepted. Regardless, the era-defining grammar of *Brugmann*^{2} II.1: 578–582 accepted the category of heteroclites, and soon thereafter came the monographic treatments of Petersson (1921, 1922), which were marred in part by his assumption (following Meringer and Pedersen) that Proto-Indo-European had the nominative endings **-i*, **-u*, **-r*, **-ā*, **-s*, **-g*, **-d*, and **-t*; only **-s* represented a true (animate) nominative ending. The other major flaw with Petersson's analysis was the omission of data from the recently deciphered Hittite, whose heteroclites played a starring role in the analysis of Hrozný (1917: 61–80), as referenced above. And what an omission it was, as the Hittite and the other Anatolian languages would turn out to have several synchronically productive categories of heteroclites (**-r/-n-*, **-tr̥/-tn-*, **-sr̥/-sn-*, **-wr̥/-wen-*, and marginally **-mr̥/-mn-*) with the **-éh$_2$-tr̥/-tn-*, **-wr̥/-wen-*, and **-mr̥/-men-*heteroclites providing verbal nouns, infinitives, and supines for the verbal system. The seminal work of Benveniste (1935) provided a clear-eyed analysis and accounting of the newly discovered Hittite and Indo-European heteroclitic categories and sought to derive many other nominal suffixes from the relics of such moribund inflectional paradigms elsewhere in Indo-European.

The next major breakthrough in heteroclitic studies came from a series of papers by Schindler (1975a, 1975b), where he described the heteroclitic paradigms according to the "Erlangen" model

of PIE morphology (described in §1.3.2.1)—analyses that still hold sway today. Since then, these obscure and frequently altered heteroclitic inflectional patterns have provided no shortage of fodder for recent morphonological scholarship (e.g., Oettinger 1982, 2015; Yates 2017a, 2019a, 2021b, 2021c). Likewise, some recent attempts have been made at diagnosing the semantics (Friedman 1999) and origins (Adrados 1991; Lipp 2019; Pinault 2019) of the heteroclites, none of which have received wide approval. Within the individual Indo-European subfamilies, there has been copious research analyzing the heteroclites in Anatolian (Eichner 1973; 273–419 Starke 1990: 433–572; Rieken 1999), Ancient Greek (Fraenkel 1909; Hirt 1912: 389–392; Chantraine 1933: 217–220; *Schwyzer* I: 517–521; Dedè 2013), Indo-Aryan (*AiGr* III: 309–319; Hoffmann 1975; Tucker 2019; Clayton 2021b), Iranian (Kümmel 2019), Tocharian (Del Tomba 2019, 2021), Celtic (Lambert 1978; Stüber 1998: 83), Armenian (Olsen 1999: 128–129, 154–158, 163–169), and Germanic (Klimp 2013).

1.2 Phonology

To fully understand the behaviors of the *-*wr̥*-/-*w*($^{e}/_{o}$)*n*-heteroclites, we must address a few topics in the phonology and morphology of Proto-Indo-European. Specifically, the behavior of the sonorants and their syllabification will play a crucial role in the analysis to follow since the formants in question, *-*wr̥*- and *-*wén*-, have only sonorants as consonantal material.

1.2.1 Sonorant syllabicity alternations

Critical to the operation of the Indo-European morphological system was the apparent ability of all Indo-European sonorant consonants to become syllabic under the appropriate contexts. All of the Indo-European sonorants (**y* [j], **w* [w], **r* [r], **l* [l], **n* [n], **m* [m]) had syllabic allophones (**i* [i], **u* [u], **r̥* [r̥], **l̥* [l̥], **n̥* [n̥], **m̥* [m̥]) that arose in phonotactically necessary contexts.

Perhaps the simplest rule-based statement of these phonotactic conditions comes from Schindler (1977b), who posits the basic syllabification rule in (1.3).

(1.3) $\begin{bmatrix} \text{+son} \\ \text{-syl} \end{bmatrix} \rightarrow \text{[+syl]} \,/\, \begin{Bmatrix} \text{[-syl]} \\ \# \end{Bmatrix} \_\_ \begin{Bmatrix} \text{[-syl]} \\ \# \end{Bmatrix}$ (applied iteratively right-to-left)

Some scholars (e.g. Mayrhofer 1986: 160–161, 168; Jasanoff 2017: 3 & n8; Ringe 2017: 11–12) assume that **i* and perhaps also **u* had phonemic status as well as being allophones of **y* and **w* respectively. Evidence adduced for phonemic high vowels includes the Gr. thematic locatives in **-o-i* > -οι, which count as disyllabic for accentuation (e.g. οἴχοι 'at home' < PIE **wóyk-o-i* LOC.SG; Ἰσθμοῖ 'on the Isthmus of Corinth' < PGr. **i(s)tʰm-ó-i*), and exceptional syllabifications in like ***/kur-ko-/* > PIE **kurko-* 'foal' (H *kūrkaš*, MP ⟨kwlk⟩, Arm. *kʿowrak*) for expected ˣ*kwr̥ko-* (Byrd 2015: 148–150). The **CurC* syllabifications in particular will be a topic of great importance for analyzing the outcomes of PIE **/wr/* sequences. I do not immediately have a solution to this problem, but the theory espoused by Leiden scholars that the PIE vowel system had only phonemic mid vowels (**e̯* and perhaps **o̯*) seems neither typologically likely nor attestationally motivated. I would reconstruct the following phonemic vowels for Proto-Indo-European:

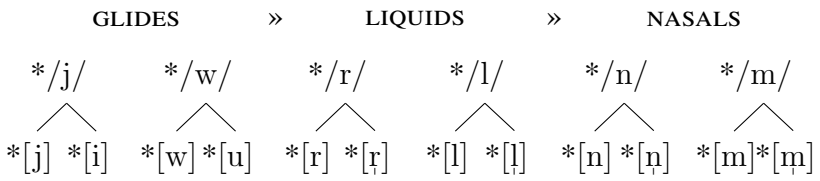
(1.4) **i*, **ī* **u*, **ū*
**e*, **ē* **o*, **ō*
**a*, **ā*

The failure of rule-based analyses to account for the many intricacies of Indo-European syllabification has inspired to two recent book-length Optimality Theoretic analyses of the subject, Cooper (2014) and Byrd (2015). All these analyses, however, require sonorant syllabicity alternations as a repair for the consonant clusters which would arise from vowel deletion by Indo-European morphology.[3] Thus we find syllabicity alternations like those in **ph₂tr̥-éy* DAT.SG ~ **ph₂tr̥̄-su* LOC.PL 'father' and **h₁dónt-s* NOM.SG ~ **h₁dn̥t-ós* GEN.SG 'tooth'. Yet such a morphological system quickly becomes untenable (and unlearnable) when this allophony of sonorants breaks down. As argued in Clayton (2021a), only the liquids and glides maintained fully productive alternations into the oldest attested stage of Indo-Aryan, the branch of Indo-European that will be the chief focus of this dissertation. By the time of Middle Indic, all productive sonorant syllabicity alternations had been weeded out (Turner 1923; von Hinüber 2001: 122–123). This progression is schematized in (1.5).

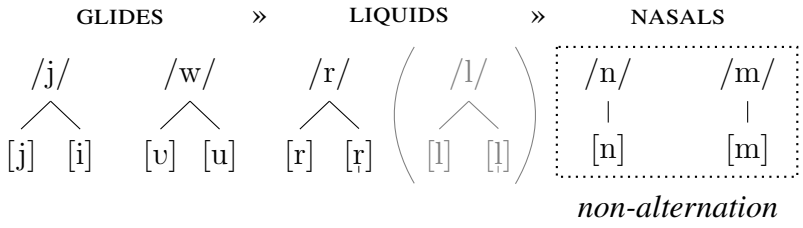
[3]Other repairs for consonant clusters exist, such as simplification by deletion (**H* > ∅ / *C*___.*CC*, Hackstein 2002;

(1.5) Sonorant syllabicity alternations since Proto-Indo-European

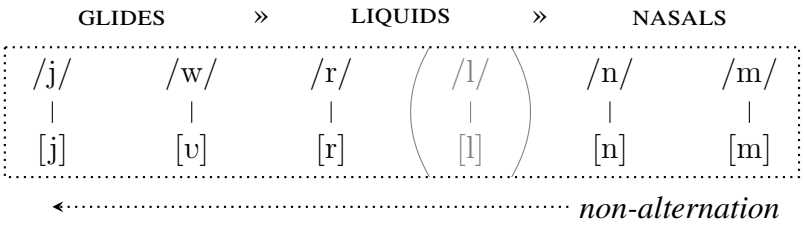
a. Proto-Indo-European



b. Vedic Sanskrit



c. Middle Indic



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e.g. ***d*^{h}*ugh*$_2$*tr-ós* 'daughter' GEN.SG > **d*^{h}*uktrós* > OE *dohtor*, Arm. *dster*, OLt. *dukterès*) or epenthesis of the so-called "schwa secundum" in *#(s)TTRV-* sequences, as in the cace of the compound form of 'four-':

(i) ***k*^{w}*twr̥*° 'four-' > {
- **k*^{w}*etru*° > Av. *caθru*°, Gaul. *petru*°
- **k*^{w}*ə̯tru*° > L *quadru*°
- **k*^{w}*tru*° > Gr. τρυφάλεια (*trupháleia*) 'four-crested (helmet)',
  ?Ven. **trumusiiati-** 'theonym'
- **k*^{w}*etur*° > Ved. *catur*°, PGerm. **feður*°
- **k*^{w}*etwr̥*° > Gr. τετρα° (*tetra*°)

Note that in the allomorphs **k*^{w}*ə̯tru*°/**k*^{w}*tru*°, **wr̥* > **ru* metathesis is apparently preferable to syllabifying /*k*^{w}*twr-*/ → *[*k*^{w}*tur-*]. One would imagine the onset **k*^{w}*t-* to be phonologically licit given that initial velar-coronal clusters are an outcome of the thorn-cluster metathesis ***TK-* > **KT-*, e.g. PIE **d*^{h}*ǵ*^{h}*ém-* > **ǵ*^{h}*d*^{h}*ém-* > Ved. *kṣám-* 'earth' (Schindler 1977a; Melchert 2003; Jasanoff 2018), but the cluster **k*^{w}*tr-* was apparently simplified already in PIE.

As these phonological processes steadily morphologized within each subgroup, various conflations of formerly disparate categories occurred, leading to confusion and dissolution of the already opaque heteroclitic inflectional paradigms. The addition of the mysterious *-*t*-formant to the heteroclites was a particular problem for Sanskrit as *-*wen-t-* ~ *-*wn̥-t-* alternations surfaced as -*vant-* ~ -*vat-*, which from a synchronic perspective seemed to show morphological insertion of -*n-* instead of phonological allophony of -*n-*.

1.2.2 Metatheses

Sonorant syllabicity alternations and their productivity are not the only source of difficulty within diachronic Indo-European morphophonology. The Indo-European sonorants were susceptible to two major metatheses, laryngeal metathesis (1.6) and *$wr̥]_{\sigma}$ > **ru* metathesis (1.7).

(1.6) Laryngeal metathesis (**CHUC* > **CUHC*; Winter 1965: 191–192; Mayrhofer 1986: 174–175; Byrd 2015: 25, 102–103; Jakob 2017):

a. PIE $\overset{*}{\sqrt{peh_3(y)}}$ 'to drink' + *-*tó-* VB.ADJ → **$ph_3itó$- > *$pih_3tó$- > Ved. *pītá-*, OCS *pitŭ* 'drunk'

b. PIE $\overset{*}{\sqrt{deh_2w}$ 'to burn' + *-*nó-* VB.ADJ → **$dh_2unó$- > *$duh_2nó$- > Ved. *dūná-* 'burned'

(1.7) *$wr̥]_{\sigma}$ > **ru* metathesis (*AiGr* I: 206–207; *Brugmann*² I: 260–261; *AiGr* I *Nachtr*: 113; Tedesco 1957; Hoffmann 1980: 94–95; Mayrhofer 1986: 161–162; Pinault 1988; Lubotsky 1994: 98–100; Lipp 2009: vol. 1, 81–82[232], vol. 2, 343–350; Meier-Brügger 2010: 229; Del Tomba 2021):

a. PIE *$k^{w}etwr̥°$ 'four-' > *$k^{w}(e)tru°$ > Av. *caθru°*, Gaul. *petru°*, L *quadru°* [4]

b. PIE *$smók$-$wr̥$ > { Hitt. *zama(n)kur*; Ved. *śmáśru-* } 'beard'

As shall be shown in §1.2.2.1, both of these metatheses have a great deal to do with how we reconstruct the paradigms of the *-$wr̥$-/-$w(^{e}/_{o})n$-heteroclites. As such, the question of when and in

[4] See fn. 3 for more details.

what branches these metatheses occurred will determine what paradigms can be reconstructed at what stages of the Indo-European family's dispersal.

1.2.2.1 The combination of metatheses

When syllabicity alternations and metatheses combined, the resultant forms began to look very different from the underlying representations. Clayton (2021b) argues that Indo-Aryan preserves relics of metathesized N.NOM/ACC.SG *-ru* < **-wr̥*, which were often reanalyzed as *u*-stem adjectives (e.g. Ved. *péru-* 'swelling, fructifying' < **péyh₁-wr̥*, *śmáśru* 'beard' < **smóḱ-wr̥*, Pa. *nhāru* 'sinew' < **sneh₁-wr̥*, *ᵍdārú-* 'liberal' « **deh₃-wr̥*, Pras. *pyörü* 'gift' < **pro-deh₃-wr̥*). Chapters 2–3 of this dissertation will substantiate these claims. In the oblique stems, laryngeal metatheses appear in certain roots. For roots in $\sqrt[*]{CeH}$, zero-grades in the root and suffix could also result in metathesis, viz. ***CeH-wén-* > **CHun-* > **CuHn-* (e.g. **peh₂wén-* > **puh₂n-*), but as discussed below, the evidence for such **puh₂n-* forms is difficult.

1.3 The morphology of Indo-European and its heteroclites

To understand the inflection and development of the **-wr̥-/-w(ᵉ/ₒ)n-*heteroclites, one must first review the morphophonological theory which underpins the older Indo-European languages and the reconstruction of Proto-Indo-European. To that end, this section will give a brief introduction to how Indo-Europeanists reconstruct the nominal morphology and the phonological issues intrinsic therein.

1.3.1 Indo-European accent and ablaut

One of the most recognizable features of the Indo-European family is its system of "accent and ablaut" (A&A), a system of accentually driven, morphophonological vowel gradation. According to all the modern schools of Indo-European scholarship, Indo-European morphemes underlyingly possessed an **e*-vowel (called "**e*-grade" or "full-grade") which could be deleted to **∅* ("**∅*-grade" or "zero-grade"), lengthened to **ē* ("lengthened grade"), backed to **o* ("**o*-grade"), or both backed

and lengthened to *$\bar{o}$ ("lengthened *$\bar{o}$-grade"). Traces of these vowel grade alternations appear in the reflexes of the Proto-Indo-European verbal root $\sqrt[*]{sed}$ 'to sit' (cited here in its full grade, the traditional citation form). Table 1.5 is adapted and expanded from the chapter on Indo-European morphology in Fortson (2010: 75–85).

Table 1.5: Ablaut grades of $\sqrt[*]{sed}$ 'to sit'

Grade	$\sqrt[*]{sed}$	Eng.	Skt.	Gr.	L	Lt.	OIr.
*∅	*sd-	***nest*** [a]	*nīḍá-* [a]	ἵζω (*hízdō*) [b]	*nīdus* [a]	*lìzdas* [a]	***net*** [a]
*e	*sed-	***sit*** [c]	***sád***as- [d]	ἕδος (***hédos***) [d]	***sed***eō [e]	***sėd***éti [e]	***sess*** [f]
*o	*sod-	***sat*** [g]	***sād***áya- [h]	ὁδός (***hodós***) [i]	***sol***ium [j]	***sod***ìnti [h]	***suid***e [j]
*$\bar{e}$	*sēd-	***seat*** [k]	***sād***ya- [l]	—	***sēd***ēs [k]	—	***síd*** [k]
*$\bar{o}$	*sōd-	***soot*** [m]	—	—	—	***súod***is [m]	***sád***id [n]

[a] *(h_1)ni-sd-ó- '*where [birds] sit down' ⇝ 'nest'
[b] *si-sd-é- 'to sit' PRS
[c] *séd-ye- 'to sit' PRS
[d] *séd-es- 'seat'
[e] *sed-é$h_1$ye- 'to sit' STAT
[f] *sed-tu- 'seat'
[g] *(se-)sód- 'to sit' PF
[h] *sod-éye- 'to make sit' ITER/CAUS
[i] *sod-ó- 'sitting, riding' (⇝ Gr. 'road')
[j] *sod-yo- 'seat'
[k] *sēd- 'seat; dwelling' (⇝ OIr. 'peace')
[l] *sēd-yo- 'riding horse'
[m] *sōd- '*stuff sitting on the surface' ⇝ 'soot'
[n] *sōd-ye- 'to set'

(*LIV*^{2}: *s.v.* *sed-*; *NIL*: *s.v.* *sed-*; Fortson 2010: 79–80)

To make this system of A&A viable for Proto-Indo-European, many scholars have assumed that most lexical words derive from verbal roots, which minimally had the shape $\sqrt[*]{CeC}$. Under the assumption that every root must begin and end with a consonant, roots could undergo vowel gradations like those in Table 1.5 in a templatic manner, with certain morphological categories selecting different grades of the root. Thus, the iterative/causative suffix *-*éye*- generally selects *o-grade of the root, as in (1.8a), while the verbal adjective suffix *-*tó*- generally selects zero-grade of the root, as in (1.8b).

(1.8) a. $\sqrt[*]{sed}$ 'to sit' + *-*éye*- ITER/CAUS → *sod-éye- 'to make sit'
> Goth. *satjan**, 'to seat', Lt. *sodìnti* 'to set', Ved. *sādáya-* 'to set'

b. $\sqrt[*]{steh_2}$ 'to stand, station' + *-*tó*- VB.ADJ → *sth$_2$tó- 'standing, stationed'
> L *status* 'set', Gr. στατός 'placed', Ved. *sthitá-* 'standing; firm'

Crucially, the choice of vowel grade is not determined solely on the basis of accentuation, since

*-*éye*- and *-*tó*- select different root grades despite both accents falling on the syllable immediately following the root. Yet neither *-*éye*- nor *-*tó*- was fully uniform in the vocalism that the root assumed. The *-*éye*- iterative/causatives could also take zero-grade of the root, with the **o*-grade likely representing a transitive formation and the zero-grade an intransitive formation (Jamison 1983: 9–24, 200–212), though others have considered phonotactic or analogical explanations for the variation (Kölligan 2002; 2007: 57; Willi 2018: 273–280; Sasseville 2020a: 215–254). Likewise, the *-*tó*- verbal adjectives did not always take zero-grade, often preferring **e*-grade in $\overset{*}{\sqrt{TeT}}$, $\overset{*}{\sqrt{ReH}}$, and $\overset{*}{\sqrt{CReC}}$ roots for phonotactic reasons (Vine 2004). The details of these suffixes and their ablaut do not matter here beyond serving as cautionary tales about the difficulty of reconstructing the vocalism in Indo-European paradigms. Understandably, much of the morphophonological debate since the dawn of Indo-European linguistics has concerned the relationship between vowels and accent because of the enormous inter- and intra-language variation in ablaut found in various morphological categories. In what follows, I will discuss some of the phonological factors relevant the functioning of the reconstructed Indo-European vowel alternations and the impediments that sound change posed to the system of A&A.

1.3.2 Morphophonological theories on the development of accent and ablaut

Several theories exist to describe the operation of the Indo-European morphophonological system, and each understandably makes different predictions about what forms should surface in the protolanguage and how these forms should develop.

1.3.2.1 Erlangen

Since the 1970s, the theory of Indo-European nominal morphology has been dominated in much of Europe and North America by the "Erlangen Model",[5] which provides a set of ablauting templatic classes characterizing suffixed nominals of the shape R(oot) + S(uffix) + E(nding) and "root" nominals of the shape R(oot) + E(nding). Crucially, the Erlangen model often does not describe morphological patterns that can be found in attested Indo-European daughter language but instead reconstructs idealized versions of the paradigms in the prehistory of Proto-Indo-European

itself. This often means Erlangen reconstructions are internal reconstructions of pre-Proto-Indo-European. The major paradigmatic classes of the Erlangen model are given in tables 1.6 (athematic suffixed nominals) and 1.7 (athematic root nominals). This system generally distinguishes "strong" cases (NOM/ACC/VOC) from "weak" cases (GEN/ABL/DAT/INS/LOC) by means of changes in accent and ablaut. Note that the classes below apply only to the "athematic" nominals, which lack the "thematic vowel" **-o/e-*, since only athematic nouns show accentual mobility and paradigmatic ablaut.

Table 1.6: Erlangen athematic suffixed nominals

CLASS	SUBCLASS	CASE	R	S	E	EXAMPLES	
Acrostatic	I ("Narten")	S	***é́***	∅	∅	**h₃ré́ǵ-r̥-∅* [a]	OAv. *rāzarᵊ*
		W	***é***	∅	∅	**h₃régʲ-n-eh₁* [b]	OAv. *rašnā*
	II ("**o/e*")	S	***ó***	∅	∅	**nókʷ-t-s* [c]	L *nox*
		W	***é***	∅	∅	**nékʷ-t-s* [d]	H *nekuz*
Proterokinetic	I ("original")	S	***é***	∅	∅	**péh₂-wr̥-∅* [e]	H *paḫḫur*
		W	∅	***é***	∅	**ph₂-wén-(o)s* [f]	H *paḫḫwenaš*
	II ("de-acrostatic")	S	***ó***	∅	∅	**dór-u-∅* [g]	Ved. *dā́ru*
		W	∅	***é***	∅	**dr-éw-s* [h]	Ved. *drós*
Hysterokinetic		S	∅	***é***	∅	***ph₂(-)tér-s* [i]	Ved. *pitā́*
		W	∅	∅	***é***	**ph₂(-)tr-éy* [j]	Ved. *pitré*
Amphikinetic		S	***é***	***o***	∅	**pént(-)oh₂-s* [k]	Ved. *pánthās*
		W	∅	∅	***é***	**pn̥t(-)h₂-ós* [l]	Ved. *pathás*

[a] 'order' N.NOM/ACC.SG
[b] 'order' N.INS.SG
[c] 'night' F.NOM.SG
[d] 'night' F.GEN/ABL.SG
[e] 'fire' N.NOM/ACC.SG
[f] 'fire' N.GEN/ABL.SG
[g] 'tree' N.NOM/ACC.SG
[h] 'tree' N.GEN/ABL.SG
[i] > **ph₂tér* 'father' M.NOM.SG
[j] 'father' M.GEN/ABL.SG
[k] 'path' M.NOM.SG
[l] 'path' M.GEN/ABL.SG

[5]See for instance Pedersen (1926, 1933), Kuiper (1942), Schindler (1967, 1969, 1972, 1975b, 1975c, 1994), and Rix (1976, 1992).

Table 1.7: Erlangen athematic root nominals

Class	Subclass	Case	R	E	Examples	
Immobile	I ("Narten")	S	***é***	∅	*$*h_3r\acute{e}\acute{g}$-s* [a]	L *rēx*
		W	***é***	∅	*$*h_3rég$-(e)s* [b]	L *rēgis*
	II ("*o/e*")	S	***ó***	∅	**dóm-s* [c]	Gr. δῶ
		W	***é***	∅	*dém-s* [d]	Gr. δεσ°
Mobile		S	***é***	∅	**$h_2$nér-s* [e]	Gr. ἀνήρ
		W	∅	***é***	*$h_2\underset{\circ}{n}$r-ós* [f]	Gr. ἀνδρός

[a] 'king' M.NOM.SG
[b] 'king' M.GEN/ABL.SG
[c] > *$d\acute{o}m$ 'house' F.NOM.SG > *$h_2n\acute{e}r$ 'man' M.NOM.SG
[d] 'house' F.GEN/ABL.SG
[f] 'man' M.GEN/ABL.SG

The Erlangen model has the interesting property of both over- and undergenerating attested paradigms. On the one hand, the root ablauts of some reconstructed classes (including all acrostatic and immobile classes) barely appear in the synchronic morphology of any one language, and thus multiple languages typically must be used to reconstruct *o/e and *$ē/e$ ablauts. On the other hand, the athematic classes above do not nearly cover all the attested athematic categories in the daughter languages, nor indeed do they make predictions about nominal paradigms with two or more derivational suffixes. To be sure, I have not reproduced all the complexity of the Erlangen model here, nor would all paradigms be expected to survive pristinely after millennia of sound change and analogy. Nonetheless, the Erlangen model assumes a (near) opposition between accented syllables with full-/lengthened-grade and unaccented syllables with zero-grade that does not faithfully appear in any attested language.

1.3.2.2 Compositional models

In response to the complaints raised above (among others), some recent (mostly American) scholarship (e.g. Kiparsky and Halle 1977; Keydana 2005; Kiparsky 2010; Kim 2013; Keydana 2013, 2014; Sandell 2015; Yates 2017b; Lundquist and Yates 2018) has sought to model Indo-European A&A using compositional instead of templatic morphology. While I will not give a full exposition of this method (or set of methods) here, I will briefly outline the basic principles and their (dis)advantages. At the root of this system is the "Basic Accentuation Principle", defined in (1.9),

applied to morphemes that were underlyingly accented, unaccented, and perhaps pre-accenting.

(1.9) Basic Accentuation Principle (BAP):
"If a word has more than one accented vowel, the first of these gets the word accent. If a word has no accented vowel, the first vowel gets the word accent."
Kiparsky and Halle (1977: 209)

To the BAP must be added rules governing the deletion of mid vowels in order to predict the ablaut patterns of the nominals, including a "Zero-Grade Rule" in (1.10) and a "Post-tonic */o/ Deletion Rule" in (1.11).

(1.10) Zero-Grade Rule (ZGR, Kiparsky 2010):
"*e*,*o* → ∅ before an accented morpheme."[6]

(1.11) Post-tonic */o/ Deletion Rule (PoD, Yates 2021a: 16):
"Short athematic */o/ is deleted in a post-tonic σ before a tautosyllabic sonorant consonant."

Using this basic framework, we can model a system of nominal A&A roughly isomorphic with that of the Erlangen model, as shown in Table 1.8. Note that the alternative forms differ in whether underlying or surface accents trigger the ZGR and whether metatheses apply. Under the Compositional Model, *$\bar{e}$/*e* and *o/*e* alternations are not directly predicted by a inflectional template but may arise from underlying vowel quality/quantity, morphological analogy, or phonological effects. Likewise, all proterokinesis must derive from accentual heteroclisis, *viz.* the suffix must be unaccented in strong cases and accented in the weak cases. Such a requirement is more palatable for segmentally heteroclitic suffixes like *-*wr̥*-/-*w*(^{e}/$_{o}$)*n*- but must be understood as dogma for any "homoclitic" proterokinetic nouns. Though I will not expound here, the Compositional Model also improves upon the Erlangen model by predicting the inflectional patterns of nominals with more than one suffix (which the Erlangen model generally ignores) and of verbs (which the Erlangen model explains separately).

[6] Yates (2017a) assumes that various daughter branches may differ as to whether the ZGR is triggered by underlying or surface accentuation.

Table 1.8: Nominals in the compositional method

Erlangen Class	Case	Compositional Schema	Underlying	Surface	Examples
Acrostatic	S	*/**Ŕ**-S⁽´⁾-E/	*/*pĕ́r-wor-∅*/ [a]	*[*pĕ́rwr̥*]	Gr. πεῖραρ
				*[*pĕ́rur*]	Ved. *párur*, ?H *pēru*
	W	*/**Ŕ**-S⁽´⁾-**É**/	*/*pér-wén-ós*/ [b]	*[*pérunos*]	H *perunaš*
				*[*pérwenos*]	Ved. *párvaṇas*
Proterokinetic	S	*/R-S-E/	*/*peh$_2$-wor-∅*/ [c]	*[*péh$_2$wr̥*]	H *paḫḫwar*
				*[*péh$_2$ur*]	H *paḫḫur*
				*[*péh$_2$ru*]	Skt. ᴳ*pāru-*, ?TA *por*
	W	*/R-**Ś**-**É**/	*/*peh$_2$-wén-ós*/ [d]	*[*ph$_2$únos*]	» Goth. *funins*
				*[*puh$_2$nós*]	Arm. *hno-c*ʿ, » L *pūr-*
				*[*ph$_2$wénos*]	H *paḫḫwenaš*
Hysterokinetic	S	*/R-**Ś**-E/	*/*peh$_2$(-)tér-s*/ [e]	*[*ph$_2$tḗr*]	Gr. πατήρ
	W	*/R-**Ś**-**É**/	*/*peh$_2$(-)tér-ós*/ [f]	*[*ph$_2$trós*]	Gr. πατρός
Amphikinetic	S	*/R-S-E/	*/*pent(-)oh$_2$-s*/ [g]	*[*péntoh$_2$s*]	Ved. *pánthās*
	W	*/R-S-**É**/	*/*pent(-)oh$_2$-ós*/ [h]	*[*pn̥th$_2$ós*]	Ved. *pathás*
Immobile	S	*/**Ŕ**-E/	*/*h$_3$rḗǵ-s*/ [i]	*[*h$_3$rḗǵs*]	L *rēx*
	W	*/**Ŕ**-**É**/	*/*h$_3$réǵ-ós*/ [j]	*[*h$_3$réǵos*]	» L *rēgis*
Mobile	S	*/R-E/	*/*h$_2$ner-s*/ [k]	*[*h$_2$nḗr*]	Gr. ἀνήρ
	W	*/R-**É**/	*/*h$_2$ner-ós*/ [l]	*[*h$_2$n̥rós*]	Gr. ἀνδρός

[a] 'limit; stone' N.NOM/ACC.SG
[b] 'limit; stone' N.GEN/ABL.SG
[c] 'fire' N.NOM/ACC.SG
[d] 'fire' N.GEN/ABL.SG
[e] 'father' M.NOM.SG
[f] 'father' M.GEN/ABL.SG
[g] 'path' M.NOM.SG
[h] 'path' M.GEN/ABL.SG
[i] 'king' M.NOM.SG
[j] 'king' M.GEN/ABL.SG
[k] 'man' M.NOM.SG
[l] 'man' M.GEN/ABL.SG

1.3.3 *-wr̥-/-w(ᵉ/ₒ)n*-heteroclites

Because of the vast number of *-*r*/*n*- and *-*l*/*n*-heteroclites in Indo-European, I will limit myself only to the *-*wr̥*-/-*w*(ᵉ/ₒ)*n*-heteroclites and primarily their reflexes in Sanskrit—no small task in view of the morphophonological considerations given above. In an article on the A&A of the heteroclites, Schindler (1975b: 9–10) assigns the *-*wr̥*/-*wén*-heteroclites to the acrostatic and proterokinetic declensions with N.COL's of the amphikinetic declension, as shown in (1.12).

(1.12) a. Acrostatic N.SG:

i. *mḗh$_2$-wr̥ ~ mḗh$_2$-un-os > H *mēḫur* ~ *mēḫunaš* ‘length (of time)’

ii. *pḗr-wr̥ ~ pér-un-os » H $^{\text{NA4}}$*pēru* ~ $^{\text{NA4}}$*perunaš* ‘rock, stone’, Gr. πεῖραρ ~ πείρατος ‘end, limit’, Ved. *párur* ~ *párvaṇas* ‘knot; joint’

b. Proterokinetic N.SG:

i. *péh$_2$-wr̥ ~ ph$_2$-wén-os > H *paḫḫur* ~ *paḫḫwenaš* ‘fire’

ii. *péyh$_x$-wr̥ ~ píh$_x$-won- > Ved. *péru-* ‘swelling, fructifying; cream’ ~ *pī́van-* ‘fat’, Gr. πῖαρ ‘fat (substance)’ ~ πίονος ‘fat (adjective)’

c. Amphikinetic N.COL:

i. **péh$_2$-wor-h$_2$ ~ ph$_2$-un-ós → *péh$_2$wōr ~ puh$_2$nós ‘fires[?]’ »

*ph$_2$wṓr- > TA *por*

*ph$_2$wṓn- > Goth. *fōn*

*púh$_2$r- > Gr. πῦρ, ON *fúr*, U **pir**, *pir*, OL *pūrigō* ‘to clean’

While the evidence in favor of acrostasis (1.12a) and proterokinesis (1.12b) can be exemplified within single languages, the *Paradebeispiel* for the amphikinetic N.COL in (1.12c) finds its alleged evidence spread across several different languages, and neither of its expected stems **péh$_2$wōr* (with root full-grade) nor **puh$_2$n-* (with *n*-final double zero-grade) is actually continued in any language. Yates (2017a, 2019a, 2022) has called into question the existence of an amphikinetic N.COL with singular desinences. He instead uses the Compositional Model to explain the apparent proterokinetic heteroclites by positing differing accentual properties for the suffixes: underlyingly unaccented *-*wor-* vs. underlyingly accented *-*wé/ón-*. With an underlyingly unaccented root $\sqrt[*]{peh_2}$, the BAP assigns a default accent to the leftmost syllable of the fully unaccented **peh$_2$-wor-∅*, giving us **péh$_2$wr̥*, and the leftmost underlying accent in **peh$_2$-wén-ós* surfaces in **ph$_2$wénos*. In principle, the accented ending in **peh$_2$-wén-ós* could induce zero-grades of all preceding syllables, giving **ph$_2$-ún-ós* > **puh$_2$nós* with metathesized zero-grade. Nevertheless, the origins of the stem variants **ph$_2$wṓr-*, **ph$_2$wṓn-*, and **púh$_2$r-* remain problematic (despite the extensive attempt of Klimp 2013: 55–86).

For the acrostatic paradigms in (1.12a), the Compositional Model predicts these by assuming underlyingly accented roots which always surface accented. The fact that they never show root

zero-grade could perhaps be explained by morphological or phonotactic effects, though a fuller survey of the evidence is necessary.

1.3.4 Lindeman's Law and *R(∅/o)-*éh₂* formations

A curious feature of Indo-European phonology (first described by Lindeman (1965)) is that sonorants at the end of word-initial cluster in monosyllabic roots may become syllabic even when followed by a vowel (*R → *$\underset{\circ}{R}$ / #C__VC_0#). For example, *dyḗws 'sky' (> Gr. Ζεύς) → *diḗws (> Ved. *dⁱyáuḥ* 'sky'), *dwóh₁ 'two' (Ved. *dvā́*) → *duóh₁ (Ved. *dᵘvā́*, L *duō*, Gr. δύω). This phonetic adjustment is called Lindeman's Law, for recent treatments of which see Barber (2012) and Byrd (2015: 21, 190–192). While the addition of the *-*wr̥*-/-*w*(*e*/*o*)*n*-suffixes never creates monosyllables susceptible to this process, they may be attached to forms that have undergone the process. In particular, there are two types of verbal abstracts of the shape *R(∅)-*éh₂* and *R(*o*)-*éh₂* to which *-*wr̥*-/-*w(o)n*-suffixes frequently attach, as Chapter 4 shall demonstrate. These two types are often referred to as the "*fuga*-formation" and "τομή-formation", respectively, after two words that characteristically show this formation, L *fuga* 'flight, escape' < *b^hug-éh₂* and Gr. τομή 'cutting; stump' < *tomh₁-éh₂*. If the *fuga*-type is built to a root of the shape $\overset{*}{\sqrt{CeR}}$, however, the resultant formation (*CR-éh₂-) will be susceptible to the creation of a "Lindeman's variant" *C$\underset{\circ}{R}$-éh₂- (e.g., $\overset{*}{\sqrt{ser}}$ 'to flow' ⇒ *s$\underset{\circ}{r}$-éh₂- 'flowing' > Ved. *sarā́-*). The resultant Lindeman's variant may then be the target of further derivation by (among other things) *-*wr̥*-/-*w(o)n*-suffixes, creating *s$\underset{\circ}{r}$-éh₂-w$\underset{\circ}{r}$ > H *šarāwar* 'torrent[?]' (§4.1.1).

1.4 Plan of the dissertation

Within the vast topic of heteroclites in Indo-European, this dissertation focuses on the particular outcomes of the strong forms of the *-*wr̥*-/-*w*(*e*/*o*)*n*-heteroclites in Sanskrit and particularly the effect of *w$\underset{\circ}{r}$ > *ru* metathesis on the paradigms of the inherited heteroclites. Chapter 2 begins with a survey of the scholarship on the previously known heteroclites in Sanskrit, then lists and categorizes the Sanskrit formations in -*r$\overset{(\circ)}{u}$*- and -*l$\overset{(\circ)}{u}$*-. Chapter 3 in turn examines the previously known heteroclites as well as some newly proposed ones to argue that many of the old -*r$\overset{(\circ)}{u}$*-/-*l$\overset{(\circ)}{u}$*-

formations actually reflect the outcome of inherited *-*wr̥*-. Finally, Chapter 4 examines the evidence for -*wr̥*/-*w(o)n*-heteroclites built to *-*éh*$_2$-abstracts in a range of other Indo-European branches, namely Anatolian, Greek, Italic, and Tocharian, to determine their phonological, morphological, and semantic distributions.

CHAPTER 2

The development of the strong cases of the *-*wr̥*-/-*w*(*e*/*o*)*n*-heteroclites in Sanskrit

2.1 *-*wr̥*-/-*w*(*e*/*o*)*n*-heteroclites in Sanskrit

Because of the complex morphological patterns intrinsic to heteroclitic paradigms, the traces of the Indo-European *-*wr̥*-/-*w*(*e*/*o*)*n*-heteroclites have been discovered in fits and starts, even in extensively studied languages like Sanskrit. These heteroclites were characterized by direct forms in *-*w*(*o*)*r* and obliques in *-*w*(*e*/*o*)*n*-, examples of which appear in (2.1).

(2.1) Stress patterns of the *-*wr̥*-/-*w*(*e*/*o*)*n*-heteroclites:

a. Proterokinetic: PIE **péh$_2$-wr̥* ~ **ph$_2$-wén-*(*e*/*o*)*s* > H *paḫḫur* ~ *paḫḫwenaš* 'fire'

b. Acrostatic: PIE **pér-wr̥* ~ **pér-wen-*(*e*/*o*)*s* > Ved. *párur* ~ *párvaṇas* 'knot; joint', Gr. πεῖραρ ~ πείρατος 'end, limit'

The N.NOM/ACC.SG *-*wr̥*, in particular, has remained elusive due to its susceptibility to syllabic metathesis to *-*ur* and segmental metathesis to *-*ru*. Furthermore, questions remain as to whether Proto-Indo-European or Proto-Nuclear-Indo-European had masculine *-*wr̥*-/-*w*(*e*/*o*)*n*-heteroclites in addition to the standardly reconstructed neuter forms and if so, what forms the M.NOM.SG and M.ACC.SG endings should take. This chapter will provide an overview of the evidence in favor of masculine reflexes of the *-*wr̥*-suffix in Sanskrit, which combine with the many masculine -*van*-possessives < *-*wen*- to suggest a complete set of masculine *-*wr̥-s* ~ *-*we*/*on*-heteroclites

Tedesco (1957) noticed the segmental metathesis to *-*ru* while discussing the Indo-Aryan reflexes of the heteroclite **snéh$_1$-wr̥* ~ **snéh$_1$-wen-* 'sinew'.[1] According to Tedesco, Sanskrit did not retain the N.NOM/ACC.SG directly: the earliest Vedic forms *snā́van-* (*AV*, *TS*, *TB*, *ŚB*, *VS*) and

snāván- (*ŚB*) came from the oblique **snéh₁-wen-* but were replaced in later Sanskrit by *snā́yu-* (*TB*, *Suśr.*), which he identifies as a hypersanskritization of **snā́vu-*,[2] a regular MIA development from **snā́vr̥-* < **snéh₁-wr̥*.[3] Middle Indo-Aryan, however, preserved *lautgesetzlich* reflexes of the direct cases: not only AMāg. *ṇhāü-* < **snā́vu-* < **snā́vr̥* but also the segmentally metathesized Pā. *nhāru-* < **snéh₁-ru* < **snéh₁-wr̥*.

For syllabic metathesis, Hoffmann (1975) discussed **-wr̥* > *-ur*, which further could be reinterpreted as *-uṣ-*stems already in the Vedic period because of the ambiguities of Sanskit external sandhi. Thus, in *RV*, we find the heteroclitic *párur* ~ *párvaṇas* < **pér-wr̥* ~ **pér-wen-(e/o)s* and homoclitic *párus* ~ *páruṣas* « *párur*, both in the meaning of 'node of a plant stem; knot'.[4] *AiGr* II 2: 489–491 provides a list of forms ending in *-uṣ-*, noting that some possess corresponding *-ván-* forms, but the list misses some associated *-ván-* forms (e.g., **térh₂-wr̥* ~ **tr̥h₂-wén-* > *táruṣ-* '(struggle/power to) overcome' (*RV*) vs. *turváṇe* 'to overcome' (*RV*)). Since these analyses, the N.NOM/ACC.SG of the **-wr̥-/-w(e/o)n-*heteroclites has gone untreated; in particular, the potential for segmentally metathesized **-ru* < **-wr̥* in Sanskrit itself has not been properly examined. This chapter demonstrates that such segmentally metathesized **-ru* outcomes are continued in Sanskrit

[1]Benveniste (1935: 111) mentions the Prakrit forms without further analysis. One could argue that *śmáśru-* 'beard' < **smók-wr̥* (cf. H *zama(n)kur* 'id.') is the first recognized form from a **-wr̥-/-w(e/o)n-*heteroclite in Sanskrit with a *-ru*-metathesis, but as will be discussed in §3.4.1, there is no direct evidence that this form was heteroclitic.

[2]Tedesco (1957: 186–187) provides a plausible explanation for how speakers could replaces MIA **-vu-* with Skt. *-yu-* based not only on the abundance of Sanskrit nominals in *-yu-* but also on the coexistence of forms like Pā. *āyu-* 'life' and Pā. *āvusō* 'friends' VOC.PL < **āyuṣas* 'having life'. This would allow speakers to see *-yu-* and *-vu-* as dialectal equivalents with *-yu-* as the more Sanskritic variant.

[3]Tedesco reconstructs PIA **snā́-vr̥-t-* with a **-t-*suffix as in the simple **-r/n-*heteroclites (e.g., **hₓyék̑ʷ-r̥(-t)* ~ **hₓyekʷ-n-ós* 'liver' > Ved. *yákr̥t* ~ *yaknás*, ?Cl.Arm. *leard*; **kókʷ-r̥(-t)* ~ **kekʷ-n-ós* 'excrement' > Ved. *śákr̥t* ~ *śaknás*, thematized Gr. κόπρος) and in Cl.Arm. *neard* 'tendon, sinew' < **snéh₁-wr̥(-t)*. The forms descended from **snā́-vr̥(-t)* through Middle Indo-Aryan (**snā́vu-(t)-* > AMāg. *ṇhāü-* and Ved. *snā́yu-*) are inconclusive because the **-ut-*stems merged into the *-u-*stems (e.g., PIA **marút-* > Pā. *marū* 'spirits of the air' M.NOM.PL). To my knowledge, no example of Sanskrit N.NOM/ACC.SG *-vr̥t* < **-wr̥-t* is anywhere attested, so this question cannot be decided.

in the form of *-ru*-stem adjectives.

2.2 **wr̥* > **ru* metathesis

Many branches of the Indo-European family have long been known to possess examples of the segmental metathesis **wr̥* > *ru* / __$C_0]_\sigma$ (*Brugmann*² I: 260–261; Hoffmann 1980: 94–95; Meillet 1937: 134; Mayrhofer 1986: 161–162; Lubotsky 1994: 98–100; Lipp 2009: vol. 1, 81–82[232]; Meier-Brügger 2010: 229; Del Tomba 2021: with lit.) as in the *Paradebeispiele* in (2.2):[5]

(2.2) a. **kʷtwr̥-* 'four' > L *quadrupēs* 'four-footed (animal)', Gr. τρυφάλεια 'four-crested (helmet)', Av. *caθrudasa-* 'fourteenth', Gaul. **petru-** vs. Ved. *catur-*, Gr. τετρα-, Goth. *fidur-*

b. **smóḱ-wr̥* 'beard' > Ved. *śmáśru-* (*ṚV*), Cl.Arm. *mōrukʿ* vs. H *zama(n)kur* (see §3.4.1)

c. **swéḱ-wŕ̥-h₂-* 'mother-in-law' > Ved. *śvaśrū́-*[6] (*ṚV*), OCS *svekry*, OL *socrus* vs. Gr. ἑκυρᾱ́, Cl.Arm. *skesur*

d. **ǵʰwr̥-tó-* > Ved. *á-hrutá-* 'not crooked' (*ṚV*) vs. *á-pari-hvr̥ta-* 'unafflicted' (*ṚV*; Hoffmann 1980: 94–95; Lubotsky 1994: 100)

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[4]When I say that a form ending in *-ur* is attested, it should be noted that in most sandhi situations, the outcomes of underlying *-ur#* and *-uṣ#* are normally indistinguishable. Whitney (1889: 61) notes that in some Vedic compounds, underlying *-r#* is preserved before voiceless consonants (e.g., *súvar-pati-* 'lord of heaven' (*ṚV*)). To my knowledge, no such instances occur in which inherited **-wr̥* + $C_{[-voice]}$- come out as *-urC-* anywhere in Sanskrit. See, however, Rothstein-Dowden (2022: 248–249) for discussion of *Parucchepa-* < *párur* + *śépa-* 'penis'.

[5]Because of the wide scope of this sound change, occurring at least in Tocharian, Italic, Celtic, Indo-Iranian, Hellenic, Armenian, and Slavic, one may well ask whether this sound change might have happened already in Proto-Nuclear-Indo-European. I will discuss this question from the Vedic perspective in §3.8.

[6]Both Ved. *śmáśru-* and *śvaśrū́-* underwent a distant assimilation of **s. . . ś* > *ś. . . ś* similar to *śaśá-* 'hare' < **śasá-* < **ḱasó-* (cf. OHG *haso*, OPrus. *sasins*, W *ceinach* 'hare').

As shown in (2.2b) and by Tedesco (1957), this segmental metathesis occurred in final position in Vedic and Indo-Aryan, and thus it is reasonable to search for evidence of the metathesis elsewhere in Sanskrit and particularly in the N.NOM/ACC.SG of the *-*wr̥*-/-*w*($^{e}/_{o}$)*n*-heteroclites. Indeed, Del Tomba (2021) has recently argued that the N.NOM/ACC.SG of the *-*wr̥*-/-*w*($^{e}/_{o}$)*n*-heteroclites underwent a segmental metathesis to *-*ru*- in the prehistory of Tocharian. Based on the data to be adduced below, I reconstruct the following distribution for Sanskrit:

$$\text{(2.3)}\quad \text{*-}wr̥ > \text{Ved. -}ur\text{ / } \begin{cases} n\_\_\# \\ rX_0\_\_\# \\ \bar{V}C\_\_\# \end{cases}$$

$$\text{(2.4)}\quad \text{*-}wr̥ \text{ » } \left\{ \begin{array}{ll} \text{Skt.} & \text{-}ru\text{- ~ -}lu\text{-} \\ \text{MIA} & \text{-}vu\text{- ~ -}ru\text{- ~ -}lu\text{-} \end{array} \right\} \text{ / elsewhere}$$

The non-metathetic environments of (2.3) may be attributed to the language's total ban on ˣ-*rr*- and ˣ-*nr*- sequences, dispreference for undergoing the *$wr̥$ > *ru metathesis after -*r*- in a preceding syllable, and avoidance of superheavy (trimoraic) syllables.

Each of the environments in (2.3) conspires to prevent metathesis in Sanskrit. The non-metathesis after *r and *n is straightforward enough, as *$pér\text{-}wr̥$ > *$pérru$ or *$d^{h}én\text{-}wr̥$ > *$d^{h}énru$ would result in the sequences ˣ-*rr*- and ˣ-*nr*- which are nowhere found in Sanskrit (Kobayashi 2004: 93–4, 99–100). Lubotsky (1994: 100) cogently demonstrated the second anti-metathetic environment, after a syllable containing an *r, when he explained the distribution of -*ru*- and -*vr̥*- reflexes of *$ǵ^{h}wr̥\text{-}tó$-: -*hvr̥tá*- appears after prefixes containing *r (e.g., Ved. *á-pari-hvr̥ta*-) and -*hrutá*- appears elsewhere (e.g., Ved. *á-hrutá*-). This avoidance of consonantal *r*'s in consecutive syllables is reminiscent of Latin's complete set of distant dissimilation processes that targeted identical sonorants in adjacent syllables (e.g., **trabernā* > L *taberna* 'hut', L *peregrīnus* > L *pelegrīnus* 'pigrim'; **rēgul-ālis* > L *rēgulāris* 'ductile; ruled'; *OHCGL*[2]: 168–169). Finally, Sanskrit seems to have avoided creating superheavy (trimoraic) syllables through metathesis. There is other evidence that Sanskrit and Indo-European more generally avoided superheavy syllables. Byrd (2015: 192–203) has motivated Sievers' Law by appealing to avoidance of superheavy syllables; separately, Hoenigswald (1988, 1989, 1991) and Ryan (2021) have pointed out that superheavy syllables are avoided in the

cadences of Sanskrit and Ancient Greek verse. Under this hypothesis, **térh$_2$-wr̥* would probably have been syllabically metathesized to **tárHur* at a very early stage (of Indo-Aryan, at least) since either un-metathesized **tárH.wr̥* or segmentally metathesized **tárH.ru* would result in superheavy syllables. These rules must have been susceptible to both dialectal differences and analogy, given that Middle Indo-Aryan has both metathesized reflexes (Pā. *nhāru-*) and unmetathesized reflexes (AMāg. *ṇhāü-*) of **sneh$_1$-wr̥-* 'sinew'.

2.3 Data and methods

As a result of the segmental metathesis above and the syllabic variability between **-wr̥* ~ **-ur*, three types of heteroclitic NOM/ACC.SG's occurred: in Skt. *-ur* » *-uṣ-*, in Skt. *-rū́-/-lú-*, and in MIA **-vu* ⇢ Skt. *-yū́-*. In order to assess what Sanskrit forms in *-ur/-uṣ-*, *-rū́-/-lú-*, and *-yū́-* could come from heteroclites, we must find other support for taking a particular form to be a reflex of a PIE heteroclite. Example (2.5) lists the types of evidence to be used, namely *-ur/-uṣ-*, *-rū́-/-lú-*, and *-yū́-* forms (2.5a) as well as various oblique (2.5b), feminine (2.5c), and non-primary (2.5d) formations within Sanskrit and other heteroclitic evidence from other Indo-European languages (2.5e).

(2.5) a. NOM/ACC.SG **-wr̥-* >

i. Skt. *-ur* » Skt. *-uṣ-* nominals

ii. PIA **-ru* » Skt. *-rū́-/-lú-* adjectives

iii. PIA **-wr̥-* > MIA **-vu* ⇢ Skt. *-yū́-* nominals

b. OBL **-wén-* > Skt. *-vā́n-* nominals

c. F **-wén-ih$_2$-* > Skt. *-vā́rī-* nominals[7]

d. Suffixed heteroclitic forms: **-wer-ó-*, **-wn̥-kó-* > Skt. *-vará-*, *-vaká-*

[7]Tucker 2019 rightly argues that not all the Vedic feminine agentive suffix *-varī-* were inherited and that the suffix underwent some productive extension within the history of early Indo-Aryan. The same must also hold for the agentive/possessive suffix *-vā́n-*, which shows even wider productivity and a tantalizingly elusive connection to the possessive suffix *-vant-* < **-wen(-)t-*. Yet the cooccurrence of the *lautgesetzlich* outcomes **-wén-* > *-vā́n-* and **-wén-ih$_2$-* > *-vā́rī-*, however productive, beside the unproductive suffix *-ur/-uṣ-* and marginally productive suffixes *-rū́-/-lū́-* should

e. Cognate *-*wr̥*-/-*w*(*e*/*o*)*n*-heteroclites in other Indo-European languages

I will also argue that the *-*wr̥*-/-*w*(*e*/*o*)*n*-heteroclites used to have masculine strong cases of the form *-*wr̥-s* M.NOM.SG and *-*wr̥-m* M.ACC.SG, resulting in Ved. -*rū́-s*/-*lū́-s* and -*rū́-m*/-*lū́-m* respectively. To these marginal paradigm cells were supplied productive -*ū́*-stem paradigms which appear in minor adjectival subsystems in the later language. In the following discussion, forms are provided with their earliest textual attestations or, in the absence of textual attestations, their earliest grammatical citations. Where the attestations within a text are few (three or fewer), I will provide the citation; otherwise, only the text will be listed. The forms are listed in Sanskrit alphabetical order.

2.3.1 Data for the -*ū́r*- and -*ū́s*-stems

The main data previously considered for the development of the strong cases of the *-*wr̥*-/-*w*(*e*/*o*)*n*-heteroclites have been forms in -*ur*/-*uṣ*- which appear with accompanying in -*van*- or -*varī*- forms in Sanskrit or cognates elsewhere. To my knowledge, only primary formations have been discovered thus far, though not all of them are formed to clear verbal roots:[8]

(2.6) -*ur*/-*uṣ*-forms built to synchronic roots:

a. $\sqrt{tar^{i}}$ 'to overcome' (*RV*) ⇒

i. *táruṣ*- '(struggle/power to) overcome' (*RV* 1.122.13, 3.2.3, 6.25.4) < **térh₂-wr̥*

ii. *turváṇe* 'to overcome' (*RV*) < **tr̥h₂-wén-ey* N.DAT.SG

iii. ?*tū́rvat*- 'victorious' (*RV*) < **tr̥h₂-wen-t-*[9]

b. $\sqrt{par}$ 'to cross' (*RV*) ⇒

i. *párur*/*páruṣ*- ~ *párvaṇ*- 'knot (of a reed); joint' (*RV*) < **pér-wr̥*

c. $\sqrt{yaj}$ 'to sacrifice' (*RV*) ⇒

i. *yájur*/*yájuṣ*- 'sacrifice' (*RV*) < **h₁yắǵ-wr̥*

not be ignored *a priori*.

[8] *AiGr* II 2: 489–491 §316

[9] See §3.2.3.

ii. *yájvan-* ~ *yájvarī-* ‘sacrificing’ (*RV*) < **h₁yáǵ-won-* ~ **h₁yáǵ-wer-ih₂-*

d. $\sqrt{śās}$ ‘to instruct; rebuke’ (*RV*) ⇒

i. *śā́sur* ‘command, instruction’ (*RV*) < **ḱéh₁s-wr̥*

(2.7) *-ur/-uṣ-*forms without clear roots in Sanskrit:

a. i. *árur/áruṣ-* ‘wound’ (*AVŚ* 5.5.4 ≈ *AVP* 6.4.3, *ŚB*, *PB*)

ii. *anarván-* ‘unassailable, unstoppable’ (*RV*)

iii. *anaruṣ-* ‘without wounds’ (*ŚB*)

b. *dhán-ur* ~ *dhán-van-* ‘bow’ (*RV*)

These forms will be examined along with several (unlikely) other candidates in *-uṣ-* in §3.2 and §3.3.

2.3.2 The *-rū́-* and *-lū́-*stems in the grammatical tradition

The history of the *-rū́-* and *-lū́-*stems is much more complicated. Some of the interesting forms in *-rū́-* and *-lū́-* are cited only in Pāṇini and other grammarians, especially the examples from P given in (2.8). Those forms having no direct textual attestations will be prefixed with a superscript $\langle^{\mathcal{G}}\rangle$ for convenience. The Pāṇinian evidence comes from three sūtras given in (2.8) as well as the centuries of commentarial tradition thereon. All four sūtras fall under the governing sūtra P 3.2.134, which describes affixes encoding agency, and in each sūtra, suffixes are given with the roots/stems to which they attach.

(2.8) Pāṇini’s discussion of the agentive suffixes *-rú-/-ālú-/-luka-*:[10]

a. P 3.2.158:

spr̥hi-gr̥hi-pati-dayi-ni-drā-tandrā-śrad-dhā-bhya āluc

[10]I am grateful to Madhav Deshpande for his interpretive help with this and other Pāṇinian material. Segments rendered in boldface are *it*-s or *anubandha*-s, markers from the grammatical tradition that indicate the morphosemantic characteristics of a morpheme. These *it*-s guide the application of Pāṇinian grammatical rules and are deleted during the derivation of a given form.

"[The affix] *ālú**c*** [occurs to denote an agent noun after the verbal stems] $\sqrt{spr̥h}$-***i***- 'to desire', $\sqrt{gr̥h}$-***i***- 'to take', $\sqrt{pat}$-***i***- 'to fly', $\sqrt{day}$-***i***- 'to give', *ni*-$\sqrt{drā}$ 'to fall asleep', $\sqrt{tandrā}$ 'to be tired', *śrad*-$\sqrt{dhā}$ 'to believe in' [when the agent performs the action at the current time because of his nature, sense of duty, or skill]."

(tr. with *(anu)vr̥tti* based on Katre 1987 & Sharma 2002: *ad loc.*)

b. P 3.2.159:

dā-dheṭ-si-śada-sad-o ru-ḥ

"[The affix] *rú* [occurs to denote an agent noun after the verbal roots] $\sqrt{dā}$ 'to give; divide; protect', $\sqrt{dheṭ}$ 'to suck', $\sqrt{si}$, 'to tie, bind', $\sqrt{śad}$ 'to fall', and $\sqrt{sad}$ 'to sit' [when the agent performs the action at the current time because of his nature, sense of duty, or skill]."

(tr. with *(anu)vr̥tti* based on Katre 1987 & Sharma 2002: *ad loc.*)

c. P 3.2.173:

śr̄-vandy-or āru-ḥ

"[The affix] *ā́ru* [occurs to denote an agent noun after the verbal roots] $\sqrt{śar^{i}}$ 'to injure, hurt' and $\sqrt{vand^{i}}$ 'to praise' [when the agent performs the action at the current time because of his nature, sense of duty, or skill]."

(tr. with *(anu)vr̥tti* based on Katre 1987 & Sharma 2002: *ad loc.*)

d. P 3.2.174:

bhiy-aḥ kru-klukan-au

"[The affixes] ***k**rú* and ***k**luka**n*** [occur to denote an agent noun after the verbal root] $\sqrt{bhī}$ 'to fear' [when the agent performs the action at the current time because of his nature, sense of duty, or skill]."

(tr. with *(anu)vr̥tti* based on Katre 1987 & Sharma 2002: *ad loc.*)

To make this more explicit, here are the forms generated by these rules respectively:

(2.9) Outputs of Pāṇini's discussion of the agentive suffixes *-ru-*/*-ālú-*/*-luka-*:

a. P 3.2.158:

i. *spr̥hayālú-* ‘desiring’
ii. *gr̥hayālú-* ‘taking, grasping’
iii. *patayālú-* ‘flying’
iv. *dayālú-* ‘doling out; compassionate’
v. *nidrālú-* ‘sleepy, disposed to sleeping’
vi. *tandrālú-* ‘disposed to tiredness, lazy’
vii. *śraddhālú-* ‘faithful, trusting’

b. P 3.2.159:

i. *dārú-* ‘giving’, ‘splitting’, ‘guarding’
ii. *dhārú-* ‘suckling’
iii. *serú-* ‘binding’
iv. *śadrú-* ‘liable to fall down, unstable’
v. *sadrú-* ‘sitting, stable’

c. P 3.2.173:

i. *śarā́ru-* ‘harmful’
ii. *vandā́ru-* ‘praising’

d. P 3.2.174:

i. *bhīrú-* ‘fearing, timid’
ii. *bhī́luka-*(*/bhī́ruka-*[11]) ‘fearing, timid’

2.3.3 Data for the *-rú(́)*-stems

The *-rú-*derivatives which Pāṇini provides (P 3.2.159, P 3.2.174) are all attached directly to verbal stems and represent a mixture of textually attested and unattested forms. The adjectives in *-rú(́)-* that I consider to belong here (including some not listed by Pāṇini) appear in (2.10–2.16).[12]

The derivational category of *-rú(́)*-stems (2.10) with the most members and the oldest attestations are those built directly to a known Sanskrit root. Six roots ($\sqrt{kā}$, $\sqrt{cay}$, $\sqrt{dā}$, $\sqrt{dhā(y)}$, $\sqrt{pay^{i}}$,

[11] Provided by the vārttika *bhiyaḥ krukan api vaktavyaḥ* ‘[The affix] ***krukan*** with $\sqrt{bhī}$ ‘to fear’ [. . .] is also fit to be spoken’ (Pat. 3.2.174).

[12] Gathered and augmented with more examples and citations from Whitney (1889: §1192) and *AiGr* II 2: 288 §177, 859–861 §689.

$\sqrt{bhay^i}$) build *-rú(́)-*stems in the Vedic Saṃhitās, while three roots ($\sqrt{sā(y)}$, $\sqrt{śad}$, $\sqrt{sad}$) are reported only in (P 3.2.159) and the ensuing grammatical literature. With the exception of *bhīrú-* and its derivatives, all forms have full-grade of the root. Most of these formations will be treated in Chapter 3.

(2.10) *-rú(́)-*/*-ruka-*forms built to roots:

a. $\sqrt{kā}$ 'to love' ⇒

i. *cā́ru-* 'beloved, agreeable' (*RV*)

b. $\sqrt{cay}$ 'to observe' ⇒[13]

i. *céru-* 'observant[?]' (*RV* 8.61.7)

ii. *nicerú-* 'observant[?]' (*RV* 1.181.5)

iii. *máhikeru-* 'greatly observant[?]' (*RV* 1.45.4)

c. $\sqrt{dā}$ 'to give' ⇒

i. *dārú-* 'giving[?]'[14] (*RV* 7.6.1)

ii. (**pra-dāru-* >) Pras. *pyörü* 'gift'[15]

d. $\sqrt{dhā(y)}$ 'to suck' ⇒

i. *dhārú-* 'suckling' (*AVP* 5.24.2c[+] = *AVŚ* 4.18.2c)

e. $\sqrt{pay^i}$ 'to swell' ⇒

i. *péru-*/*perú-* 'swelling, fructifying; richest' (*RV*; *TS* 3.1.11.8; *VS* 6.10)

ii. *pī́lu-*/*pīlú-* 'fructifying' (*AVP* 7.19; *AVŚ* 20.135.12)

f. $\sqrt{bhay^i}$ 'to fear' ⇒

i. *bhīrú-* 'fearful' (*RV* 2.28.10, 1.101.6)

ii. °*bhīruka-*:

abhīruka- 'fearless' (*MBh.* 7.50.43)

[13] See §3.6.3 for discussion of the problems associated with this form's interpretation.

[14] See §3.5.3 for discussion of the problems associated with this form's interpretation.

[15] *CDIAL*: #8661

^{G}*daṃśabhīruka* ‘fly-fearing (buffalo)’ (H 1282)

dharmabhīruka- ‘shying from duty’ (*MBh.* 8.49.11)

śītabhīruka- ‘sensitive to cold’ (*Suśr.* 1.46.4)

iii. ^{G}*bhīluka-* ‘afraid’ (P 3.2.174)

iv. *abhī́ruṇa-* (*AVP* 1.33.3d = *AVŚ* 7.89.3), *abhīrúṇa-* (*VS* 6.17) ‘impudence[?]’

g. $\sqrt{sā(y)}$ ‘to bind’ ⇒

i. ^{G}*serú-* ‘binding’ (P 3.2.159)

h. $\sqrt{śad}$ ‘to fall’ ⇒

i. ^{G}*śadrú-* ‘liable to falling, unstable’ (P 3.2.159)

i. $\sqrt{sad}$ ‘to sit’ ⇒

i. ^{G}*sadrú-* ‘sitting, stable’ (P 3.2.159)[16]

A small class of *-ru*-forms built to *-ā*-stems are attested in the grammatical literature. Though their attestation is not promising, their *-ā*-stem bases will prove to be an important category in Chapter 4, where the Ved. *-ā*-stems and their PIE ancestor **-éh$_2$-* are shown to be the new host for **-wr̥-/-w(o)n-*heteroclite forms.

(2.11) *-ru*-forms built to *-ā*-stems:

a. *bhāryā́-* ‘wife’ (*ŚB* 14.4.1.20, 14.6.7.1) ⇒

i. *bharyāru-* ‘the father of a bastard by someone else’s wife’[17]

b. *hiṃsā-* ‘harm’ (*MBh.*) ⇒

i. ^{G}*hiṃsāru-* ‘tiger’ (*Trik.* 2.5.4)

ii. ^{G}*hiṃsāluka-* ‘biting dog’ (*Hār.* 222)

[16] *Bhaṭk* 7.21 does use *sadru-* (along with *spr̥hayālu-*, *nidrālu-*, *śraddālu-*, and *dhāru-*), but these forms cannot be accepted as true attestations since the *Bhaṭṭikāvya* intentionally uses forms from Pāṇini to demonstrate proper grammar and rhetoric. Indeed, the proximity of five forms from P 3.2.158–9 in a single verse highlights the artificiality of the work.

[17] *PW*: *s.v. bhāryāru-* and *AiGr* II 2: 861 §689c give this form from lexicographers, but I cannot find it in the lexica.

A single illness name *pākārú-* illustrates *-rú-* derivation from a *-a-*stem. The stem-final vowel lengthens to *-ā-*, suggesting the dominance of *-āru-* as the going derivational pattern.

(2.12) *-rú-*forms built to *-a-*stems:

a. *pāka-* 'abscess, inflammation' (*Suśr.*) ⇒

i. *pākārú-* 'some illness' (*VS* 12.97)

As mentioned by P 3.2.173, a few forms are derived from roots with an intervening *-ā-* attested nowhere else. All of them come from *RV* and the pattern remains unproductive later. For the form *śarā́ru-*, normally taken to √*śar*^{i} 'to destroy', I provide a rather different account in §3.7.1.

(2.13) *-rú́-*forms to roots with :

a. √*pīy* 'to abuse' ⇒

i. *píyāru-* 'scornful' (*RV* 1.190.5, 3.30.8)

b. √*vand*^{i} 'to praise' ⇒

i. *vandā́ru-* 'praising; praise' (*RV*)

c. $^{?}$√*śar*^{i} 'to destroy' ⇒

i. *śarā́ru-* 'destructive$^{?}$' (*RV* 10.86.9)

There are a handful of derivatives in *-eru-* of unclear formation. Three appear to be built directly to a root, while two attach to the thematic nouns *kapha-* 'phlegm' and *himá-* 'cold'. *AiGr* II 2: 513 §346 plausibly suggests that *himerú-* may be a Middle Indicism for **himaryú-* < **ǵ^{h}i-mer-y-u-* of comparable formation to Gr. χειμέριος 'wintry' < **ǵ^{h}ey-mer-yo-*, though the *-u-*stem is unexplained. Two of these forms, *maderú-* (*RV* 10.106.6) and *sanéru-* (*RV* 10.106.8), come from the notoriously untranslatable verses 5–8 of *RV* 10.106 (for discussion and literature, see *J&B*; *J&B*$^{Com.}$: *ad* 10.106). I have no more to say on the formation of any of these forms.[18]

[18] Against *AiGr* II 2: 513 §346, *mitrérūn* M.ACC.PL (*RV* 1.174.6) does not belong here. Similarly to *J&B*$^{Com.}$: *ad loc.*, I take this as *mitrá-* 'ally' + *īru-* 'abandoning' from √*īr* 'to go (away from)', which is supported by the quadrisyllabic scansion *mitra-īrūn* in a triṣṭubh cadence (— ∪ — × |). The formation *īru-* is problematic, but the hymn's composer

(2.14) *-eru*-forms built to various stems:

a. *kapha* ‘phlegm’ (*Suśr.*) ⇒

i. ^{G}*kaphelū-* ‘phlegmatic’ (*Uṇādis.* 1.93), = *śleṣmātakataru* ‘*Cordia Latifolia*, whose fruits are slimy’ (Ujjv.*Uṇādis.* 1.95)

b. $\sqrt{tam}$ ‘to suffocate’ ⇒

i. *átameru-* ‘not languid’ (*VS* 1.23)

c. $\sqrt{mad}$ ‘to invigorate’ ⇒

i. *maderú-* ‘invigorating[?]’ (*RV̥* 10.106.6)

d. $\sqrt{san}$ ‘to acquire’ ⇒

i. *sanéru-* ‘acquiring[?]’ (*RV̥* 10.106.8)

e. *himá-* ‘cold’ ⇒

i. *himerú-* ‘chilly’ (*MS* 4.2.14)

ii. ^{G}*himelu-* ‘chilly’ (Pat. 5.2.122)

There are two formations in *-ru-* built to athematic roots, one a hapax in (*KauśS* 5.2.3) and one appearing only in the grammatical literature. These seem to be one-off constructions.

(2.15) *-rú(ʔ)*-forms built to other stems:

a. *kiṣku-* ‘handle’ (*PB* 6.5.13) ⇒

i. *kiṣkuru-* ‘staff, club’ (*KauśS* 5.2.3)

b. *carman-* ‘hide, skin’ (*RV̥*) ⇒

i. ^{G}*carmaru-* ‘shoemaker’ (*Trik.* 2.10.3)

Agastya is notorious for his wordplay and neologisms. It is conceivable that the *-u*-stem *mitrérūn* that ends pāda a is modeled after *ádāśūn* ‘impious’ M.ACC.PL that ends pāda b, especially as both are direct objects of *jaghanvāṃ* ‘having smashed’ and describe dereliction of duty. See Clayton (2022b: 45–46[23]) for discussion of the neologism *śūrtá-* ‘conquered’ in the same verse.

The forms *kaśeru-/kaseru-* ‘backbone’ (*Halāyudha apud Śkdr.*), ‘the bulbous root of *Scirpus Kysoor* grass’ (*Suśr.*) lack a clear derivational base.

Finally, there are a set of formations without an obvious Sanskrit base.

(2.16) *-rū́*-forms without an obvious Sanskrit base:[19]

a. *áśru-* 'tear' (*RV* 10.95.12, 10.95.13)

b. *ūrú-* 'thigh' (*RV*)[20]

c. *jatrú-* 'collarbone' (*RV* 8.1.12)

d. $^{\mathcal{G}}$*pāru-* 'sun, fire' (Ujjv.*Uṇādis.* 4.101)

e. *śátru-* 'opponent' (*RV*)

f. i. *śmáśru-* 'beard' (*RV*)

ii. *hári-śmaśāru-* 'gold-bearded' (*RV* 10.96.8)

Of these, *áśru-* 'tear', $^{\mathcal{G}}$*pāru-* 'sun, fire', and *śmáśru-* 'beard' will receive extended treatment in Chapter 3.

2.3.4 Data for the *-lū́*-stems

The forms in *-ālū́-* make up a larger and more productive category than those in *-rū́-*.[21] With the exception of $^{\mathcal{G}}$*bhālu-* 'sun', attested only in the grammarians, all forms are non-primary and generally adjectival in meaning.

(2.17) *-lu-* built to roots:

[19] I omit several forms from consideration because of obscurity of meaning or etymological source. These include the taxonyms *camūru-* 'a type of deer' (M.*Śpv.* 1.8) = *samūru-* (*Ak.* 2.5.9) = *samūra-* (H 1294), *śigru-* '*Moringa oleifera*, horseradish tree' (*Suśr.*), *ruru-* 'a type of antelope' (*VS* 24.27, 24.39); the ethnonym *Śígru-* (*RV* 7.18.19); and the topynyms *Meru-* 'a holy mountain' (*MBh.*) = *Sumeru-* (*R*) = Pā. *S(i)neru-*, *Vitadru-* 'a river name' (Ujjv.*Uṇādis.* 4.102).

[20] See Nikolaev (2021) for a recent etymology deriving this form from *$*(h_x)w̥lh_x$-Lu-*.

[21] These data have been gathered and augmented with more examples and citations from Whitney (1889: §1227b), Pischel (1900: 402 §595), and *AiGr* II 2: 290–291 §180, 866 §697–698.

a. $\sqrt{bhā}$ ‘to shine; appear’ (*RV*) or *bhā́-* ‘light’ (*VS* 30.12, *ŚB* 9.4.1.9, 11.8.3.11) ⇒

i. *ᵍbhālu-* ‘sun’ (Ujjv.*Uṇādis.* 1.5)

ii. *vibhā́van-* ‘shining forth’ (*RV*)

iii. *vibhāvat-* ‘shining forth’ (*RV* 1.58.9)[22]

The largest category of these forms are built to *-ā-*stems. They mostly describe bodily states and emotions and skew heavily towards the medical literature for attestation. Seven appear beside forms in *-vat-*, and five have descendants in Middle Indic. This category, which I derive from **-éh₂-wr̥-* » *-ālú(ˀ)-*, analogically extends from a few main lexical items, of which *dayālu-* ‘charitable’ plays a crucial role (§3.7.2).

(2.18) *-lu-* built to *-ā-*final stems:[23]

a. *īrṣyā́-* ‘envy’ (*AV*) ⇒

i. *īrṣyālu-* (H 391; *Kathās.* 61.147), Pk. *īsālu-*, Or. *isāḷu-*, M *isāḷū* ‘envious’

ii. *īrṣyāvat-* ‘envious’ (*Kathās.* 52.28, 61.142)

b. *kr̥pā-* ‘pity’ (*MBh.*) ⇒

i. *kr̥pālu-* ‘pitious, compassionate’ (*MBh.* 5.6.14, 11.8.41, 12.83.60; (*BhāgP*)

ii. *kr̥pāvat-* ‘pitious, compassionate’ (*Kumāras.* 5.26)

c. *kṣudhā-* ‘hunger’ (*MBh.*) ⇒

i. *kṣudhālu-* ‘hungry’ (Var.*BS* 67.110, 67.114, 100.9)

ii. *kṣudhāvat-* ‘hungry’ (*Bhaiṣajyaratnāvalī apud Śkdr.*)

d. *ghr̥ṇā́-* ‘warmth; sunshine’ (*RV*), ‘compassion’ (*MBh.*) ⇒

i. *ghr̥ṇālu-* ‘compassionate’ (*BhāgP* 4.22.43)

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[22]This form only appears in the M.VOC.SG *vibhāvas* with the innovative ending *-vas*.

[23]*AiGr* II 2: 290 §180a lists the forms *pipāsālu-* ‘thirsty’ and *bubhukṣālu-* ‘hungry’ built to *pipāsā́-* ‘thirst’ (*ŚB* 10.2.6.19, 12.2.3.12) and *bubhukṣā-* ‘hunger’ (*MBh.*), respectively, but I can find no evidence for either *pipāsālu-* or *bubhukṣālu-*.

ii. *ghṛṇāvat-* ‘disgusting’[24] (*Sarasv.*)

e. *tandrā-* ‘laziness, lassitude’ (*MBh.* 12.184.8, *YājñS* 3.158) ⇒

i. *tandrālu-* ‘tired’ (*Suśr.* 6.39.44)

f. *tṛṣṇā-* ‘thirst’ (*RV* 1.38.6, 7.89.4, 9.79.3) ⇒

i. *tṛṣṇālu-* ‘thirsty’ (*Suśr.* 6.27.12)

g. *dayā́-* ‘dole, pity’ (*ŚB* 14.8.2.4) ⇒

i. *dayālu-* (P 3.2.158, *MBh.* 8.67.3, *BhāgP*), Pk. *daālu-* ‘charitable’

ii. *mahādayālu-* ‘very charitable’ (*MBh.* 13.17.98)

iii. *dayāvat-* ‘charitable’ (*MBh.*)

h. *nidrā́-* ‘excessive sleep’ (*RV* 8.48.18) ⇒

i. *nidrālu-* (*Suśr.* 1.46.166, 6.60.13, 6.60.16), Pā. *niddālu-*, M *nidāḷū-* ‘sleepy’

ii. *atinidrālu-* ‘overly sleepy’ (*MBh.* 3.270.20)

i. *lajjā-* ‘shame’ (*MBh.*) ⇒

i. *lajjālu-* (*ŚārṅgS* 2.2.41), Pk. *lajjālu-*, S *lajāro*, G *lājāḷũ* ‘shameful’

ii. *lajjāvat-* ‘shameful’ (*MBh.* 3.52.17)

j. *lālā-* ‘saliva’ (*BhāgP*, *Suśr.*) ⇒

i. *lālālu-* ‘drooling’ (*CarS* 6.30.247, 6.30.249)

k. *śankā́-* ‘doubt’ (*ŚB* 10.1.1.10, 12.8.3.11) ⇒

i. Hind. *śaṅkālu-* ‘suspicious’

l. *śayā́-* ‘resting place’ (*RV* 3.55.4) ⇒

i. *śayālu-* ‘sleepy, sluggish’ (Pat. 3.2.158, M.*Śpv.* 2.80)[25]

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[24] Perhaps with a development similar to that of *pitiful* ‘feeling pity’ ⇝ ‘deserving pity’.

[25] We also find an apparent derivation from an *-a*-stem in *saṃśaya-* ‘doubt’ (*ĀśvŚr.*, *MBh.*) ⇒ *saṃśayālu-* ‘doubtful’ (*Naiṣ.* 3.61, 13.21, 20.73), but since *Naiṣ.* also uses unprefixed *śayālu-* (3.66, 11.92, 18.121) and places the first instance of *saṃśayālu-* (3.61) five verses away from the first instance of *śayālu-* (*Naiṣ.* 3.66), I assume that *saṃśayālu-* was created analogically to *śayālu-* and not directly from *saṃśaya-*.

m. *śraddhā́-* ‘trust’ (*RV*) ⇒

i. *śraddhālu-* (*BhāgP* 3.8.9, 11.11.23, 11.20.28), Pk. *saddhālu-* ‘faithful’

ii. *śraddhāvat-* ‘faithful’ (*BhāgP* 5.16, *Kathās.* 101.108)

A smaller category of forms in *-lu-* are built to thematic *-a*-stems, but always with derivatives in *-ālu-* by analogy to the category in (2.18). On the whole, these forms appear later and contain more forms from the grammatical literature. Perhaps the earliest attested of these *-ālu*-derivatives come from *Suśr.*, a medical text whose dating is difficult since its redactional history likely begins in the second half of the first millennium BCE and ends in the second half of the first millennium CE. Furthermore, none of these forms appear beside any *-vat-*, *-van-*, or *-varī-* forms.

(2.19) *-ālu-* built to *-a*-final stems:

a. *aṇḍa-* ‘egg’ (*Pt.*) ⇒

i. *ᴳaṇḍālu-* ‘fish’ (*Śc. apud Śkdr.*)

b. *uṣṇá-* ‘hot’ (*RV* 10.4.2) ⇒

i. *uṣṇālu-* ‘suffering from heat’ (Pat. 5.2.122.7; *Vikr.* 17.10), M *unhāḷṇẽ* ‘to be affected by heat of weather’

c. *kañcuka-* ‘armor; snake skin’ (*MBh.*) ⇒

i. *ᴳkañcukālu-* ‘snake’ (*Śc. apud Śkdr.*)

d. *kaṇṭa-* ‘thorn’ (*BhāgP*) ⇒

i. *kaṇṭālu-* ‘a type of (thorny) plant’ (*Rājan.*)

e. *kr̥śá-* ‘lean’ (*RV*) ⇒

i. *kr̥śāluka-* ‘leanish’ (*Divyāv.* 37)

f. *krodhá-* ‘anger’ (*AVP* 16.139.7 = *AVŚ* 9.7.13; *AVP* 5.19.7, *AVŚ* 4.38.4) ⇒

i. *krodhālu-* ‘passionate’ (*Suśr.* 6.60.14)

g. *tr̥prá-* ‘hasty’ (Kāty.*Śr.* 25.11.30), *tr̥prám* ‘hastily’ (*ŚB*) ⇒

i. *ᴳtr̥prālu-* ‘restless?’ (Pat. 5.2.122)

h. *śītá-* ‘cold’ (*RV* 10.34.9) ⇒

i. *śītālu-* ‘suffering from cold’ (Pat. 5.2.122; Var.*Bṛ.* 17.10)[26]

i. *sneha-* ‘oil’ (*MBh.*, *Suśr.*) ⇒

i. Pk. *ṇehālu-* ‘oily’

j. *svápna-* ‘sleep’ (*RV*) ⇒

i. *svapnālu-* ‘sleepy’ (*Suśr.* 3.3.26)

k. *hṛ́daya-* ‘heart’ (*RV*) ⇒

i. ^{G}*hṛdayālu-* ‘warm-hearted’ (Pat. 5.2.122), Or. *hiāḷi* ‘charming’

ii. ^{G}*hṛdayāvin-* ‘warm-hearted’ (Pat. 5.2.122)

Finally, three adjectives are built to non-primary verbal stems. Of all the forms in *-ālu-*, only *patayālú-* ‘flying’ appears in Vedic and thus is attested with an accent. Despite the small size of this category, there is good reason to believe it is old (as is discussed §§3.7.2 and 3.7.3).

(2.20) *-ālú-* built to non-primary verbal stems:

a. *patáya-* ‘to fly’ (*RV*) ⇒

i. *patayālú-* ‘flying’ (*AVP* 20.18.8a ≈ *AVŚ* 7.115.2a)

b. $^{?}$*gṛbháyant-* ‘grasping’ PRS.ACT.PTCP[27] (*RV* 1.148.3) ⇒

i. ^{G}*gṛhayālu-* ‘grasping’ (P 3.2.158)

c. *spṛhaya-* ‘to desire’ (*RV* 1.41.9, 8.2.18) ⇒[28]

i. *spṛhayālu-* ‘desirous’ (*MBh.* 5.43.10)

The formation of derivatives with the complex suffix *-ā-lú-* to verbal stems matches that of the periphrastic perfect constructions in *-ā́-*. These periphrases attach *-ā́m* F.ACC.SG chiefly to derived

[26] *MW*: *s.v.* mentions a form *śītāru-* ‘sensitive to cold’ in the lexicographers that I have not found.

[27] Jamison (1983: 100) argues that the hapax stem *gṛháya-* is a nonce formation based on the deverbative stem *gṛhāyá-* < **ǵʰr̥bʰh₂-eh₂-yé-*. Given the marginality of its base, ^{G}*gṛhayālu-* likely was created by analogy to *spṛhayālu-*.

[28] Or perhaps this form belongs in (2.18) given the existence of the adjective *spṛhayā́yya-* ‘desirable’ (*RV*), which implies the existence of a form **spṛhayā́-* ‘desire’.

stems and are governed by the auxiliary verbs $\sqrt{kar}$ 'to do', $\sqrt{as}$ 'to be', and $\sqrt{bhū}$ 'to become' and allow for perfects to causatives, desideratives, and other derived verbal categories (Whitney 1889: 392–394 §§1070–1073; *AiGr* II 2: 252–259 §143; Kümmel 2000: 61–63). The first such formation appears already in *AVŚ* 18.2.27 ≈ *AVP* 18.65.10, where a periphrastic perfect *gamayā́ṃ cakāra* is built to a causative of $\sqrt{gam}$ 'to go':

(2.21) *AVŚ* 18.2.27 (≈ *AVP* 18.65.10; describing a dead man in a funeral hymn)
ápemáṃ jīvā́ arudhan gr̥hébhyas ' táṃ nír vahata pári grā́mād itáḥ |
mr̥tyúr yamásyāsīd dūtáḥ prácetā ' ásūn pitŕ̥bhyo ***gamayā́ṃ cakāra*** ||
'The living have expelled this man from their houses. Carry him out away from this village.
Death was the attentive messenger of Yama. He **has made** their breaths **go** to the fathers.'

2.4 The distribution of *-rū́-* and *-lū́-*stems

Though many of the above *-rū́-* and *-lū́-*stems represent productive formations in the later language, a few patterns emerge. The *-rū́-*stems appear significantly earlier and derive mainly from roots. When they do not derive from roots, formations in *-āru-* dominate. On the other hand, *-lū́-*stems appear generally later and describe bodily and emotional states. When not derived from roots, the *-lū́-*stems overwhelmingly favor derivation from *-éh₂-*stems. Chapter 4 will argue that derivation from *-éh₂-* is common among *-wr̥-/-w(e/o)n-*heteroclites and the likely origin of the *-āru-* and *-ālu-*stems. First, however, Chapter 3 argues in detail for deriving some of the *-rū́-* and *-lū́-*stems from *-wr̥-/-w(e/o)n-*heteroclites on morphological and comparative grounds.

CHAPTER 3

Proto-Indo-European *-*wr̥*- » Sanskrit -*rū́*- & -*lū́*-

3.1 Sanskrit -*ur*/-*uṣ*- vs. -*rū́*-/-*lū́*-

This chapter will be primarily concerned with the evidence for the hypothesis that the strong cases of some *-*wr̥*-/-*w*(*e*/*o*)*n*-heteroclites were inherited into Sanskrit as forms ending in -*rū́*-/-*lū́*-. To do this, however, we must first deal with the previously known heteroclite reflexes in -*ur*/-*uṣ*-. This chapter will progress as follows. First we will look at the nouns in -*ur*/-*uṣ*- that I find likely to be reflexes of inherited *-*wr̥*-/-*w*(*e*/*o*)*n*-heteroclites in §3.2, followed by those nouns that I find unlikely to be inherited reflexes in §3.3. Next in §3.4 we will look at nouns in -*ru*- and -*lu*- to evaluate their sources. Following that are the adjectives in -*ru*- and -*lu*- of various stock (likely primary adjectives in §3.5, unlikely primary adjectives in §3.6, and a discussion of non-primary adjectives in -*lú*- in §3.7). Finally, §3.8 will discuss the distribution and age of the *w*r̥* > **ru* metathesis, and §3.9 concludes. Within each section, the entries will be laid out by root when available and will appear in order of plausibility, with the forms I deem most likely to descend from inherited *-*wr̥*-/-*w*(*e*/*o*)*n*-heteroclites appearing first and those least likely appearing last.

3.2 Nouns in -*ur*/-*uṣ*- likely to be from *-*wr̥*-/-*w*(*e*/*o*)*n*-heteroclites

As noted in Chapter 2, this category was first identified in Sanskrit as reflexes of PIE heteroclites by Hoffmann (1975), who provided both Indo-Iranian and Indo-European cognates.

3.2.1 $\sqrt[*]{per}$ ‘to go through’

Identified by Hoffmann (1975: 331–337), Ved. *párur* ~ *párvaṇas* ‘knot, knot of a reed; joint’ < **pér-wr̥* ~ **pér-wen-os* is one of two **-wr̥-/-w(e/o)n*-heteroclites to show true heteroclitic inflection in Sanskrit itself. This form finds a close cognate in Gr. πεῖραρ ~ πείρατος ‘end, limit’ (Att. πέρας) through an apparent semantic development ‘*thing passed through’ → ‘*edge’ → ‘limit, joint’. Furthermore, Greek and Sanskrit share a parallel privative adjective **n̥-per-wōr* ~ **n̥-per-wen-* > Ved. *aparván-* (*RV*) ‘place with no junction’, Gr. ἀπείρων ‘boundless, endless’. Even by the time of the *RV*, however, the synchronically obscure N.NOM/ACC.SG *párur* had already created a separate stem *páruṣ-* (e.g., *páruṣā* N.INS.SG, *páruṣas*. N.GEN.SG; *RV*), of the same meaning based on the sandhi ambiguity of *-r#* and the influence of forms like *áyuṣ-* ‘life’ N.

Bailey (1961: 470–473) argues that YAv. *druca paᵘruuąnca* (*Yt.* 13.99, *Yt.* 19.85) meant ‘from both bow and arrow’, taking *paᵘruuąn* as ABL.SG < **pár-wan-s*, with a semantic parallel in OKhot. *pū(r)na-* ‘arrow’ < **pauruna-* < **par-un-a-*. Instead of taking **pár-wan-* from the heteroclite **pér-wr̥* ‘knot, limit’, Bailey prefers to reconstruct a different heteroclite to $\sqrt[*]{per(h_x)}$ ‘to fly’ found in **por-nó-* ‘wing, feather’ > Ved. *parṇá-*, YAv. *parᵊna-* ‘feather’, OE *fearn* ‘fern’, Lt. *spaũnas* ‘wing’ and **per(hx)-o-* > OCS *pero* ‘feather’. He understandably does not list TB *parwa* ‘feathers’, which could be a recharacterized *-wa* PL to **péru-* < **pérru-* < **pér-wr̥*, according to the principles in Del Tomba 2021 (if such a **-rr-* geminate could be formed and degeminated). Kümmel (2019: 161) cites Bailey on *paᵘruuąn* but without comment equates it to Ved. *párur* ‘knot’ and glosses *paᵘruuąnca* “and arrows” as if from **parwān≂ča* < **pér-won-h₂≂kʷe*. Bailey takes *druca* ‘from/by bow’ from a (heteroclitic?) form **druéns≂kʷe* ABL.SG or from **druh₁≂kʷe* INS.SG, which he compares to PIIr. **druna-* > Skt. *ᴳdruṇa-*, OKhot. *durna-*, BSog. *dr’wn*, ZPahl. *drwn*, Oss.D. *ärdunä*, *ändurä*, Oss.I. *ärdyn* ‘bow’, all of which he believes go back to **dru-* ‘wood’. The best explanation comes from Hintze (1994: 356–357), who instead accepts the *v.l.* reading *druca* ⁺*paᵘruuąnaca* ‘with wood and shaft’ < **drú-h₁≂kʷe pér-won-eh₁≂kʷe* where **pér-won-* refers to the shaft of a reed between two knots. She assumes that the full-grade suffix *-uuąn-* < **-wān-* must be analogical, since ˣ*paᵘruna* < **pér-un-eh₁* might be expected. If an oblique **pér-un-* is to be reconstructed, it would be similarly replaced in Vedic *pár-vaṇ-*.

Is there any evidence for oblique **pér-un-/-un-*? The Gr. oblique πείρατ- goes mechanically back to **pér-wn̥-t-*, which is very similar in formation to Ved. *párvata-* 'rocky, mountainous', YAv. *pa^{u}ruuatā-* 'mountain' < **pér-wn̥-t(-)o-* and H ^{NA_4}*perwant-* 'rocky, craggy' < **pér-wn̥-t-*. If the heteroclite **pér-wr̥* ~ **pér-un-* 'rock, mountain' > H ^{NA_4}*peru* (dissimilated from **perur*) ~ ^{NA_4}*perun-* 'stone, cliff, boulder' is not homophonous but in fact the same word as the 'limit, knot' heteroclite (as per Rieken 1999: 337–338 & n^{1658} with lit.), then the oblique **pér-un-/-un-* would be confirmed. *EDH*: *s.v.* ^{NA_4}*peru / perun-* does not think that the meanings 'limit, knot' and 'rock, mountain' can be easily reconciled, but if this heteroclite comes from $\sqrt[*]{per}$ 'to go through, cross', it must have meant 'thing gone through, crossed ⇝ limit'. In Indo-Iranian, 'limit' came to mean 'knot (of a reed)' because the knots of a reed at the limits of the reed segments. But at the Indo-European phase, 'limit' may have come to refer to rocks and mountains in their common function as milestones and border mountains; alternatively, large stone formations could be thought of as 'knotty' or 'rugged'. If these two heteroclites are to be united, then Ved. *párur*, Gr. πεῖραρ, and H ^{NA_4}*peru* would be morphological equations.

It is worth noting that the Hittite form ^{NA_4}*peru* is spelled ⟨^{NA_4}*pé-e-ru*⟩ in both of its attestations, which could spell ^{NA_4}*pēru* < **pḗr-wr̥*. Likewise, Gr. πεῖραρ could come from **pḗr-wr̥* since Osthoff's Law in Greek (PIE **V̄* > PGr. **V* / *__RC$_0$*]$_\sigma$) would shorten **pḗr.wr̥* to **pérwr̥* > πεῖραρ. As such, an acrostatic accentual pattern **pḗr-wr̥* ~ **pér-un-* is quite plausible for this word.[1] Of course, we do not find Ved. ×*pā́rur*, but this could be leveled from the oblique *párvaṇ-*.

[1] *HED* 9: *s.v.* ^{NA_4}peru objects that the dissimilation of **perur* to ^{NA_4}*peru* is contradicted by *kūrur* 'enmity, war(fare)', but this form is not heteroclitic (*EDH*: *s.v. kūrur-*), so the oblique cases in *kūrur-* and various derivatives like *kūrura-* 'enemy', *kūrur-y^{e}/$_{a}$-^{zi}* 'to be hostile', etc. could have analogically reinforced the final *-r* in the N.NOM/ACC.SG and prevented deletion. Alternatively, as Anthony Yates suggests to me, a N.NOM/ACC.PL ***pḗ̆r-wor-h$_2$* > PIE **pḗ̆rwōr* would yield pre-H **pḗ̆ro* > H *pḗ̆ru* 'rocks, mountains' [pé(ː)ro] by PA **r* > H ∅ / *ō*$_{[\text{-stress}]}$___# (Yoshida 1990: 108–112) and PA **w* > H ∅ / *T*___*ŏ* (*AHP*: 128–129).

3.2.2 **$*d^h$*én-wr̥* ‘bow’**

Hoffmann (1975: 327–331) likewise identified a **-wr̥-/-w(ᵉ/ₒ)n*-heteroclite in the noun *dhánur* ~ *dhánvanas* ‘bow’ < **dʰén-wr̥* ~ **dʰén-wen-os* with its Old Iranian cognates YAv. *θanuuarə* ~ *θanuuan-* ‘bow’ and OP *θanuvan-iya-* ‘archer’.[2] Once again, *dhánur* has already been reanalyzed as *dhánuṣ-* in the *R̥V*.

3.2.3 $\sqrt[*]{terh_2}$ ‘to cross; overcome’

The root $\sqrt[*]{terh_2}$ ‘to cross; overcome’ shows ample Indo-Aryan, Indo-Iranian, and Indo-European evidence for a **-wr̥-/-w(ᵉ/ₒ)n*-heteroclite. Within the *R̥V*, the is the *-uṣ*-noun *táruṣ-* ‘(struggle/power to) overcome’ (*R̥V*) < **térh₂-wr̥*, the infinitive *turváṇe* ‘to overcome’ (*R̥V*) < **tr̥h₂-wén-ey*,[3] and the odd forms *turváṇi-* ‘overcoming’ (*R̥V*, 8×) < **tr̥h₂-wén-i-* with unexplained *-i*-extension and the related hapax *tuturváṇi-* ‘id.’, all pointing to a **-wr̥-/-w(ᵉ/ₒ)n*-heteroclite. Furthermore in Iranian, we find YAv. *t̰baēšō.taᵘruuan-* ‘overcoming enmity’ < **t(e)rh₂-wen-*, YAv. *vīspa.taᵘruuarī-* ‘overcoming all’ < **t(e)rh₂-wer-ih₂-*. Anatolian also has reflexes of the heteroclite in the Hittite verbal noun *tarḫḫ(u)waš* ‘conquering’ GEN.SG < **tr̥h₂-wén-s* and supine *tarḫḫ(u)wan* ‘to conquer’ < **tr̥h₂-wén* as well as the pan-Anatolian ‘Storm God’ deity H *tarḫḫ(u)want-*, CLuw. ᴰ*Tarḫuwant-* /ᴰ*Tarḫunt-*, HLuw. *Tarḫunt-*, Lyd. *tarvτalli-*, Lyc. *Trqqñt-*, Mi. *Trqqñt-* < **tr̥h₂went-* ~ **tr̥h₂unt-*, to which the Ved. epithet of Indra *tū́rvat-* ‘overcoming’ has been compared (*EDH*: *s.v. tarḫu-ᶻⁱ*). The root $\sqrt[*]{terh_2}$, however, attests a present stem with **-u-*, found in Ved. *tū́rvasi* ‘overcome’ 2SG.PRS.ACT.IND (*R̥V* 8.99.6) < **tŕ̥h₂-w-e-si* and H *tarḫuzi* 3SG.PRS.ACT.IND ~ *taruḫanzi* ‘overcome’ 3PL.PRS.ACT.IND < **térh₂-u-ti* ~ **tr̥h₂-w-énti*, to which *tū́rvat-* and its Anatolian comparanda could easily be a PRS.ACT.PTCP.

[2] Hoffmann (1975: 329) explains the unexpected PIE **dʰ* > PIr. **θ* as analogical to the PIr. verb $\sqrt[*]{\theta ang}$ ‘to draw’.

[3] For **tr̥h₂wV́-* > *turvV́-* instead of *ˣtūrV́-*, see Lubotsky 1997.

3.2.4 $\overset{*}{\sqrt{h_1elh_2}}$ ‘to drive’

The *AV* possesses a noun *árur/áruṣ-* ‘wound’ and privative adjectives *anarván-* ‘unassailable; unstoppable’ (*ṚV*; once *anarmán-*, *AVŚ* 7.7.1) and *anaruṣ-* ‘without wounds’ (*ŚB*). Hajnal (1999) discusses this word at length, comparing it to PGerm. **arwiz* > OIc. *ørr*, MLG *are* ‘scar’ and H *ērman-* ‘sickness’ from $\overset{*}{\sqrt{h_1er}}$ ‘to be hurt’, a comparison already found in *EWA*: *s.v. áruṣ-* and tentatively supported by *EDH*: 247–248. These may suffice as comparanda, but I prefer to derive *árur* from PIE **h₁élh₂-wr̥* beside Gr. ἐλαύνω ‘to drive’ < **h₁(e)lh₂-un-yé/ó-*. The verb ἐλαύνω can indeed mean ‘to strike, deal a wound’ as in the case of the famous scar given Odysseus by a boar in (3.1).

(3.1) *Od.* 19.393–394
... αὐτίκα δ’ ἔγνω
οὐλὴν, τήν ποτέ μιν σῦς ἤλασε λευκῷ ὀδόντι ...
‘... and immediately she knew
(the scar of) **the wound**, which a boar once dealt him with its white tusk ...’

Under this explanation, *árur* would mean ‘driving into, wounding’. While the Vedic sources are not consistent in their characterization of the affliction described by *árur*, Hajnal vacillates unnecessarily between the translations ‘wound’ and ‘illness’. Examples like (3.2) in *AV* seem to describe major physical contusions or lacerations, though whether *háras-* means ‘flame’ or ‘furious passion’ remains a matter of debate (cf. *EWA*: *s.v. háras-*). *ŚB* (3.3) has a copulative noun *árur*, which Hajnal translates as “*krank*” without explanation and from which is formed the indeclinable *ánarur* ‘unwounded’. Finally, *ŚB* and *PB* (3.4) have the causative adjective *áruṣkr̥ta-* ‘having been wounded’, which metaphorically describes the Voice after a sacrifice and is coordinated with *krūra-* ‘bloody, gory’ *krūrīkr̥ta-* and ‘having been made bloody, gory’.

(3.2) *AVŚ* 5.5.4 (≈ *AVP* 6.4.3)
yád daṇḍéna yád íṣvā yád vā́rur hárasā kr̥tám |
tásya tvám asi níṣkr̥tiḥ sémáṃ níṣ kr̥dhi pū́ruṣam ||
‘If by club, by arrow, or by ardor a **wound** is made,

of that you are the cure; cure this man.'

(3.3) a. *ŚB* 3.1.3.7

*. . . **árur** vai púruṣó 'vāchitó **'narur** evaìtád bhavati yád abhyaṅkte . . .*

'. . . **a wound** indeed is the skinned man. Then he becomes **unwounded** when he salves himself.. . . '

b. *ŚB* 3.1.3.10 (≈ 3.3c)

athā́kṣyāv ā́nakti |

***árur** vai púruṣasyā́kṣi praśā́n*[4] *maméti ha smāha yā́jñavalkyo durakṣá iva hāsa pū́yo haivā̀sya dūṣī́kā té evaìtad **ánaruṣ** karoti yad ákṣyāv ānákti*

'Then he salves both eyes.

"**A wound** indeed is man's eye. I have alleviation[?]." spoke Yājñavalkya. Bad-eyed indeed he was then. Then indeed he had pus and rheum. These two (eyes) indeed he makes **unwounded** thus when he salves both eyes.'

c. *ŚBK* 4.1.3.10 (≈ 3.3b)

*áthāsyā́kṣíṇī ā́nakty árur vā ákṣinī praśā́n maméti hovāca yā́jñavalkyo durakṣá iva hāsa tásya yā́ dūṣī́kā yáthā pū́ya evaṃ tad **ánarur** évaine karoti*

'Then he salves both eyes. "**A wound** indeed are the eyes. I have alleviation[?]." spoke Yājñavalkya. Bad-eyed indeed he was then. What rheum he has, that is just like pus. Thus he makes these two (eyes) **unwounded**.'

(3.4) a. *ŚB* 13.3.6.6

*. . . sárvā vai sáṃsthite yajñe vā́g āpyate sā́trāptā yātáyāmnī bhavati krūrī́kr̥teva hi bhávaty **áruṣkr̥tā** . . .*

'With the sacrifice completed, the Voice is gained, truly whole. Gained then, [the Voice] becomes depleted; so it becomes bloodied and **wounded**. . . .'

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[4]Unacknowledged in Hajnal's discussion of *ŚB* 3.1.3.10 is that the form *praśā́n* is a hapax. *EWA*: *s.v. ŚAM*^{I} with lit. takes it with $\sqrt{śam^{I}}$ 'to become tired' as if a compound **proḱóm* < **pro-ḱómh$_2$(-s)* 'fully ceasing, alleviating', but the morphosyntax is difficult. Is *praśā́n máma* to be understood as 'I have alleviation' with some sort of N.ACC.SG **proḱóm*? The difficult interpretation of *praśān* only hinders narrow translation of *árur*.

b. *PB* 9.8.13

*saṃvatsare 'sthīni yājayeyuḥ saṃvatsaro vai sarvasya śāntir yat purā saṃvvatsarād yājayeyur vācam **aruṣkr̥tāṃ** krūrām r̥ccheyuḥ*

'After a year, they should sacrifice the bones. This year is the alleviation of all. If they sacrifice before (the end of the) year, they would reach the **wounded**, bloody voice.'

The remainder of Hajnal's examples of *aruṣ-* appear as first members of compounds. He takes the plant name *arundhatī́-* as a haplology of **arun-rundhatī́-* '(plant,) which closes/stops a wound'; if correct, this seems to describe staunching bleeding.[5] He also discusses a medicinal tool of variable spelling (*arusrā́ṇa- AVŚ* 2.3.3–5; *arusyāṇa-*, *v.l. aruspāṇa- AVP* 1.8.3–4), which he derives from **arus-śrā́ṇa-* 'wound paste' with *ᵍśrāṇa-* 'cooked; moist' (Pat. 6.1.27). The *arusrā́ṇa-* is used to treat *róga-* 'breaking, infirmity'. P 3.2.35 has an irregularly formed compound *arun-tuda-*, which should mean 'striking a wound' and which *Ak.* 3.1.82 glosses as *marmaspr̥k*. Hajnal bafflingly translates *marmaspr̥k* as "*sehr brennend*" 'burning greatly', instead of the literal 'touching/grazing the vital organs'. Finally, Hajnal discusses a demonic epithets *arur-magha-* and *arun-mukha-*, which could mean 'rich in wounds, having wounds as gifts' and 'having a wounded face', respectively. Overall, the evidence that *árur/áruṣ-* means 'illness' instead of 'wound' is not compelling. The adjective *anarván-* found 18× in *RV* primarily describes gods as impervious warriors and protectors of mortals. The epithet further describes heroes who cannot be wounded in battle, not beings immune to illness. Indeed, in the oldest material *árur/áruṣ-* and its derivatives describe severe wounds resulting from stabbing, smashing, and flaying, much like Odysseus' goring wound in (3.1).

Regardless of the underlying root, the Vedic forms *árur*, *áruṣ-*, and *anarván-* as well as Indo-European comparanda support *árur* as a heteroclite. The strong stem *árur* can derive unproblematically from either **h₁ér-wr̥* 'harming' or **h₁élh₂-wr̥* 'driving through'. For *an-arván-*[6] 'unharmed, impervious', we might expect an earlier root zero-grade, either *×anr̥ván-* < **n̥-h₁r̥-wón-* or *×anūrván-* < **n̥-h₁l̥h₂-wón-*, but neither form is attested. If *×anr̥ván-* or *×anūrván-* were leveled to *anarván-*, either $\sqrt[*]{h_1er}$ or $\sqrt[*]{h_1elh_2}$ would serve, but if the root full-grade is original, only **n̥-h₁er-wón-* would

[5] On this form in a context of flowing blood, see (4.5).

be *lautgesetzlich*, as **n̥-h₁elh₂-wón-* should produce ˣ*anarv̆ván-*.

3.2.5 $\sqrt[*]{\textit{ḱeh₁s}}$ 'to order, command'

Ollett (2012) has exhaustively analyzed the OAv. *saxᵛārə̄*, *sāxᵛə̄nī* 'imprecations?' and argued that they are both N.NOM/ACC.PL of a heteroclite **ḱéh₁s-wr̥* ~ **ḱéh₁s-wen-*. The former, *saxᵛārə̄*, would be inherited from an original **ḱh₁swṓr* < **ḱeh₁s-wor-h₂*, whereas the latter, *sāxᵛə̄nī*, was innovated from an oblique PIr. **sā́hwan-* and recharacterized with N.NOM/ACC.PL **-ī* < **-h₂* (cf. YAv. *baēuuani* 'thousands' N.NOM/ACC.PL to *baēuuar-*). On the basis of this strong Iranian parallel, the reconstruction **ḱéh₁s-wr̥*[7] > *śā́sur* 'order, command' falls out naturally, with no metathesis because of the heavy CV̄C- root (§2.2).

3.2.6 $\sqrt[*]{\textit{h₁yaǵ}}$ 'to sacrifice'

Some difficulty arises from the unmetathesized form *yájur/yájuṣ-* 'sacrifice'. It is attested 5× in *RV*,[8] where also appear *yájvan-* and *yájvarī-* 'sacrificing' < **h₁yáǵ-wen-* and **h₁yáǵ-wer-ih₂-*,[9] all of which suggest this could be an inherited **-wr̥-/-w(ᵉ/ₒ)n-*heteroclite. There are two ways to account for the lack of metathesis in *yájur/yájuṣ-*. Because it has no apparent morphological cognates outside of Indo-Aryan, one could suggest that the form is a Vedic-internal innovation (*viz.*, *párvan-* : *párur* :: *yájvan-* : x, x = *yájur*), but there is no evidence that *yájvan-* is older, especially given the extent to which *yájur* is embedded within the Vedic tradition. On the other hand, I tentatively propose that there was an acrostatic accentual pattern **h₁yā́ǵ-wr̥* ~ *h₁yáǵ-un-* much like **pḗr-wr̥* ~ **pér-un-* » Ved. *párur* ~ *párvaṇ-* discussed in §3.2.1. A preform **h₁yā́ǵ-wr̥* would not undergo **wr̥* > **ru* metathesis since this would produce a disfavored superheavy syllable in **h₁yā́ǵ.ru*. Then the pre-Ved. paradigm **yā́jur* ~ **yájun-* would undergo the same morphological levelings proposed for **pḗr-wr̥* ~ **pér-un-* » Ved. *párur* ~ *párvaṇ-*. While this account remains speculative, it would

[6]The oxytone accent of *anarván-* is characteristic of privative *bahuvrī*-s (Whitney 1889: §1304a), as also in hapax endingless locative *aparván* 'where there is no joint' (*RV* 4.19.3).

[7]Also followed by Kümmel (2019: 161).

account for the absence of ˣ*yájru-*.

Another explanation could follow Lubotsky (1981: 135), who reconstructs the root as $\overset{*}{\sqrt{yeh_2ǵ}}$.[10] According to Lubotsky's Law (LL), a laryngeal is deleted in Indo-Iranian when followed by another consonant (e.g., **h₁yeh₂ǵ-nó-* > PIIr. **Hyajná-* > Ved. *yajñá-*, Av. *yasna-* 'sacrifice'). If **wr̥* > **ru* metathesis predated LL, the metathesis of **h₁yeh₂ǵ-wr̥* would again produce a disfavored superheavy syllable in **h₁yéh₂ǵ.ru*. If, on the other hand, **wr̥* > **ru* metathesis postdated LL, then LL would not occur giving **h₁yéh₂ǵ-wr̥* > **HyáHjur* > **(H)yā́jur* > **(H)yā́j.ru*, once again with a superheavy syllable. Under this account, the expected outcome would be ˣ*yā́jur*, but this lengthened grade could have been leveled as in the rest of the paradigm of $\sqrt{yaj}$ per Lubotsky. That said, the evidence for Lubotsky's Law has not received wide acceptance (see, for instance, the critiques of Lipp 2009: vol. 2, 159–174; Neri 2017: 204–221), and I am inclined to reconstruct **ā* ~ **a* alternations for Proto-Indo-European.

3.2.7 $\overset{*}{\sqrt{meyth_2}}$ 'to meet, confront'

The root $\overset{*}{\sqrt{meyth_2}}$ 'to meet, confront' has Indo-Iranian support as a **-wr̥-/-w(ᵉ/ₒ)n-*heteroclite in the Vedic form *mithuná-* 'paired' (*RV*) < **mith₂-un-ó-* beside YAv. *miθuuana-* 'paired' < **mith₂-wen-ó-* and *miθuuara-* 'paired' < **mith₂-wer-ó-*, but the forms *míthuś cárantam* 'going astray' (*TS* 4.7.15.2) and *mámedám iṣṭám ná míthur bhavāti* 'This sacrifice of mine shall not fail' (*TB* 3.7.5.12) might appear to show **méyth₂-wr̥* » *míthur/míthuṣ-* 'confusion' without metathesis, which could be expected after a CVCCC- syllable. The form *míthuṣ*, however, need not be old. Only the *TS* has *míthuś cárantam*; parallel passages have the more common *mithuyā́ cárantam* (*AVŚ* 4.29.7b, *AVP* 4.38.7b) and *mithu cárantam* (*MS* 3.16.5.16). This has led Schmidt (1889: 359–360) and *AiGr* II 2: 922 to declare *míthuṣ-* merely an extension of a *-u-*stem *míthu-* 'falsely, wrongly' with *-s-*, as in *túvi-ṣ-mant-* 'powerful' beside *tuví°* 'strong' or *ā́yu-* 'life' beside *ā́yuṣ-* 'life'. As Stephanie Jamison suggests to me, *mithás* 'together, reciprocally, confusedly' (*RV*), an adverbial accusative of a neuter

[8] 3 of those times (*RV* 8.41.8, 10.12.3, 10.106.3) are sandhi contexts where *yájur* appears.

[9] For the reconstruction of the initial **h₁-*, see Woodhouse 2011: 164–167; Bozzone 2014: 7.

[10] Likewise Woodhouse (2011: 164–167, 168–169, 174–175).

-*s*-stem, could have spread its -*s* to the semantically similar *míthu* analogically. Furthermore, if the form *míthus* were old, we would expect to find a full-grade root *méth-* < **méyth$_2$-*. As such, these Taittirīyan forms should be discounted for analysis of the N.NOM/ACC.SG.

3.3 Nouns in *-ur/-uṣ-* unlikely to be from **-wr̥-/-w(e/o)n-*heteroclites

3.3.1 $\sqrt[*]{\textit{génh}_1}$ 'to be born; beget'

This root possesses some forms in *Ṛ̊V* that appear heteroclitic, but they are all of complicated interpretation. On the one hand, *janúṣ-* 'being born, birth' (*Ṛ̊V* 33×) looks like it could be built from the strong stem of a heteroclite **génh$_1$-ur-*, but it has unexpected oxytone accentuation. On the other hand, the hapaxes *vi-jā́vā* 'proliferating' M.NOM.SG (*Ṛ̊V* 3.1.23) and *pūrva-jā́varī* 'being born before' F.NOM.DU (*Ṛ̊V* 10.65.8) look like they come from oblique **gn̥h$_1$-won-* and feminine **gn̥h$_1$-wer-ih$_2$-* with accented root zero-grade. To make matters worse, *janúṣ-* possesses the unique M.NOM.SG *janū́ṣ*, with an ending found nowhere else in the *-us*-stems. We can eliminate *vi-jā́vā* and *pūrva-jā́varī* easily as archaisms. Beside *pūrvajā́varī*, we find the synonymous forms *pūrva-jā́-* (*Ṛ̊V* 8.6.41) and *pūrva-já-* (*Ṛ̊V* 7.53.2, *Ṛ̊V* 10.14.15), suggesting that *pūrvajā́varī-* is part of the productive °*Cā́-* ⇒ °*Cā́-van-/-varī-* process discussed in Chapters 2 and 4.[11] The same argumentation likely applies to *vi-jā́vā*: though there is no *vi-jā́-* attested, the collocation *ví* $\sqrt{\textit{ján}^{i}}$ is attested 5× in *Ṛ̊V*, implying that a noun **vi-jā́-* may once have existed. In the absence of these *-van-* and *-varī-* forms as inherited parts of a heteroclitic paradigm, the noun *janúṣ-* must be taken at face value as a **-ús*-stems of the same type as *vanúṣ-* 'zealous' and *tápuṣ-* 'burning, hot; heat' below.

[11] See likewise Scarlata (1999: 142).

[12] Following *AiGr* II 2: 292, *J&B*$^{Com.}$: *ad* VII.58.2 concedes that the more common animate *-as*-stems could have served as a model for the nonce form *janū́ṣ*, though other explanations like *-ū*-stems are also considered.

3.3.2 $\sqrt[*]{wenh_1}$ 'to wish; love'

The *RV* attests an adjective *vanúṣ-* 'zealous' which might be taken as a derivative of the noun **vánur* from a putative heteroclite **wénh$_1$-wr̥*, but this verb does not find any convincing heteroclitic support elsewhere. The formation and identificaiton of *vánīvānas* (*RV* 10.47.7) is complicated (on which, see Schaefer 1994: 27[29]; *J&B*$^{Com.}$: *ad* X.47.7), but it likely represents an intensive formation of some sort and not some unlikely form like **wénh$_1$-won-es*. As such, the heteroclitic origin of *vanúṣ-* remains suspect.

3.3.3 $\sqrt[*]{tep}$ 'to be hot'

The form *tápuṣ-* 'heat' appears in the *RV* as a simplex and the first member of compounds and serves as the stem for a derivative *tápuṣi-* 'glowing; glowing weapon'. Benveniste (1935: 39) argues that YAv. *tafnu-* 'fever' shows evidence of a heteroclite but leaves the derivation of **tep-nu-* unexplained. YAv. *tafnu-* and *tafnah-* 'heat' are better taken from an adjective **tep-no-* 'hot', whence also OIr. *tene* 'fire' < **tepnet-* (*LÉIA*: vol. T, 49–50). Otherwise, there is no good evidence that $\sqrt[*]{tep}$ had an old heteroclite **tép-wr̥*, and thus *tápuṣ-* may be a Vedic-internal innovation.

3.3.4 $\sqrt[*]{g^wey}$ 'to conquer'

The form *jayúṣ-* 'victorious', attested only 3 × in the *RV* in the form *jayúṣā*, which *WRV*: 478 takes as a M.NOM.DU describing the Aśvins but which *J&B*: *ad* I.117.16, VI.62.7, X.39.13 translate "with your [=the Aśvins'] victorious (chariot)". No other relevant or heteroclitic forms appear to this verb in Indo-Aryan or Indo-European, so as with *tápuṣ-*, there is no good reason to reconstruct an old **g^{w}éy-wr̥*.

3.3.5 Summary of the nouns in *-ur/-uṣ-*

Based on the above survey, only the following forms were found to have N.NOM/ACC.SG forms inherited directly from their preforms:

(3.5) a. *párur* ‘knot (of a reed); joint’ </« *pé̯r-wr̥

b. *dhánur* ‘bow’ < *dʰén-wr̥

c. *táruṣ-* ‘(struggle/power to) overcome’ < *térh₂-wr̥

d. *árur* ‘wound’ < *h₁élh₂-wr̥ or *h₁ér-wr̥

e. *śā́sur* ‘order, command’ < *ḱéh₁s-wr̥

f. *yájur* ‘sacrifice’ « *h₁yā́ǵ-wr̥

The form *mithur* ‘confusion[?]’ also appears to come from old heteroclites but not in a *lautgesetzlich* manner. All other forms were rejected.

3.4 Nouns ending in *-ru-* and *-lu-*

Having examined the Sanskrit forms ending in *-ur/-uṣ-*, I will now move on to the Sanskrit nouns in *-ru-* that have been thought to derive from *-wr̥-/-w(ᵉ/ₒ)n-* heteroclites. Only five in number, these forms nonetheless have good Indo-European pedigrees (if unclear morphological backgrounds and attestational histories).

3.4.1 **smóḱ-wr̥* ‘beard’

The word *śmáśru-* ‘beard’ < **smóḱ-wr̥* has precise morphological cognates like H *zama(n)kur* (*EDH*: *s.v. zama(n)kur*), Cl.Arm. *mawrukʿ* < **mowru-*[13] (*EDAIL*: *s.v. mawrukʿ*), Lt. *smãkras* ‘chin’ (with **-ra-*stem analogically reshaped from PBS **-ru-* per *LED*: *s.v.* smãkras) and several closely related forms (OIr. *smech* ‘chin’ N/F < **smeḱ-o-/*smeḱ-eh₂-* (*LÉIA*: *s.v.* smech), Alb. *mjekër* ‘beard’ < **smeḱ-r-eh₂-* (*AE*: *s.v.* mjék/ër, -ra; *AED*: *s.v.* mjekër). Despite its apparently old **-wr̥* suffix, there is no direct evidence for heteroclitic **-wé(n)-* forms (Lubotsky 1994: 99), unless the intrusive *-n-* in *śmaśruṇá-* ‘bearded (of a goat)’ (*TS* 2.1.1.5, 5.5.1.2; *KS* 24.7) is a contamination from an oblique stem **sméḱ-un-*. The *-ṇ-* could just as well be the *-n-* found throughout the neuter *u*-stems. No other compelling examples exist in Sanskrit of **-n-ó-* being added to **-ru-* < **-wr̥* to my knowledge. While several adjectives in *°ruṇa-* could have provided a compelling analogical

source for *śmaśruṇá-*, most get the *-r-* from the root or lack good etymologies:

(3.6) *aruṇá-* 'tawny, ruddy' (*RV*)
Likely related to *aruṣá-* 'red (of fire, horses, cattle)' (*RV*) < *$h_1$er-u-* (whence *h_1r-ew-d^h-* 'red' >) or *$h_1$el-u-* (cf. OHG *elo* 'red-brown'; *EWA*: *s.v. aruṇá-*)

(3.7) *dāruṇá-* 'hard, harsh' (*ŚB* 1.2.3.8, 13.4.4.9; *MBh.*; *dā́ruṇa-* with analogical accent in *Uṇādis.*) ⇐ *dā́ru-* 'tree' (*EWA*: *s.v. dā́ru-*)

(3.8) *dharúṇa-* 'holding' (*RV*) < *d^her-ún-o-*[?] or *d^her-ú-no-*[?]

(3.9) *karuṇa-* 'miserable, pitiful' (*MBh.*)
No good etymology. The sense could maybe come from '*compassionate ↜ *having the holy work of compassion' from *karúṇa-* 'action, holy work' (*EWA*: *s.v. karúṇa-*) < *k^wer-ún-o-*, but this is highly speculative.[14]

(3.10) *suśrúṇa-* 'having good hearing' (*RV* 10.74.1)
J&B$^{Com.}$: *ad* X.74.1 plausibly takes this hapax *suśrúṇam* as a conflation of nearby *suśrutas* 'hearing well' and *vanúm* 'eager'.

(3.11) *táruṇa-* 'young, new sprung' (*RV*) < *tér-u-no-*[?] 'weak'
Cf. Gr. τέρυ: ἀσθενές, λεπτόν 'τέρυ: without strength, weak' (Hsch.), τερύνης: τετριμμένος ὄνος καὶ γέρων ἢ δυσανάληπτος γέρων 'τερύνης: worn out donkey and old man or old man unable to recover' (Hsch.; *EWA*: *s.v. táruṇa-*)

Only *a-bhī́ru-ṇa-* (*AV*), *a-bhīrú-ṇa-* (*VS*) 'fearless', if from a heteroclite (see §3.5.2), could show a conflation of *-ru-* < *-*wr̥* and *-un-* < *-wen-*, but this is hardly strong support. Likewise, see the discussion of *-r-* and *-n-* conflation in §§3.4.3, 4.3, 4.4.

The form *hári-śmaśāru-* 'gold-bearded' (*RV* 10.96.8) could be an inherited form *°*smeḱ-eh$_2$-* (whence OIr. *smech* 'chin' F) + *-*wr̥-* but is more likely an innovative nonce form on the basis

[13] With *w* < *k* from depalatalized *ḱ* before *r*.

[14] Furthermore, *k^wer-ún-o-* should yield ˣ*carúṇa-*, but this could perhaps be leveled by analogy to the verb √*kar* 'to do, make'.

of similar *-āru-* forms. Compare Ved. *vandā́ru-* 'praising; praise' (*RV*) with YAv. *duž-vandru-* 'blaspheming' (*Yt.* 19.87). While *śmáśru-* is assuredly of old stock, its status as a heteroclite is speculative.

3.4.2 $\overset{*}{\sqrt{(s)neh_1}}$ 'to twist'

As mentioned in §2.1, Tedesco (1957) has shown that the heteroclite **snéh₁-wr̥* ~ **snéh₁-wen-* 'sinew' displays a variety of Indo-Aryan descendants containing the strong stem, including Ved. *snā́yu* (*TB* 1.5.9.7, *Suśr.*) and AMāg. *ṇhāü-* from unmetathesized **snā́wu-* < **snéh₁-wr̥-* and Pā. *nhāru-*, *nahāru-* from metathesized **snéh₁-ru-*. Its oblique forms are better attested in early Vedic with *snā́van-* (*AV*, *TS*, *TB*, *ŚB*, *VS*) and *snāván-* (*ŚB*). It also has a privative adjective *asnāvaka-* 'sinew-less' (*TS* 7.5.12.2) as if from **n̥-sneh₁-wn̥-kó-*, though this is certainly a nonce formation with productive *-ka-*suffix given the context:

(3.12) *TS* 7.5.12.2

. . . retasvíne svā́hāretáskāya svā́hā
prajā́bhyaḥ svā́hā prajánanāya svā́hā
lómavate svā́hālomákāya svā́hā
tvacé svā́hātvákkāya svā́hā
cármaṇvate svā́hācarmákāya svā́hā
lóhitavate svā́hālohitā́ya svā́hā
māṁsanváte svā́hāmāṁsákāya svā́hā
*snā́vabhyaḥ svā́h**āsnāvákāya** svā́hā |*
asthanváte svā́hānasthíkāya svā́hā
majjanváte svā́hāmajjákāya svā́hā |
aṅgíne svā́hānaṅgā́ya svā́hā |
ātmáne svā́hānātmane svā́hā . . . ||

'. . . Hail the one with semen! Hail the semen-less! Hail the begotten ones! Hail the begetter! Hail the hairy! Hail the hairless! Hail the one with skin! Hail the skinless! Hail the one with hide! Hail the hide-less! Hail the one with blood! Hail

the bloodless! Hail the one with flesh! Hail the fleshless! Hail the sinews! Hail the **sinew-less**! Hail the bony! Hail the boneless! Hail the one with marrow! Hail the marrow-less! Hail the one with limbs! Hail the limbless! Hail the one with breath! Hail the breathless! . . . ' ‖

Somewhat problematically in context, both of the plurals *prajā́bhyaḥ* 'begotten ones' and *snā́vabhyaḥ* 'sinews' are hailed directly and not with possessive adjectives *prajā́vate* 'one having offspring' and **snā́vavate* 'one having sinews'. This perhaps indicates later additions to the list.

Outside Sanskrit, **sneh₁-wr̥* has many reliable reflexes: YAv. *snāuuarᵊ*, TB *ṣñor*, Gr. νεῦρον (< **sneh₁-ur-o-*), Cl.Arm. *neard* (< **sneh₁-wr̥-t-*), L *nervus* < **sneh₁-ur-o-*, OE *sinu* 'sinew' (Schindler 1975b: 9). Note that Del Tomba (2021: 54–58) has recently argued for a similar metathesized strong stem in TB *ṣñor* 'sinew' < **sneh₁-ru-* < **sneh₁-wr̥-*. Latin likewise shows a metathesis in *nervus* < **newro-* < **sneh₁-ur-o-* which we find regularly in other **-wr-* contexts (e.g., L *parvos* 'small' < **pawro-* < **peh₂u-ro-*; *OHCGL*[2]: 170).

3.4.3 Vedic *áśru-* 'tear' and $\sqrt[*]{h_2e\acute{k}}$ 'sharp, bitter'

The reconstruction of Ved. *áśru-* 'tear' *RV* 10.95.12–13 and its status as a **-wr̥-*/*-w(ᵉ/ₒ)n-*heteroclite have long been a topic of debate. The cognate set is voluminous:

(3.13) a. ?Anatolian: ?H *išḫaḫru-*[15]

b. Armenian: Cl.Arm. *artawsr*, *artasu-kʿ* PL

c. Baltic: Lt. *ãsara*, Lv. *asara*

d. Celtic: OIr. *dér*; MW *deigyr*; Corn. *dagr*; Bret. *dazrou*

e. Germanic: Goth. *tagr*; ON *tár*; OHG *zahar*, *trahan*; MHG *zaher*, *traher*, *trahen*; NHG *Träne*, *Zähre* (obs.); OE *tæhher*, *tēar*, *teagor*; OF *tār*; OS *trahn*

[15] *EDH*: *s.v. išḫaḫru-* correctly doubts the appurtenance of this form. Even with a reconstruction like **s-h₂ék-wr̥*, it would contain a unique assimilation **s-h₂ék-wr̥* > **s-h₂éh₂-wr̥* and the only word-final example of **-wr̥#* > **-ru*. For discussion of **wr̥* > **ru* metathesis, see also §3.8.

f. Hellenic: Gr. δάκρυ

g. Indo-Aryan: Ved. *áśru-*, Pā. *assu*

h. Iranian: YAv. *asrū°*; MP *'sr*

i. Italic: OL *dacruma*, *dacrima*; L *lacruma*, *lacrima*

j. Nuristani: Pras. *üčű*

k. Tocharian: TA *ākär*, *ākrunt* PL; TB *akrūna* PL

I will not attempt a full rehash of all the debates surrounding this word, but I will highlight a few key points:

1. The forms are generally divided into two categories, those starting with inherited **d-* (Armenian, Celtic, Germanic, Greek, Italic, Tocharian) and those with **a-* (Baltic, Indo-Aryan, Iranian, Nuristani, Tocharian). One popular account of this distinction is to reconstruct **dr̥ḱ-h₂éḱ-ur* 'acrid fluid of the eye' vs. **h₂éḱ-ur* 'acrid fluid' from the roots $\overset{*}{\sqrt{derḱ}}$ 'to see' and $\overset{*}{\sqrt{h_2eḱ}}$ 'sharp, bitter' (Kortlandt 2003; Pinault 1997). Others start simply with **dráḱ-ur* and **áḱ-ur* (e.g., Hamp 1972; Eichner *apud* Mayrhofer 1986: 162; Lubotsky 1994: 99).

2. There are a few pieces of evidence that suggest that the N.NOM/ACC.SG was underlyingly **-wr̥/*-ur* and metathesized to **-ru*:

   (a) The shapes of Cl.Arm. SG *artawsr* and PL *artasu-kʿ* pose interesting morphophonological issues; as Kortlandt (2003) discusses, to get the *-w-* in the SG, there must have been a sequence **-ḱr- > *-kr- > *-wr-*, while the *-s-* in the PL requires **-ḱu- > -su-*. Then a complicated series of intraparadigmatic levelings must have occurred whereby the *-s-* was inserted between the new **-wr-* sequence.

   (b) In arguing the Sanskrit evidence for Weise's Law (WL) whereby Indo-European palatovelars depalatized before **r* (**ḱ, *ǵ, *ǵʰ > *k, *g, *gʰ / __r*), Kloekhorst (2011: 268) claims that Ved. *áśru-* escaped depalatalization because the **wr̥ > *ru* metathesis occurred after WL.

PIE	*$h_2$ék-ru-	*$h_2$ék-wr̥-
WL	*$h_2$ék-ru-	—
wr̥ > *ru	—	*$h_2$ék-ru-
Ved.	×ákru-	áśru-

Under this analysis, *$wr̥$ > *ru metathesis would counterfeed WL. Kloekhorst also provides the examples of *$smók$-$wr̥$-[16] > *śmáśru-* (not ×*smákru*) 'beard' and *$swek$-$wr̥$-h_2-[17] > *śvaśrū́-* (not ×*svakrū́-*) 'mother-in-law'.

(c) According to Hamp (1972: 297), certain Germanic forms like MHG *traher* point to *-*ur*, but *EDPG*: *s.v.* **tagra- ~ *trahna-* instead derives *traher* < PGerm. **trahra-*.

3. It is generally held that the 'tear' word is a heteroclite (Hamp 1972; Kortlandt 2003; Eichner *apud* Mayrhofer 1986: 162; Pinault 1997; Kloekhorst 2011: 268). This claim rests on three types of data:

(a) The mix of *-r* and *-n* forms found in Germanic: e.g., OHG *zahar* vs. *trahan*; MHG *zaher* vs. *traher* vs. *trahen*; NHG *Träne* vs. *Zähre* (obs.). Lubotsky (1994: 99), however, prefers to interpret this as a distant **r. . . r* dissimilation. Thus, PGerm. **trahra-* developed in three ways:

(3.14) a. No dissimilation: **trahra-* > OHG **trahar* > MHG *traher*

b. **r. . . r* > **r. . . n*: **trahna-* > OHG *trahan* > MHG *trahen* > NHG *Träne*

c. **r. . . r* > **. . . r*: **tahra-* > OHG *zahar* > MHG *zaher* > NHG *Zähre*

There is some reason to follow Lubotsky on this as several languages show similar dissimilations (e.g., Gr. δάκρυ, OIr. *dér*).

(b) The *-n-* that appears in the PL's of TA *ākrunt* PL, TB *akrūna* PL (Pinault 1997; Del Tomba 2021: 54–58).[18]

[16] See §3.4.1 for reconstruction.

[17] See (2.2c) for reconstruction.

[18] See also §3.4.1 and fn. 36.

(c) I would also add that a reconstruction *h_2éḱ-wr̥ ‘sharp/bitter fluid’ would semantically match *sḗh_2-wr̥ ~ *séh_2-un-os ‘sour fluid’ > H *šēḫur* ~ *šēḫunaš* ‘urine’ (Oettinger 2015).[19]

Overall, reconstructing a *-wr̥-/-w(^{e}/$_o$)n-heteroclite *(dr̥ḱ-)h_2éḱ-wr̥ ~ *(dr̥ḱ-)h_2éḱ-un- seems plausible enough. We might expect a N.NOM/ACC.SG in *$^{(\circ)}h_2$óḱ-wr̥ or *$^{(\circ)}h_2$ḗḱ-wr̥, but there is no unambiguous evidence for this. The Germanic, Indo-Iranian, Baltic, and Tocharian evidence could derive from to *$^{(\circ)}h_2$óḱ-wr̥, but L *dacruma* and Gr. δάκρυ must represent *$^{(\circ)}h_2$éḱ-wr̥.[20] As such, *(dr̥ḱ-)h_2éḱ-wr̥ is the safest reconstruction.

3.4.4 *péh₂wr̥ ‘fire’

One of the best attested heteroclites ending in *-wr̥/-wén- in Indo-European is the word *pé$h_2$wr̥ ~ *p$h_2$wén-(^{e}/$_o$)s ‘fire’ > H *paḫḫur* ~ *paḫḫwenaš*, Gr. πῦρ, U *pir*, TB *puwar*, TA *por* ‘fire’ among others. I say “heteroclites ending in *-wr̥/*-wén-” because the form, while clearly heteroclitic, is of unclear morphological division. It remains possible that *péh_2w-r̥ is a simple *-r-/-n-heteroclite built to the long-diphthong root $\sqrt[*]{peh_2w}$ ‘to purify’ (*LIV*^{2}: *s.v.* 1. *peu̯H-) and meant ‘purification, purifying thing’ both in the ritual sense of fire acting as the conduit to the gods and in the pragmatic sense of fire and ash’s many sanitary and culinary uses. Indeed, Dunkel (2000: 94) derives L *pūr*(*i*)*gō* ‘to purify’ from *puh_2r-h_2ǵ-eh_2-ye- ‘to lead the fire’. Furthermore, *wód-r̥, the frequent counterpart of *pé$h_2$wr̥, appears to be a simple *-r-/-n-heteroclite built to $\sqrt[*]{wed}$ ‘to stream, be wet’ (*LIV*^{2}: *s.v.* *u̯ed-), so a parallel formation for ‘fire’ might be expected. Yet Ved. *punā́ti* ‘purifies’ 3SG.PRS.ACT.IND < *pu-né-h_x-ti (among other forms) points to $\sqrt[*]{pewh_x}$. For the ‘purify’ root and

[19]Oettinger (2015: 257–259$^{2\ \&\ 4}$ with lit.) ably parries the attempts by *EDH*: *s.vv. šēḫur / šēḫun-, mēḫur / mēḫun-* to deny the validity of Eichner’s Law in these contexts.

[20]Armenian has been argued to show PIE *o > Cl.Arm. *a* in initial open syllables (for a good survey of this debate, see Ravnæs 1991: 9–12), but that would require *o > a to occur after *dr̥ḱ-h_2óḱ-wr̥ became *dróḱur but before both of the metatheses of *#dr- > *#(V)rd- and *wr̥ > *ru, but since the PIE *o > Cl.Arm. *a* / #C_0___C_1V is a matter of debate, it seems easier to reconstruct *°h_2éḱ-wr̥.

the 'fire' word to be connected, the root would need have created an innovative full-grade $\sqrt{*pewh_2}$ from the metathesized zero-grade $*puh_2C$-. On the other hand, $\overset{*}{\sqrt{peh_2w}}$ could have been falsely extracted from $*péh_2$-$w̥r$, but what then would the root be? One might suggest $\overset{*}{\sqrt{peh_2}}$ 'to guard, protect' (*LIV*[2]: *s.v.* $*peh_2(i)$-) in fire's capacity to protect from cold and darkness, but I know of no phraseological support for this interpretation. Alternatively, Sasseville (2020a: 135–136) has proposed the existence of a verb $\overset{*}{\sqrt{peh_2}}$ 'to burn' found in two CLuw. forms ⟨*pa-aḫ-ḫi-it-ta-ru*⟩, ⟨*pa-aḫ-ḫ*[*i-it-ta-ru*]⟩ 3SG.PRS.MID.IND < $^{?}*peh_2$-$y^{é}/_{ó}$- that appear in incantations from a purification ritual. Unfortunately, the CLuw. forms and their interpretation are by no means secure. Overall, we cannot be certain of the morphological breakdown of this heteroclite, but since it has the appropriate shape, it likely influenced or was influenced by the "true" *-$w̥r$-/-$w(^{e}/_{o})n$-heteroclites morphologically and thus deserves discussion.

A recent study by Klimp (2013: 55–86) summarizes the Indo-European data for this word and takes note of the form Skt. *pāvaka-* 'fire' (*MBh.*) < $*peh_2$-$w̥n$-*ko*-. This new stem is built by the same pattern seen with *udakám* 'water' (*RV*) < $*ud$-$n̥$-*kó*- replacing the old N.NOM/ACC.SG *vā́r* 'water' < $*wóh_1r̥$ < $*wód$-$r̥$.[21] But do we have evidence for N.NOM/ACC.SG of $*péh_2$-$w̥r$ in Sanskrit? Perhaps. We find attested in the late grammarians Ujjv.*Uṇādis.* 4.101 (circa 13th c. CE[?]) and *Uṇādik. apud Śkdr.* 126.3 (early 18th c. CE) evidence for a form ^{Ø}*pāru*- 'sun, fire', which would be the expected outcome of $*péh_2$-$w̥r$:

- $*péh_2$-$w̥r$ > ^{Ø}*pāru*- 'sun, fire'

(3.15) Ujjv.*Uṇādis.* 4.101:

a. *pīyate rasān iti perur ādityaḥ*

"'he drinks the juices': *peru*- [is] sun"

[21] This picture is somewhat confused by Ved. *pāvaká-* (*RV*), a frequent epithet of the fire god Agni, which mysteriously always scans as $*pavā́ka$- in all metrically clear contexts. It is conceivable that we are dealing with a separate formation $*powh_x$-eh_2-*kó*- 'purifying one' from *pavā́*- 'purification' < $*powh_x$-$éh_2$-. The form $*pavā́ka$- would then be redactionally replaced with *pāvaká-* on the basis of *pāvaka-* 'fire'. Yet, -*āka*-formations are by no means common or well understood in Sanskrit (*AiGr* II 2: 266–267 §150).

b. *saṃvatsaravapuḥ pāruḥ perur* $^{+}$*vāsīd dinapraṇīr iti haṭṭacaṃdraḥ*

"'having the form of a full year *pāru-* or *peru-* was *dinapraṇī-* ['day leader']' [according to] Haṭṭacandra."

(3.16) *Uṇādik. apud Śkdr.* 126.3

pāruḥ . . . vahniḥ | sūryyaḥ | ity uṇādikoṣaḥ

"*pāru- . . .* 'conveyance/fire, sun' [according to the] Uṇādikoṣa"

Beyond the late attestation of this material, several issues present themselves. We find *peru-* alongside or instead of *pāru-*. The reference to drinking juices in (3.15a) is odd, but as we will see in §3.5.1.1, the term *peru-* 'fructifying; cream', an epithet of good fluids like soma and water, had already in the Vedic period been reapplied to Agni in his capacity as Apām Napāt 'Child of the Waters'. The explanatory quote *pīyate rasān* 'he drinks the juices' is a folk-etymological attempt to explain the conflation of *peru-* with *pāru-*. Perhaps more troubling is the conversion of the neuter **péh₂-wr̥* to masculine *pāru-*. This may be accounted for by the dominance of the animate deity Agni throughout all Vedic ritual, effacing the conceptual opposition between animate **h₁n̥gʷní-* and inanimate **péh₂-wr̥* (*EIEC*: *s.v.* FIRE). Notice also that *pāvaka-* 'fire' is masculine, not neuter, in *MBh.* and later. Due to the poor shape of this material, no conclusions may be drawn with certainty.

3.4.5 $\overset{*}{\sqrt{b^heh_2}}$ 'to shine; appear'

The form ^{G}*bhālu-* 'sun' is given in Ujjv.*Uṇādis.* 1.5 (*bhālur ādityaḥ* '*bhālu-* is sun'). This late form is rather doubtful, but if it came from **b^{h}éh₂-wr̥-s* 'shining', it would find support as a **-wr̥-/-w(*^{e}*/*$_{o}$*)n-*heteroclite in Sanskrit and elsewhere. *RV* has *vi-bhā́vā* M.NOM.SG and *vi-bhāvari* F.VOC.SG 'shining widely' < **h₁wi-b^{h}éh₂-won-*, **h₁wi-b^{h}éh₂-wer-ih₂-*. Likewise, Avestan has YAv. *vohuuā-uuaṇt-* 'with good light' (*Yt.* 7.5) < pre-YAv. **wohuβāwant-* < PIr. **wahubāwant-* < **wesu-b^{h}eh₂-went-* and YAv. *viiā-uuaṇt-* (*Yt.* 8.2) ~ *viiā-uua^{i}tī-* (*Yt.* 17.6) 'shining widely' < pre-YAv. **wiβāwant-* < PIr. **Hwibāwant-* < **h₁wi-b^{h}eh₂-went-*. In Gr., we find °φῶν 'light' (Ἀναξιφῶν 'ruling the light', Ἀρξιφῶν 'id.') < PGr. **°p^{h}awont-* < **b^{h}h₂-won-t-* 'shining' and φαείνω 'to bring light, cause to appear' (*Od.*) < PGr. **p^{h}awenyé-* < **b^{h}h₂-wen-yé-* (Peters 1993: 106–108; van Beek 2014: 100–101). If we accept the hypothesis of laryngeal breaking for Greek whereby unaccented

*$CUh_{1/2/3}C$ > *$CW\bar{e}/\bar{a}/\bar{o}C$ (Olsen 2009), the following etymologies would also be possible: Gr. φαίνω 'id.' (*Il.*) < PGr. *$p^hw\bar{a}nyé$- < *b^huh_2n-yé- < *b^hh_2-un-yé-. But as soon as the laryngeal metathesis occurred, the stem *b^huh_2n-yé- would seem morphophonological distant from $\overset{*}{\sqrt{b^heh_2}}$, and speakers therefore innovated a morphologically parsable form *b^hh_2-wen-yé-, leading to the variability between Hom. φαίνω and φαείνω. Despite this, the status of ^{G}*bhālu*- 'sun' remains speculative.

3.5 Primary adjectives in *-rṷ́-/-lṷ́-* likely to be from *-*wr̥*-/-*w*(*e*/*o*)*n*-heteroclites

In the following section, I will discuss the forms in -*rṷ́*-/-*lṷ́*- built to verbal roots which are good candidates to be descended from *-*wr̥*-/-*w*(*e*/*o*)*n*-heteroclites.

3.5.1 $\overset{*}{\sqrt{peyh_x}}$ 'to swell'

The best attested adjectival *-*wr̥*-/-*w*(*e*/*o*)*n*-heteroclite in Indo-European is certainly the one built to the root $\overset{*}{\sqrt{peyh_x}}$ 'to swell', attested in at least three major branches:[22]

(3.17) a. Ved. *pī́van*- M/N *pī́varī*- F 'fat, rich' (*RV*+) < *$píh_x$-won*- ~ *$píh_x$-wer-ih$_2$*-

b. Gr. πῑ́ων M ~ πῑ́ειρα F ~ πῖον N 'fat, rich, abundant' (*Il.*+) < *$píh_x$-won*- ~ *$píh_x$-wer-ih$_2$*- ~ *$píh_x$-won*; Gr. πῖαρ 'fat, cream; richest substance' < *$píh_x$-wr̥*

c. OIr. *íriu* 'earth, soil', ?*Ériu* 'Ireland'; MW ?*Ywerdon*; W *Iwerydd*, *Iwerddon* 'id.' < *pih_x-wer-ih$_2$-on*-[23]

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[22]The suggestion by *EDAIL*: *s.v.* that Cl.Arm. *yoyr* 'fat' may come from *$peyh_x$-ur-ih$_2$*- > PArm. *he(i)ur-i- > *hoyr-i- > *yoyr* is intriguing. A feminine of the shape *R(*é*)-*ur-ih$_2$*- may also be found in Myc. *a-ro-u-ra*, Gr. ἄρουρα, Cyp. *a-ro-u-ra-i* 'cultivated field' < *$h_2érh_3$-ur-ih$_2$*-, but this form could also be reconstructed *$h_2ér̥h_3$-ur-ih$_2$*- or *h_2(*é*)rh_3-ur-h$_2$*-. Since $\overset{*}{\sqrt{peyh_x}}$ has the most widely attested feminine of a *-*wr̥*-/-*w*(*e*/*o*)*n*-heteroclite, Armenian would have to preserve a deep archaism.

[23]The vocalism of *Ériu* is difficult; the outcome ×*Íriu* is expected, especially when W *Iwerydd*, *Iwerddon* could go back to *pih_x-wer-ih$_2$-on*-. The topographic loanwords to non-Celtic languages also disagree on this matter: L *Ibernia*,

For the Gr. adjective in (3.17b), we find two main semantic categories: 'fat' describing animals (*Il.*+) and 'rich, abundant, fertile' describing soil, crops, and land (*Il.*+).[24] These two families of meaning show different diathesis of the root $\sqrt[*]{peyh_x}$ 'to swell'. The meaning 'abundant' describing lands (found also in Celtic) has an active sense 'swelling (TR), fructifying, fertile' while the meaning 'fat' has a mediopassive meaning 'swelling (INTR), fattened'. One might argue that 'fat, cream' is the substance which fattens those who consume it, but the contrasting term Gr. στέαρ, στῆρ, στεῖαρ 'hard fat, suet, tallow' < *$st\acute{e}h_2$-$wr̥$ 'that which stands firm' shows that πῖαρ '(soft) fat, cream' must originally mean 'that which swells, is lactated'. This section will argue that this duality of diathesis or *lability* applies to the previously obscure Ved. terms *péru-/perú-* 'causing to swell, fructifying;

Ivernia, Gr. Ἰερνία, Ἰερνίς point to PC **φīweriyon-*, but the Hiberno-Latin forms *Ebernia*, *Evernis*, *Hebernensium* pattern with *Ériu* (Stüber 1998: 95–97). Pokorny (1925) suggests that **$h_1$epi-wer-iyo-* 'protected land; hill' could yield *Ériu*, a position that is bolstered by Isaac (2009), who points out that he previously overlooked MW form *Ywerdon* could come from the same preform. For Isaac, W *Iwerddon* comes from the PC epithet **φīweriyon-* 'fertile' (whence OIr. *íriu* 'earth') and replaced MW *Ywerdon*. Regardless of the account, PC **φīweriyon-* must be reconstructed.

swollen; cream' and *pī́lu-/pīlú-* 'milky, creamy'.

3.5.1.1 Vedic *péru-* and *perú-*

The two variously accented forms *péru-* and *perú-* were formerly assigned separate lexical meanings and etymologies,[25] but since the in-depth survey of Lüders (1940: 751–761), the forms have been taken as accentual variants from the same root $\sqrt{pay^{i}}$ 'to swell' (*KEWA*: *s.v. péruḥ* with lit. *EWA*: *s.v. péru-*; *J&B*$^{Com.}$: *ad* IX.74.4). The forms have not yet received an adequate etymology.[26] I propose here that these forms should be reconstructed as **péyh$_x$-wr̥-* > **páyHru-* > **páyru-* > *péru-*, whence *perú-* with an analogical oxytone accentuation by analogy to the *-ú*-stem adjectives. To this end, we will need to reexamine some of the attestations of *péru-* and *perú-* with an eye towards their

[24] *LSJ*^{9}: *s.v.* πίων cite the use of πιοτάτῳ in B.*Ep.* 2 = *AP* 6.53 as meaning "fattening, fertilizing", but they err:

(i) Εὔδημος τὸν νηὸν ἐπ' ἀγροῦ τόνδ' ἀνέθηκεν
τῷ πάντων ἀνέμων **πιοτάτῳ** Ζεφύρῳ:
εὐξαμένῳ γάρ οἱ ἦλθε βοαθόος, ὄφρα τάχιστα
λικμήσῃ πεπόνων καρπὸν ἀπ' ἀσταχύων.
'Eudemus dedicated this temple on his land
to Zephyrus, **most abundant** of all winds;
For he came hastening to help the praying man so that he might very quickly
winnow the grain from the ripe ears.'

In this context, Zephyrus uses his normal windy powers to help winnow grain, i.e., blow the lighter chaff away from the heavier grain when both are tossed in the air. The word πιοτάτῳ follows the frequent use of πῖαρ 'cream; richest/best/most abundant portion' + partitive GEN.PL discussed below.

morphology and semantics.

The two places where *péru-* is attested (*RV* 9.74.4, 10.36.8) would thus preserve the archaic accentuation. Indeed, the latter attestation exemplifies an inherited formula **péyh$_x$-wr̥-* + partitive GEN.PL 'the cream of X', much as as we say *cream of the crop*, *crème de la crème*, or (*to slay*) *the fatted calf* to refer to the best portion.

(3.18) *RV* 10.36.8

apā́m péruṃ *jīvádhanyam bharāmahe ' devāvíyaṃ suhávam adhvaraśríyam |*
suraśmíṃ sómam indriyáṃ yamīmahi ' tád devā́nām ávo adyā́ vr̥ṇīmahe ||

'We will bring (forward) **the cream of the waters**, providing riches for the living, pursuing the gods, good to invoke, the glory of the ceremony.

Soma, destined for Indra, with his good reins would we hold fast. — This help of the gods we choose today.'

(tr. after *J&B*: *ad loc.*)

This description of soma as 'cream of the waters', the best of all ritual fluids, would be parallel to the use of Gr. πῖαρ in *Il.* 11.551 and *h.Ven.* 30, where πῖαρ does means literally 'cream' and metaphorically 'richest/best/most abundant portion' of something.

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[25]For example, *WRV*: *s.vv. perú, péru* translates *perú-* as "durchdringend, durchfahrend" from $\sqrt{par}$ 'to cross' but *péru-* as "gähren, schwellen machend" from $\sqrt{pay^{i}}$ 'to swell'. Likewise *PW* and *MW*: *s.vv.*

[26]The dialectal Nor. *fēl(e)*, *file* 'cream, thickened milk' has previously been suggested as a cognate of *péru-*/*perú-* 'causing to swell, fertilizing' (*WP*: *s.v.* poi, pī̆; *KEWA*: *s.v. péruḥ*) as evidence for a suffix **-lu-*. The etymology of these Nor. forms is matter of some difficulty. ON *þél* 'freshly curdled milk, buttermilk' < PGerm. **þīhla-* < **tenk-lo-* (cf. Skt. *takra* 'a buttermilk-water mixture' < **tn̥k-lo-*, Lt. *tánkus* 'thick' < **tonk-u-*) has long been connected with Nor. *fēl(e)*, *file* through a sporadic alternation between **f* and **þ* before **l* (Lidén 1897: 39–42; *NDEW*^{2}: *s.v.* Filebunke), but all agree that there is likely another form beginning with **f-* with which **þīhla-* was conflated. ON *í* is normally lowered to Nor. *ē* before a deleted **h* or nasal except when the next syllable contained a high vowel (*AnGr*^{4} I: 101), so *fēl(e)*, *file* must come from PGerm. **fī(N)hla-* and cannot go back to PGerm. **fīlu-* < **peyh$_x$-lu-*.

(3.19) *Il.* 11.548–550 (describing Ajax fleeing battle)

ὡς δ’ αἴθωνα λέοντα βοῶν ἀπὸ μεσσαύλοιο
ἐσσεύοντο κύνες τε καὶ ἀνέρες ἀγροιῶται,
οἵ τέ μιν οὐκ εἰῶσι **βοῶν** ἐκ **πῖαρ** ἑλέσθαι 550

‘And as from the cattle’s inner stable, a fiery lion
was driven off by dogs and rustic men,
who do not allow it to seize the **fattest/cream of the cattle**, . . . ’

(3.20) *h.Ven.* 29–32 (describing Zeus appeasement of Hestia)

τῇ δὲ πατὴρ Ζεὺς δῶκε καλὸν γέρας ἀντὶ γάμοιο,
καί τε μέσῳ οἴκῳ κατ’ ἄρ’ ἕζετο **πῖαρ** ἑλοῦσα. 30
πᾶσιν δ’ ἐν νηοῖσι θεῶν τιμάοχός ἐστι
καὶ παρὰ πᾶσι βροτοῖσι θεῶν πρέσβειρα τέτυκται.

‘And to her Father Zeus gave a beautiful honor in place of marriage.
And she sat in the middle of the house taking the **richest portion/cream**.
And in all the temples of the gods she has a share of honor,
And among all mortals, she has become foremost of the gods.’

In neither Greek passage does πῖαρ refer to literal fat so much as the best portion. So too does the description of soma as the *apā́m péruṃ* designate it as the best of all waters. The collocation *apā́m perúḥ* appears several times in the Saṃhitās, particularly in the invocation of Agnīṣomā, where the animal victim is allowed to drink for the last time. *VS* 6.9–10 will act as a representative version of this prayer, from which the parallel passages differ slightly.

(3.21) *VS* 6.9–10 (≈ *TS* 1.3.8.1, *MS* 1.2.15, 3.9.6, *KS* 3.5, *KpS* 2.12)[27]

devásya tvā savitúḥ prasavè ’śvínor bāhúbhyāṃ pūṣṇó hástābhyām |
agnī́ṣómābhyāṃ júṣṭaṃ ní yunajmi |
adbhyás tváuṣadhībhyó ’nu tvā mātā́ manyatām ánu pitā́nu bhrā́tā sagarbhyó ’nu sákhā sáyūthyaḥ |
agnī́ṣómābhyāṃ tvā júṣṭaṃ prókṣāmi ‖9‖
apā́ṃ perúr *asi* |

ā́po devī́ḥ svadantu svāttáṃ cit sád devahavíḥ |

sáṃ te prāṇó vā́tena gacchatāṁ́ sám aṅgāni yájatraiḥ sáṃ yajñápatir āśíṣā ‖10‖

‘To the impulse of the god Savitar, to the arms of the Aśvins, to the hands of Pūṣan, I bind you, welcome to Agnīṣomā. (I bind) you to the waters, to the plants. Let the mother permit you, the father, the full brother, the herd companion. I besprinkle you, welcome to Agnīṣomā.

You are **cream of the waters**. Let the waters, the goddesses, sweeten even the seasoned true oblation of the gods. Let your breath unite with the wind, your limbs with those worthy of worship, your lord of sacrifice with a prayer.’

Because the victim drinks the waters, it becomes the essence of the waters themselves. In attempting clarifying the obscure form *perú-*, *TS* 6.3.6.4 folk-etymologically misinterprets *apā́ṃ perúr* as ‘drinker of waters’ instead of ‘cream of the waters’.[28]

(3.22) *TS* 6.3.6.4

apā́m perúr *asī́ty āhaiṣá hy àpā́m pātā́ yó médhāyārabhyáte*

‘“You are **cream of the waters**,” he says, for this is the drinker of waters who is sacrificed for nourishment.’

Because of this early reinterpretation of *perú-*, *PW* lists *perú-* as meaning “trinkend” ‘drinking’ from $\sqrt{pā}$ ‘to drink’, which *MW* follows. Unsurprisingly given the frequent repetition of *apā́ṃ perúr asi* in the Saṃhitās, *perú-* had already been combined with *apā́ṃ nápāt* ‘Child of the Waters’, an epithet of Agni, in *RV* 7.35.13 (≈ *AVP* 12.17.3 = *AVŚ* 19.11.3).[29]

[27] *apā́ṃ* ***perúr*** *asi* is quoted in *KS* 26.8 and *KpS* 41.6, the ritual exegeses of *KS* 3.5 and *KpS* 2.12, respectively. Here also *ŚB* 3.7.4.6.

[28] More tautologically, *MS* 3.9.6 says *apā́ṃ perúr asī́ti | apā́ṁ hy èṣá perúḥ* ‘He says “You are cream of the waters,” because this is cream of the waters.’

[29] This extension of *perú-* to be an epithet of Agni likely also led to its use as a word for ‘fire’ in Ujjv.*Uṇādis.* 4.101 as mentioned in §3.4.4.

(3.23) *ṚV* 7.35.13 (≈ *AVP* 12.17.3 = *AVŚ* 19.11.3)

śáṃ no ajá ékapād devó astu ' śáṃ no áhir budhníyaḥ śáṃ samudráḥ |

śáṃ no ***ap^{a}ā́ṃ nápāt perúr*** *astu ' śáṃ naḥ pŕ̥śnir bhavatu devágopā ||*

'Luck for us be god Aja Ekapad; luck for us Ahi Budhnya [/Serpent of the Deep], luck the Sea.

Luck for us be the **richest/swelling Child of the Waters**; luck for us be Pr̥śni, who has the gods as her protectors.'

(tr. after *J&B*: *ad loc.*)

Yet *péru-/perú-* has retained more literal meanings of **péyh$_x$-wr̥-* beyond the 'cream of the waters' formula. In several passages describing rain, *péru-/perú-* has a meaning of 'causing to swell, fructifying'. In *ṚV* 5.84.2, part of a riddle hymn describing the earth at night during the monsoon season (Jamison 2013), a storm casts fructifying moisture across the land.

(3.24) *ṚV* 5.84.2 (= $^{+}$*TS* 2.2.12.3)

stómāsas tvā vicāriṇi ' práti ṣṭobhant̬y aktúbhiḥ |

prá yā́ vā́jaṃ ná héṣantam ' ***perúm*** *ásyas̬y arjuni ||*

'Praises sound in response to you, oscillating lady, through the nights,

as you fling the **fructifying** (moisture) forward like a (horse) neighing for a prize, silvery one.'

(tr. after *J&B*: *ad loc.*)

Likewise we find a use of *péru-* meaning 'fructifying' in *ṚV* 9.74.4 as part of a hymn where soma is analogized with rain. In this verse, *péravaḥ* M.NOM.PL describes both fructifying rain gods, the Maruts, "pissing down" rain and the priests "pissing down" the soma juice along the filter. *péravaḥ* mixes morphological archaism and innovation. While it preserves the older barytone accentuation, this attestation of *péru-* is not in M.NOM.SG or M.ACC.SG, the forms that were the source of the innovative *-u*-stem declension (**péyh$_x$-wr̥-s*, **péyh$_x$-wr̥-m* > *pérus**, *pérum*).

(3.25) *ṚV* 9.74.4 (≈ *KS* 35.6 = *KpS* 47.7)

ātmanván nábho duhyate ghr̥tám páya ' r̥tásya nabhir amr̥taṃ ví jāyate |

*samīcīnā́ḥ sudā́navaḥ priṇanti tám̐ ' náro hitám áva mehanti **péravaḥ*** ||

> 'The embodied cloud is milked of ghee and milk. The navel of truth, the immortal (drink soma) is born.
>
> United, possessed of good drops, they (the Maruts) please him. The **fructifying** men piss down the one propelled.'
>
> (tr. after *J&B*: *ad loc.*)

Lüders (1940: 751–761) correctly identifies *pérum̐* in *TS* 3.1.11.7–8 as another example of the fructifying powers of rain. Both the *TS* and *AV* passages describe rain swelling brooks with fructifying water which is (rather explicitly) compared to women in the act of lovemaking or procreation.

(3.26) *TS* 3.1.11.7–8 (≈ +*AVP* 19.22.12 = +*AVŚ* 6.22.3)[30]

divó no vr̥ṣṭím maruto rarīdhvam prá pinvata vŕ̥ṣṇo áśvasya dhā́rāḥ |
arvā́ṅ eténa stanayitnútéhy apó niṣiñcánn ásuraḥ pitā́ naḥ ||
<u>pínvanty</u> apó marútaḥ sudā́navaḥ páyo ghr̥távad vidátheṣv ābhúvaḥ |
átyam̐ ná mihé ví nayanti vājínam útsam̐ duhanti stanáyantam ákṣitam ||
udaprúto marutas tā́ṁ iyarta vŕ̥ṣṭim ||7||
yé víśve marúto junánti |
krós̀āti +*gáldā kanyèva tunnā́ **pérum̐** tuñjānā́ pátyeva jāyā́* ||8||

---

[30]Both *AVŚ* 6.22.3 and *AVP* 19.22.12 corruptly replace *pérum* with the hapax *érum*. Lüders rightly amends (i), the transmitted text of *AVŚ* 6.22.3, to (ii).

(i) *udaprúto marútas tā́m̐ iyarta vr̥ṣṭír yā́ víśvā nivátas pr̥ṇā́ti* |
éjāti gláhā kanyèva tunnáirum̐ tundānā́ pátyeva jāyā́ ||

(ii) *udaprúto marútas tā́m̐ iyarta ' vr̥ṣṭír yā́ víśvā nivátas pr̥ṇā́ti* |
éjāti +*gálhā kanⁱyèva tunnā́ '* +*pérum̐* +*tuñjānā́ pátyeva jāyā́* ||

> 'Maruts, springing in water, send forth the rain which may fill all valleys.
>
> Let the brook stir like a banged girl, streaming forth fructifying (water/semen) like a wife with her husband.'

‘From heaven grant us rain, Maruts. Swell the streams of the bullish steed.

Come hitherwards with this thunder, pouring down the waters, our father Asura.

The bounteous Maruts swell the waters present at the sacrifices with ghee, the milk.

The prizewinning one they lead around as if a steed to rain. They milk the thundering and immortal spring.

Maruts, springing in water, send forth the rain. ‖7‖

What all the Maruts impel,

Let the brook howl like a banged girl, streaming forth **fructifying (water/semen)** like a wife with her husband.’ ‖8‖

I will mention three more uncertain uses of *péru-/perú-*. *ṚV* 1.158.3 contains an enigmatic description of the Aśvins saving Bhujyu from the sea with their chariot. In this verse, their chariot is described as both *perú-* and *pajrá-* ‘strong, sturdy’.

(3.27) *ṚV* 1.158.3

yuktó ha yád vāṃ taugriyā́ya ***perúr*** *' ví mádhye árṇaso dhā́yi pajráḥ |*

úpa vām ávaḥ śaraṇáṃ gameyaṃ ' śū́ro ná ájma patáyadbhir évaiḥ ||

‘Because your harnessed (chariot)—**fat**, sturdy—was set apart in the middle of the flood for the son of Tugra [=Bhujyu],

I would come to your sheltering help by flying ways, as a hero (flies) his course.’

(tr. after *J&B*: *ad loc.*)

Baunack (1898: 529–540) argues at length for interpreting *perú-* as an epithet of soma meaning “*strotzend*” ‘abundant’ in its capacity as a rejuvenating drink. I am inclined to take a more pedestrian interpretation of this passage and understand the two epithets of the Aśvins’ enormous chariot as ‘fat’ and ‘sturdy’. If *perú-* can mean ‘fat’ in this context, the semantics would match those of *pī́van-* found elsewhere in Sanskrit.

Finally, differently accented *péru-* and *perú-* appear in consecutive verses of the *TA* 3.11.6–7. The first use closely recalls *péravaḥ* in (3.25) with another use of the “pissing” metaphor, while

the second refers to golden soma and governs the verb *pinvate* 'swells'. The barytone accentuation of the former must be explained as a direct allusion to (3.25), while the latter must represent the productive oxytone accentuation.

(3.28) *TA* 3.11.6–7

índro rā́jā jágato yá íše | saptáhotā saptadhā́ vikl̥ptáḥ | páreṇa tántuṃ pariṣicyámānam | antárādityé mánasā cárantam | devā́nāṁ hŕ̥dayaṃ bráhmā́ 'nvavindat | bráhmaitád bráhmaṇa újjabhāra | arkáṁ ścótantaṁ sarirásya mádhye | ā́ yásmin saptá ***péravaḥ*** *| méhanti bahulā́ṁ śríyaṃ | bahvaśvā́m indra gómatīṃ* ‖6‖

ácyutāṃ bahulā́ṁ śríyaṃ | sá hárir vasuvíttamaḥ | ***perúr*** *índrāya pinvate . . .* ‖7‖

'Indra, the king who is master of the living world, was transformed into the sevenfold (Ādityas) with seven Hotar priests. At the far end of the thread which, when unspooled, goes by thought to the Āditya within, the brahman found the heart of the gods. From the sacred formulation he has selected this formulation, a song dripping in the middle of the flood, on which the seven **fructifying (Ādityas)** piss abundant prosperity full of cattle and many horses, O Indra. ‖6‖

Golden (soma), best at procuring goods, **fructifying**, swells unshakable, abundant prosperity for Indra. . . . ' ‖7‖

3.5.1.2 Vedic *pī́lu-* and *pīlú-*

Yet *péru-* and *perú-* are not the only Ved. forms which I believe derive from **péyh$_x$-wr̥-*. The words *pī́lu-* and *pīlú-* I also take to mean 'fat, cream' and 'fatty, creamy, milky', respectively. In my view, these forms variously describe the galaxy, trees, and perhaps elephants. In his discussion of *AVP* 7.19, a hymn to the *pīlu-* tree, Griffiths (2009: 435–448) extensively discusses the past literature on these forms and comes to the conclusion that, with the exception of the word *pīlú-* 'elephant', all the other Vedic forms refer to the *pīlu* tree, which he accents *pī́lu-*. I am not so convinced. For the accentuation, three citations provide evidence for *pī́lu-/pīlú-*: *AVŚ* 20.135.12 with *pī́lu*, *AVŚ* 18.2.48 with *pīlúmatī*, and *MS* 2.7.12 with *pīlvàyor*. In his discussion of the *pīlu* tree, Griffiths (2009: 436–437 & n^{92}) claims that only *pī́lu* '*pīlu* fruit' transmits the accent reliably, that *pīlúmatī*

'full of *pīlu* trees' is accentually corrupt, and that *pīlvàyor* refers instead to 'elephants'. As outlined below, I only really agree with Griffiths on the last point. To begin with *AVŚ* 20.135.12, this passage describes the boons given by Indra to an unlucky bird:

(3.29) *AVŚ* 20.135.12[31]

t^{u}vám indra kapótāya ' $^{+}$chinnápakṣāya váñcate |

*$^{+}$śyāmā́kaṃ pakváṃ $^{+}$**pī́lu** ca ' vā́r asmā $^{+}$akr̥ṇor $^{+}$bahú ||*

'You, Indra, to the trembling dove with rent wings,

To him you gave ripe millet, **cream**, and much water.'

These boons are normally translated as three separate items, *śyāmā́kaṃ pakváṃ* 'ripe millet', a neuter hapax form *pī́lu* 'fruit of the *pīlu* tree', and *vā́r . . . bahú* 'much water'.[32] Given the accentuation and the neuter gender, I instead take *pī́lu* 'cream' to be the morphological and semantic cognate of Gr. πῖαρ 'fat, cream' from **píh$_x$-wr̥*.

For the word *pīlvàyor* in *MS* 2.7.12 (= *ĀpŚS* 16.18.6), Griffiths (2009: 436–437) hits the nail on the head in identifying this as a nonce thematicization of *pīlu-* 'elephant' found in later Sanskrit.

(3.30) *MS* 2.7.12 (= *ĀpŚS* 16.18.6)

*uṣṭā́rayoḥ **pīlvàyor** átho ābandhanī́yayoḥ |*

sárveṣāṁ vidma vo nā́ma vā́hāḥ kī́lālapeśasaḥ ||

'Of two camels, of **two elephants**, and of two (animals) to be tied on,

Of you all we know the name, *kī́lāla*-ornamented draft animals.'

The accentuation of *pīlvàyor* would point to an underlying *pīlú-*, which easily could have originally meant 'fat (animal)' owing to elephants' enormous size. It is difficult to tell whether this word could be inherited given its scanty early attestations. The term must have been borrowed either into or out of Indo-Aryan, given the existence of Ak. *pīru*, *pīlu*, *pēru* 'elephant'.

[31] I follow Griffiths (2009: 436–437) in his textual emendations if not his translation.

[32] Bizarrely, Griffiths (2009: 436–437) (correctly) emends to N.ACC.SG *bahú* but translates it together with M.ACC.SG *śyāmā́kaṃ pakváṃ* as 'much ripe millet'.

In the funeral hymns *AVŚ* 18.2.48 = ⁺*AVP* 18.67.9, *pīlúmatī* names the middle zone of the heavens. Whitney and Lanman (1905: *ad loc.*) translates *pīlúmatī* as "full of stars" following the commentary's "worthless etymological guess (*pālayantī 'ti pīlavaḥ: grahanakṣatrādayaḥ*)". Hoffmann (1976: 389) prefers to translate *pīlúmatī* "*fettreich*" 'full of fat' and takes it to an adjective *pīlú-* which he finds thematized in *uṣṭā́rayoḥ pīlvàyor* 'fat camels' from *MS* 2.7.12 (= *ĀpŚS* 16.18.6). Griffiths (2009: 435, 442–443) stumps instead for "Full-of-Pīlu" and imagines the *pīlu* tree as a prop of heaven based on *AVP* 7.19.4, where the tree is described as *yā mahatī mahonmānā ' sarvā āśā vyānaśe* 'Who is great, of great measure, penetrating all (heavenly) spaces'. Yet the interpretations of Whitney and Lanman, Hoffmann, and Griffiths can all be united!

(3.31) *AVŚ* 18.2.48 = ⁺*AVP* 18.67.9

udanvátī dyáur avamā́ ' pīlúmatī́ti madhyamā́ |

tr̥tī́yā ha pradyáur íti ' yásyāṃ pitára ā́sate ||

'"Full of water" is the lowest heaven. "Full of *pīlú-*" is called the middle.

The third is called the "Fore-heaven", in which the fathers sit.'

The lowest heaven clearly describes the rain-filled atmosphere, while the third heaven describes the abode of the immortals and the dead. As Stephanie Jamison suggests to me, the fat- or milk-filled heaven could refer to the astronomical sphere where the "Galaxy" or "Milky Way" resides. This would place the third heaven beyond the visible sky. But could this also refer to a *pīlu* tree? The description of the heavens as a galactic tree also finds parallels in Indo-European. Most prominently, the Norse world tree Yggdrasill connects the human plain Miðgarðr with the gods' plain Ásgarðr and therein the hall of the slain, Valhǫll, much as *pīlúmatī-* stands between the realm of the mortals and that of their ancestors. The tree Yggdrasill is also where Óðinn hangs himself from the tree for nine days and nights in order to gain the knowledge of sacred runes for magic and poetry.

The description of the *pīlu* tree in *AVP* 7.19 matches the description of Yggdrasill in several ways. As mentioned above, *AVP* 7.19.4 describes how the tree penetrates all heavenly spaces as a cosmic tree would. I also find the two trees' depiction as the source of magic striking. The hymn begins in *AVP* 7.19.1 with *āṅgiraso janmanāsi* 'you are a descendant of Aṅgiras by birth' and the name *āṅgirasa* is repeated in *AVP* 7.19.6, where new-born Indra is depicted suckling upon the tree.

(3.32) *AVP* 7.19.6

yadā pīlav āṅgirasa ' pakvo ('')tiṣṭho vanaspate |

athāhur indram jajñānaṃ ' śakraṃ +barjah^{i}ye prati ||

'Aṅgiras-descended *pīlu* tree, when you stood ripe,

then they say mighty Indra, having been born, (was) at (your) nipples.'

The adjective *āṅgirasá-* often refers to objects and plants involved in magic (Griffiths 2009: 439), and when Indra appears with the family of singers, the Āṅgirasas, he does so in his capacity as Bṛhaspáti 'Lord of the sacred formulation', when he uses magical formulations to sing open mount Vala and release the heavenly cattle. This depiction of Indra suckling the magical tree is reminischent of Óðinn's self-martyrdom on Yggdrasill to learn the sacred runes. The *pīlu* tree is also associated with two demons *Arāti* and *Arāya*, whose names both mean 'not giving liberally; illiberality' (*AVP* 7.19.3–5) and who may be compared to the dragon Níðhöggr and the innumerable snakes that infest the roots of Yggdrasill.

There is also evidence within the hymn to suggest that the tree name *pīlu-* meant 'milky, creamy' from **píh$_x$-wr̥-*, built to $\sqrt[*]{peyh_x}$ 'to swell'. In *AVP* 7.19.8–9, *pīlu-* occurs close by the verb *ā pyāyate* 'swells up' and is directly equated with the *pīvam* 'fat(ty)'.

(3.33) a. *AVP* 7.19.8

yat piśācaiḥ puruṣasya ' jagdhaṃ bhavat^{i}y ātmanaḥ |

*ā **pīlo** pyāyate punas ' tava cāśnāti pippalam ||*

'Whatever of a man's self is eaten by piśācas

swells up again if he eats of your fig, **pīlu**.'

b. *AVP* 7.19.9

***pīluṃ** tvāhuḥ pīvaṃ tvāhur ' atho tvāhur vanaspatim |*

sarvā te bhadrā nāmāni ' tebhir naḥ pāh^{i}y aṃhasaḥ ||

'They call you "*pīlu*", they call you "fat", and they call you "lord of the forest".

All your names are auspicious. With these protect us from trouble.'

Griffiths interprets these collocations as mere folk etymology, but I find this hard to believe.

These verses instead preserve the original understanding of the tree as a galactic tree. Later lexica say that the *pīlu* tree is '*Careya arborea*', which has edible fruit.[33] But the association of *pīlu-* and '*Careya arborea*' could be a later transferal. The word *pippala-* (used in *AVP* 7.19.8) normally refers to the fruit of the sacred fig tree, and indeed a divine fig tree *Aśvatthá-*[34] is the seat of the gods in the third heaven (*AVP* 7.10.6a = 19.11.1a = 20.61.8a = *AVŚ* 5.4.3a = 6.95.1a = 19.39.9). A galactic tree that extends from earth to all the heavenly spaces would surely occupy part of the third heaven as well. If indeed *pīlúmatī* should mean '(the heaven) holding the milky/galactic tree', the removal of *pī́lu* in *AVŚ* 20.135.12 as a fruit name would mean that *pīlú-* could be the true accentuation for the adjective 'creamy, milky, fatty' and thus the tree name, but the data are too unclear to be sure. Regardless, as with *péru-* and *perú-* above, a change to adjectival oxytone accentuation would be expected in any case. More research remains to discover the full ramification of this mythological proposal.

3.5.1.3 The development of **péyh$_x$-wr̥*

But how would this constellation of forms come about? The old and unproductive forms in *péru-* 'fructifying; richest' point to a strong stem **péyh$_x$-wr̥-*, while the more common *pī́van-* 'fat' requires a weak stem **píh$_x$-won-*. The root accentuation of **píh$_x$-won-* can be explained using the compo-

[33] Dravidian may possess some loanwords from this word or its ancestor: Ta. *pēṟai-maram*, Ma. *pēṟ(u)*, *pēṟa* '*Careya arborea*' (*DED*^{2}: 393 #4443) point to a preform **peru-*, suggesting that the tree name *pīlu-* replaced an earlier **peru-*, but it is hard to tell.

[34] The name *Aśvatthá-* is normally take as a Middle Indicism for **aśvasthá-* 'where horses stand' from *áśva-* 'horse' + $\sqrt{sthā}$ 'to stand', ostensibly referring to how horses would eat the fallen fruit of the tree. It is curious though that Yggdrasill traditionally thought to mean 'Ygg's [=Óðinn's] horse', a kenning referring to when Óðinn suspends himself from Yggdrasill. *Aśvatthá-* could also mean 'seated on a horse' and allude to an inherited epithet of the tree as a divine steed, perhaps for conveying gods between realms. Alternatively, the ending *-ttha-* appears elsewhere in the Sanskrit plant names *kapittha-* '*Feronia Elephantum*' (*MBh.*), *kulattha-* '*Dolichos uniflorus*' (*MBh.*), and *dadhittha-* '*Feronia elephantum Correa*' (*GobhGS* 1.5.17), so perhaps *Aśvatthá-* is best understood as 'horse tree'.

sitional method by assuming an underlyingly accented root $\sqrt[*]{péyh_x}$ with a zero-grade induced by accented *-*wó/én*-; thus ***péyh*$_x$*-wón*- > **píh*$_x$*-won*-. From this oblique stem, an innovative zero-grade strong stem **píh*$_x$*-wr̥*- was created. Gr. πῖαρ shows that this change must have happened already in Greco-Indo-Iranian, leaving the Vedic reflexes of **péyh*$_x$*-wr̥*- as morphological archaisms. Crucially, all the words that derive from the innovative strong form **píh*$_x$*-wr̥*- (Ved. *pī́lu* 'cream', *pīlu*- 'milky (tree)'; Gr. πῖαρ 'fat, cream') have a narrowed sense of 'fat, cream, milk' instead of the broader sense of 'swelling, fructifying'. This account is schematized in Table 3.1.

Table 3.1: The development of **péyh*$_1$*-wr̥*

		M	N		
Ved. *péru-s*, *perú-s*	«	**píh*$_1$*-wr̥-s*	**péyh*$_1$*-wr̥*		
Ved. *pī́van*-, Gr. πῖον-	<	**píh*$_1$*-won*-			
Ved. *pīlú-s*	«	**píh*$_1$*-wr̥-s*	**píh*$_1$*-wr̥*	>	Ved. *pī́lu*, Gr. πῖαρ

If Cl.Arm. *yoyr* 'fat' is indeed from **péyh*$_x$*-ur-ih*$_2$- (see fn. 22), then the Greco-Indo-Iranian F **píh*$_x$*-wer-ih*$_2$- would also have to derive analogically from the innovative **píh*$_x$*-* stem. The strong forms of the adjectives Ved. *pī́van*-, Gr. πῖον- 'fat'[35] must also be analogically extensions on the weak stem **píh*$_x$*-won*-.

3.5.2 $\sqrt[*]{bʰeyh_2}$ 'to fear, be afraid'

As seen in (2.10f), $\sqrt[*]{bʰeyh_2}$ provides a number of forms in *-rú-*, *-ruka-*, and *-rṛ́ṇa-*, with the simplex *bhīrú-* 'fearful' appearing already in *RV* 2.28.10, 1.101.6. Much like *pī́lu-/pīlú-* in §3.5.1 above, I assume we are originally dealing with an old heteroclite **bʰéyh*$_2$*-wr̥*- ~ **bʰih*$_2$*-wén*- 'fearful; fearing', which rebuilt its strong stem as **bʰíh*$_2$*-wr̥*-[36] > **bhī́ru*- > *bhīrú*-.

[35] Ved. *pī́vānam* M.ACC.SG (*RV* 10.27.17), *pī́vānaḥ* M.NOM.PL (*TS* 3.2.8.5); Gr. πῖονα M.ACC.SG (*Il.*), πῖον N.NOM/ACC.SG (Pi.*P* 4.56), πῖων M.NOM.SG (Ar.*Ra.* 1092).

[36] The only potential *-ru-* derivative with accented root *bhī́-* comes from *abhī́ruṇa-* in *AVŚ* 7.89.3 (though *VS* 6.17 reports *abhīrúṇam* as if by analogy to *bhīrú-*).

AiGr II 2: 860 §689aβ propose the cognates Lt. *bailùs* 'fearful, timid, skittish', Lv. *baîļš* 'timid, shy'. There are several reasons to doubt this etymological comparison, however. Most obviously, the Baltic forms require an **o*-grade of the root, while *bhīrú-* requires a zero-grade. Furthermore, *LED*: *s.v.* báilė argues that Lt. *bailùs* as well as Lt. *bailýbė*/*bailỹbė* 'fear', *bailỹs* 'coward', *báilauti* 'to be fearful', *báilėtis* 'to fear', and *bailìnti*/*báilinti* 'to scare' all derive from a "neo-stem" *bail-* extracted from *báilė*/*bailẽ* 'fear' (similarly Lv. *baîļš* from *baîle* 'fear'; *EDBIL*: *s.vv. bailė, bailus* does not take a stance on the derivation of *bailùs*). Of course, it cannot be guaranteed that the *-rú-* in *bhīrú-* actually came from an **-l-* at all.

While Sanskrit does not provide any other support for this form being a *-*wr̥*-/-*w*(*e*/*o*)*n*-heteroclite, I propose to find a cognate in PIr. **baywr̥* ~ **baywan-* 'a very large number; 10,000' > YAv. *baēuuarə* ~ *baēuuan-*, MSog. *βrywr*, Khot. *byūrru*, Oss.D. *beurä*, Oss.I. *birä*, MP/MPth. *bywr*, NP *bēvar*, ⇢ Cl.Arm. *bewr* '10,000, myriad' (*DKS*: *s.v.* byūrru; *EDIL*: *s.v.* *bai̯ar- / *bai̯an-; Kümmel 2019: 162). Unlike Indo-Aryan, Iranian would build a novel oblique stem **bʰéyh₂-wᵒ/ₑn-* from the strong stem **bʰéyh₂-wr̥-*. For the semantics, I would propose **bʰéyh₂-wr̥* meant '*frightening thing ⇝ (*frighteningly big thing ⇝) big number ⇝ 10,000' similar to how Eng. *monstrous* and NHG *Ungeheuer* describe terrifying things and large numbers.[37] One might object that Ved. *bhīrú-* means 'scared, timid' and not ×'frightening'. There are two ways of addressing this complaint. On

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(i) *AVŚ* 7.89.3 (= *AVP* 1.33.3d ≈ *VS* 6.17)

idám āpaḥ prá vahata‿avadyáṃ ca málaṃ ca yát |
yác cābhidudróhā́nr̥taṃ ' yác ca śepé ***abhī́ruṇam*** ||

'Waters, carry forth both this reproach and whatever is impure
and whatever untruth I have inflicted and whatever **impudence**? I have sworn.'

The meaning of *abhī́ruṇa-* is not entirely clear, but from the context of slights to the divine, I suggest 'impudence, irreverence' in the sense of 'lack of appropriate fear/reverence'. Whitney and Lanman (1905: *ad* 7.89.3) doubt the form *abhī́ruṇam*, suggesting with the commentary that it may come from *abhí* 'to' + *r̥ṇá-* 'debt' (in an unattested form ×*ruṇá-*). The passage in *AVP* 1.33.3d reads identically, however, and *VS* 6.17 differs only in accentuation. Overall, I am inclined to take the form in *AVŚ* at face value. For the *-na-* extension, see also §3.4.1.

the one hand, nominals pertaining to fear frequently switch from 'having fear' to 'causing fear' as in Eng. *fearful* or *frightful*. In Ved., *bhīṣmá-* means 'terrible, dreadful' and not ×'afraid'. On the other hand, there is some evidence that Avestan had transitive forms of this verb which could mean 'to frighten' (OAv. *biieṇtē* 3PL.PRS.MID.IND (*Y* 34.8), YAv. *baiieṇte* 3PL.PRS.MID.IND (*Yt.* 17.12–13); *AiW*: *s.v.* bay-; *EDIV*: *s.v.* *baiH; Kellens and Pirart 1991: 118), which would allow *b^héyh$_2$-wr̥- to have a transitive meaning 'frighting' and intransitive 'fearing', (at least in Iranian). As with all matters pertaining to the Avesta, however, this topic is debated (see, for example, Humbach and Faiss 2010: 177 for an opposing view).

To my knowledge, the only older etymology for the Iranian forms comes from Bartholomae (1895b: 112), who compares PIr. **baywr̥* ~ **baywan-* to Ved. *bhū́ri-* 'many, much, abundant', OAv. *bū^{i}ri-*, YAv. *bu^{i}ri-* 'abundant' < *b^húh$_2$-Li-*. The idea would be to build a *-wr̥-/-w(^{e}/$_{o}$)n-heteroclite to a *-ey- extension of $\sqrt[*]{b^huh_2}$ 'to be(come), grow', viz. *b^huh$_2$-ey-wr̥*. This would produce PIr. **buHaywr̥* > **bwaywr̥*, which would then dissimilatorily lose the first *-w-*. While the semantics of this proposal might work, the morphology and phonology are completely ad hoc. The dissimilation would have to occur in these very special circumstances, since YAv. *buiie* 'to become' (*A* 1.10–11) < *b^huh$_2$-éy* (cf. Ved. *bhuvé* 'id.', *RV* 10.88.10) instead preserves the *-u-* vowel with a hiatus-filling *-y-*.

3.5.3 $\sqrt[*]{deh_3}$ 'to give'

P 3.2.159 provides a form ^{G}*dārú-* 'liberal' < **déh$_3$-wr̥-*, which seems to find a descendant in Pras. *pyörü* 'gift' < **pro-deh$_3$-wr̥-* (*CDIAL*: #8661). Despite the fact that ^{G}*dārú-* is not directly attested in Sanskrit, we can say with certainly that $\sqrt[*]{deh_3}$ made a *-wr̥-/-w(^{e}/$_{o}$)n-heteroclite from the abundance of Sanskrit and cognate evidence. $\sqrt{dā}$ productively forms a dizzying number of

[37]The *Gv.* 15.10 possesses a form *bhelu*, which *MVyutp.* 7893 glosses with Tib. *ñar ñer*, as part of list of immensely large numbers for counting the number of bodhisattvas. This form could in principle match PIr. **baywr̥* semantically and be derived from *b^héyh$_2$-wr̥-* (> *b^háyHur-* > *b^háyru-* > *bhelu*), but the form is attested quite late and appears in a list of similarly shaped forms: *elu, velu, gelu, śvelu, nelu, bhelu, kelu, selu, pelu, melu* (Schiefner 1960–63: 639). As such, this is likely a nonsense form.

°*dā́-van-* and °*dā́-varī-* forms that will be discussed in detail in Chapter 4.[38] The simplex INF *dāváne* 'to give' < **deh₃-wén-ey* is well attested already in *Ṛ̊V* and finds formal and functional equivalents in Gr. δοῦναι, δῶναι (Tegea), Cyp. *to-we-na-i* 'to give' < **dh₃-wén-eh₂-i*, HLuw. *(la)launa* 'taking' < **deh₃-un-eh₂*, H *dāwaš* 'taking' GEN.SG **deh₃-wen-s*, *dāwanzi* 'id.' < **deh₃-wen-ti*, and Celtib. *taunei* 'putting' < **d(e)h₃-un-ey*[39] (Meillet 1918; *Schwyzer* I: 808–809; Carter 1953; García Ramón 1994).[40]

One question does arise as to the meaning of the form *dārú-* in *Ṛ̊V* 7.6.1. This hymn praises Agni, but begins by comparing him to Indra and Varuṇa. Agni is called *dārúm*, a term normally thought to mean 'breaker' < **dor-ú-m* from the root $\sqrt{dar}$ 'to break, burst', and this interpretation is reinforced by the use of *puraṃdará-* 'breaker of strongholds' in *Ṛ̊V* 7.6.2, an epithet normally associated with Indra.[41] It is conceivable that *dārú-* is a pun here, originally meaning 'giving' but contextually assuming the meaning 'breaking'. Besides this usage, the word *dārú-* meaning 'breaking, breaker' is otherwise unattested.[42]

(3.34) *Ṛ̊V* 7.6.1

prá samrā́jo ásurasya práśastim ' puṃsáḥ kr̥ṣṭīnā́m anumā́diyasya |
índrasyeva prá tavásas kr̥tā́ni ' vánde ***dārúṃ*** *vándamāno vivakmi ||*

'(I proclaim) the praise of the universal king and lord, of the man to be celebrated by

[38] To name some of them: *bhūri-dā́van-* 'giving much' (*Ṛ̊V*), *aśva-dāvan-* 'giving horses' (*Ṛ̊V*), *vasu-dā́van-* 'giving goods' (*Ṛ̊V*), *vāja-dā́van-* 'giving prizes' (*Ṛ̊V*), *śata-dā́van-* 'giving hundredfold' (*Ṛ̊V*), *satrā-dāvan-* 'giving always' (*Ṛ̊V*), *sahasra-dā́van-* 'giving thousandfold' (*Ṛ̊V*), *su-dā́van-* 'giving well' (*Ṛ̊V*), *sva-dāvan-* 'self-giving' (*Ṛ̊V*), *āyur-dāvan-* 'giving life' (*KauśS*, *VS*, *TS*).

[39] If not from **dʰ(e)h₁-un-ey*.

[40] See also the proposal that H *paddur* ~ *paddunī* 'mortar' comes from **h₁po-dh₃-úr* ~ **h₁po-dh₃-un-í* (Rieken 1999: 357–358; *AHP*: 34)

[41] Though also used of Agni performing Indra's deeds in *Ṛ̊V* 6.16.14 and of Indra and Agni combined (Indrāgnī) in *Ṛ̊V* 10.109.8.

[42] *dāruṇá-* 'hard, harsh' comes from *dā́ru-* 'tree', for which see §3.4.1.

the settlements.

Extolling the deeds of the mighty one—I extol the one **giving/breaking**—I proclaim them like those of Indra.'

(tr. after *J&B*: *ad loc.*)

3.5.4 $\sqrt[*]{seh_2}$/ $\sqrt[*]{sh_2ey}$ 'to bind'

P 3.2.159 supplies the form ^{G}*seru-* 'binding', which lacks any other literary attestations. Nevertheless, there may be some comparative evidence to support the reconstruction of a *-*wr̥*-/-*w*(^{e}/$_{o}$)*n*- heteroclite to this root in Indo-Aryan and in Indo-European. Puhvel (1964: 189) has suggested that PDrav. **cēru* 'a yoked pair of oxen with plow' (whence Ta./Ma. *ēr* 'plow, yoke of oxen', Ka., *ār*, *ēru* 'a pair of oxen yoked to a plow', Te. *ēru* 'id.', Kui *sēru* 'yoke of oxen, pair (of oxen for plowing)', Gō. *sēr* 'plow') could be an early loanword from Indo-Aryan. PDrav. **cēru* would more easily come from a Skt. form **seru-* < **sh₂ey-wr̥-* 'a binding/yoking (of cattle)'.[43] Hittite may also possess a cognate form in^{GIŠ}*išḫāwar* 'yoke-plow pair' < **sh₂^{ó}/$_{é}$y-wr̥* (*HED* 2: *s.v. ishawar, ishaur*; *EDH*: *s.v. išḫai-^{i}/išḫi-*).[44]

3.5.5 $\sqrt[*]{sed}$ 'to sit'

The form ^{G}*sadru-* 'sitting, stable' (P 3.2.159) finds a near-perfect cognate in ἵδρύω 'to seat' < **s$_{ə}$d-ru-yé-*, as suggested already by *AiGr* II 2: 860 §689aβ.[45] Beside this we also find compounds

[43]For the phonology of Skt. *s* -→ PDrav. **c*, Skt. *e* -→ PDrav. **ē*, and development of PDrav. **c* in Dravidian, see Burrow (1947: 135, 141[1]), Emeneau and Burrow (1962: 16 #55), *DED*[2]: 244–245 #2815, Andronov (2003: 88–89), and Krishnamurti (2003: 121–127).

[44]For the development of PA *-*ay-wr̥* > H *-āwar*, *EDH*: *s.v. išḫai-^{i}/išḫi-* compares the development of **seh₂i-wr̥* > H *šāwar* 'sullenness, anger'. Craig Melchert insists to me, however, that H *šāwar* means only 'anger' and must be separated from H *šāi-^{zi}* 'to become sullen'. It does not seem so difficult to me for the concepts of anger and sullenness to cooccur in the same lexeme, but I cannot offer a better explanation for the Hittite facts.

in °*sád-van-*:[46]

(3.35) a. *adma-sádvan-* ‘meal companion’ (*RV* 6.4.4)

b. *upa-sadvan-* ‘approaching for worship’ (*ĀśvŚr.* 2.5.9)

c. *dru-ṣádvan-* ‘sitting in a tree’ (*RV* 6.3.5)

d. *nr̥-ṣádvan-* ‘dwelling among men’ (*RV* 10.46.1)

e. *pari-ṣádvan-* ‘surrounding’ (*RV* 10.61.13)

This material could support reconstructing a *-*wr̥*-/-*w*(*e*/*o*)*n*- heteroclite.

3.6 Primary adjectives in *-rú(ˀ)-/-lú(ˀ)-* unlikely to be from *-*wr̥*-/-*w*(*e*/*o*)*n*-heteroclites

3.6.1 $\sqrt[*]{d^heh_1(i)}$ ‘to suck’

The form *dhārú-* ‘sucking, suckling’ appears once in *AVŚ* 4.18.2 = ⁺*AVP* 5.24.2 and is reported by P 3.2.159.

(3.36) *AVŚ* 4.18.2 (= ⁺*AVP* 5.24.2)

yó devāḥ kr̥tyā́m kr̥tvā́ ' hárād áviduṣo gr̥hám |

vatsó ***dhārúr*** *iva mātáraṃ ' táṃ pratyág úpa padyatām ||*

‘O Gods, whoever, having performed witchcraft, should bring it to the home of one unaware,

let (the witchcraft) go back to him like a **suckling** calf to its mother.’

This form has long been closely connected to Gr. θῆλυς M/F ~ θήλεια F ~ θῆλυ N ‘female’ < *d^heh_1-*lu-* and perhaps to L *fēlīx* ‘fruitful, fortunate’ < *d^heh_1-*l(w)-i* (the L data is ambiguous; *AiGr* II 2: 860 §689aβ; *EWA*: *s.v. dhārú-*; *EDL*: *s.v.* fēlīx, -īcis *inter alios*). Beyond these, there are numerous

[45] See Vine (1999: 10) for this reconstruction and discussion of Greek *schwa secundum*.

[46] With *EDH*: *s.v.* $^{(GIŠ)}$*ḫašdwer-*, I do not think H $^{(GIŠ)}$*ḫašdwer-* ‘twigs, brushwood’ can be derived from *h_2o-sd-wer-* ‘whereupon (birds) sit’ with certainty, *contra AHP*: 63, 134, Rieken (1999: 347), and *NIL*: 591, 594[10].

forms with *-*l*- suffixes: Gr. θηλή́ ‘breast, nipple’ < *$d^{h}eh_1$-*l*-*éh*$_2$, Cl.Arm. *dal* ‘colostrum, beestings’ < *$d^{h}h_1$-*l*-*y*(*e*)h_2- (*EDAIL*: *s.v. dal*), Lt. *dėlẽ* ‘leach’ *$d^{h}eh_1$-*l*-*eh*$_2$-, L *fēlāre* ‘to suck’ *$d^{h}eh_1$-*l*-*eh*$_2$-*yé*- to give a few. If *dhārú*- and θῆλυς are cognate, as seems likely, *dhārú*- probably gained its oxytone accent from an earlier **dhā́ru*- following the pervasive *-*ú*-stem oxytonesis in Sanskrit. Note also the opposite valencies of θῆλυς ‘female ↜ *one giving suck’ and *dhārú*- ‘sucking’. Given the lack of any related *-*wr̥*-/-*w*(*e*/*o*)*n*-heteroclite forms, this *-*rú*-stem is best derived from *-*lu*-.

3.6.2 *$\sqrt{peh_3}$ ‘to drink’

As discussed in §3.5.1, there is no form *perú*- meaning ‘drinking’. While there are some forms in °*pā́van*- ‘drinking’ (3.37), these may easily be derived productively from compounds in °*pā́*- ‘drinking’ like *suta-pā́*- ‘drinking soma’ (*RV*), *soma-pā́*- ‘drinking soma’ (*RV*).[47]

(3.37) a. *asr̥k-pā́van*- ‘drinking blood’ (*AVP* 4.13.6 = *AVŚ* 2.25.3, *VS* 6.19)

b. *gharma-pā́van*- ‘drinking hot milk’ (*VS* 38.15)

c. *ghr̥ta-pā́van*- ‘drinking ghee’ (*AVP* 18.17.4 = *AVŚ* 13.1.24, *VS* 6.19)

d. *vasā-pāvan*- ‘drinking fat’ (*VS* 6.19)

e. *suta-pā́van*- ‘drinking soma’ (*RV*)

f. *soma-pā́van*- ‘drinking soma’ (*RV*)

Besides these forms, Vop. mentions ᵍ*supīvan*- ‘drinking well’ while discussing P 3.2.74. All in all, none of these forms points to an inherited *-*wr̥*-/-*w*(*e*/*o*)*n*-heteroclite.

3.6.3 *$\sqrt{k^{w}ey}$ ‘to observe’

There are several forms *céru*- ‘observant?’ (*RV* 8.61.7), *nicerú*- ‘observant?’ (*RV* 1.181.5), *máhikeru*- ‘greatly observant?’ (*RV* 1.45.4)[48] of difficult meaning. The present consensus (*AiGr* II 2: 860 §689aα; *EWA*: *s.v. céru*-; *J&B*$^{Com.}$: *ad* I.45.4, I.181.5, VIII.61.7) takes them tentatively with the

[47]For discussion of the productivity of *-van*- ~ *-varī*- in this root and in general, see Scarlata (1999: 315, 740–742), Tucker (2019), and Chapter 4.

verb $\sqrt{cay}$ 'to observe' < PIE $\overset{*}{\sqrt}{k^wey}$ (whence Gr. τίω 'to esteem, respect', OCS *čajati* 'to expect').[49] There is no support known to me for *-*wr̥*-/-*w*(*e*/*o*)*n*- heteroclite forms in either Sanskrit or elsewhere in Indo-European, so these forms may derive from *$k^{wó}$/*éy-Lu*- as easily as from *$k^{wó}$/*éy-wr̥*-.

3.6.4 $\overset{*}{\sqrt}{\acute{k}h_2ed}$ 'to fall'

P 3.2.159 gives the form ^{G}*śadru*- 'liable to fall, unstable', which could be mechanically reconstructed as *$\acute{k}h_2$éd-wr̥*-, but I can find no exact morphological cognates. Latin does have *cadāver* 'corpse', which I argue in §4.3 to be from *$\acute{k}h_2$d-éh_2-wr̥*, but it is of the productive *-éh_2-wr̥*-/-*w*(*o*)*n*-type. Unless we are dealing with a marginal example of the *śmáśru*- vs. °*śmaśāru*- pattern (§3.4.1), these must be considered separate formations. If ^{G}*śadru*- has any reality, it may be modeled on ^{G}*sadru*- 'sitting, stable' (§3.5.5).

3.6.5 $\overset{*}{\sqrt}{\acute{k}ey(h_x)}$ 'to lie'

The form ^{G}*śeru*- 'dozing, sleeping' < *$\acute{k}$éy(h_x)-wr̥*- appears only in the grammatical tradition (P 3.2.159) but does find some support for cognate *-*wr̥*-/-*w*(*e*/*o*)*n*-heteroclite forms. In Vedic, we find multiple compounded forms of *$\acute{k}ih_x$-wer-ih_2*- > °*śī́varī*- (3.38), which match ^{G}*śīvan*- 'boa constrictor' (Ujjv.*Uṇādis.* 4.113) < *$\acute{k}ih_x$-wen*-.

(3.38) a. *uttāna-śī́varī*- 'lying spread' (*AVP* 7.11.1 = *AVŚ* 3.21.10)

b. *upa-śī́varī*- 'lying near' (*MS* 2.13.16)

c. *talpa-śī́varī*- 'lying in bed' (*ṚV* 7.55.8)

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[48] *MS* 2.5.1 has a man's name *úpa-keru*-, but *KS* 13.1 transmits it as *upa-ketu*-. Given the uncertainty of the form compounded with the difficulties of onomastic etymology, I will leave these aside.

[49] This construction form *LIV*^{2}: *s.v.* 1.*$k^{\mu}e\underset{\frown}{i}$-. But *EDSIL*: *s.v.* *čàjati and *EDG*: *s.v.* τίω argue in favor of a root shape $\overset{*}{\sqrt}{k^weh_1i}$ on the basis of the Slavic accentuation, Gr. πολύ-τῑ-τος 'highly honored' < *°k^wih_1-to*- < *°k^wh_1i-to*-, and a general distaste for reconstructions involving Narten grades. If one were to reconstruct *$k^{wó}$/*éh_1i-wr̥*-, *céru*- would still be the expected outcome.

d. *prati-śī́varī-* ‘lying close’ (*AVP* 17.4.5 = *AVŚ* 12.1.34, *TS* 1.4.40.1)

e. *vahya-śī́varī-* ‘lying on a litter’ (*AVP* 4.6.3 ≈ *AVŚ* 4.5.3)

Yet the *seṭ* character of this root is problematic, and the root is normally reconstructed $\overset{*}{\sqrt{\acute{k}ey}}$ (*LIV*^{2}: *s.v.* 1. $\hat{k}e\underset{\circ}{i}$-). Indeed, *LIPP*: vol. 2, 414 & n^{56} suggests that $\overset{*}{\sqrt{\acute{k}ey}}$ ‘to be here ⇝ to lie’ may be extracted from the deictic stem **ḱey-* ‘here’ without a final laryngeal. Also, Ved. *níśitā-* ‘night’ (*TS* 2.2.2.2–3), if related, could point to either **ní-ḱi-t-eh$_2$-* ‘lying down (time)’ but also **ní-ḱh$_x$-t-eh$_2$-* ‘bedding down (time)’ from $\overset{*}{\sqrt{\acute{k}eh_x}}$ ‘to sleep’ (cf. perhaps Gr. κῶμα ‘deep sleep’ if from **ḱóh$_x$-mn̥*; *EWA*: *s.vv. níśitā-, ŚAY$^{\text{I}}$, ŚĀ*). If $\overset{*}{\sqrt{\acute{k}eh_x}}$ ‘to sleep’ did exist, it may have become conflated with $\overset{*}{\sqrt{\acute{k}ey}}$ to create $\overset{*}{\sqrt{\acute{k}eyh_x}}$ in the prehistory of Indo-Aryan. The forms $^{\mathcal{G}}$*śīvan-* and °*śī́varī-* could also have been built to the verbal noun °*śī́-*, though the compounds in °*śī́varī-* do not share any first members in common with the attested compounds in °*śī́-*. Regardless, something innovative seems to have occurred in Indo-Aryan.

Outside of Sanskrit, Goth. *heiwa-frauja* ‘master of the family’, ON *hjón*, *hjún* ‘man and wife’ PL, OE *hīwan*, OF *hīuna* ‘members of the house’ PL, OS *hīwa*, OHG *hīūn* ‘spouse, family member’ < PGerm. **hīwan-* ‘spouse, married couple’[50] could come from *ḱih$_x$-won-* or *ḱey-won-* (*HGE*: *s.v.* *xīwan; *OFED*: *s.v.* -higen; *EDPG*: *s.v.* **hīwōn-*). The Germanic evidence is unclear, however, because Indo-European possesses several formations to $\overset{*}{\sqrt{\acute{k}ey}}$ ending with **-w-* (e.g., L *cīvis* ‘citizen’, Ved. *śéva-* ‘dear’, Lv. *siẽva* ‘wife’), and because Germanic productively builds animate **-n-*stems, allowing for a reconstruction like **ḱey-w-on-*. Overall, the existence of this heteroclite is unclear.

3.6.6 $\overset{*}{\sqrt{d^{h}eh_1}}$ ‘to put’

The root $\sqrt{dhā}$ ‘to put’ does attest forms with *-van-* and *-vat-* in *RV* (*sva-dhā́van-*, *sva-dhā́vat-* ‘possessing self-endowed authority’) and *-lu-* and *-vat-* in later material (*śrad-dhālu-* (*BhāgP* 3.8.9, 11.11.23, 11.20.28), Pk. *saddhālu-*, *śrad-dhāvat-* ‘faithful’ (*BhāgP* 5.16, *Kathās.* 101.108)). None of this points to an inherited heteroclite, however, since as Scarlata (1999: 262–265) has demonstrated,

[50]For the semantics, compare Gr. ἄκοιτις ‘wife’ < **sm̥-ḱoy-ti-s* ‘lying together (with)’.

the bases of *sva-dhā́-* 'self-endowed authority' and *śrad-dhā́-* 'faith' are not root nouns but **-éh₂-* abstracts, respectively **swe-dʰh₁-éh₂-* and **ḱred-dʰh₁-éh₂-*. Thus these *-van-*, *-vat-*, and *-lu-* fall into the productive extension of **-éh₂-*stems discussed above and in Chapter 4.

The hapax *śraddhivám* (RV 10.125.04d) does not represent **ḱred-dʰh₁-wó-*. I take it instead as a nonce formation in service of the "extreme phonetic figure" recognized by recognized by Watkins (1995: 111). The context for this form is a pāda at the center of a hymn to the goddess Speech: RV 10.125.04d ***śrudhí śruta śraddhivám te vadā***mi 'Listen, o you who are listened to: it's a trustworthy thing I tell you.' (tr. J&B: *ad loc.*). Watkins claims that:

> "the hidden message of the goddess Speech to the poet . . . is an exhaustive classification of the speech sounds of the Vedic language, with one example of each class: the vowels *a i u* and a single icon each of the oppositions of quantity (*a* : *ā*) and nasalization (*a* : *aṃ*); a single sibilant *ś*; a single liquid *r*; a single semi-vowel (glide) *v*; a single nasal *m*; and a single order of stops, the dentals *t d dh* as tokens of the oppositions of voicing (*t* : *d*) and aspiration or murmur (*d* : *dh*)."

Thus, the root $\sqrt{dhā}$ shows no apparent evidence in Sanskrit for an inherited heteroclite.

3.7 Non-primary adjectives in *-rū́-/-lū́-*

As discussed in Chapter 2, most of the *-rū́-* and *-lū́-*adjectives appear to be productively built to *-ā-* stems from **-éh₂-*. Since many of these forms were likely created analogically, I shall not treat each of them in detail. There are a few forms, however, which stand out from the others either because of the lack of any apparent base within Sanskrit or because they appear early in the language.

3.7.1 *śarā́ru-* 'horny'

As already reported in P 3.2.173, the hapax *śarā́rus* (RV 10.86.9) has been taken to mean 'destructive, harmful, noxious, etc.' and derived from $\sqrt{śar^{i}}$ 'to destroy' < $\sqrt[*]{ḱerh_2}$ 'to shatter' (whence also Gr. κεραΐζω 'to plunder'; LIV²: *s.v.* 1. **ḱerh₂-*). The context is the enigmatic hymn RV 10.86, a dialogue between Indra, his wife Indrāṇī, and the monkey Vṛṣākapi wherein Vṛṣākapi makes

many vulgar remarks about Indrāṇī using a unique palette of sexual terminology.[51] Indrāṇī uses the epithet *śarā́ru-* of Vr̥ṣākapi when describing him making a pass at her, and for this reason, a meaning like 'destructive', 'noxious', or even 'homewrecker' could serve. Given the overwhelming sexual context of the hymn, I believe a meaning of 'horny' or 'horned up' would serve far better.

(3.39) *RV* 10.86.9

avī́rām iva mā́m ayáṃ ' ***śarā́rur*** *abhí manyate* |

utā́hám asmi vīríṇī ' *índrapatnī marútsakhā* ' *víśvasmād índra úttaraḥ* ||

'[Indrāṇī:] "This **horny** creature has designs on me, as if I lacked a man [/hero].

And I have a man [/hero]—with Indra as husband and the Maruts as companions." –

Above all Indra!'

(tr. after *J&B*: *ad loc.*)

But how could this word mean 'sexually aroused'? I use the translations 'horny' or 'horned up' very specifically since I believe this word comes specifically from PIE **ḱer-h₂-* 'horn; head', which has been discussed in detail by Nussbaum (1986). Under my analysis, *śarā́rus* would derive from **ker-éh₂-wr̥-s* 'having horn(s)' and find exact cognates in H $^{(SI)}$*karāwar* ~ *karaun-* 'horn(s), antler(s)' < **kr-éh₂-wr̥* ~ **kr-éh₂-un-* (Nussbaum 1986: 31–34; *EDH*: *s.v.* $^{(SI)}$*karāwar* / *karaun-*) and, I would also propose, Gr. κεραυνός 'thunderbolt, lightning' < **ḱer-(e)h₂-un-ó-*. The alternation between the derivational stems **ḱér-eh₂-* and **ḱr̥-éh₂-* need not pose any issue, as both forms must be reconstructed for PIE and reflexes of both appear within Gr.: κέρᾱ (*Il.*+), Myc. *ke-ra* vs. κάρᾱ (*Il.*+) 'horn' (Nussbaum 1986: 44–46, 107–110).[52]

Yet the semantics of these cognations require some more explanation. While Eng. *horny* and *horned up* 'sexually aroused' do provide a nice parallel for *śarā́ru-*, these English meaning is not

[51] For further discussion of this text as an oblique reference to the Vedic kingship ritual, the Aśvamedha, see Jamison (1996: 74–88).

[52] The reconstruction **ker-éh₂-wr̥-s* for Ved. *śarā́rus* must contain a conflation of the root full-grade of **ḱér-eh₂-* and the oxytone accentuation of **ḱr̥-éh₂-*, indeed just as Gr. κάρᾱ contains the reverse situation, root zero-grade and barytone accentuation.

old[53] and does not represent a shared semantic inheritance. Fortunately, there is evidence in Sanskrit for the same development occurring: the term *śŕ̥ṅga-* 'horn' *RV* (which incidentally comes from the same root for 'horn', *ḱŕ̥-n-g-o-*) has a derivative *śr̥ṅgāra-* that means 'beautiful' in *MBh.* but also is the technical term for erotic emotions in the Indic typology of poetic *rasa*-s 'flavors; emotions'. *śr̥ṅgāra-* has this erotic sense thereafter in *R* 1.4.8, Kāvya literature, and *Rājat.*.

(3.40) *R* 1.4.8 (Vālmīki teaches Kuśa and Lava, the sons of Rāma and Sītā, the Rāmāyaṇa itself)
*hāsya**śṛṅgāra**kāruṇyaraudravīrabhayānakaiḥ* |
bībhatsādirasair yuktaṃ kāvyam etad agāyatām ||
'(The two sons) sang this poem furnished with amusement, **eroticism**, compassion, anger, heroism, terror, disgust, etc.'

This shows that the Indo-Aryan tradition was capable of the metaphorical extension of words for 'horn'. Furthermore, words for 'horn' often function as epithets for the male member (e.g., Ir. *adhard* 'horn; erection') and give rise to other sexually charged terminology (e.g., It. *cornuto* 'horned; cuckold').

As for the proposal that Gr. κεραυνός 'thunderbolt' comes from **ḱer-(e)h₂-un-ó-* 'having horns', I suggest that the term refers to the branching, antler-shaped appearance of lightning. Like *śarā́ru-*, κεραυνός is also normally taken from $\sqrt[*]{ḱerh_2}$ 'to shatter' (Benveniste 1935: 112; *GEW*²; *DELG*²; *EDG*: *s.v.*) and could have been assisted by the semantic interference of this root just as in the case of *śarā́ru-*.

Another issue arises from the etymology for *śarā́ru-* proposed here: the metathesis of **wr̥* > **ru* should not have occurred after a preceding **r*, or at least not in Vedic. Yet an appeal to dialectal terminology may be appropriate here given the low register of the vocabulary. As with **sneh₁-wr̥* giving both Pā. *nhāru* and AMāg. *ṇhāü* 'sinew', we may be dealing with a loanword from a dialect which allows metathesis after a preceding **r*.

[53]The Oxford English Dictionary lists the first usage of *horny* meaning of "sexually excited; lecherous" in 1889 (*horny, adj. and n.* 1989).

3.7.2 *dayālu-* ‘charitable’

As seen in (2.20), a few forms in *-ālu-* seem to be derived from verbal stems (*patayālú-* ‘flying’ ⇐ *patáya-* ‘to fly’, *ǵr̥hayālu-* ‘grasping’ ⇐ *gr̥bháyant-* ‘grasping’, *spr̥hayālu-* ‘desirous’ ⇐ *spr̥haya-* ‘to desire’). As suggested in that discussion, these forms seem to match the periphrastic perfect constructions which use a verbal stem + *-ā́m* F.ACC.SG with $\sqrt{kar}$ ‘to do’, $\sqrt{as}$ ‘to be’, and $\sqrt{bhū}$ ‘to become’ (Whitney 1889: 392–394 §§1070–1073; *AiGr* II 2: 252–259 §143; Kümmel 2000: 61–63), but I have yet to adduce a formal point of contact between these periphrastic perfects and the *-lu-* forms. In fact, the forms *dayā́-* ‘dole, pity’ (*ŚB* 14.8.2.4), *dayālu-* ‘charitable’ (P 3.2.158, *MBh.* 8.67.3, *BhāgP*), Pk. *daālu-* ‘charitable’, *mahādayālu-* ‘very charitable’ (*MBh.* 13.17.98), and *dayāvat-* ‘charitable’ (*MBh.*) provide just such a connection.

The noun *dayā́-* serves double duty in (*ŚB* 14.8.2.4) as a lexical noun meaning ‘dole, pity’ and in *MBh.* 7.41.13ab as part of a periphrastic perfect:

(3.41) *MBh.* 7.41.13ab

bhaktānukampī bhagavāṃs tasya ***cakre*** *tato* ***dayām*** |

‘Please with his own share, the venerable (god) **pitied/had pity on** him then.’

dayā́- < **dh₂-ey-éh₂-* is built to the present stem *dáyate* ‘to divide, dole out; have pity on’, which has a perfect cognate in Gr. δαίομαι ‘id.’, both from **dh₂-éye-* (*LIV*²: *s.v.* **deh₂(i̯)-*; Lubotsky 2011: 113–114). While *dayā́-* appears first in *ŚB*, *adayá-* ‘without mercy’ is found in *ṚV* 10.103.7 and could be reconstructed as **n̥-dh₂-ey-h₂-ó-* (though **n̥-dh₂-ey-ó-* cannot be excluded).

(3.42) *ṚV* 10.103.7

*abhí gotrā́ṇi sáhasā gā́hamāno ◡́ ᵃ****dayó*** *vīráḥ śatámanyur índraḥ* |

duścyavanáḥ pr̥tanāṣā́ḷ ayudhyó ◡́ ᵃsmā́kaṃ sénā avatu prá yutsú ||

‘Plunging toward the cowpens with overwhelming strength, the hero **without mercy**,
Indra of the hundredfold battle-fury,
difficult to shake, overwhelming in battle, impossible to combat—let him further our
armies in the combats.’

(tr. *J&B*: *ad loc.*)

This *-*éh*$_2$-abstract to a present stem provides not only the base for *dayālu-* (Pk. *daālu-*) < **dh*$_2$*-ey-éh*$_2$*-wr̥-* and *dayāvat-* < **dh*$_2$*-ey-éh*$_2$*-wen-t-* but also the elusive link from the periphrastic perfect construction to the system of *-*éh*$_2$*-wr̥-/-w(o)n-*derivation.[54]

3.7.3 *patayālú-* 'flying'

The word *patayālú-* 'flying', the oldest and only accented *-ālú-* form in Sanskrit, appears once in *AVŚ* 7.115.2 and the entirely parallel *AVP* 20.18.8. For its single appearance, the form will receive an extended treatment here because it possesses previously unidentified cognate forms in Gr. πετεηνός 'flying, winged' (*Il.*+) and its dialectal variants and Gr. πέτευρον 'bird's perch; acrobat's springboard' (Theoc.+).[55] A reconstruction **peth*$_{1/2}$*-ey-éh*$_2$*-wr̥-* ~ **peth*$_{1/2}$*-ey-éh*$_2$*-wen-* could serve as the ancestor for Ved. *patayālú-* as well as those in (3.43).

(3.43) **peth*$_{1/2}$*-ey-eh*$_2$*-wen-ó-s* > **petāwenós* >

a. πετεηνός (*Il.*+)
b. πετεεινός (*AP*)
c. πετεινός (Aesop.+)
d. πετηνός (A.*Th.*+)
e. ποτᾱνός (Pi.*P*, Pi.*N*)
f. ποτηνός (Pi.*P* 5.114,[56] Pl.*Phdr.*)
g. πτηνός (Aesop.+)
h. πτᾱνός (A.*A*+)

[54]It is also conceivable that we are dealing with a *-*y-éh*$_2$-suffix of the type favored by Sasseville (2020b) for Sanskrit and Luwian. Under such an analysis, *dayā́-* would reflect something like **dh*$_2$*-e-y-éh*$_2$*-*.

[55]Benveniste (1935: 112) has already suggested a derivation from a heteroclite built to $\sqrt[*]{peth_{1/2}}$ for this word. There is a form πέταυρον attested in Apollod.Dam. (2nd c. CE) and later, but it is hard to imagine a Doricism retaining an inherited -α-vocalism would survive unattested for so long only to reappear; more probably, this is a hyperdoricism. Both forms could come from **peth*$_{1/2}$*-ey-eh*$_2$*-ur-o-* 'place of flying'.

[56]Forssman (1966: 153–154) suggests that the single use of ποτηνός in Pindar cannot be explained as a Attic-Ionic form introduced accidentally into the text during transmission because the literary form ποτηνός is much less frequently attested than Pindar's normal form ποτᾱνός. He can find no reason, however, to differentiate Pindar's usages of ποτᾱνός and ποτηνός semantically or syntactically and concludes that the true origin of the variation is lost to us.

This strange array of dialectal forms have been mustered before, as in Chantraine (1933: 206), *GEW*^{2}: *s.v.* πέτομαι, *EDG*: *s.v.* πέτομαι, and *DELG*^{2}: *s.v.* πέτομαι. These Gr. forms can be analyzed in several different ways: by the grade of the root, by the vocalism of the suffix, and by the presence of vowel hiatus in the suffix. When dividing them by root vocalism, Detschew (1936: 228) has suggested that those forms with root **o-* and zero-grade may go back to old τομή forms. ποτή 'flight' is attested in *Od.* 5.337 and could provide a a source for ποτᾱνός, ποτηνός, πτηνός, and πτᾱνός, if from **p(o)th$_{1/2}$-éh$_2$-* (whence also ποτάομαι < **poth$_{1/2}$-éh$_2$-ye-*). Given the age of these attestations, these could go back to **p(o)th$_{1/2}$-eh$_2$-wen-ó-* with no trace of the intervocalic **-w-* retained. In this way, the forms with root **e*-grade (3.43a–3.43d) may be separated from the rest (3.43e–3.43h). There are advantages and disadvantages to separating out the **e*-grades, however. On the upside, separating the vocalisms would mean that the ποτ- ~ πτ- alternation would fall category of zero-grades replaced by *o*-grades discussed by Penney (1978: 310–326) and leave the πετ- forms as a separate formation. On the downside, the root **e*-grade forms would no longer possess evidence for original **-ā-* in the suffix (a theoretical issue only for the equation of πετηνός and *patayālú-*). More difficult, however, is the semantic identity between the usage of Homeric πετηνός and Pindaric ποτᾱνός discussed below and the recurrence of the rare suffix -ᾱνός ~ -ηνός in two sets of synonymous forms. It seems better to assume that πετ- is original and that πτ- is formed analogically in the same was as the zero-grade future πτήσομαι beside full-grade πετήσομαι. Conversely, ποτ- must be analogical to ποτάομαι.

The spellings πετεινός and πετηνός looks like the outcomes of a contraction, while Hom. πετηνός and πετεεινός, attested in later grammarians, scholiasts, and anthologies, must be (pseudo-)epicisms. But how do we account for πετηνός and πετεεινός? These cannot be *lautgesetzlich* outcomes of **petāwenós* > pre-Att.-Ion. **petēwenós* > ˣπετηνός as the quantitative metathesis from **ēe* > ει, is not the normal type of quantitative metathesis found in Greek, which only occurs in **ēa*, **ēo* > εᾱ, ευ (e.g. Hom. βασιλῆα > Att. βασιλέᾱ 'king' ACC.SG, Hom. νηός > Att. νεώς 'temple' NOM.SG; *Schwyzer* I: 245–246; Chantraine 1973: 68–73; Rix 1976: 57). It may instead have been motivated by the unacceptable metrical shape of a GEN.PL **πετηενῶν < **petāwenóon*, with is final cretic (— ∪ —) could not fit anywhere in a hexameter line. The GEN.PL πετηνῶν would be the source of the new stem πετην- as it appears as 9 of the 10 attestations of πετηνό-

in Homer (*Il.* 8×, *Od.* 1×). The usages and positions of πετεηνῶν have all the hallmarks of an old formulation with 7 attestations at line end and 2 before the bucolic diaeresis. Furthermore, the GEN.PL consistently functions as a partitive genitive in superlative constructions describing eagles and other raptors (3.44) and constructions with ἔθνος 'clan' describing groups of birds (3.45).

(3.44) a. *Il.* 8.247 (= *Il.* 24.315):

τελειότατον **πετεηνῶν**

'[the eagle], most absolute **of flying (omens)**'

b. *Il.* 17.675:

ὀξύτατον δέρκεσθαι ὑπουρανίων **πετεηνῶν**

'[the eagle, whom they say] sees keenest **of those flying** under heaven'

c. *Il.* 21.252–253:

αἰετοῦ οἰμᾳτ' ἔχων μέλανος τοῦ θηρητῆρος,
ὅς θ' ἅμα κάρτιστός τε καὶ ὠκιστος **πετεηνῶν**

'[Achilles rushed back] with the swoop of a black eagle, the hunter
who is both strongest and fastest of **flying things**.'

d. *Il.* 22.139 (= *Od.* 13.87):

ἐλαφρότατος **πετεηνῶν**

'[a hawk,] swiftest **of flying things**'

(3.45) a. *Il.* 15.690–692:

ἀλλ' ὥς τ' ὀρνίθων **πετεηνῶν** αἰετὸς αἴθων 690
ἔθνος ἐφορμᾶται ποταμὸν πάρα βοσκομενάων
χηνῶν ἢ γεράνων ἢ κύκνων δουλιχοδείρων

'But as onto a flock **of flying** birds the fiery eagle
rushes as they are feeding beside a river,
geese or cranes or long-necked swans, . . . '

b. *Il.* 2.459–461:[57]

τῶν δ', ὥς τ' ὀρνίθων **πετεηνῶν** ἔθνεα πολλά

χηνῶν ἢ γεράνων ἢ κύκνων δουλιχοδείρων 460
Ἀσίῳ(ι) ἐν λειμῶνι Καϋστρίου ἀμφὶ ῥέεθρα

‘And of them, as the many flocks **of flying** birds,

geese or cranes or long-necked swans

on the Asian meadow beside the streams of Caystrius, . . . ’

Only *Od.* 16.218 has πετεηνά N.NOM.PL, which could come from a metrically acceptable *πετηενά, but this form spans the bucolic diaeresis, implying a newer formulation. As Brent Vine has suggested to me, πετεηνός could be an adjustment of πετηνός in the *Kunstsprache* modeled after words like κλεηδών (*Od.*+) vs. κληδών (A.*A*+) ‘omen’ (in a very similar meaning!) to solve the metrical problems posed by *πετηενῶν and πετηνῶν.

Beyond the formal similarity of the forms in (3.43) and *patayālú-*, I argue that the context of the latter’s use in *AVŚ* 7.115.2 (= *AVP* 20.18.8) closely matches similar usages in Ancient Greek as part of an inherited augurial formula. In both traditions, I will argue, *patayālú-* and πετεηνός are associated with fortunate omens and black, taloned birds.

(3.46) a. *AVŚ* 7.115.1 (≈ *AVP* 20.18.7)
prá patetáḥ pāpi lakṣmi ' náśyetáḥ prā́mútaḥ pata |
ayasmáyen[a]āṅkéna ' dviṣaté tvā́ sajāmasi ||

‘Fly away from here, evil omen. Disappear from here. Fly away yonder.

By a metal hook we fix you to the hater.’

b. *AVŚ* 7.115.2 (= *AVP* 20.18.8)
*yā́ mā lakṣmī́ḥ **patayālū́r** ájuṣṭā ' abhicaskánda vándaneva vṛkṣám |*
anyátrāsmát savitas tā́m itó dhā ' híraṇyahasto vásu no rárāṇaḥ ||

‘What **flying** omen, unwanted, has alit on me, like a creeper on a tree,

put that far from us, from here, Savitar, gold-handed, granting us gifts.’

[57]The repetition of χηνῶν ἢ γεράνων ἢ κύκνων δουλιχοδείρων opens the possibility that *Il.* 2.459–461 is modeled after *Il.* 15.690–692, which once again describes a swooping eagle.

c. *AVŚ* 7.115.3

ékaśataṃ lakṣmíyò mártiyasya ' sākáṃ tanvà̀ janúṣó 'dhi jātā́ḥ |

tā́sāṃ pā́piṣṭhā nír itáḥ prá hiṇmaḥ ' śivā́ asmábhyaṃ jātavedo níyacha ||

'The mortal has one hundred and one omens[58] born from birth with the body.

The worst of these we send forth away from here. Jātavedas, bind lucky ones to us.'

d. *AVŚ* 7.115.4

etā́ enā́ víyákaraṃ ' khilé gā́ víṣṭhitā iva |

rámantāṃ púṇyā lakṣmī́r ' yā́ḥ pāpī́s tā́ anīnaśam ||

'These I have divided like cattle spread in a wasteland.

Let the auspicious omens stay. Whichever are evil, those I have made disappear.'

While at first my translation of *lakṣmī́-* as 'omen' instead of 'mark, sign' may appear unwarranted, especially given the lack of overt bird terminology beyond the frequent use of words for flight, the ritual instructions for this hymn found in *KauśS* 3.1.16–18 make the avian association explicit.

(3.47) *KauśS* 3.1.16–18

kr̥ṣṇaśakuneḥ savyajaṅghāyām aṅkam anubadhyāṅke puroḍāśaṃ pra patetaḥ iti anāv̥rtaṃ pra pādayati ‖16‖

nīlaṃ saṃdhāya lohitam ācchādya śuklaṃ pariṇahya dvitīyayoṣṇīṣam aṅkenopasādya

[58]The phrase *ékaśataṃ lakṣmyàḥ* 'one hundred and one omens' seems to correspond to the phrase *mr̥tyáva ékaśatam* 'one hundred and one deaths':

(i) *mr̥tyáva ékaśataṃ* (*AVŚ* 8.2.27), *mr̥tyū́n ékaśataṃ* (*AVŚ* 11.6.16) 'one hundred and one deaths'

(ii) *śatám anyā́n pári v̥ṇaktu mr̥tyū́n* 'Let them turn away the other hundred deaths.' (*AVŚ* 1.30.3)

(iii) *vy ànyé yantu mr̥tyávo yā́n āhúr ítarān chatám* 'Let the other deaths go away, which they call 'the other hundred'.' (*AVŚ* 3.11.5)

See Whitney and Lanman 1905: *ad* iii.11.5 for literature.

savyena sahāṅkenāvāṅ apsv apa vidhyati ‖17‖

t̥rtīyayā channaṃ caturthyā saṃvītam ‖18‖

‘Having bound a hook on the left leg of a black bird and on the hook a sacrificial cake, (saying) “Fly away from here” (*AVŚ* 7.115.1), (having turned) to the south(west)[?], he lets it go forth.

Having donned a dark-colored (undergarment), having bedecked (himself) with a reddish (overgarment), having bound around a white (head wrap), with the second (verse, *viz.* *AVŚ* 7.115.2) he puts his head wrap down into the waters, having placed it near (the waters) with the hook, with the hook in his left (hand).

With the third (verse, *viz.* *AVŚ* 7.115.3, he puts down into the waters) the (reddish) overgarment. With the fourth (verse, *viz.* *AVŚ* 7.115.4), the (dark-colored) undergarment.’

Caland (1900: 45[11]) correctly interprets the use of a blackbird here as a scapegoat ritual for the evil *lakṣmī́-* and cites a modern ritual from the Kharwars where a black rooster is similarly affixed with a metal bangle on the leg and loosed as a scapegoat for disease and sin. The attachment of a metal hook in on the leg of the bird not only matches the hook for attaching the evil signs to an enemy in *AVŚ* 7.115.1 but recalls the talons of birds of prey. Slightly more difficult is the interpretation of the word *anāv̥r̥taṃ*, which Caland (1900: 44–45) translates “in südwestlicher Richtung”. He argues for this interpretation under his translation of *KauśS* 3.1.11.

(3.48) *KauśS* 3.1.11:

anāv̥r̥tam āv̥r̥tya sakr̥j juhoti

‘having turned not a full turn (=facing to the south/southwest), (the priest) offers once.’

In a footnote (44[9]), he compares *anāv̥r̥tam āv̥r̥tya* ‘having turned not a full turn’ to *pradakṣiṇam āv̥r̥tya* ‘having turned to the right’ and *prasavyam āv̥r̥tya* ‘having turned to the left’ and assumes that the priest would start facing east and turn an incomplete half-turn to the rightwards direction (135°), leaving the priest facing southwest. *KauśS* 5.3.22–25 also makes use of this idiom in a directional context:

(3.49) *KauśS* 5.3.22–25:

anāvṛtam ‖22‖

agoṣpadam ‖23‖

anudakakhātam ‖24‖

dakṣiṇāpravaṇe vā svayaṃdīrṇe vā svakṛte veriṇe 'nyāśāyāṃ vā ni dadhāti ‖25‖

'(having turned) to the southwest,

to a place without cattle tracks,

to a place without a water ditch,

in (a place) sloping southwards or (a place) having split itself or naturally salty/barren (a place) or in another's abode, (the priest) puts down (the ritual implements).'

The explicit use of *dakṣiṇāpravaṇe* 'sloping southwards' strongly supports the idea that the *anāvṛtam* (*āvṛtya*) 'having turned not a full turn' resulted in a southerly orientation. The direction of this ritual could reflect the pan-Indo-European augurial preference for bird omens occurring in the right field of vision. Since the Vedic priests typically face east towards the rising sun, a bird released to the south(west) would fly propitiously to the right side of the ritual ground. Furthermore, the description of separating the *lakṣmī́-* in *AVŚ* 7.115.4 is reminiscent of this augurial division of the sky.

All of these avian details find striking parallels in two augurial requests for protection in *Il.* 8.245–252 and *Il.* 24.314–321. In both instances, the kings Agamemnon and Priam seek guarantees of safety from Zeus, which he fulfills by sending an eagle, the τελειότατον πετεηνῶν 'most absolute of flying (omens)'.

(3.50) *Il.* 8.245–252 (Zeus heeds Agamemnon's pleas to save the Achaean army)

ὣς φάτο, τὸν δὲ πατὴρ ὀλοφύρατο δάκρυ χέοντα, 245
νεῦσε δέ οἱ λαὸν σόον ἔμμεναι οὐδ' ἀπολέσθαι.
αὐτίκα δ' αἰετὸν ἦκε, τελειότατον **πετεηνῶν**,
νεβρὸν ἔχοντ' ὀνύχεσσι, τέκος ἐλάφοιο ταχείης:
πὰρ δὲ Διὸς βωμῷ περικαλλέϊ κάββαλε νεβρόν,
ἔνθα πανομφαίῳ Ζηνὶ ῥέζεσκον Ἀχαιοί. 250

οἳ δ’ ὡς οὖν εἶδονθ’ ὅ τ’ ἄρ’ ἐκ Διὸς ἦλυθεν ὄρνις,
μάλλον ἐπὶ Τρώεσσι θόρον, μνήσαντο δὲ χάρμης.

‘Thus he spoke, and the father took pity on the one shedding tears,
and he nodded his assent that his army be safe and not perish.
And immediately he sent an eagle, most absolute of **flying (omens)**,
holding in its talons a fawn, offspring of a swift doe.
And beside the splendid altar of Zeus it threw down the fawn
Where the Achaeans often sacrificed to all-oracular Zeus.
And when they saw then that the bird had come from Zeus,
They leapt more so upon the Trojans and heeded their battle lust.’

(3.51) *Il.* 24.314–321 (Zeus heeds Priam’s pleas for his safety retrieving Hector’s corpse)

ὣς ἔφατ’ εὐχόμενος, τοῦ δ’ ἔκλυε μητίετα Ζεύς.
αὐτίκα δ’ αἰετὸν ἦκε, τελειότατον **πετεηνῶν**,
μόρφνον θηρητῆρ’, ὃν καὶ περκνὸν καλέουσιν.
ὅσση δ’ ὑψορόφοιο θύρη θαλάμοιο τέτυκται
ἀνέρος ἀφνειοῖο, ἔϋ κληΐσ’ ἀραρυῖα,
τόσσ’ ἄρα τοῦ ἑκάτερθεν ἔσαν πτερά: εἵσατο δέ σφιν
δεξιὸς ἀΐξας διὰ ἄστεος. οἳ δὲ ἰδόντες
γήθησαν, καὶ πᾶσιν ἐνὶ φρεσὶ θυμὸς ἰάνθη.

‘Thus he spoke, praying, and Zeus the counselor heard him.
And immediately he sent an eagle, most absolute of **flying (omens)**,
the hunter μόρφνος, which they call “dusky/spotted” also.
And as wide is the door of high-roofed treasury
of a wealthy man, — a door well-fitted with bolts —,
so wide were its wings on either side. And it appeared to them
on the right, darting across the city. And seeing it,
they rejoiced, and in all their breasts the soul warmed.’

The first of these parallel passages depicts an eagle in its characteristic behavior as a raptor,

gripping a fawn in its talons, while the second explicitly described the eagle as broad-winged, dark-colored,[59] and flying on the right side — both Iliadic passages strikingly similar to the *kr̥ṣṇaśakuni* 'black bird of omen' with a hook bound to its leg in *KauśS* 3.1.16–18. The employment of πετηνός with eagles in their capacity as long-winged and long-taloned hunters mirrors the usage of πτηνός in A.*Pr.* 1021 and ποτᾱνός in Pi.*P* 5.114 and Pi.*N* 3.80, showing the apparent synonymy of meaning and usage between these dialectal variants.

(3.52) A.*Pr.* 1021–1025

. . . Διὸς δέ σοι
πτηνὸς κύων, δαφοινὸς αἰετός, λάβρως
διαρταμήσει σώματος μέγα ῥάκος,
ἄκλητος ἕρπων δαιταλεὺς πανήμερος,
κελαινόχρωτον δ' ἥπαρ ἐκθοινήσεται. 1025

Hermes addresses bound Prometheus:

'Then, Zeus' **flying** hound, the blood-red eagle, will violently cut off a great piece of your body, stealing up unbidden as an all-day banqueter, and it will

[59]The interpretations of μόρφνον and περκνόν in *Il.* 24.316 are somewhat difficult. μόρφνος appears only here in Homer and later as a term for eagles (Hes.*Sc.* 134, Lyc.*Alex.* 838) and in later grammarians (Hdn., *Soud.*), where it its glossed μέλας 'black'. I am inclined to follow the suggestion of *EDG*: *s.v.* μόρφνος that μόρφνος should mean 'dark-colored' and be compared to ὀρφνός 'dark' < **h₁r̥gʷ-s-nó-*. To me, this seems to be a **-s(-)no-*adjective **mr̥gʷ-s(-)no-* built to the 'bird' word **mr̥gʷ-ó-* (cf. Ved. *mr̥gá-* 'bird, beast', YAv. *mərᵊγa-* 'bird'). Note also the frequent use of **-s(-)no-* suffixes in words referring to light and dark: **h₁r̥gʷ-s-nó-* > Gr. ὀρφνός 'dark'; **kr̥snó-* > Ved. *kr̥ṣṇá-*, Lt. *kiršna-*, OCS *črŭnŭ* 'black'; PC **dusno-* > OIr. *donn* 'brown'; **luk-sno-* > Gr. λύχνος 'lamp'; **lowk-sneh₂-* > L *lūna*, Cl.Arm. *lusin* 'moon', YAv. *raoxšnā-* 'light', OPrus. *lauxnos* 'stars' PL, OCS *luna* 'moon'.

περκνόν can also mean 'dark-colored' as in ripe grapes or olives, though it comes from **p(e)rḱ-no-* 'speckled', whence also Ved. *pr̥śni-* 'speckled', OIr. *erc* 'perch; salmon'. In support of the 'dark-colored' meaning is also *Il.* 21.252–253, where an eagle is described as μέλανος 'black' with a reuse of the word θηρητῆρος 'hunter' as in the line under discussion (see (3.44c) for a full translation).

feast on your black-colored liver.'

(3.53) a. Pi.*P* 5.107–115

. . . ἄνδρα κεῖνον ἐπαινέοντι συνετοί:
λεγόμενον ἐρέω:
κρέσσονα μὲν ἀλικίας
νόον φέρβεται 110
γλῶσσάν τε: θάρσος δὲ τανύπτερος
ἐν ὄρνιξιν αἰετὸς ἔπλετο:
ἀγωνίας δ', ἔρκος οἷον, σθένος:
ἔν τε Μοίσαισι **ποτηνὸς** ἀπὸ ματρὸς φίλας,
πέφανταί θ' ἁρματηλάτας σοφός. 115

'This man the wise praise. I will say what is being said: beyond his years, he nourishes his mind and tongue; in courage he is long-winged, an eagle among birds; his contest strength is like a bulwark; **flying** among the Muses because of his beloved mother, he has shown himself a clever charioteer.'

b. Pi.*N* 3.80–83

. . . ἔστι δ' αἰετὸς ὠκὺς ἐν **ποτανοῖς**, 80
ὃς ἔλαβεν αἶψα, τηλόθε μεταμαιόμενος,
δαφοινὸν ἄγραν ποσίν:
κραγέται δὲ κολοιοὶ ταπεινὰ νέμονται.

'Swift among **flying** (birds) is the eagle, which, searching from afar, suddenly seizes its blood-red prey with its talons. But the cackling jackdaws graze the lower regions.'

Through this extended comparative discussion, I have shown that Ved. *patayālú-* and Gr. πετεηνός represent cognates from **peth$_{1/2}$-ey-éh$_2$-wr̥* ~ **peth$_{1/2}$-ey-éh$_2$-wen-*. Unfortunately, H *pitteyawar* 'running, flying', whose only attestation appears in (3.54), likely does not form an exact parallel with the Vedic and Ancient Greek forms. As Melchert (2022: 118–119) has recently argued, the stem of H *piddai-* 'to run, flee, fly' must have come from an old **pth$_{1/2}$-óy-* ~ **pth$_{1/2}$-*

éy- alternation, to which $^{\text{LÚ}}$*pitte(y)ant-* ‘fugitive’ must represent an old participle *$*pth_{1/2}$-éy-ent-*. Without a plene spelling $^{\times}$*pitteyāwar*, we cannot be sure whether *pitteyawar* comes from *$*pth_{1/2}$-ey-$éh_2$-$w̥r$* or is part of the productive class of *-war ~ -waš* verbal nouns built to the weak stem in *-iya-* (e.g. *tiya-war* ⇐ *dai-* ‘to put’, *piya-war* ⇐ *pai-* ‘to give’).[60]

(3.54) KUB 36.75 iii 14–15 (OH/Middle Script, Schwemer 2015: 368–369, 372):
dudduwaranza=kan LÚ-*aš māḫḫan* ***pitteyawar*** *peššiyanun*
‘Like a crippled man, I have given up **running**.’

3.8 The distribution and age of *$*w̥r$ > *$*ru$ metathesis

In the preceding sections, we have seen how Sanskrit-internal and comparative morphological evidence supports the interpretation that many *-$rū̆$-* and *-$lū̆$-*stems derive from the strong cases of inherited PIE *-$w̥r$-/-$w(^{e}/_{o})n$-heteroclites. Four paradigm cells (three endings) provide the source of these innovative *-$rū̆$-* and *-$lū̆$-*stems:

(3.55)

a.	M.NOM.SG	*-$w̥r$-*s*	> *-ru-s*, *-lu-s*	» *-rú-s*, *-lú-s*
b.	M.ACC.SG	*-$w̥r$-*m*	> *-ru-m*, *-lu-m*	» *-rú-m*, *-lú-m*
c.	N.NOM/ACC.SG	*-$w̥r$-∅	> *-ru*, *-lu*	» *-rú*, *-lú*

From these frequently occurring paradigm cells, speakers could build out a complete *-$ū̆$-*stem paradigm. The accentuation of these lemmata, when attested, shows a clear pattern of oxytonesis mostly clearly visible in *$*péyh_x$-$w̥r$-* >(>) *péru-* » *perú-* ‘swelling; fructifying’.

For this account to work, however, there must be some discussion of when phonologically the metathesis was licit and when chronologically it occurred. In the preceding discussion, I have found no examples of *-$w̥r$-* > *-$rū̆$-/-$lū̆$-* in surface $\bar{V}C$__ environments,[61] implying that the crosslinguistic dispreference for superheavy syllables prevented the creation of novel *-$\bar{V}_{\mu\mu}C_{\mu}$.ru-* syllabifications.[62] The only truly clear evidence for this prohibition comes from *$*ḱéh_1s$-$w̥r$* > *śā́sur* ‘order, command’,

[60] I thank H. Craig Melchert (p.c. April 19, 2023) for this observation about the productivity of building *-war ~ -waš* verbal nouns to weak stems.

not ˣ*śā́sru-*/ˣ*śāsrú-* (§3.2.5). Likewise, there are no surface examples of *-Vnru-* or *-Vrru-* as *-nr-* and *-rr-* sequences are nowhere permitted in Sanskrit.[63] Thus **pér-wr̥* becomes *párur* 'joint', not **párru-* > ˣ*pā́ru-*, and **dʰen-wr̥* becomes *dhánur* 'bow', not ˣ*dhánru-*. The only tricky situation arises from *táruṣ-* '(struggle/power to) overcome' < **térh₂-wr̥*: why should it not develop as **térh₂-wr̥* > **térh₂-ru-* > ˣ*tárr̆ru-* or *tā́ru-*? The best solution is probably that of Lubotsky (1994: 100), who noticed that **wr̥* > **ru* metathesis is frequently blocked by a preceding *-r-* (i.e. **térh₂-wr̥* could not metathesize to an illicit ˣ***térh₂-ru-*).

Unfortunately, no information may be gleaned with respect to Indo-Aryan laryngeal vocalization. The only *seṭ* form which can be reconstructed with metathesis is **peyhₓ-wr̥-* 'swelling', but **-ᵒ/ₑyHC-* generally results in monosyllabic Ved. *-eC-* as can be seen in the aorist injunctive of $\overset{*}{\sqrt{bʰeyh_2}}$ 'to fear' (**méh₁ bʰéyh₂-me* > *mā́ bhema* 'we do not fear' 1PL.AOR.ACT.INJ (*RV* 11.2, 8.4.7)) or the development of the thematic optative:

Table 3.2: Thematic PRS.ACT.OPT of $\overset{*}{\sqrt{bʰer}}$ 'to bear'

	PNIE		**Ved.**	
	SG	**PL**	**SG**	**PL**
1	**bʰér-o-yh₁-m̥*	**bʰér-o-yh₁-me*	*bháreyam*	*bhárema*
2	**bʰér-o-yh₁-s*	**bʰér-o-yh₁-te*	*bháres*	*bháreta*
3	**bʰér-o-yh₁-t*	**bʰér-o-yh₁-ent*	*bháret*	*bhárey<u>ur</u>*

Because the Indo-Aryan outcome of laryngeal vocalization was always *$\check{\text{i}}$, the preceding **y* may well have dissimilatorily blocked or assimilatorily absorbed laryngeal vocalization in the environment **Vy__C*.

All of this leads to the conclusion that there are no developments in Indo-Aryan that limit metathesis to that branch alone. Indeed, this is a welcome outcome as (2.2) shows that the effect has occurred sporadically throughout the daughter branches of Proto-Nuclear-Indo-European. One is

[61] Indeed, to my knowledge, there are no *-u*-stems of the shape *-V̄C.Lu-* or *-VC.CLu-* anywhere in the language.

[62] See Cooper (2014) for extensive argumentation in favor of *-VC.CV-* syllabification.

[63] See Nikolaev (2021) for the development *-V̄r-* from **-Vrr-* < **VLHL-*.

struck by the comparative productivity of the metathesis in Sanskrit final syllables beside its dearth in Iranian, where no examples of final *-*wr̥*# > *-*ru*# are known to me. On the other hand, Avestan has regular metathesis of initial **wr* > *ᵘruu* /#__ (Bartholomae 1895a: p. 177; Morgenstierne 1973: pp. 58–59; Cantera 1999).

It is hard to say whether limiting the metathesis to Indo-Iranian has any ramifications for Weise's Law, as discussed in §3.4.3 and Kloekhorst (2011). The evidence for Weise's Law is by its nature difficult to assess since the law replaces palatals with plain velars, so that examples are confined to securely reconstructible root etymologies attested in so-called *satəm* languages. If Kloekhort is right that Weise's Law existed and predated **wr̥* > **ru* metathesis, Weise's Law would remain the only *terminus post quem* known to me. Importantly, **wr̥* > **ru* metathesis is not found in Anatolian. Kloekhorst is somewhat inconsistent on this point. He rightly rejects the cognation of H *išḫaḫru-* 'tear' and *(*dŕ̥k-*)*h*$_2$*ék-wr̥* 'tear' (see §3.4.3 and fn. 15) but uses the metathesis in analyzing H *kutruwan-* 'witness', which he derived from **k*^{w}*ₒtru-en-* < **k*^{w}*et-wr̥-* 'four' + individuating suffix *-*ó*/*ėn-*, supposedly meaning 'the fourth person (at a trial beyond the plaintiff, defendant, and judge)' and compared semantically to L *testis* 'witness' < **tri-sth*$_2$*-s* 'third person standing/present (at a dispute)' (*EDH*: *s.v. kutruu̯an-* / *kutruen-* with lit.). Firstly, the semantics of fourth person at a trial are not as compelling as third person present at (i.e. observing) the dispute under investigation. Secondly, it is impossible to assume that *-*wr-* would metathesize to *-*ru(w)-* (with this syllabification) before a vowel but would not metathesize word-finally in any of the numerous instances of verbal nouns ending in *-*wr̥*# > *-war*/*-ur*. Furthermore, as Craig Melchert advises me (p.c. Jan. 1st, 2022), there is a perfectly good cognate for *kutruwan-* in Lt. *gudrùs* 'cunning, sly' < **g*$^{(h)}$*ud*$^{(h)}$*-ru-*. Interestingly, however, Kloekhorst (2011: 269) claims that **wr̥* > **ru* did not occur in Anatolian, contradicting his etymology in *EDH*: *s.v. kutruu̯an-* / *kutruen-*. If we accept then that **wr̥* > **ru* metathesis did not occur in Anatolian but did occur in Tocharian (Del Tomba 2021), then we have a properly Proto-Nuclear-Indo-European phenomenon.

3.9 Conclusions

This chapter has argued that Sanskrit retains reflexes of the strong forms of the *-*wr̥*-/-*w*(*e*/*o*)*n*-heteroclites in both metathesized and unmetathesized forms. The N.NOM/ACC.SG *-*wr̥* became both *-ur* (*párur* 'knot (or a reed); joint' < **pér-wr̥*) and *-ru* (*áśru* 'tear' < **h*$_2$*ék-wr̥*) according to a set of phonological principles given in (2.3–2.4). Moreover, I have argued that Sanskrit has animate adjectives derived from the heteroclitic strong stems in *-*wr̥-s* ~ *-*wr̥-m*. These could be primary formations (*péru-*/*perú-* 'swelling; fructifying; fat' < **péyh*$_x$*-wr̥-*) or could be built to *-*éh*$_2$-abstracts (*patayālú-* 'flying' < **peth*$_{1/2}$*-ey-éh*$_2$*-wr̥-*). This last category, the *-*éh*$_2$*-wr̥-*/*-w*(*o*)*n*-constructions, will receive further treatment in the next chapter, where I show that they are an inherited category of Proto-Indo-European date.

CHAPTER 4

The morphology and semantics of *-*éh*$_2$-*wr̥*-/-*w*(*o*)*n*-constructions in Indo-European

In the preceding chapters, I have argued that there are reflexes of the strong stem of the *-*wr̥*-/-*w*($^{e}/_{o}$)*n*-heteroclites preserved in Sanskrit in the form of -*rū́*- and -*lū́*-suffixes. While a handful of these are primary formations, that is to say, built directly to the full-grade of the root, the majority of the formations seem to target -*ā*-stems from feminine *-*éh*$_2$-abstracts (*dayā́*- 'dole, charity' ⇒ *dayālu*- 'charitable', *śayā́*- 'resting place' ⇒ *śayālu*- 'sleepy', *śraddhā́*- 'trust' ⇒ *śraddhālu*- 'faithful'). Given this apparent phenomenon, the question remains whether this pattern of derivation of *-*wr̥*-/-*w*($^{e}/_{o}$)*n*-heteroclites from *-*éh*$_2$-stems appears robustly outside of Sanskrit. This chapter will examine the evidence from Sanskrit and other branches of Indo-European (specifically Anatolian, Ancient Greek, Latin, and Tocharian) to identify traces of an Indo-European-wide *-*éh*$_2$-*wr̥*-/-*w*(*o*)*n*-construction and discuss the semantics of the construction.

Unsurprisingly, this type of construction has been observed before. Eichner (1973: 92[35]) in a footnote tentatively identifies H *karāwar* 'horn(s)' < **kŕ̥*-*éh*$_2$-*wr̥* as the starting point of a Hittite pattern of -*āwar* suffixes made out of *-*éh*$_2$-abstracts with collective *-*wr̥*-/-*w*($^{e}/_{o}$)*n*-suffixes attached. Nussbaum (1986: 31–36) follows this interpretation and carefully investigates Eichner's handful of Hittite examples (*karāwar* 'horn(s)', *partāwar* 'wing', *ašāwar* 'pen, sheepfold', and *ḫaršāwar* 'tilled land'). From here the belief in a collective construction in *-*éh*$_2$-*wr̥*-/-*w*(*o*)*n*- has gained some approval Melchert (1984: 63–64 & n[115–117]; 1994: 86), Pinault (2011: 460), and Melchert (2014: 259).

Yet describing the *-*éh*$_2$-*wr̥*-/-*w*(*o*)*n*-constructions as collectives will not suffice for the Indo-Iranian data. Tichy (1986) has shown that Ved. *ṛtā́van*-, Av. *aṣ̌auuan*-, and OP *ṛtāvā* M.NOM.SG

'truthful, righteous' can all go back to a construction *h_2(*o*)*r-t-éh*$_2$*-won-/-un-/-wer-ih*$_2$*- 'provided with/having truth' from an old neuter collective or feminine abstract*h_2(*o*)*r-t-éh*$_2$*-. The Indo-Iranian development of this word is shown in Table 4.1.

Table 4.1: *h_2(*o*)*r-t-éh*$_2$*-w(o)n- in Indo-Iranian

	Ved.	**OAv.**	**<**	**PIIr.**	**<**	**PNIE**	**<**	**pre-PNIE**
M.NOM.SG	*ṛtā́vā*	*aṣ̌auuā*	<	*°*áHwā*	<	*°*éh*$_2$*wō*	<	**h_2(*o*)*r-t-éh*$_2$*-wón-s*
M.ACC.SG	*ṛtā́vānam*	*aṣ̌auuanəm*	<	*°*áHwānam*	<	*°*éh*$_2$*wonm̥*	<	**h_2(*o*)*r-t-éh*$_2$*-wón-m̥*
M.DAT.SG	*ṛtā́vⁿne*	*aṣ̌āunē*	<	*°*áHunay*	<	*°*éh*$_2$*uney*	<	**h_2(*o*)*r-t-éh*$_2$*-wón-éy*

As shown by the Vedic preservation of stems in the M.NOM.SG and M.ACC.SG are likely innovative and thus the reconstructed (pre-)PNIE forms are *Transponaten*. The true PIE forms were likely M.NOM.SG *°*éh*$_2$*-wr̥-s* and M.ACC.SG *°*éh*$_2$*-wr̥-m*. One might well expect M.NOM.SG *°*éh*$_2$*wōr* < **°*éh*$_2$*-wor-s* and M.ACC.SG *°*éh*$_2$*worm̥* < *°*éh*$_2$*-wor-m* with application of Szemerényi's Law (**-VRF# > -V̄R#*) in the M.NOM.SG, and in principal the Indo-Iranian forms could represent *°*éh*$_2$*wōr* since final sonorants are lost after long vowels in alter Proto-Indo-Iranian. Since Ancient Greek also has -ά́ων < *-*éh*$_2$*-wō(n)* (§4.2), however, it seems more likely that these animate forms in M.NOM.SG *°*éh*$_2$*-wr̥-s* and M.ACC.SG *°*éh*$_2$*-wr̥-m* were innovated some time within Nuclear-Indo-European after the application of Szemerényi's Law by simply applying the endings *-*s* and *-*m* to the N.NOM/ACC.SG in *-*wr̥*.[1] This innovation was not to last, however, as the *-*wr̥-s* ~ *-*wr̥-m* ~ *-*wn-* alternation was remodeled to *-*wō* ~ *-*won-m̥* ~ *-*wn-* by analogy to the *-*món*-stems in *-*mṓ* ~ *-*món-m̥* ~ *-*mn-*.[2] The accentual affects of the analogy may perhaps appear in the small class of possessive adjectives in *-ván-* found only in early Vedic (*śruṣṭī-ván-* 'having obedience, obedient' (*RV*), *ṛṇā-ván-* 'having a debt, indebted' (*RV*), *sumnā-várī-* 'bring favor' (*RV*)). These *-ván*-forms likely represent an abortive innovation that did not overcome the dominant tendency for

faithful stem accentuation.

To account for these animate adjectives, Melchert (1984: 64[117]) suggests that there was a set of amphikinetic adjectives (°-*éh₂-won-* ~ °-*éh₂-un-ᵒ/ₑs*) with possessive semantics built from the hysterokinetic collectives (°-*éh₂-wer* ~ °-*éh₂-un-ó/és*). This is an interesting proposal, though as we shall see, the attested formations in the daughter languages for this construction also include agentive and resultative semantics as well. Furthermore, none of the constructions examined show any form of hysterokinetic inflection or clear collective semantics. Where accentual information is available, it always points to *-*éh₂-wr̥-/-w(o)n-*. As discussed in the previous chapters, the oxytone *-ālú-* in *patayālú-* 'flying' must be analogical, while *śarā́ru-* 'horny' preserves the inherited accentuation.

4.1 *-*éh₂-wr̥-/-w(o)n*-constructions in Anatolian

The data from Anatolian provides a mixture of tantalizing forms which could derive from *-*éh₂-wr̥-/-w(o)n*-constructions, but some difficulties arise in their analysis. To begin with, Anatolian has abundant infinitives and verbal nouns derived from *-*wr̥-/-w(ᵉ/ₒ)n*-heteroclites, and of these a fair number are built to *-*éh₂-* factitives, which have been thought to continue old *R(∅/ₒ)-*éh₂* abstracts (Sihler 1995: 528 §475; Sasseville 2020a: 67–77). Here, for instance are the Hittite verbal nouns built to factitive stems:

(4.1) Hittite verbal nouns in *-aḫḫuwar* ~ *-aḫḫuwaš* built to factitives in *-aḫḫ* < *-*eh₂-*:

a. H *armaḫḫuwaš* GEN.SG, *-wazza* DAT/LOC.SG 'impregnation' ⇐ *armaḫḫ-ⁱ* 'to impregnate'

[1]A similar account may serve for the feminines in *-*wér-ih₂-*, whose accentuation and suffixal *-*e*-grade would be analogical to forms like **déyw-ih₂-* 'goddess' > Ved. *dévī-*, YAv. *daēuuī-*, Lt. *deĩvė*. The reconstruction of the feminines in *-*wér-ih₂-* remains a topic for further research, however.

[2]I follow Yates (2022) in his arguments that the animate *-*món*-stems did not have an amphikinetic paradigm *R(é)-*mon-* ~ *R(∅)-*mn*-É but instead had suffixal accentuation derived by accentual shift from acrostatic neuter *R(é)-*mn̥* paradigms: **dʰér-mn̥* (whence Ved. *dhárman-* 'foundation') ⇒ **dʰer-món-* (whence Ved. *dharmán-* 'support(er)').

b. H [*inn*]*arauwaḫḫuwaš* GEN.SG 'strengthening' ⇐ *innaruwaḫḫ-*^{i} 'to strengthen'

c. H *išiyaḫḫuwar* NOM/ACC.SG, *-waš* GEN.SG, *-wanni* LOC.SG 'informing' ⇐ H *išiyaḫḫ-*^{i} 'to inform'

d. H *kunnaḫḫuwaš* GEN.SG 'setting right' ⇐ H *kunnaḫḫ-*^{i} 'to set aright'

e. H *maniyaḫḫuwaš* GEN.SG 'distributing' ⇐ H *maniyaḫḫ-*^{i} 'to distribute'

f. H *māninkuwaḫḫuwar* 'nearing' ⇐ H *manninkuwaḫḫ-*^{i} 'to near'

g. H *šuppiyaḫḫuwar*, *-waš* GEN.SG 'purification' ⇐ H *šuppiyaḫḫ-*^{i} 'to purify'

h. H *watarnaḫḫuwaš* GEN.SG 'ordering' ⇐ H *wātarnaḫḫ-*^{i} 'to order'

One might look at these forms and consider this sufficient evidence for *-*éh*$_2$-*wr̥*-/-*w*(*o*)*n*-constructions in Anatolian, but despite Sasseville's discussion, there is no good evidence that the *-*éh*$_2$-factitives should be derived from *R(∅/*o*)-*éh*$_2$ abstracts. The *-*éh*$_2$-factitives likely represent a primitive of PIE morphology that happens to be homophonous with the *R(∅/*o*)-*éh*$_2$ abstracts. Moreover, the sheer productivity of *-*wr̥*-/-*w*(*e*/*o*)*n*-heteroclites in making verbal nouns further undermines these as examples. *-*wr̥*-/-*w*(*e*/*o*)*n*-heteroclite-derived verbal nouns, infinitives, and supines represent the default category in Anatolian across the verbal system, so the appearance of such heteroclitic forms in the *-*éh*$_2$-factitives does not necessarily represent an archaic retention of an inherited category.

Indeed, better evidence for inherited *-*éh*$_2$-*wr̥*-/-*w*(*o*)*n*-heteroclites would come from nouns derived from -*éh*$_2$-stems (especially those without associated verbal stems). Some potential examples appear in (4.2).

(4.2) Nominal forms ending in -*eh*$_2$- with *-*wr̥*-/-*w*(*e*/*o*)*n*- and *-*went*-suffixes:

a. H <*kuršawara* NOM/ACC.PL (← Luw.), CLuw. *kuršaunantinzi* ERG.PL 'island',[3] Lyc. *krzzãna-se-*[4] 'peninsula' < *k^{w}*r̥séh*$_2$-*wr̥*/-*un*- 'cutting off' ⇐ ? *k^{w}*r̥s-éh*$_2$- (whence perhaps CLuw. *ku(wa)rša-šša-* '(military) division' POSS, H *kuršāi* 'cut off, separate'

2SG.ACT.IMP ← Luw.)[5]

b. H *miyaḫuwant-** ‘old’ < **mih$_{1/3}$-éh$_2$-went-* ⇐ **mih$_{1/3}$-éh$_2$-* ‘growth’

Unfortunately, each of these examples runs into various difficulties in their derivation. Beginning with the words for ‘island’ (Luw. loanwords into H: *ˀkuršawara* NOM/ACC.PL, *ˀkuršawanza* DAT/LOC.PL; CLuw. *kuršaunantinzi* ERG.PL, *kuršawan-aššis* POSS.NOM.SG.ANIM) and ‘peninsula’ (Lyc. *krzzãna-se* LOC.SG), we find that there does appear to be a H verb *kuršāi* ‘cut off, separate’ 2SG.ACT.IMP,[6] whence also derive ^{URU}*Guršamašša*, a city name, and *kuršammalliyaš*, a hapax epithet of the Storm-god in a Hittite inventory, both from an intermediate Luw. **kuršamman-* ‘separation’ (*CLL*: *s.v. *kuršamman-*). Furthermore, there is no guarantee that the base PA **k^{w}r̥sā́-* came from an **-éh$_2$-* stem, especially as we might then expect the CLuw. form to be *ˣkuršaḫuwar* (though see below on this point). Overall, **k^{w}r̥s-éh$_2$-wr̥/-w(o)n-* remains plausible.

I follow the derivation of Eichner (1973: 56–59) for *miyaḫuwant-*, *miḫuwant-*, *meḫuwant-* ‘old ↜ having growth’ from **mih$_{1/3}$-éh$_2$-* ‘growth’ + **-went-*. The base form of the word is only ever written with the Sumerogram ^{LÚ}ŠU.GI, making the basic root shape difficult to determine. Objecting to Eichner’s derivation, Kloekhorst (*EDH*: *s.v. meḫuu̯ant-*) incorrectly derives this lexeme from **meyh$_2$-went-*, whence he also derives H *mēḫur* ‘time, period, season’. He reasons that **mih$_{1/3}$-éh$_2$-went-* should have produced *ˣmiyaḫḫuwant-* with geminate *ḫḫ*, which is nowhere attested. Instead, Kloekhorst argues that the forms in *mĕ̆ḫuwant-* are the oldest and were associated by speakers with the (unattested) 1SG.PRS.ACT.IND *ˣme-ḫḫi* and 1SG.PST.ACT.IND *ˣme-ḫḫun* of the verb *māi-*^{i} ‘to grow’, which he reconstructs **mh$_2$-oy-*. These reconstructions fail in a few ways: */mh$_2$-oy-/* should have been syllabified as **m̥h$_2$-oy-* to produce something like *ˣaḫḫai-*, and posttonic lenition should have produced **me-ḫi* and **me-ḫun*. Next, he supposes that when these forms were replaced by the

[3] Starke (1981: 142–152) and *AHP*: 275, 285, 315

[4] *AHP*: 312. Cf. also H *Ḫu(wa)ršanašša/i-* and Gr. Χερσόνησος (as if ‘dry island’), both loanwords from Carian (Oreshko 2020: 551, 556–557 & n^{23}).

[5] *CLL*: *s.vv. *kuršā(i)-, *k(u)warša-*.

[6] Starke (1981: 149) takes this to be as a Luwian loanword into Hittite, but *EDH*: *s.v. kuer-*^{zi} */ kur- / kuu̯ar-* and Simon (2022) takes it as a native Hittite formation. In any case, the verb must exist.

forms *miyaḫi** and *miyaḫun*, speakers would have altered *meḫuwant-* to *miyaḫuwant-* by analogy. This explanation is rather implausible. Assuming the forms ˣ*me-ḫḫi* and ˣ*me-ḫḫun* existed (or the historically more plausible forms **me-ḫi* and **me-ḫun*), -(*ḫ*)*ḫ*- was not part of the verbal stem itself but the desinences -(*ḫ*)*ḫi* and -(*ḫ*)*ḫun*. This would require speakers to resegment **me*-(*ḫ*)*ḫi* as **me*(*ḫ*)*ḫ-i* for the purposes of an ad hoc analogy. Furthermore, the spellings on which he ostensibly bases his analysis of *meḫuwant-* are ⟨*me-ḫu-un-ta-aḫ-ḫu-ut*⟩ and ⟨*mi-e-ḫu-un-ta-aḫ-ḫu-ut*⟩ 'to age' 2SG.IMP.MID.IND, both in New Hittite texts, and only ⟨*mi-e-ḫu-un-ta-aḫ-ḫu-ut*⟩ unambiguously points to *meḫuwant-*. The other 5 complete attestations have either ⟨*mi-ya-ḫu-*⟩ or ⟨*mi-ḫu-*⟩ and come from a mix of Old and New Hittite texts, implying they are older. If anything, it would seem that the analogy ran in reverse from Kloekhorst's proposal: *miyaḫuwant-* 'old' was influenced in New Hittite by *mēḫur* 'time' (for which see also fn. 19). Instead, I follow *AHP*: 85, who improves on Eichner's etymology by assuming *miyaḫu-want-* was constructed after **-ḫḫ-* had undergone lenition to **-ḫ-* in final position, producing **miyaḫ-*. The fact that this form is attested only as a *-want*-adjective is also not very strong evidence in favor of a **-wr̥-/-w*($^{e}/_{o}$)*n*-heteroclite in a language where the category was fully productive.

Hittite has a small set of forms in *-āwar ~ -aun-*, originally identified by Eichner, that look plausibly like they could go back to **-éh*$_2$*-wr̥ ~ *-éh*$_2$*-un-* and do not obviously derive from verbal stems:

(4.3) Hittite forms in *-āwar ~ -aun-*:[7]

a. *ašāwar ~ ašaun-* 'pen, sheepfold' < **h*$_1$*oséh*$_2$*-wr̥ ~ *h*$_1$*oséh*$_2$*-un-* ⇐ **h*$_1$*os-éh*$_2$*-* 'loca-

[7]For a full list of *-war ~ -un-* forms in Hittite, see Kronasser (1962–87: 297–308). Here also might belong H *āštawar* 'a food forbidden for pregnant women' (Beckman 1983: 134, 156), but its meaning and etymology are unclear and in its two attestations it is spelled ⟨a-aš-ta-u-wa-ar⟩ and ⟨aš-ta-u-wa-ar⟩, not ˣ⟨aš-ta-a-u-wa-ar⟩ = ˣ*aštāwar*. Beckman (2010) suggests that this form may mean 'leftovers' and derive from a verb **āštāi-* from a noun **āštā-* (neither of which he glosses) from *āšš-*^{zi} 'to remain, be left over'. The semantics and proposed derivation might lead us to expect **-t-éh*$_2$-abstract. If indeed derived from *āšš-*^{zi}, the initial plene spelling of *āštawar* could be analogical to the verb. Unfortunately, *āšš-*^{zi} remains without a compelling etymology (*EDH*: *s.v. āšš-*^{zi} with lit.).

tion, seat' (whence HLuw. *asa-* 'seat'[8])

b. (A.ŠÀ)*ḫaršāwar* ~ *ḫaršaun-* 'tilled land' < **h₂(o)rh₃séh₂-wr̥* ~ **h₂(o)rh₃séh₂-un-* ⇐ **h₂(o)rh₃-s-éh₂-*[9] 'tilling'

c. (SI)*karāwar* ~ *karaun-* 'horn(s), antler(s)' < **ḱr̥éh₂-wr̥* ~ **ḱréh₂-un-* ⇐ **ḱr-éh₂-* 'horn' (see §3.7.1 for discussion of this form)

d. (UZU)*partāwar* ~ *partaun-* 'wing' < **p(o)rtéh₂-wr̥* ~ **p(o)rtéh₂-un-* ⇐ **(s)p(o)r-t-éh₂-*[10] 'flying, flight'

e. *šarāwar* ~ *šaraun-* 'torrent?, flood?' < **sr̥éh₂-wr̥* ~ **sr̥éh₂-un-* ⇐ **sr̥-éh₂-* 'flowing' (whence Ved. *sarā́-* 'brook?, torrent?')

Phonological obstacles stand in the way of the etymologies given in (4.3), however. Specifically, **h₂* seems to have been preserved as labialized PA **Hʷ* > H *-ḫ(ḫ)u-*, CLuw. *ḫu*, HLuw. *hu*, Lyc. *q*, Car. *q* between a vowel and **u* (e.g., **pó/éh₂wr̥* 'fire' N.NOM/ACC.SG > PA **páHur* > H *paḫḫur*, CLuw. *pāḫur*) and between a vowel and **w* (e.g., **p(e)h₂wén-i* 'fire' N.LOC.SG > H *paḫḫweni*).[11] But where does this leave the status of the Hittite forms in *-āwar* ~ *-aun-*? Melchert (*AHP*: 86; 2014: 259) suggests instead that these heteroclites were derived from old **-éh₂-*stems only after final **-éh₂* became **-ā* but before it shortened to *-a*. This explanation could work, but it would mean that this heteroclite class would have to have arisen within the internal history of Hittite. In my opinion, what may have occurred is two types of concurrent analogy. On the one hand, the **-éh₂-*stem bases, though not attested in H, could have exerted analogical pressure on their heteroclitic derivatives.[12] Likewise, the verbal nouns in *-ātar* ~ *-ānn-* < **-éh₂-tr̥* ~ **-éh₂-tn-* (*AHP*: 86) could have influenced the inflectionally similar **-éh₂-wr̥* ~ **-éh₂-un-*stems. Note that the verbal nouns built to factitives in (4.1) do not have the same ablaut pattern as the nouns in (4.3); all the verbal nouns have a *-war* ~ *-waš* < **-wr̥* ~ **-wen-s* GEN.SG ablaut pattern, and indeed the factitive verbal nouns in *-ḫḫuwar*

[8]The **-éh₂-* origin of HLuw. *asa-* is shown by the absence of *i*-mutation in the NOM.SG *asas* ⟨(MENSA.SOLIUM)*á-sa-sa*⟩ and ACC.SG *asan* ⟨"MENSA.SOLIUM"*-sa-na*⟩, ⟨("MENSA.SOLIUM")*á-sa-na*⟩, ⟨("MENSA.SOLIUM")*á-sa-na-*'⟩. I am indebted to Anthony Yates for bringing this form to my attention.

[9]For discussion of this root and its sigmatic forms see, see *LIV*²: *s.v. *h₂erh₂-* and *EDH*: *ḫārš-*^{i}.

[10]For the verbal root, see *LIV*²: *s.v.* 2.**(s)per-*.

~ *-ḫḫuwaš* have an unexpected syllabification since **-éh₂-wr̥* should have become PA **-áH^{w}-ur*> ˣ*-aḫḫur* like **méh₂-wr̥* > *mēḫur* 'time'. I am inclined to accept Melchert's derivation of *-āwar* ~ *-aun-* as reflecting PIE **-éh₂-wr̥-/-w(o)n-*constructions.

For the first four examples in (4.3), I will not have much more to say about their formation. For *ašāwar* 'pen, sheepfold', the **-éh₂-*base seems apparent in HLuw. *asa-* 'seat', and I have discussed $^{(SI)}$*karāwar* 'horn(s), antler(s)' in §3.7.1, where I base my argument on the treatment of this word and its cognates by Nussbaum (1986). $^{(A.ŠÀ)}$*ḫaršāwar* and $^{(UZU)}$*partāwar*, on the other hand, have no identical **-éh₂-*abstracts attested in Indo-European that are known to me, and thus these reconstructions are purely mechanical.[13] For *šarāwar*, however, a somewhat longer treatment is necessary.

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[11] *AHP*: 68 §4.1.3.2, *HHP*: 402–403 §10.5.2.2, and Kloekhorst (2018)

[12] See similarly Watkins (1975: 371–372).

[13] *NIL*: *s.v. *h₂erh₃-* does identify some potential **-éh₂-*abstracts for the root $\sqrt[*]{h_2erh_2}$ (**h₂r̥h₃-éh₂-* > Mess. *ara-* 'field', Alb. *arë* 'cornfield'), but none with the intervening **-s-*. Nussbaum (1986: 33–34) instead suggests that *ḫaršāwar* may be a conflation of the primary heteroclites **h₂érh₃-wr̥* ~ **h₂r̥h₃-wén-* 'plowing' (whence OIr. *arbor*/*arbae* 'corn', Gr. ἄρουρα, Cl.Arm. *harawunkʿ* 'tilled land') and **k^{w}éls-wr̥* ~ **k^{w}l̥s-wén-* 'drawing' (whence YAv. *karšuuarə*/*karšuuąn* 'region') and the **-éh₂-*form **k^{w}ols-éh₂-* 'drawing' (whence YAv. *karšā-* 'land bound by furrows'), and from this construction he assumes **-ā-war* spread to other agricultural terminology like *ašāwar* 'pen, sheepfold'. Given the high productivity of **-éh₂-wr̥-/-w(o)n-*constructions I discuss in this chapter, I do not think this Hittite-internal analogy is necessary. He furthermore suggests that $^{(UZU)}$*partāwar* 'wing' may find an **-éh₂-*base in Gr. σπάρτη 'rope, cord' < **(s)pr̥-t-éh₂-* (beside σπεῖρα 'coil' < **(s)per-ih₂-*) but does not clarify the semantic relationship between ropes and flight (unless he is thinking of trapeze artists or *dei ex machinis*). *GEW*^{2}, *DELG*^{2}, and *EDG*: *s.v.* σπάρτον connect this word to the semantically closer *σπάργω, σπάρξαι 'to envelop'. Nussbaum (1986: 34[18]) glosses $\sqrt[*]{per}$ as 'traverse, fly' and adduces L *porta* 'passage, gate' < **p(o)r-t-éh₂-*, but connecting the widely attested $\sqrt[*]{per}$ 'to cross' (which never shows s-mobile) with the marginal $\sqrt[*]{(s)per(h_x)}$ 'to fly' does not seem warranted (thus the separate entries in *LIV*^{2}: *s.vv.* 1.**per-*, 2.**(s)per-*).

4.1.1 Hittite *šarāwar* ~ *šaraun-* 'torrent[?], flood[?]'

The meaning of H *šarāwar* remains uncertain. According to *CHD* Š: *s.v.* šarawar, it appears unbroken in five contexts (N.NOM/ACC.SG *šarāwar* ⟨ša-ra-a-u-wa-ar⟩ 3×, ⟨ša-ra-u-wa-ar⟩ 1×; N.ERG.SG *šaraunanza* ⟨ša-ra-u-na-an-za⟩ 1×) and perhaps once in a broken context (*ša-a-ra-a-u-wa-*). Due to its appearance in close connection with *ḫaršiḫarši* 'thunderstorm' and *ḫēyaueš=a* 'rains' (KUB 32.117 obv.! 3–4 + KBo 32.117 obv.! 3–4, Old Script), with the Storm-god's angry reactions (KUB 7.13 obv. 29–30), and with the results of an incorrectly timed *purulli*-festival (KUB 18.11 obv. 5–6), it is thought to be a (negative) meteorological phenomenon of some sort. It also appears as part of a metaphor in a broken section of the *Song of Ḫedammu*, a subsection of the Kumarbi cycle. In this scene, the goddess Šauška goes to the sea monster Ḫedammu, whom Kumarbi has fathered to defeat his other son Tešḫub:

(4.4) KUB 8.66 rt. col. 4–5 + KUB 33.86 iii 3–4 (New Script, *CHD* Š: *s.v.* šarawar):
[MUŠ*ḫ*]*edammuš* INIM^{MEŠ}-*ar ANA* ^{d}*IŠTAR memiš*[*kiuwan dāiš*]
kwiš=za MUNUS-*naš zik*
^{d}*IŠTAR-iš ANA* MUŠ*ḫed*[*ammu* EGIR-*pa*] *memiškiuwan dāiš*
ammuk=za MUNUSKI.SIKIL *ḫarš*[*alanza*[?]]
nu=mu ***šarauwar*** GIM-*an* ḪUR.SAG-*uš laḫḫurnuz*[*i* . . .]
'Ḫedammu [began to spe]ak words to Šauška:
"What (sort of) woman are you?"
Šauška began to speak [back to Ḫed]ammu:
"I am an an[gry[?]] girl. The mountains [spread out[?]] their greenery for me like ***šarāwar***."'

The broken context leaves much uncertain, but most interpretations understand a verb 'spread out' or 'cover' in the final line of Šauška's response.[14] Given the aforementioned meteorological contexts of *šarāwar*'s usage and the way in which *šarāwar* might spread over mountains, CHD suggests a translation "blizzard" or "storm clouds". While this could work, I think a derivation from **sr̥-éh$_2$-* 'flowing, torrent' is possible, and thus *šarāwar* would mean 'torrent(s), rain-filled streams on the

side of a mountain'. A resultative meaning would seem appropriate for this context.

A reconstruction *$sr̥$-$éh_2$-[15] would find a close cognate in Ved. *sarā́*-, which is normally translated 'brook, stream'. The word appears twice in *AV*, and in both cases the meaning is not entirely clear. In (4.5), the word is used to describe a certain medicinal vine *silācī-/lākṣā-*, which stems from the blood of the god of death Yama's horse and quickly grows/flows among and around the trees of the forest.

(4.5) *AVŚ* 5.5.9 (≈ *AVP* 6.4.9; addressing a healing vine *silācī-/lākṣā-*)

áśvasyāsnáḥ sáṃpatitā ' sā́ vr̥kṣā́ṁ abhí ṣiṣyade |

sarā́ *patatriṇī bhūtvā́ ' sā́ na éhi̯y arundhati*[16] ||

'Congealed from (Yama's) horse's blood, you flowed into the trees.

Having become a winged (=leafy) **torrent**, may you come to us, wound-closing one.'

In (4.6), *sarā-* is used as part of list of epithets of a female deity and is paired with the divine name *Sarasvatī* (lit. 'full of lakes').

(4.6) *AVP* 16.48.2

sarā́ cāsi sarasvatī cāsi ' tasyās te brahma ca kṣatraṃ ca | . . .

'You are the torrent and you are Sarasvatī (lit. 'full of lakes'). You have the sacred formulation and dominion. . . . '

The use of *sarā* and *sarasvatī* together recalls the two holy rivers *Saráyu-* 'full of flowing, streams' and *Sárasvatī-* 'full of lakes'. The age of these river names is confirmed by the Iranian cognates OP *Haraiva-* (*WAK*: *s.v.* Haraiva-[1]), YAv. *Harōiva-* 'Areia' < **ser-é-yw-o-* and OP *Haraʰuvati-* (*WAK*: *s.v.* Hara.uvati-), YAv. *Haraxᵛaiti-* 'Arachosia' < **sélᵒ/ₑs-wn̥t-ih₂-*, pointing to an old pair of opposed hydronyms.

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[14] See *CHD* Š: *s.v.* šarawar for a summary the translations.

[15] For the syllabification of *$sr̥$-$éh_2$-*, see §1.3.4.

[16] For the interpretation of *arundhatī́-*, see §3.2.4.

Indo-European possesses other derivatives of $\sqrt[*]{ser}$ ‘to flow’, though morphologically more distant: Gr. ὀρός ‘whey; watery substance’ < **sor-ó-* and L *serum* ‘id.’ < **ser-o-*. However, we might not need to look so far from Anatolian for reflexes of **s(o)r-éh₂-*! *HEG*: *sarunta/i-* suggests that H (𒀀)(TÚL)*šarunta/i-* ‘well(spring)’ could be from **sor-éh₂-w(e)n-t-*.[17] *šarunta/i-* is clearly a Luwian loanword into Hittite given its spelling with 𒀀 and its Luwian *i*-mutation between ACC.SG 𒀀*šaruntin* and ABL.SG TÚL*šăruntaz*. The meaning of ‘well(spring)’ is shown by the determiner TÚL and by the two contexts in which the word appears: a place whence water is drawn (KUB 31.77 i 8–14) and as part of a list of cities and landmarks whence a god is invoked (KUB 29.4 iii 43–48). To account for the change from Luw. **sarāw(a)nta/i-* to **sarunta/i-*, Tischler appeals to the same syncope found in **miyaḫuwant-* > **miḫuwant-* ‘old’ (discussed above) and cites *HHP*: 180–183, who provides more examples of syncopes in the vicinity of *w*. Furthermore, the Luwian forms of the ‘horn’ word, CLuw. **zarwan-* and HLuw. *suran-*, likewise seem to show a syncope with respect to H *karāwar*. Likewise Sasseville (2020a: 19[4]), building on *AHP*: 260–261, suggests that the Luwian factitive 3PL.PST.ACT.IND ending *-unta* may derived from **-éh₂-n̥to* via an intermediate from **-aunto*. If Tischler is correct in deriving *šarunta/i-* from a form like **s(o)r-éh₂-un-t-*, then it would be a match for the base heteroclite found in H *šarāwar* ‘torrent’. He also points out the likely appurtenance of the mountain name ḪUR.SAG*Šarwantašš*[*a* in the meaning ‘rich in well(springs)’ (*HED* 10: *s.v.* sarunt-, sarunti- adduces the Greek parallel of πολυπῖδαξ Ἴδη “many-fountained Mt. Ida”). The use of ḪUR.SAG*Šarwantašš*[*a* ‘rich in springs’ as epithet for a mountain can only strengthen the interpretation of (4.4), where *šarāwar* seems to cover a mountainside.

4.1.2 Conclusions for Anatolian

This section has shown that the Anatolian languages certainly had a synchronic processes by which new heteroclites could be derived from the reflexes of **-éh₂-*stems. Beyond that synchronic process, certain archaic nouns like *karāwar* ‘horn(s)’, *ašāwar* ‘pen, sheepfold’, and *šarāwar* ‘torrent[?], flood[?]’ seem to derive from old **-éh₂-*abstracts with no apparently related verbal stems in **-eh₂-*. All these

[17] *EDH*: *s.v.* (𒀀)*šarunta/i-* instead suggests “**sru-nt-* ??” < $\sqrt[*]{srew}$ ‘to flow’ (Skt. $\sqrt{srav}$, Gr. ῥέω ‘id.’), but admits that “the formation is not fully clear.”

archaic forms seem to either represent result nouns or extensions of the base *-*éh*$_2$-abstracts with no discernible change in meaning; a collective interpretation is not necessary.

4.2 *-*éh*$_2$-*wr̥*-/-*w*(*o*)*n*-constructions in Ancient Greek

Ancient Greek has already had several *-*éh*$_2$-*wr̥*-/-*w*(*o*)*n*-constructions identified in past scholarship, and in particular, the onomastic forms in *-*éh*$_2$-*won*- > Myc. -*Ca-wo*, Hom. -ᾱ́ων, -ήων, Dor. -ᾱ́ϝων have received no small amount of attention (Jacobsohn 1930: 104–105; *Schwyzer* I: 521; *AiGr* II 2: 900–902 §718; Ruijgh 1967; Risch 1974: 57 & n^{50}; Tichy 1986: 91–92; de Lamberterie 2012). Below I list some members of this category:

(4.7) Mycenaean and Alphabetic Greek words that descended from *-*éh*$_2$-*won*-:

a. Myc. *a-re-ta-wo*[/aretā́wŏn(-)/, Hom. Ἀρετάων ⇐ ἀρετή 'virtue, excellence' [18]

b. Myc. *a-ti-ja-wo* /antiā́wōn/ < *h_2*ent-y-éh*$_2$*-won*- 'confronting' [19]

c. Myc. *a-mu-ta-wo* /hamut^{h}ā́wōn/, Hom. Ἀμυθάων < *s̥m-ud^{h}-éh*$_2$*-won*- 'striking/hitting together' [20]

d. Hom. διδυμάον- 'twin' (only in dual) ⇐ **didumā́*- 'twinhood' [21]

e. Hom. Ἰκετάων (brother of Priam) ⇐ ἱκέτης 'suppliant'

f. WGr./Arc. κοινᾱ́ν, Att. κοινών 'partner' < **kom-y-éh*$_2$*-won*- 'having common (interest)'

= Ion. ξυνήων/ξυνέων, Dor. ξυνᾱ́(ω)ν, Att. ξυνών 'partner' < PGr. **ksun-y-ā́-won*- 'having common (interest)'

[18] From either *h_2*(*e*)*r-et-éh*$_2$*- 'well-proportionedness' (Vine 1998: 61–62) or *h_2*(*e*)*rh*$_1$*-t-éh*$_2$*- 'preparedness' (*EDG*: *s.v.* ἀρετή).

[19] Compare the factitive verb *h_2*ent-y-éh*$_2$*- > Luw. *ḫantiya*- → H *hantiyai*- 'to place before', Gr. ἀντιάω 'to encounter', Arm. *anc*ʿ*anem* 'to pass by' (*LIPP*: 310 & n$^{34–37}$).

[20] de Lamberterie (2012)

[21] Compare the city of Δίδυμα in Asia Minor where the twins Apollo and Artemis had temples.

g. Hom. Μαχάων (name of a Homeric doctor) ⇐ μαχή ‘battle ↜ cutting?’[22]

h. Hom. ὀπάων ‘companion’ < **sok^{w}-éh$_2$-won-* ‘following’[23]

i. Myc. *pa-ja-wo-ne* /paiāwonei/ DAT.SG, Hom. Παιήων, Att. Παιάν (an epithet of Apollo in his capacity as a physician) < **pyeh$_2$-u-y-éh$_2$-won-* ‘cutting’[24]

j. Hom. Τυφάων (serpentine antagonist of Zeus) ⇐ τυφή ‘smoke’[25]

Similarly to Indo-Iranian, the **-éh$_2$-won-*constructions show a mixture of possessive semantics (e.g., Ἀρετάων ‘having virtue, virtuous’) or agentive semantics (e.g.,).[26]

Ancient Greek also has at least two examples of nouns in **-éh$_2$-wr̥-/-wn̥-t-*. Vine (1994) derives ὄπεαρ ‘awl’ from **h$_3$(o)k^{w}-éh$_2$-wr̥* ‘hole(-making) thing, opening thing’, in turn from an abstract **h$_3$(o)k^{w}-éh$_2$-* ‘opening’. ὄπεαρ stands beside another paradigm ὄπεας ~ ὀπέᾱτ-, where the oblique underwent the quantitative metathesis from **opḗat-* < **opā́wat-* < **h$_3$(o)k^{w}-éh$_2$-wn̥-t-*. The addition

[22]I suggest this interpretation of μαχή because of μάχαιρα ‘large knife’ < **mak^{h}-éh$_2$-wer-ih$_2$* ‘cutting tool’. The words Μαχάων and μάχαιρα appear close together in a surgical scene in *Il.* 11.833 and 11.844, respectively. The description of Μαχάων as ‘cutting’ seems to refer to the doctorial ability of cutting/surgery. See also (4.7i).

[23]The **-éh$_2$-*abstract is indirectly attested in **sok^{w}-h$_2$-oy-* ‘follower’ > Ved. *sákh(ā)y-*, YAv. *haxa* ~ *haš-*, ‘OP’ *haxā-* ‘friend’ and ***sok^{w}-h$_2$-yó-* ‘part of a following’ > **sok^{wh}-yó-* > L *socius* ‘sharing; ally’, OE *secg*, ON *seggr* ‘warrior, man’ (see recently Weiss 2019; Yates 2019b).

[24]Compared to παίω ‘to strike’, with *GEW*^{2}: *s.v.* παιάν and *EDG*: *s.v.* παιάν, -ᾶνος suggesting ‘striking with magical healing powers’. *LIV*^{2}: *s.v.* **pi̯eh$_2$-* connects the verb πταίω ‘to cause to stumble’ and takes both verbs from **pyeh$_2$-u-yé-* (whence Lt. *piáuti* ‘to cut, mow, torment’, Lv. *pļaũt* ‘to mow, hit’) with a dissimilation to **peh$_2$-u-yé-* for παίω. If the verb’s original meaning was closer to that of the Baltic languages (i.e., ‘to cut, stab’), then the semantics would be similar to Μαχάων in (4.7g). Lv. *pļauja* ‘reaping, harvest’ would be the exact base form **pyeh$_2$-u-y-éh$_2$-*.

[25]The name seems to mean ‘smoking’ and either references or is referenced in his eventual imprisonment under various volcanos (Etna, Ischia).

[26]The Greek situation also recalls the Luwian possessive adjective suffix *-wann(i)-*, which is frequently applied to personal and geographic names. It seems possible that the frequency of Anatolian names in **-wan(n)-* may have encouraged the production of native Greek -ᾱ́(ϝ)ον- names in the Epic tradition.

of *-*t*- to the oblique is a regular characteristic of Ancient Greek neuter heteroclites (e.g., **b^{h}réh$_{1}$-wr̥* ~ **b^{h}réh$_{1}$-wn̥-t-* > **p^{h}rḗwar* ~ **p^{h}rḗwat-* > φρέαρ ~ φρέᾱτ- 'well(spring)'). According to Vine, the alternative form ὄπεας arose because the oblique **h$_{3}$(o)k^{w}-éh$_{2}$-wn̥-t-* made a substantivized neuter adjective **opā́wat* which lost its word-final **-t#*, yielding **opā́wa*, which was recharacterized with -ς. Semantically, ὄπεαρ 'awl' behaves like an agent or instrument noun 'hole(-making) thing, opening thing'.[27]

The Hom. noun κτέαρ ~ κτέατ- 'possession, property', found in Homer only in the DAT.PL κτεάτεσσι(ν), seems instead to be a result noun built to **tk-éh$_{2}$-* 'obtaining, possessing' (whence κτάομαι 'to get' < **tk-eh$_{2}$-yé-*) from $\sqrt[*]{tek}$ 'to obtain; receive'. In Homer, we never find the scansion ˣκτεᾰ́τ-, which we would expect from **tk-éh$_{2}$-wn̥-t-* > **ktā́wat-* > **ktḗ.at-* > **ktéāt-*, but ˣκτεᾰ́τ- would always result in a metrically unusable cretic (— ∪ —); The attested κτέατ- may thus be due to metrical shortening. The N.NOM/ACC.SG κτέαρ does not appear until Lyc.*Alex.* 895. Despite these issues, the semantics and derivation of the form look perfect for a **-éh$_{2}$-wr̥-/-w(o)n-*construction.[28]

The form ὕφεαρ 'mistletoe' appears first in Thphr.*HP*, where it also has a GEN.SG ὑφέαρος, and in Hsch. with the form ὑφαίαρ: τὸ ἐπιφυόμενον ταῖς πεύκαις και ἐλάταις 'ὑφαίαρ: the thing growing on pines and firs'. Despite the early appearance of a non-heteroclitic GEN.SG in -αρος, *Schwyzer* I: 519[8] rightly suggests a derivation "*ὕφα-ϝαρ, eig. ‚Gewebe'", that is to say **ub^{h}-éh$_{2}$-wr̥* 'webbing', referring to the web-like shape of a mistletoe plant as seen in Figure 4.1.[29] We seem to have a result noun of the abstract **ub^{h}-éh$_{2}$-* > ὑφή 'web'—a fact further confirmed by the form ὑφαίαρ from Hsch., which seems to be a pseudo-etymological analogy to the verb ὑφαίνω 'to weave' (which could itself in principle go back to **ub^{h}-eh$_{2}$-wn̥-yé-*).

This section has shown that the earliest stages of Ancient Greek have evidence for **-éh$_{2}$-wr̥-/-*

[27]See Vine (1994) for further discussion of the meaning and development of various related forms such as Myc. *o-pa-wo-ta* /opāwota/ 'helmet spikes' and ὀπήτιον, ὀπητίδιον 'small awl'.

[28]For alternative theories and literature on this form, see Dedè (2013: 141–146).

[29]Nikolaev (2004: 221–230) provides a phonologically, morphologically, and semantically elaborate derivation ὕφεαρ < **(h)up^{h}k$^{(h)}$ewar* < **(h$_{1}$)up-skew-r̥* 'the thing behind the needles (of a tree)', which *EDG*: *s.v.* ὕφεαρ rightly rejects.

Figure 4.1: A mistletoe plant (picture from Wikimedia)

w(*o*)*n*-constructions with animate possessive/agentive forms and neuter instrument and resultative forms. Furthermore, none of the neuter forms adduced show collective semantics or hysterokinetic inflection.

4.3 **-éh₂-wr̥-/-w(o)n*-constructions in Latin

Latin has two neuter nouns *papāver* 'poppy' and *cadāver* 'cadaver, corpse', which on their surface point to **-éh₂-* with some ending *-ver*. Older treatments have derived these from **papā-wes-* and **cadā-wes-* with rhoticism in the oblique case (e.g., GEN.SG **papā-wes-es*, **cadā-wes-es* > **papā-wer-es*, **cadā-wer-es* > *papāveris*, *cadāveris*) which was then analogically leveled into the NOM/ACC.SG, creating *papāver*, *cadāver* (*LEW*[3]: *s.vv.* cadāver, papāver; *DELL*[4]: *s.vv.* cadāuer, -eris; papāuer, -eris; *EDL*: *s.v.* cadō, -ere).[30] *LEW*[3] follows an older suggestion that the **-wes-* element in *cadāver* is an old PF.ACT.PTCP to the same root as *cadō* 'to fall; die, be slain', but *EDL* rightly

objects that the *-ā-* and the neuter gender are unexplained.

More recently, Cohen (2014a) discusses the word *papāver* as part of a discussion of the development of word-final **-r̥#* in Latin, where he modifies the findings of Frotscher (2012) and argues for the following distribution:

(4.8) PIE *r̥ > { L *ur* / *k*^{w}__# ; L *or* / *m*__# ; L *er* / elsewhere }

While I find his phonological distribution plausible, his etymology for *papāver* does not work quite as well. He takes this form as an intensive reduplication of **péh₂wr̥* 'fire' with the derivation ***peh₂-péh₂wr̥* > **ph₂-péh₂wr̥* > *papāver*. With regard to the semantics, Cohen (2014a: 23) says only that the poppy "is something that, figuratively, is in intense flame," and I suppose a field of red poppies could brook comparison to a sea of flames, but some textual support for such a fanciful epithet would have been useful.[31] While the phonological development of **ph₂-péh₂wr̥* > *papāver* remains workable, the morphology is to my knowledge unparalleled. The reduplicated nouns from roots of the shape $\sqrt[*]{C_1eC_2}$ typically take the form **C₁°/ₑ-C₁C₂-* (e.g., $\sqrt[*]{k^{w}el}$ 'to roll' ⇒ **k*^{w}*e-k*^{w}*l-ó-m* 'wheel' > Ved. *cakrá-*, YAv. *caxra-*, OE *hwēol*, ON *hvél*; $\sqrt[*]{tek}$ 'to fashion' ⇒ **té-tḱ-on-* 'craftsman' > Gr. τέκτων, Ved. *tákṣan-*, Av. *tašan-*); I can find no examples of total reduplication (**C₁eC₂-C₁éC₂-*) nor instances where the root syllable retains the accent instead of the reduplicant or suffix. Latin does have reduplicated perfects like *tutudī* 'to beat' 1SG.PF.ACT.IND from **te-tówd-* (whence Ved. *tutóda* 'to beat' 3SG.PF.ACT.IND), which copy the vocalism of the root to the reduplicant, but these always show zero-grade of the root and in any case are not morphologically related to Cohen's proposed intensive nominal reduplication. In all, it seems better to seek a different origin for *papāver*.

[30] *EDL* makes no mention of *papāver*, most likely because of its obscurity and lack of obvious cognates.

[31] As far as I can tell, this idea of deriving *papāver* from **péh₂wr̥* 'fire' does not originate with Cohen but instead with an unpublished manuscript by Manaster Ramer (n.d.), to which Cohen has had access since 2010 according to Cohen (2014b: 41) but which he fails to cite in this instance.

Figure 4.2: Poppy pods (pictures from Wikimedia)

Unsurprisingly, I will derive *papāver* from a *-*éh*$_2$-*wr̥*-/-*w*(*o*)*n*-construction,[32] in this case from pre-L **papā*- 'swelling, boil', whose diminutive is found in *papula* 'pustule, pimple'.[33] *EWLS*[2]: *s.v.* PAP, PAMP has also suggested a connection between *papula* and *papāver* from a root $\sqrt[*]{pa(m)p}$ 'to swell, inflate' (whence he also derives Ved. *pippala*- 'berry, fig' and Lt. *pam̃pti* 'to swell, bloat'). While *pippala*- does not belong here, the Balto-Slavic forms Lt. *pam̃pti* 'to swell, bloat', *pámpa* 'swelling, bump, blister', and OCS *pǫpŭ* 'bud, navel' (< PBS **pompu*-) could go back to a (pseudo-)root $\sqrt[*]{pa(m)p}$ 'to swell, bloat', which could also produce **pap-éh*$_2$- > PIt. **papā*-. The construction **papā-wr̥* could mean either 'thing having a swelling/boil' or 'swelling thing' referring to poppies' characteristic pods which swell up at the end of the stalk and ooze fluid when cut, as seen in Figure 4.2. While less romantic than Cohen's fiery proposal, this etymology comports better with the morphology of Indo-European and of poppies.

A similar account may be proposed for *cadāver*. The association with *cadō* 'to fall; die, be slain' remains correct, though now as a *-*éh*$_2$-*wr̥*-/-*w*(*o*)*n*-construction PIt. **kadā-wr̥*, which could have either a possessive meaning 'thing having a downfall/death' or, more likely, a resultative meaning 'thing having fallen/died' similar to **h*$_3$(*o*)*k*^{w}-*éh*$_2$-*wr̥* 'hole(-making) thing, opening thing' > Gr. ὄπεαρ 'awl'. I can find no convincing forms that look like an old *-*éh*$_2$-stem **kadā*-.[34] As for further etymological comparisons for *cadō*, Ved. $\sqrt{śad}$ 'to fall' and Gr. κεκάδοντο 'they shrank

[32] As also Melchert (1984: 63[115]).

[33] In general, diminutives retain the gender of their base unless there is a semantic differentiation (*LGr.* I: 307–308).

away (in fear)' 3PL.AOR.MID.IND (*Il.* 4.497) are frequently adduced from $\sqrt[*]{\acute{k}ad}$ or $\sqrt[*]{\acute{k}h_2ed}$ (*LIV*[2]: *s.v.* *$\hat{\acute{k}}$*ad*-). Such a root could well produce an otherwise unattested *-*éh*$_2$-abstract 'downfall, death'. this root derivation has been proposed by J. Schindler *apud* Melchert (1984: 63) and is followed by Pinault (2011: 460), though neither provide analysis of the semantics or the root beyond associating *cadāver* with *cadō*.

In this section, I have shown that both L *papāver* and *cadāver* could go back to old *-*éh*$_2$-abstracts with *-*wr̥* suffixes but without any trace of the oblique stem *-*w*$^{o}/_{e}$*n*-. This is unsurprising, however, since Latin retains only three *-*r*/-*n*-heteroclitic paradigms (only *femur* ~ *feminis* 'thigh', *iecur* ~ *iecinoris* 'liver',[35] and *iter* ~ *itineris* 'way, road'), and the latter two show a conflation of both *-r*- and *-n*- in the oblique stem, showing the paradigmatic influence of the N.NOM/ACC.SG. The words *papāver* and *cadāver* likely did not possess the appropriate semantics to appear either with high enough frequency or in formulaic enough poetic or legal contexts[36] to retain any of the unparalleled potential outcomes of *-*éh*$_2$-*wr̥* ~ *-*éh*$_2$-*w*($^{o}/_{e}$)*n*- listed in (4.9).

[34]I can find no other secure examples of an *-*ā*-stem to this root in Italic or elsewhere. The Oscan word **kadum** (Ve: 6.2; *WOU*: *s.v.* O.**kadum**; *ST*: 37.5; *ImagItal*: Campania / CAPVA 34.2) has been translated variously as 'hatred', 'harm', and 'ruin', but the context is too uncertain to be sure. If it did mean 'harm' or 'death' and was a N.NOM/ACC.SG, a plural **kadā* could serve as a base for the *-*wr̥*-/-*w*(*o*)*n*-derivative, as **h*$_2$*r̥t-éh*$_2$ 'truths' does for **h*$_2$*r̥-t-éh*$_2$*-won-* > Ved. *r̥tā́van-*. On the other hand, the medieval glossary *Glossae Luctatii Placidi grammatici*, allegedly authored by the 4th cen. CE grammarian Lactantius Placidus, contains the following gloss:

(i) ***cadula*** *frusta ex adipe.* ***cada*** *enim aruina dicitur.*

'*cadula* (means) pieces of fat. For *cada* is said for "fat, suet".'

The use of *cadāver* chiefly for human corpses (and especially of fallen soldiers) argues against a butcherly meaning 'a thing having adipose flesh, fatty thing', and indeed *DELL*[4]: *s.v. cada* doubts the reality of *cada* and *cadula* altogether.

[35]See *OHCGL*[2]: 257–258 & n[7] for discussion of the complex attestations, inflection, and development of L *iecur*.

[36]While *cadaver* does appear in an OL inscription prohibiting the dumping of corpses in a grove (*CIL*: I[2] 401, ca. early 3rd cen. BCE), the form is *cadaver* N.NOM/ACC.SG.

(4.9) Potential *lautgesetzlich* outcomes of heteroclitic **-éh₂-wr̥ ~ *-éh₂-w(ᵒ/ₑ)n-*:

a. L *-āver ~ ˣ-ān-*[37] < PIt. **-āwr̥ ~ -āwon-* < PIE **-éh₂-wr̥ ~ *-éh₂-won-*

b. L *-āver ~ ˣ-āvin-* < PIt. **-āwr̥ ~ -āwen-* < PIE **-éh₂-wr̥ ~ *-éh₂-wen-*

c. L *-āver ~ ˣ-ūn-* < PIt. **-āwr̥ ~ -awn-* < PIE **-éh₂-wr̥ ~ *-éh₂-un-*

To judge from these few examples, the semantics of L *-āver* seem to be resultative, 'swelling thing -→ poppy' and 'thing having fallen/died -→ corpse', or perhaps possessive 'thing having a swelling/boil -→ poppy' and 'thing having a downfall/death -→ corpse', but they do not seem to be collectives.

4.4 **-éh₂-wr̥-/-w(o)n-*constructions in Tocharian

The Tocharian reflexes of the **-r/-n-* and **-wr̥-/-w(ᵉ/ₒ)n-*heteroclites have received a good deal of attention recently by Del Tomba (2019, 2021) who has also argued in favor of **wr̥ > *ru* metathesis in this category. First, Del Tomba (2019) cogently shows that the TA plural ending *-äm* found in a closed class of originally heteroclitic words comes from a reanalysis of the heteroclitic **-n-* oblique. Thus for TA *ytār ~ ytāräm* 'road', he provides the following derivation:

TABLE 2 Heteroclitic inflection from PIE to Tocharian A

	PIE	Pre-PTch		PTch	Pre-TchA	TchA
Strong stem	**it-ór*	> **yət-ar*	sg.	> **yətār*	> **yätār*	> *ytār*
Weak stem	**it-n-*	> **yət-ən-*	pl.	> **yətə-na*	>> **yätār-än(ā)*	> *ytäräṃ*

Figure 4.3: The development of TA heteroclitic singular and plural stems per Del Tomba (2019: 7)

The change he adduces closely mirrors the conflation of **-r-* and **-n-* forms in the oblique stem of L *iter* NOM/ACC.SG ~ *itineris* GEN.SG discussed in §4.3, showing that the introduction of strong-stem **-r-* or weak-stem **-n-* into the opposing stem represents a typological pathway in the development of the Indo-European heteroclites.

[37] For **w > ∅ / ___o*, see *OHCGL*[2]: 165–166.

Del Tomba (2021) builds on these findings by showing that several plural endings (TB *-wa*, TA *-u*; TB *-(a)una* among others) originate from inherited heteroclitic material and that **-wr̥* metathesized to **-ru* in Proto-Tocharian as well. For the plurals in *-(a)una* in particular, Del Tomba uses the same reasoning as in his previous discussion of TA *-äm*. With Pinault (1997: 224–225), he assumes that the 'tear' word (for which, see §3.4.3) had a pre-PT plural **akru-* < **aḱrōw*. But because this word was a heteroclite, Del Tomba reasons that **-na* was imported from the oblique **akw(ə)na* < **aḱwn̥-h₂*, resulting in TB *akruna* 'tears'. Furthermore, I observe that a certain subset of TB adjectives (the gerundives I and II in *-lye*/*-lle* < **-l(i)yo-*,[38] the adjectives in *-re* < **-ró-*, and the privatives in *a(n)-*/*e(n)-* + *-tte* < **n̥-* + *-to-*[39]) shows *-ona* only in the feminine plurals (e.g., *ratre* M.NOM.SG ~ *rtarya* F.NOM.SG ~ *rätrona* F.NOM/OBL.PL < **h₁rudʰ-ró-* 'red'; Krause and Thomas 1960: 148–150 §§225–229). At least the *-re*-stems must be oxytone (Winter 2005: 368), which leads to the suggestion that some oxytone feminines in **-éh₂-* built plurals by attaching a heteroclitic **-won-* and the N.NOM/ACC.PL suffix *-h₂*: thus, *rätrona* < *h₁rudʰ-r-éh₂-won-h₂* (Pinault 2008: 513–515). At least in the case of **h₁rudʰ-ró-* 'red', we can find another **-éh₂-*abstract in ON *roðra* 'blood (of a slaughtered animal)' < **h₁rudʰ-r-éh₂-*, but the productivity of this *-ona* suffix in Tocharian B implies that **-éh₂-un-h₂* plurals were widespread.

Beyond the F.NOM.PL suffix *-ona*, we find examples of **-éh₂-wr̥* as well. Pinault (2008: 612–614; 2011: 460) reconstructs the TB suffix *-or* used to build absolutives to preterite participles as **-éh₂-wor*, as in TB *karyor*, TA *kuryar* 'trade' < **kʷrih₂-éh₂-wor* to PIE $\sqrt[*]{k^{w}reyh_2}$ 'to trade, buy'. But Del Tomba (2021: 54–8 & n₂) has now shown this *-or* could well go back to **-éh₂-ru* < **-éh₂-wr̥*. Other TB absolutives of this shape include:

(4.10) Tocharian B absolutive constructions:

a. *āyor* 'gift, giving' ⇐ *ai-* 'to give'[40]

[38] Pinault (1989: 102–103), Ringe (1996: 116), Pinault (2008: 611–612), and Malzahn (2010: 49), seemingly cognate with the Cl.Arm. verbal adjectives in *-li* (Olsen 1999: 395–398).

[39] Pinault (2008: 614–615) and Malzahn (2010)

[40] *DTB*²: *s.vv.* āyor, ai-

b. *oṅkor* 'together ← taking (together)'[?], *eṅkor* 'seizing, taking' (TA *eṃtsur*) ⇐ *eṅk-* 'to take, seize' (TA *eṃts-*) < *h_1n̥ḱ-[41]

c. *käskor* 'idle talk, gossip' ⇐ *käsk-* 'to scatter; confuse' < *g^{wh}n̥-sḱé-[42]

d. *yaitkor* 'commandment' ⇐ *wätk-* 'separate, distinguish; decide; command' < *$h_1$wi-$d^h h_1$-sḱé-[43]

I do not give all the available absolutives or their etymologies due to my limited control of Tocharian phonology and literature. In future, I would like to carry out a fuller survey of this data. Regardless, the presence of *-*éh*$_2$-*wr̥*-/-*w*(*o*)*n*-constructions in Tocharian seems assured. These neuter plurals, if correctly reconstructed, need not show any sort of collective semantics since they have overt plural marking. Likewise, the derivation *-*éh*$_2$-*wr̥* > *-*éh*$_2$*ru* > TB *-or* once again does not require an origin in a hysterokinetic paradigm.

4.5 Conclusions

Through this investigation, I have confirmed that several branches of Indo-European other than Indo-Iranian show evidence for *-*éh*$_2$-*wr̥*-/-*w*(*o*)*n*-constructions with a variety of semantics with regard to the *-*éh*$_2$- base, including possessive, agentive, and resultative. Nowhere however, is there clear evidence for the collective semantics or hysterokinetic inflection proposed by Melchert. Though I have not investigated every branch, the distribution across Anatolian, Tocharian, Indo-Iranian, Ancient Greek, and Latin guarantees the age of the formation and bolsters the claim that Vedic *-āru-* and *-ālu-* formations arose bymetathesis from inherited *-*éh*$_2$-*wr̥*-. The agentive semantics of *patayālú-* 'flying' and *dayālu-* 'charitable' and possessive semantics of *śraddhālu-* 'faithful' and *śarā́ru-* 'horny' find parallels in Ancient Greek onomastic material and perhaps L *papāver*

[41] *LIV*^{2}: *s.v.* *$h_1$nêk-* and *DTB*^{2}: *s.vv.* eṅk-, oṅkor. *oṅkor* would be the regular result of *o*-umlaut, while *eṅkor* must have been remodeled after the other forms of *eṅk-*. See also Lt. *našà* 'crop, yield, harvest' < *$h_1$noḱ-*éh*$_2$- (*LED*: *s.v.* našà), though with different ablaut grade.

[42] *DTB*^{2}: *s.vv.* käsk-, käskor*

[43] Melchert (1977: 113) and *DTB*^{2}: *s.vv.* yaitkor*, wätk-

'poppy' and *cadāver* 'corpse'. In this this light, the Ved. nonce formation *hári-śmaśāru-* 'having a golden beard' (*RV* 10.96.4) for expected ˣ*hári-śmaśru-* can be understood as an attempt by the poet to provide neuter *śmáśru-* with animate inflection and possessive semantics using the *-āru-*suffix. Future work remains to examine this construction more deeply in Tocharian and Iranian.

CHAPTER 5

Conclusions

In the preceding chapters, I have identified evidence for *-*wr̥*-/-*w*(*e*/*o*)*n*- in Sanskrit that was previously overlooked because of the obscuring effect of **wr̥* > **ru* metathesis—a metathesis that the category seems to share with Tocharian as shown recently by Del Tomba (2021), perhaps pointing to a shared innovation of Proto-Nuclear-Indo-European. The word **péyh*$_x$-*wr̥*- ~ **píh*$_x$-*won*-'swelling; fat' seems to be of particularly archaic form as it has reflexes in at least three different branches (Ved. *péru-/perú-* 'swelling, fructifying; fat, cream', *pī́lu-/pīlú-* 'fructifying; fat, cream', *pī́van-* 'fat, rich'; Gr. πῖαρ 'fat (noun), cream', πί̓ων ~ πί̓ειρα ~ πῖον 'fat (adj), rich, abundant'; OIr. *íriu* 'earth, soil') and shows strong cases with root full-grade and animate strong stems **péyh*$_x$-*wr̥-s* M.NOM.SG ~ **péyh*$_x$-*wr̥-m* > **péyh*$_x$*rus* ~ **péyh*$_x$*rum* > Ved. *pérus** ~ *pérum* » *perús* ~ *perúm*, to which an innovative *-ú*-stem paradigm was built. The majority of novel forms in *-ru-* and *-lu-*, however, were not primary derivations but were instead built to *-*éh*$_2$- abstracts. With this in mind, I have also marshaled evidence for *-*éh*$_2$-*wr̥*-/-*w*(*o*)*n*--constructions in Anatolian, Ancient Greek, Latin, and Tocharian, which join Indo-Iranian to confirm the antiquity of this category.

5.1 Animate *-*wr̥*-/-*w*(*e*/*o*)*n*-adjectives

That Sanskrit *-ru-/-lu-* represent old animate strong stems in *-*wr̥-s* ~ *-*wr̥-m* ~ *-*wr̥*-∅ comes as a welcome result as it cleans up the paradigm of the one well-attested primary animate *-*wr̥*-/-*w*(*e*/*o*)*n*-heteroclite, **péyh*$_x$-*wr̥*- ~ **píh*$_x$-*won*-'swelling; fat'. Formerly, it was assumed that the adjectival masculine and neuter nominatives and accusatives were in **píh*$_x$-*won*- as seen in Ved. *pī́van-* and Gr. πί̓ων ~ πί̓ειρα ~ πῖον, but this account had two major disadvantages. First, it assumed an accented zero-grade root, **píh*$_x$- in the M/N.NOM/ACC.SG when a full-grade is expected in the

strong cases of the heteroclites. To be sure, there are a class of roots witht the shape $\sqrt[*]{CUH(C)}$ that appear almost exclusively in the zero-grade throughout their derivatives (e.g., $\sqrt[*]{b^huh_2}$ 'to be(come); grow', $\sqrt[*]{d^huh_2}$ 'to smoke', $\sqrt[*]{puh_x}$ 'to putrify', $\sqrt[*]{srih_xg}$ 'to freeze'; see recently Vine 2022), but $\sqrt[*]{peyh_x}$ has archaic-looking full-grades:

(5.1) a. *$péyh_x$-$^o/_e s$- > Ved. *páyas*-, YAv. *paiiah*- 'milk'

b. *$póyh_x$-$m\underset{\circ}{n}$- > YAv. *paēman*- 'mother's milk'[1]

⇒ *$poyh_x$-*mén-ih*$_2$- > YAv. *paēma^{i}ni*- F 'sucking'

⇒ *$poyh_x$-mn-yéh*$_2$- > PGerm. **faimnijǭ* 'young woman' > OE *fǣmne*, OF *fāmne*

c. *$péyh_x$-tu*- 'nourishing; nourishment' > Lt. *piētūs* PL 'dinner', OIr. *íath* 'land, territory'

d. *$péyh_x$-no*- > Lt. *píenas*, Lv. *piẽns* 'milk'

Second, the M/N.NOM/ACC *-*won*- beside F *-*wer-ih*$_2$- has always shown an awkward mismatch: the masculine and neuter strong stems derived from the oblique stem *-*w(o)n*- while the feminine stem derived from the strong stem *-*wer*-. This is not a fatal complaint, as we find a mixture of derivation types from strong and weak stems elsewhere in Indo-European: *$h_3énh_2$-$^o/_e s$- 'burden' (> L *onus* 'burden', Ved. *ánas*- 'cart') ⇒ *$h_3enh_2$os-to*- (> L *onustus* 'burdened') vs. *skél-$^o/_e s$- 'bending, crook; perversion' (> L *scelus* 'evil deed', Gr. σκέλος 'leg') ⇒ *skeles-to*- (> L *scelestus* 'evil'). Nevertheless, a solution that does not resort to different derivational stems for the M/N.NOM/ACC and the F is surely preferable.

The animate *-$w\underset{\circ}{r}$-/-w($^e/_o$)n-adjectives thus far have only been found in Nuclear Indo-European and chiefly in Indo-Iranian and Ancient Greek, suggesting that this may represent a Proto-Nuclear-Indo-European innovation at oldest. Luwian does possess a class of -*wan(ni)*- possessive adjectives that could in principle go back to *-*wén*-, but clear oxytone animate adjectives in *-*wén*- appear nowhere else besides a handful of Vedic forms in -*ván*- that are to be explained otherwise (§4).

[1] I assume an irregular *-*o*-grade here because of PGerm. **faimnijǭ* and PIE *$poyh_x$-d-o*- > PGerm. **faitaz* 'fat' > ON *feitr*, OF *fat*, but in principle the root could also be $\sqrt[*]{peh_{2/3}i \sim pih_{2/3}}$ to which an innovative full-grade $\sqrt[*]{peyh_{2/3}}$ was built. A reconstruction *$peh_{2/3}i$-mn-yéh$_2$- could also supply the Germanic vocalism.

Furthermore, none of the Luwian *-wan(ni)-* possessives appear beside related *-$w̥r$* forms, implying that *-*wén*- may be an Anatolian or Luwic innovation.

5.2 *-*éh*$_2$-*wr̥*-/-*w*(*o*)*n*-constructions

This dissertation has argued for the antiquity and productivity of *-*éh*$_2$-*wr̥*-/-*w*(*o*)*n*-constructions that could be both neuter nouns or animate adjectives. While some of the neuter nouns have been previously assumed to be collectives in previous scholarship, none of the evidence point clearly to a collective meaning, and forms like the Tocharian B absolutives in *-or* < *-*éh*$_2$-*wr̥*, the Latin nouns *cadāver* 'thing having fallen/died ⇝ corpse' and *papāver* 'swelling/swollen thing ⇝ poppy', and Ancient Greek ὄπεαρ 'hole(-making) thing ⇝ awl' clearly have agentive/patientive meanings based on the verbal abstracts from which they are derived. The animate *-*éh*$_2$-*wr̥*-/-*w*(*o*)*n*-adjectives all have possessive or agentive semantics. In terms of inflection, these constructions all show fixed stress on *-*éh*$_2$- where detectable, though Sanskrit shows innovative oxytonesis in *-ālú-* and *-ārú-* by analogy to the productive *-ú*-stem adjectives. The obliques show **o*-grade *-*won*- and zero-grade *-*un*- consistent with a posttonic syllable closed by a sonorant.

Much work still remains to be done on this category. As discussed in §4.4, further work must be done on Tocharian to explore the distribution and etymologies of the TB *-or* absolutives. Furthermore, I have not fully surveyed all the branches of Indo-European for reflexes of *-*éh*$_2$-*wr̥*-/-*w*(*o*)*n*-constructions. Specifically, Iranian certainly has unsurveyed *-*āwan(t)*- formations (e.g., Sog. -^{ə}*wnd*, Khot. *-auña*; Gershevitch 1954: 166 §§1087–1088), and Celtic, Armenian, Balto-Slavic, and Albanian may as well. A fuller analysis could clarify the semantics of this structure and what sort of derivatives may be made to it.

5.3 The accent and ablaut of Sanskrit *-*wr̥*-/-*w*($^{e}/_{o}$)*n*-heteroclites

For the primary, synchronically heteroclitic descendants of N *-*wr̥*-/-*w*($^{e}/_{o}$)*n*- in Sanskrit, we find only acrostatic inflection: **pér-wr̥* ~ **pe̋r-wen-*$^{o}/_{e}$*s* » Ved. *párur* ~ *párvaṇaḥ* 'limit, joint'. Traces of erstwhile proterokinesis does appear to be archaically preserved in the Ved. infinitives *turváṇe*

'to overcome' < *$tr̥h_2$-*wén-ey* and *dāváṇe* 'to give' < *deh_3-*wén-ey*, but even the latter does not show the expected zero-grade found in Gr. δοῦναι, Cyp. *do-we-na-i*. The primary heteroclitic adjectives show root full ~ zero ablaut across various synchronically separate stems but immobile root accent throughout: *péru-* & *pī́van-* < *$péyh_x$-$wr̥$-* ~ *$píh_x$-won-* and maybe ^{G}*śeru-* 'dozing, sleeping' & ^{G}*śī́van-* 'boa constrictor' & °*śī́varī-* 'lying' < *$ḱéy(h_x)$-$wr̥$-* ~ *$ḱí(h_x)$-won-* ~ *$ḱí(h_x)$-wer-ih_2-*. The compositional method of A&A accommodates this pattern by assuming an underlyingly accented $\sqrt[*]{péyh_x}$ and *-*wén-*, giving *$píh_x$-won-* < **$péyh_x$-wén-*. All other Sanskrit *-$wr̥$-/-w($^{e}/_{o}$)n-heteroclites examined show stable accentuation and ablaut grades.

Further research is required to determine whether certain of the $\sqrt[*]{(C)CeH}$ roots show zero-grades with laryngeal metathesis. For instance, *$stéh_2$-$wr̥$ ~ *sth_2-wén-* 'thing standing (firm)' seems to have thematic derivatives with *sth_2uC- > *$stuh_2C$-*: Ved. *sthū́ṇā-*, Av. *stunā-*, *stŭ̄na-* 'post, pillar, column' < *$stúh_2no$- < *$sth_2úno$- **$stéh_2$-wén-ó-*; Ved. *sthūrá-*, *sthūlá-* 'big, strong, thick', Av. *Baēšata-stura-*, *Pa^{i}ri-štūra-* 'the Hinderer[?]', Arm. *stuar* 'thick; large' < *$stuh_2ró$- < **$sth_2uró$- < **/$stéh_2$-wer-ó-/*. The circumstances under which both the root and heteroclitic suffix appear in the zero-grade at the same time require further exploration, however.

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Shorthands

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AiGr I *Nachtr*	*See* Debrunner, Albrecht. 1957.
AiGr II 2	*See* Debrunner, Albert. 1954.
AiGr III	*See* Wackernagel, Jacob. 1930.
AiW	*See* Bartholomae, Christian. 1904.
AnGr^{4} I	*See* Noreen, Adolf. 1923.
Brugmann^{2} I	*See* Brugmann, Karl. 1897.
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DELG^{2}	*See* Chantraine, Pierre. 1999.
DELL^{4}	*See* Ernout, Alfred, and Alfred Meillet. 2001.
DKS	*See* Bailey, Harold Walter. 1979.
DTB^{2}	*See* Adams, Douglas Q. 2013.
EDAIL	*See* Martirosyan, Hrach K. 2008.

EDBIL *See* Derksen, Rick. 2015.

EDG *See* Beekes, Robert S.P. 2010.

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J&B$^{Com.}$ *See* Jamison, Stephanie W. 2015.

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WP — *See* Walde, Alois, and Julius Pokorny. 1927.

WRV — *See* Grassmann, Hermann. 1873.

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