

David M. Goldstein, Stephanie W. Jamison, Brent Vine (eds.)

Proceedings of the 32nd Annual UCLA Indo-European Conference

November 5th, 6th and 7th, 2021



BUSKE

Goldstein, Jamison, Vine (eds.)
32nd UCLA Conference

Proceedings of the 32nd
Annual UCLA Indo-European
Conference

November 5th, 6th and 7th, 2021

Edited by

David M. Goldstein
Stephanie W. Jamison
Brent Vine

with the assistance of

Angelo Mercado



BUSKE

Cover illustrations:
Wheeled vehicles depicted on Bronze Age vessels and petroglyphs,
from Kuzmina, E. E. (2007) *The Origin of the Indo-Iranians*,
Leiden, Brill; Fig. 34. Reproduced with the kind permission of the author.

Bibliografische Information der Deutschen Nationalbibliothek
Die Deutsche Nationalbibliothek verzeichnet diese Publikation in der
Deutschen Nationalbibliografie; detaillierte bibliografische Daten sind im
Internet über <https://portal.dnb.de> abrufbar.

ISBN (Print) 978-3-96769-307-2
ISBN (eBook-PDF) 978-3-96769-308-9

© 2022 Helmut Buske Verlag GmbH, Hamburg. Alle Rechte vorbehalten.
Dies gilt auch für Vervielfältigungen, Übertragungen, Mikroverfilmungen
und die Einspeicherung und Verarbeitung in elektronischen Systemen,
soweit es nicht §§ 53 und 54 UrhG ausdrücklich gestatten.
Umschlaggestaltung: Detemple Design, Igel b. Trier. Druck und
Bindung: CPI books, Ulm. Printed in Germany.

Contents

Preface	vii
Michele BIANCONI	
A New Look at Phrygian Metre	1
Chiara BOZZONE and Ryan SANDELL	
One or Many Homers? Using Quantitative Authorship Analysis to Study the Homeric Question	21
Isabelle DE MEYER	
Myc. <i>a-mo</i> and Gk. ἄρμα: The Enigma that Keeps on Rolling	49
Benjamin W. FORTSON IV	
The <i>ber</i> Necessities: The Second Singular Aorist Imperative in Armenian	67
José L. GARCÍA RAMÓN	
The Greek Infinitives in Aor. -σαι, Med.-Pass. -εσθαι, -σθαι	83
Riccardo GINEVRA	
On Chariots and at Sea: Indo-European Gods of Mobility— Old Norse <i>Njǫrðr</i> , Vedic Sanskrit <i>Násatya-</i> , and Proto-Indo-European * <i>nes-ét-/ét-</i> ‘returning (safely home), arriving (at the desired goal)’	105
Stefan HÖFLER	
Greek Adjectives in -ης (-ᾱς): An Overlooked Type?	125
Anahita HOOSE	
On Aorist Stems Surviving in Epic Sanskrit	143
Ronald I. KIM	
The Prehistory of Ossetic Verbal Inflection (I): Present Indicative and Imperative	153
Jared S. KLEIN	
On Double Determination in the Classical Armenian Noun Phrase	173
Valentina LUNARDI	
φ-feature Hierarchy and Old Irish Object Pronoun Distribution	199
Teigo ONISHI	
Clitic Doubling in Tocharian B	221

Zachary ROTHSTEIN-DOWDEN	
Against the Supposed Law of Geminate Sibilant Occlusion in Indic	243
Andrei SIDELTSEV	
Finer-Grained Hittite Syntax: Hittite Philology and Theory-Dependent Construals—The Case of Vocatives and the Left Periphery	253
Anthony D. YATES	
Emergent Mobility in Indo-European <i>*-r/n-</i> stems and Its Implications for the Reconstruction of the Neuter Plural	271
List of Contributors	297
Index Verborum	299

Preface

It was a particular pleasure, in the fall of 2021, to return to our annual conference, following the cancellation of the 2020 conference due to circumstances imposed by the global COVID-19 pandemic. These *Proceedings*, then, include papers presented at the Thirty-Second Annual UCLA Indo-European Conference, held in an online format on November 5th, 6th, and 7th, 2021.

Special gratitude is owed, first and foremost, to the graduate students comprising the Indo-European Conference Student Organizing Committee, whose dedicated participation and skilled tech-savvy support helped ensure the success of this online event: John Clayton, Anahita Hoose, Valentina Lunardi, Elisa Migliaretti, Thomas Motter, Teigo Onishi, Alex Roy, Paolo Sabattini, and Chengzhi Zhang. We are also grateful for significant administrative help from members of the Dodd Humanities Group: Bret Nighman, Carolyn Attanucci, Paul Gass—and above all, for crucial help and support, Savannah Shapiro. We also gratefully acknowledge the financial support furnished by the A. Richard Diebold, Jr. Endowment in Indo-European Studies.

Naturally, we are especially indebted to the scholars whose papers appear below, not only for their stimulating conference presentations, but also for their cooperation and patience while negotiating the online format, and then during the editing process. We owe special thanks, among those scholars, to our featured speaker Andrei Sideltsev. (As usual, not all papers presented at the conference appear here, for a variety of reasons, including publication or planned publication elsewhere.)

We are also happy to repeat our annual praise of Angelo Mercado for his consummate skill and professionalism in the preparation of the camera-ready copy. This is, finally, our second outing with Helmut Buske Verlag: as with the preceding volume in this series, we are deeply grateful to Managing Director Michael Hechinger for his support and guidance throughout the production process.

David M. Goldstein, Stephanie W. Jamison, and Brent Vine
November, 2022

A New Look at Phrygian Metre*

MICHELE BIANCONI

University of Oxford

The aim of this paper is to look at the issue of Phrygian metre from a new perspective. It will be shown that a certain type of metrical pattern is identifiable in our New Phrygian corpus and that in order to understand its origin we should turn to the Greek evidence from Roman Anatolia.

1 Introduction

This paper sets out to offer a new solution to the long-standing issue of Phrygian metre. After a brief outline of the problem, I will assess the two most recent approaches to the issue, which are, so far, the only credible attempts¹ at understanding the origin of the metrical inscriptions of the New Phrygian (henceforth NPhr.) period.² I will argue that while both hypotheses—by A. Lubotsky and M. L. West, respectively—provide us with valuable insights, neither of them accounts for the

* I wish to thank the audiences of the Thirty-second Annual UCLA Indo-European Conference and of the Comparative Philology Seminar at the University of Oxford (Hilary Term 2021) for their useful feedback and encouragement. I am indebted to Sasha Lubotsky and Marta Capano, who commented on an earlier draft, and to the editors Brent Vine and David Goldstein, whose feedback greatly improved this paper. Special thanks go to Emily Reith, who improved its English. The usual disclaimer applies. This work is part of the PRIN project “Ancient Languages and Writing Systems in Contact: A Touchstone for Language Change,” funded by the Italian Ministry of Education, University, and Research.

1 I do not discuss the hypotheses of Haas (1966) and Orel (1997), who claim to identify some metrical sequences in specific inscriptions, but fail to provide a unified account of them.

2 Our Phrygian inscriptions are conventionally divided into two groups: Old Phrygian and New Phrygian (but cf. n.4 below), depending on the script employed—a native alphabet and the Greek alphabet, respectively—and depending on the period—8th–4th c. BCE and 2nd–3rd c. CE, respectively. It is worth noting that a new Old Phrygian inscription has just (August 2022) been discovered, which carries the Seleucid name “Antiochos” and therefore points to the 3rd century BCE. Here I adopt the traditional numeration (cf. Ligorio and Lubotsky 2018), which is based on Haas 1966 for inscriptions 1–110 and on various other publications for subsequent inscriptions (111–14 = Brixhe 1978:3–7; 118 = Mitchell 1993:186, Figure 33; 119–25 = Brixhe and Drew-Bear 1997; 126–8 = Drew-Bear, Lubotsky, and Üyümez 2008; 129 = Brixhe and Drew-Bear 2010), but I also provide the new system adopted by Obrador Cursach (2020a), separated by a slash (for instance, 2/4.1 = 2 Haas and 4.1 Obrador Cursach).

majority of the data while being fully compatible with what we know about the epigraphic habit in the area at the time. I will then make a different proposal, which—I contend—better explains the data and, more importantly, considers the Greek evidence from Anatolia, which is contemporary with our NPhr. corpus. With this proposal, I aim to sketch a more realistic scenario that coheres with known models of language and cultural contact and that takes into account the comparative evidence from different cultures in Roman Anatolia.

2 Looking for metrical structures in a small epigraphic corpus

2.1 Some of the leading figures in early Phrygian studies³ tried to find traces of hexameters in NPhr. inscriptions; but the limitations of the corpus,⁴ the variation in curse formulae,⁵ and the lack of obvious correspondences to hexametric rhythm put an early end to the search for metrical patterns. As we shall see, new life has been breathed into this old question in recent years. This is no doubt due to the ingenuity of the scholars who have worked on this problem, but one should also acknowledge the role that the increase in our corpus and comparative data from other IE traditions must have played.

2.2 A brief methodological remark is in order here. Two distinct concepts may in principle underlie the label “Phrygian metre”: 1) metrical structures in Phrygian texts, and 2) the possible continuation of Indo-European (IE) metres into Phrygian. Anyone wanting to answer fundamental questions about Phrygian metre should address both issues, which have to do with synchrony and diachrony, respectively. The former is preliminary to any consideration about the latter, especially in the case of a small-corpus language, and I shall adopt a rigorously bottom-up approach. Tempting as it might be to look for parallels in other languages which show similar patterns, one should first focus on the evidence from our documents without taking

3 Calder 1911, Ramsay 1887, 1905. Cf Lubotsky 1998:413 n.1.

4 As of 2021, the Phrygian corpus consists of 525 inscriptions (404 in Old Phrygian, 119 in New Phrygian, and one in “Middle Phrygian”)—but cf. n.2, with mention of the new text. This figure is based on the corpus gathered in Obrador Cursach 2020a, with the addition of the texts in the continuously updated list (which was last updated 23 August 2021) by the same author (<https://el.natoli.medium.com/phrygian-inscriptions-identified-after-the-phrygian-language-2020-9f7bfda0d18e>). Most OPhr. inscriptions are very short and fragmentary, whereas the NPhr. corpus is relatively uniform.

5 These are composed of a protasis (e.g., 3/17.2: *ιος νι σεμον κνουμανει κακον αδδακετ*) and an apodosis (e.g., 40/24.1: *δεωξ ζεμελωξ κε τιτ/τετικμενοξ ειτου*), with a substantial amount of lexical and orthographic variation, as will be seen throughout this paper.

anything else into account, and then eventually bring in any comparanda. But before beginning to do so, I would like to review two recent attempts at finding an answer to the questions related to Phrygian metre.

3 Lubotsky's solution

3.1 We shall start with one of the most recent contributions to the problem (Lubotsky 2017), in which the focus is on our one and only Middle Phrygian⁶ inscription, MPhr-01/W-11:

1. μανκα μεκας σας κινιν εν κε βιλταταδε-
2. ναν νεκοινουν : ποκραιου κη γλουρεος γαμενονγ
3. σα σοροι ματι μακραν : βλασκον κε τακρις κε λονγ-
4. ιον μορτις λαπτα ματι αιουνουν : νικοστρατος
5. κλευμαχοι μιρος αιδομενου ματιν κισις μο-
6. .κρος υιταν παρτιας πλαδε πορκορο οσ. .-
7. ρος παντης : πεν(-)νιτι ιος κορο αν(-)δετογγ
8. σφον ομαστα ομνισιτ ους

Lubotsky observes that there are diacritics on most lines, and that these diacritics are placed at regular intervals. If the text were to be rearranged using these diacritics as line-end markers—he continues—we would obtain six lines of about seventeen syllables:

- | | | | |
|----|---------------------------------------|------------------------------|-----|
| a. | μανκα μεκας σας κινιν εν κε βιλταταδε | ναν νεκοινουν : | 17 |
| b. | ποκραιου κη γλουρεος γαμενονγ | σα σοροι ματι μακραν : | 17 |
| c. | βλασκον κε τακρις κε λονγιον | μορτις λαπτα ματι αιουνουν : | 17? |
| d. | νικοστρατος κλευμαχοι μιρος | αιδομενου ματιν κισις [:] | 17 |
| e. | μο. κρος υιταν παρτιας πλαδε | πορκορο οσ. . ρος παντης : | 17? |
| f. | πεν(-)νιτι ιος κορο αν(-)δετογγ | σφον ομαστα ομνισιτ ους | 17 |

3.2 He notes (2017:428) that “[t]he lines of 17 syllables suggest that the poem is written in a meter reminiscent of the dactylic hexameter” and that “[l]ine b is a perfect hexameter, containing five dactyls.” Despite admitting that no other line is as straightforward, he thinks that we should be content with this explanation and avoid resorting to particular metrical constraints or look for other indigenous metres, because the Greek influence in this text is very strong. He adduces three points

6 “Middle Phrygian” is a label used after the discovery of this inscription (first published by Brixhe, 2004:7–26), which is the earliest Phrygian text written in Greek alphabet that we possess and is dated to the last quarter of the 4th c. BCE. Here I follow Lubotsky in using the Greek alphabet (pace Brixhe).

in support of this claim: 1) the inscription was written shortly after Alexander's conquest and its findspot is Dokimeion, a town founded by one of his generals; 2) it is written in the Greek alphabet; 3) it contains the Greek names νικιστρατος and κλευμαχου. He also hypothesises that the traditional use of the hexameter in Greek funerary epigrams must have been the reason for its adoption by the Phrygian aristocracy.

3.3 Having a hexameter in this peculiar inscription would not be unparalleled, as—in Lubotsky's opinion—traces of hexameters may be found in New Phrygian inscriptions. In a famous 1998 article, he argued that one can reconstruct two hexameters starting from the New Phrygian curse formulae. Some phonological premises are in order:

- I. Brixhe's vowel system (Brixhe 1990), with the addition of a second phoneme /o₂/:⁷

$$\begin{aligned} /i/ &= \langle \iota \rangle / \langle \varepsilon \rangle \\ /u/ &= \langle \text{ου} \rangle / \langle \text{ο} \rangle / \langle \upsilon \rangle / \langle \iota \rangle \\ /o/ &= \langle \text{ου} \rangle / \langle \text{ο} \rangle / \langle \upsilon \rangle / \langle \iota \rangle \\ /o_2/ &= \langle \omega \rangle \\ /a/ &= \langle \alpha \rangle \end{aligned}$$
- II. NPhr. still had a diphthong /ei/, which was prone to monophthongisation, but only in final position (cf. κνουμανει / κνουμανι / κνουμανε). The other four diphthongs (/ai/, /oi/, /au/, /eu/) were not monophthongised.
- III. Alternations such as αδδακετ / αδακετ, αββερετ / αβερετ and τιττετικμενος / τιττετικμενος show that geminates were probably simplified.
- IV. The phonetic value of ⟨ζ⟩ is unclear, but perhaps it could be [dz] (cf. σζεμελως), which would be phonetically double.

If I–IV are accepted, then the typical protasis of the NPhr. curse formula has a dactylic rhythm:

– ◡ ◡ – ◡ ◡ – ◡ ◡ – ◡ ◡ – ◡ ◡
 ιος νι σεμο(υ)ν κνουμαν(ε)ι / κακουν αδδακετ (οι αββερετ)

whoever brings harm to this grave ...

7 “As the omega is consistently used in the dat.pl. ending -ως < *-ōis, e.g. ζεμελως δεως ‘among men and gods’, it is safer to assume a separate phoneme /o₂/ (= /ō/?)” (Lubotsky 1998:414).

These are four dactyls (4 *da*), and in order to form a complete hexameter we need one more dactyl and one final spondee (= an adonean, in Classical terms). Lubotsky thinks that it is not a coincidence that such a protasis is often expanded by two or three more words⁸ and suggests that *αιν’ατεαμαις* was the best attempt at a reasonable hexameter. Therefore:

— ◡ ◡ — ◡ ◡ — ◡ ◡ — ◡ ◡ — ◡ ◡ — — ◡ ◡ —
 ιος νι σεμο(υ)ν κνουμαν(ε)ι / κακουν αδδακετ αιν’ατεαμαις (or αινι τεαμας)

3.4 Most apodosis formulae end in *τι(τ)τετικμενος ειτου* “let him become accursed”, which has the metrical structure of the end of a hexameter (◡ ◡ — ◡ ◡ — —, also known as “penthemimeral anaclomenus”). If we then look for the beginning of a hexameter, a good candidate would be the *δεως ζεμελως* “amongst gods and men” formula, which occurs more than twenty times with some variation.⁹ So the first line of this reconstructed distich would read [*ιος νι σεμο(υ)ν κνουμαν(ε)ι κακουν αδδακετ*] + [*αιν’ατεαμαις*], and the second would start with [*με ζεμελως κε δεως κε*] (— ◡ ◡ — ◡ ◡ — ◡) and end with [*τι(τ)τετικμενος ειτου*] (◡ ◡ — ◡ ◡ — —). In order to form another complete hexameter, we would need two syllables in the middle—possibly light + heavy—and the best candidate would be *τιε/η*, which is generally translated as “Zeus” (though we know that Phrygian *Ti-* is not exactly superimposable on Greek Zeus).

3.5 Summing up, the “archetypical” curse formula would be composed in a hexametric distich:

— ◡ ◡ — ◡ ◡ — ◡ ◡ — ◡ ◡ — ◡ ◡ — —
 ιος νι σεμο(υ)ν κνουμαν(ε)ι / κακουν αδδακετ αινι τεαμας
 — ◡ ◡ — ◡ ◡ — ◡ ◡ — ◡ ◡ — ◡ ◡ — —
 με ζεμελως κε δεως κε Τη τι τετικμενος ειτου

8 Some examples: *αινι μανκα* (18/11.2, 26/36.1); *αινι μανκης* (86/8.1); *αιν’ (αδ) ατεαμας* (14/7.3); *αινι τιαμας* (87/9.1); *αινι (αδ) ατε(α)μας* (112/10.1); *αιν’ ατεαμαις* (120/15.1); *αινι σας μδυει* (73/14.1). I leave out *αινι οι θαλαμει* (4/18.1), which Lubotsky lists, because the sequence is now generally segmented as *θαλαμειδη* (cf. Obrador Cursach 2020a:547 with references).

9 Variants include, among other things, versions with different ordering of the two nouns, with one or two instances of connective *κε* ‘and’, and with or without preposition *με* ‘among’, e.g., *δεως ζεμελως κε* (40/24.1), *με δεως κε ζεμελως κε* (96/19.1), *με ζεμελως κε δεως κε* (3/17.2 and elsewhere), etc. Lubotsky thinks that *δεως ζεμελως*, the only asyndetic expression, was the original formula because of the order “gods and men” and Behaghel’s law of increasing cola, but that the most common variant, *με ζεμελως κε δεως κε*, reflects, once more, a dactylic rhythm, and is therefore “likely to be the opening of the metrical line.”

Whoever does harm to this grave or to the stone,
let him be accursed by Zeus among men and gods.

The scenario we are dealing with, then, is one in which the hexameter was adopted at some point by the Phrygians and used for funerary curses. This has become the mainstream theory on the origin of Phrygian metre (cf. most recently Obrador Cursach 2020a:9). However, another hypothesis was put forth a few years later.

4 West's solution

4.1 In 2003, Martin West argued that the NPhr. inscriptions reflect a much older metrical pattern. He shows dissatisfaction with Lubotsky's explanation because he maintains that, even if Lubotsky's hypothesis were to be correct, it would say little or nothing about "native Phrygian versification."

4.2 West also starts from the common variant of the $\delta\epsilon\omega\varsigma$ $\zeta\epsilon\mu\epsilon\lambda\omega\varsigma$ formula that Lubotsky considered ($\mu\epsilon$ $\zeta\epsilon\mu\epsilon\lambda\omega\varsigma$ $\kappa\epsilon$ $\delta\epsilon\omega\varsigma$ $\kappa\epsilon$) and notes that it often occurs without the preposition $\mu\epsilon$, without the first $\kappa\epsilon$, or—asyndetically—with neither. He also thinks that $\zeta\epsilon\mu\epsilon\lambda\omega\varsigma$ (which we find in 92/27.1) is the older form of this case because it preserves the final vowel of the ending. On these grounds, he concludes that "the archetypal text" might have been: $\mu\epsilon$ $\delta\epsilon\omega\varsigma$ $\zeta\epsilon\mu\epsilon\lambda\omega\varsigma$ $\tau\eta$ or $\delta\epsilon\omega\varsigma$ $\kappa\epsilon$ $\zeta\epsilon\mu\epsilon\lambda\omega\varsigma$ $\kappa\epsilon$ followed by $\tau\iota\tau\epsilon\tau\iota\kappa\mu\epsilon\nu\omicron\varsigma$ $\epsilon\iota\tau\omicron\upsilon$. This, he observes, is a combination of glyconic (gl : $\times\times-\cup\cup-\cup\times$) + pherecratean (ph : $\times\times-\cup\cup--$), which is quite common in Greek lyric poetry.

4.3 Moving on to the protasis of the curse formula, one may find another glyconic: $\kappa\nu\omicron\mu\alpha\nu\epsilon\iota$ $\kappa\alpha\kappa\omicron\upsilon\nu$ $\alpha\delta\delta\alpha\kappa\epsilon\tau$ ($\times\times-\cup\cup-\cup\times$). This is preceded by $\iota\omicron\varsigma$ $\nu\iota$ $\sigma\epsilon\mu\omicron\nu$, which according to West is not a problem because "a glyconic is sometimes preceded by a four-syllable measure, normally of the form $\times-\cup-$ (iambic metron)," as in, e.g., Alc. 70.10 $\chi\alpha\lambda\acute{\alpha}\sigma\sigma\omicron\mu\epsilon\nu$ $\delta\grave{\epsilon}$ $\tau\acute{\alpha}\varsigma$ $\theta\upsilon\mu\omicron\beta\acute{\omicron}\rho\omega$ $\lambda\acute{\upsilon}\alpha\varsigma$ and elsewhere (West 2003:81).

4.4 If one assumes a basic scheme (G = glyconic) with minimal variation (G_\wedge = pherecratean [= catalectic glyconic]) and takes into account the aforementioned four-syllable prothesis (4), we can account for the metrical structure of the basic curse formula:

$\iota\omicron\varsigma$ $\nu\iota$ $\sigma\epsilon\mu\omicron\nu$	$\kappa\nu\omicron\mu\alpha\nu\epsilon\iota$ $\kappa\alpha\kappa\omicron\upsilon\nu$ $\alpha\delta\delta\alpha\kappa\epsilon\tau$	4	G
	$\delta\epsilon\omega\varsigma$ $\kappa\epsilon$ $\zeta\epsilon\mu\epsilon\lambda\omega\varsigma$ $\kappa\epsilon$		G
	$\tau\iota\tau\epsilon\tau\iota\kappa\mu\epsilon\nu\omicron\varsigma$ $\epsilon\iota\tau\omicron\upsilon$		G_\wedge

4.5 Not only would this schema find parallels in other Indo-European traditions, especially Greek and Vedic,¹⁰ but it would also be compatible both with those cases in which we find a longer protasis, such as (4/18.1), and with some alternative forms of the curse:

4/18.1	ιος νι σεμον [κνουμανι] κακουν α(δ)δακετ αινι οι θαλαμειδη	4 G G _λ
32/62.1, 33/62.2, 34/62.3, 36/62.5, 59/60.1, 105/62.6	ιος νι σεμου κνουμανει κακουν αδδακετ γεγρεμεναν εγεδου Τιος ουταν	4 G 4 G _λ

4.6 Another peculiarity that West notes is the presence of a pentasyllabic colon of the form $\times - \cup - -$, here noted with “5”, after a glyconic:

33/62.2, 76/53.1, 108/54.1	ακκε οι βεκος ακκαλος τιδρεγρουν ειτου	G 5
----------------------------	--	-------

Once more, this is not an isolated case in the IE panorama, as—he argues—this pentasyllabic colon recurs in Greek and Vedic poetry. In the former, it often occurs as a clausula after a dactylic hemiepes ($- \cup \cup - \cup \cup$), or in combination with a glyconic (as in Ion of Chios, PMG 744.3, ἥδιστον πρόπολον βαρυγδούπων ἐρώτων). In the latter, the *dvipadā virāj* verse is composed of two pentasyllables (West 2003:83). The same pentasyllabic clausula could also be isolated in the sequence *ασβαταντευτους*¹¹ of 33/62.2 and 36/62.5.

4.7 If one is looking for the origin of these metrical sequences, then, West admits that there are two possibilities: either the Phrygians took these metres from the Greeks, or they inherited them. If the former is the case, he argues, it would be

10 “Similar metres are characteristic of the Rigveda. One of the commonest is an octosyllabic verse of the form $\times \circ \circ \circ \cup - \cup \times$. ($\circ \circ \circ$ denotes a sequence of positions in which two successive short syllables are avoided.) This often produces lines that correspond exactly to a Greek glyconic [...] There also occurs a seven-syllable verse, $\times \times \circ \circ - \cup \times$, which corresponds to the Greek pherecratean. The other most common types are eleven- and twelve-syllable verses, which are like the seven- and eight-syllable ones with four extra syllables at the beginning. As they have a regular caesura after either the fourth or the fifth syllable, a basic structure of 4 + 7 or 4 + 8 (with optional displacement of caesura by one syllable) can be postulated” (West 2003: 81–2).

11 For a long time, both reading and word segmentation were uncertain (this was also read *αβατ αντευτους*), but it has now become clear that this should be analysed as *ας βαταν τευτους*, with *ας βαταν* “by Bat” being a variant of *ας τιαν* “by Zeus”. I thank Sasha Lubotsky for pointing this out to me.

difficult to sketch a realistic transmission scenario, because metres such as the glyconic and the pherecratean had stopped being in use long before our Phrygian inscriptions. In light of this and of the aforementioned IE parallels, he believes that the NPhr. corpus preserves a direct reflex of IE versification.

4.8 Despite the ambition of his proposed solution, West—like Lubotsky—expresses some caution, admitting that not every text can be analysed metrically, and often we are dealing with unmetrical adaptations. He also draws a parallel with the Greek tradition¹² which, in my opinion, can be further elaborated (cf. §6 below).

5 Discussion of current solutions

5.1 Both solutions are ingenious and address different parts of the problem. Neither of them, though, seems to definitively solve it. On the one hand, Lubotsky's idea implies a more realistic transmission scenario but accounts for a relatively small number of inscriptions in the corpus. On the other hand, West's proposal is compatible with a higher number of curse formulae, but is highly hypothetical and sets up schemes that are too flexible to be proof for similarities that go beyond chance. In the rest of this section, I highlight the problems and questions that each of these proposals leaves open.

5.2 Accepting West's idea would leave one wondering why a relatively unusual structure such as the glyconic preceded by four syllables should be so widespread in Phrygia. At the same time, if this and the other sequences are directly inherited from PIE, one also wonders why they are not found in Old Phrygian, which also has texts with curses. More generally, the similarities that have been pointed out with Vedic metres are certainly worth noting, but one must also admit that the variety one finds in the Vedic corpus would allow for a considerable number of hypothetical parallels. Finally, there is a detail which should not be underestimated: we saw above (§4.2) that the form ζεμ]/ελωσι in 92 is a crucial part of West's theory, but the reading of this form is extremely uncertain.¹³ Therefore, it seems rather unsafe to use this form as the basis for any complex theory.

5.2.1 Building a scheme with many variants allows one to fit almost anything in it. At a more general level, some metrical schemes *may look* similar superficially,

12 “Similarly in lower-class Greek epitaphs we often find metrical formulae and clichés derived from real funerary verse but not successfully put together to make a properly metrical text” (West 2003:84).

13 Brixhe and Neumann 1985:177: “iota est net sur la photo de MAMA IV 116, pl. 30, mais oblique et peut-être ajouté après coup.”

but their origin might also be totally independent. As the following examples show, the Plautine catalectic trochaic tetrameter may resemble the Italian sequence of *ottonario* + *ottonario tronco* (ignoring line division, of course), but their origin, history, and traditions are completely different.

*nunc te, nox, quae me mansisti, mitto ut concedas die,
ut mortalis illucescat luce clara et candida*

Now, Night, who waited for me, I send you off so that you might yield to Day,
so that he may enlighten mortals with clear and bright light.¹⁴

Pl. *Am.* 546–7

*Mise l'elmo sulla testa per non farsi troppo mal
E partì, la lancia in resta, a cavallo di un caval*

He put the helmet on his head, lest he get too hurt
and he left, with the spear on his rest, on horseback

Giovanni Visconti Venosta (1831–1906), “La partenza del crociato”

5.3 Besides the occasional inconsistencies—e.g., κε is treated as heavy in the MPhr. inscription, but light in the NPhr. corpus; one often finds cretic (– ∨ –) sequences, which are not allowed in the hexameter—the main issue with Lubotsky’s solution is that it explains very few actual inscriptions. Also, one is left to wonder why a language with no length distinction in vowels (cf. the phonological premises summarised in §3.3 above) should have a metrical scheme which, in principle, is heavily based on length distinctions. Finally, even adopting a contact perspective, one wonders if the hexameter (and the hexameter alone!) was so often used for funerary inscriptions, and—even if this were the case—why one should have hexameters specifically for *curses*.

5.4 Both theories highlight important points and show interesting intuitions,¹⁵ but neither captures the majority of the actual data while being completely falsifiable. Only one of them implies a realistic scenario, which takes into account that these inscriptions were made for non-elite peoples in rural areas. Therefore, in what follows, I offer a possible alternative which considers both language-internal and contextual data.

14 Translations here and below are mine, except as noted.

15 For instance, the necessity of thinking of an adapted metre in Lubotsky’s case and the presence of pentasyllabic clausulae in West’s solution.

6 A modest proposal

6.1 When dealing with material of this sort, it is conceivable, in principle, that an archetype may lie behind the attested forms, and that such an archetype may indeed be metrical—though one must take into account that texts of this sort were re-created all the time. A Latin parallel comes to mind in this respect: the famous distich *quisquis amat valeat pereat qui nescit amare/ bis tanto pereat quisquis amare vetat* “whoever loves, may (s)he be well; who does not know how to love, may (s)he perish;/ whoever forbids loving, may (s)he perish twice” would be difficult to reconstruct from the Pompeian attestations alone¹⁶ if we did not know anything about Latin versification and elegiac couplets. But a verse archetype is clearly present.

6.2 Let us then start by focussing on $\iota\omicron\varsigma \nu\iota \sigma\epsilon\mu\omicron\nu\nu \kappa\nu\omicron\upsilon\mu\alpha\nu\epsilon\iota \kappa\alpha\kappa\omicron\nu\nu \alpha\delta\delta\alpha\kappa\epsilon\tau$ “whoever does evil to this tomb,” which is the most common sequence we find,¹⁷ is universally regarded as the “typical” curse formula, and makes sense syntactically and semantically. This sequence seems to be a dodecasyllable which, if one were to “translate” it into Greek, could resemble a simplified iambic trimeter ($\times - \cup - \times - \cup - \times - \cup -$).¹⁸ Let us test if this “Phrygian dodecasyllable”/iambic trimeter hypothesis is compatible with our material.

6.3 The protasis of the curse formula has twelve syllables in several occurrences:

3/17.2	$\iota\omicron\varsigma \nu\iota \sigma\epsilon\mu\omicron\nu \kappa\nu\omicron\upsilon\mu\alpha\nu\epsilon\iota \kappa\alpha\kappa\omicron\nu \alpha\delta\delta\alpha\kappa\epsilon\tau$
5/18.2	$\iota\varsigma \kappa\epsilon \sigma\epsilon\mu\omicron\upsilon\mu\iota \kappa(\nu)\omicron\upsilon\mu\iota\nu\omicron\varsigma \langle\kappa\alpha\kappa\omicron\nu\nu\rangle/ \alpha\delta\alpha\kappa\epsilon\nu$
103/66.1	$[\iota\omicron\varsigma] \sigma\epsilon\mu\omicron\nu \tau\iota \kappa\nu\omicron\upsilon\mu\alpha\nu\iota \kappa[\alpha\kappa/\omicron\nu \alpha]\beta\epsilon\rho\epsilon\tau$
129/19.2	$\iota\omicron\varsigma \nu\iota \sigma\alpha \mu\alpha\tau[\epsilon]/\rho\epsilon \kappa\alpha\kappa\omicron\nu \alpha\beta\beta\epsilon/\rho\epsilon\tau\omicron\iota$

16 *CIL* IV 4091: *quis amat valeat pereat qui nescit amare bis tanti pereat quisquis amare uetat*; *CIL* IV 1173 add. p.204: *quisquis ama ualia peria qui nosci ama[re] bis [t]anti peria quisquis amare uota*; *CIL* IV 3199: *cuscus amat ualeat pereat qui nescit amare*; etc.

17 This sequence was the one that was best remembered and most reproduced by whoever engraved those tombs.

18 One could of course argue that this interpretation is not viable because, e.g., the third element of some iambic metra (e.g., the final syllable of $\kappa\nu\omicron\upsilon\mu\alpha\nu\epsilon\iota$) is long and not short as it should be, or light syllables are found where heavy ones are expected (as in, e.g., the first syllable of $\sigma\kappa\epsilon\lambda\epsilon\delta\rho\iota\alpha$ in 67/44.3). But I think that it is clear—as Lubotsky and West admitted—that our best hope is to reconstruct an *approximation* of a Greek metre—if indeed this is an approach that is worth following (cf. the discussion under §7 below).

67/44.3 ιος/ σα τι σκελεδριαι/ κακουν αδακετ

The apodosis can also be a dodecasyllable (124/65.4: με ζεμελωσ οττιτετικμε/νοσ ειτου) and sometimes we even find sequences of two dodecasyllabic lines (e.g., 53/46.1: ιος νι σεμον κν[ου]/μμανει κακουν [α]/δδακετ || ταικαγ / τιττετικμεν[ος]/ ας ταν ειτου; 93/32.1: ιος νι σεμον/ κνουμανε κακον/ αδακετ || δεωσ ζεμελωσ τιτετικ/μενοσ ειτου). If one is ready to allow for some variation, or distortions (given the nature of the texts), more sequences may be read as “Phrygian dodecasyllables” (33/62.3, 76/53.1, 108/54.1: ακκε οι βεκοσ ακκαλοσ τιδρεγρουν ειτου [synaloepha or elision between ακκε and οι]; 12/40.1: ειωσ νι σεμον κνουμανι κακον/ αδδακετ [if ειωσ is to be taken as a single syllable]; 82/64.1: ιος νι σα του μανκα κακουν αδ/δακετ [if, alternatively, ιος is to be taken as two syllables, which is perhaps less likely]). This could also apply to 12 + 12 sequences, provided that we allow for resolutions (cf. §6.7 below) and/or verse end in the middle of a word—though the latter is less likely in a stichic line (26/36.1: ιος νι σεμον κνουμα/νε κακον δακετ αι||νι/ μανκα τιε τιττετι/κμενοσ ειτου; 40/24.1: ιος νι σεμον κνουμα-νε κακεν αδδακε||τορ δεωσ ζεμελωσ κε τιττετικμενοσ ειτου [here, εω would need to be taken in synizesis]). Despite the license taken in some cases, it seems that quite a few lines would scan in this way, and in this respect this proposal would already be more faithful to the data than the previous ones. One could even go a step further and hypothesise an archetypical “Phrygian distich”:

ιος νι σεμον κνουμανει κακουν αδδακετ
 δεωσ ζεμελωσ τιτετικμενοσ ειτου —or— ζεμελωσ δεωσ ...

Despite the fact that one inscription (93/32.1, cf. supra) is remarkably similar to our reconstructed distich, the reader should not believe for a second that this reconstruction corresponds to reality. This is just to show how shaky the grounds for this kind of exercise are, especially when one cherry-picks from the available material. In a less facetious way, I would like to suggest that the first step for this kind of analysis should be to exclusively look at the material.

6.4 We have seen that the protasis often consists of a twelve-syllable sequence, so let us now turn to the apodosis. Despite the occasional dodecasyllable (cf. examples in §6.3), a closer look reveals a much higher degree of variation. There is, however, one notable feature: sequences of five syllables (a Phrygian pentasyllable?) are attested throughout the corpus and have a tendency to appear at the end of the sentence. The famous *akkalos* formula ακκε οι βεκοσ ακκαλοσ τι δρεγρουν ειτου (cf.

33/62.2, 76/53.1, 108/54.1)¹⁹ ends in τιδρεγρουν ειτου, which has five syllables just like the “attempts at ending a hexameter” that Lubotsky noted (αινι ταμας (87/9.1), αιν’ ατεαμας (120/15.1), αινι σας μδυει (73/14.1), cf. n.8 supra). One inscription could be read as a sequence of two pentasyllables, if one allows for “verse”-end in the middle of a word (98/1.2: δακαρεν πα/τε||ρης ευκιν/ αργου), or even as a decasyllable,²⁰ and another (33/62.2) could be composed of four dodecasyllables and one pentasyllable:²¹

ιος νι σεμουν κνουμανει κακουν αδδακετ	12
γεγ(ρ)ειμεναν ε/γεδου τιος ουταν ακ	12
κε οι βεκος ακκαλος τι δρεγρουν ειτου ☞	12
αυτος κε ουα κ εροκα γεγαριτμενος	12
ας βαταν τευτους	5

6.5 Regardless of whether one believes in the analysis of one or the other individual example, this is—admittedly—a new house of cards. One can safely say that there are several sequences that can be identified as dodecasyllables, and some that can be thought of as pentasyllables. And, in my opinion, this model, which clearly borrows elements from Lubotsky’s and West’s analyses, conforms better with the data than the solutions hitherto proposed and includes more inscriptions without resorting to archetypes or ad hoc modifications. However, on its own it is not any more falsifiable and has no further explanatory power. Therefore, I suggest that one should turn to another set of data, which in my opinion has the potential to provide a weighty argument in favour of my hypothesis. But this time we shall not

19 While the word βεκος is uncontrovertibly the word for ‘bread’ (Obrador Cursach 2020a:196), ακκαλος remains a mystery. In the older literature, scholars tried to identify it with the IE word for ‘water’ (Latin *aqua*, etc.), but Obrador Cursach (2020a:152) follows Lubotsky (2004) in thinking that ακκαλος is a noun in apposition to βεκος ‘bread’ and takes the formula to mean something like “may the bread AKKALOS be innutritious to him.” He suggests that this might be a loanword from Akkadian *akalu*- and adduces a Hebrew parallel (Lev. 26:26) in which God’s curse is $\text{וַאֲכַלְתֶּם וְלֹא תִשְׂבְּעוּ}$ *wa’ākaltēm wālō’ tīśēbā’ū* “you shall eat but not be satiated” (Obrador Cursach 2019:155-6).

20 If one were to follow a comparative approach and consider these decasyllables as “shorter” variants of hendecasyllabic and dodecasyllabic types, parallels such as the Vedic *virāṣṭhānā* and *gautamī* (ten syllables, related to the hendecasyllabic *triṣṭubh*; Arnold 1905:14, 211–2) and *bhārgavī* (eleven syllables, related to the dodecasyllabic *jagatī*; Arnold 1905:14, 213) come to mind. I wish to thank Brent Vine and David Goldstein for bringing these parallels to my attention.

21 This would of course require that τιος (in the second line) be read as a two-syllable word, that τι δρεγρουν ειτου (in the third) be considered part of a dodecasyllable and not as a self-standing pentasyllable, and that ακκε be split between the second and third lines.

turn to Vedic, or reconstructed IE metres, as I contend that before identifying possible models for these metrical sequences in faraway contexts and cultures, one should look nearby and focus on those documents that are close to our Phrygian inscriptions in time, location, and genre.

6.6 In his recent book, Bartomeu Obrador Cursach praises the value of Strubbe's *Arai Epitymbioi* (1997), which gathers the formulae attested in Greek inscriptions of Asia Minor,²² and notes that there are important parallels between the two corpora. Not only do I fully agree with this stance, but I would also like to take a firmer step further down this path and argue that the Phrygian and Greek corpora can—and should—be connected also from a metrical point of view. The first, most striking, parallel is that the first line of the Greek curse formula is in iambic trimeters of twelve syllables (× – ∪ – × – ∪ – × – ∪ –):

193 Strubbe τίς ἂν κακῶς ποιήσι τούτῳ μνήματι

if someone does any harm to this tomb

285–8 Strubbe τίς ἂν προσοίσει χεῖρα τὴν βαρύφθονον

if someone lays a hand with heavy envy (on this tomb)

Not only do these sequences have almost exact parallels in Phrygian inscriptions (cf. the standard phraseology as in ιος νι σεμουν κνουμανει κακουν αδδακετ “whoever does harm to this tomb,” as seen above, and 106/59.4: ιος νι σεμουν κνου/μανει κακουν αδοκετ ζειραι “whoever does harm to this tomb with the hand”), as noted by Obrador Cursach,²³ but they also belong to a very widespread typology of inscriptions which are composed of one or two iambic trimeters. Some examples:²⁴

23 Ὅς ἂν προσάξει χεῖρα τὴν βαρύφθονον,
οὔτως ἄωροις περιπέσοιτο συνφοραῖς

161 Εἴ τις προσοίσει χεῖρα τὴν βαρύφθονον,
[το](ι)ευταις (?) ἄωροις περιπέσοιτο συνφοραῖς

22 “By compiling and classifying all of the different formulae attested in Greek inscriptions, [...] created a priceless source of information that can be compared with the Phrygian inscriptions” (Obrador Cursach 2020a:132).

23 “[T]hey are not word-for-word versions of the same text, but both the Greek and Phrygian inscriptions contain the same idea and it is possible that the variants are affected by the metrics of the Greek imprecations” (Obrador Cursach 2020a:132).

24 The numbering is that of Strubbe 1997.

- 166 Τίς δ[ὲ τούτῳ κακὴν] χεῖρα προσοίσει, πολλαῖς κακαῖς
περιπέσ[οιτο συνφοραῖς]
- 167 Οὕτως ἄωρος περιπέσοιτο συν[φ]οραῖς,
τίς ἂν ποσάζει χεῖρα τὴν βαρύφθονον
- 168 Ὅς ἂν προσοίσει χεῖρα τὴν βαρύφθονον,
οὕτως ἄωροις περιπέσοιτο συ(ν)φοραῖς
- 176 Ὅς ἂν ποσοίσι χῖρα τὴν βαρύφθονον,
οὕτως ἄωροι(ς) περιπέσοιτο συ(ν)φοραῖς

The meaning of this curse formula, which shows a certain degree of orthographic and syntactic variation, is “whoever lays a hand with heavy envy (on this tomb), may (s)he fall victim in the (same) way to untimely misfortunes” (cf. Strubbe 1997: 287). These lines scan as dodecasyllabic iambic trimeters in most cases,²⁵ and one should also note that, in most inscriptions, ἂν is in the same metrical slot as Phr. vi, and initial ὅς / τίς is reminiscent of Phr. ιος.

6.7 However, we may find lines which have clear violations of the standard iambic trimeter (e.g., a heavy syllable in the third element of a metron), or which scan only if one takes two syllables in synaloepha. Cf. 271 for both instances: Τίς ἂν τούτῳ τῷ ἔργῳ κακῶς ποιήσει, / ἀνγῆς φάος λίποιτο καὶ ἡλίου τὸ φῶς. Defective hexameters are also found, such as in the apodoseis of 272: Τίς ἂν ταύτῃ τῇ σορῶ κακὴν χεῖρα προσοίσει, / ὀρφανὰ τέκνα λίποι[τ]ο χῆρον βίον οἶκον ἔρημον] and 162: Τίς ἂν ποσάζει χῖρα τὴν βαρύφθονον, / ὀρφανὰ τέκνα λίποιτο οἶκον χῆρον βίον ἔρημον. Finally, one may also detect decasyllabic (or pentasyllabic, provided that one allows for line-break in the middle of a word) sequences within curses that would not scan otherwise: e.g., the protasis of 55: Εἴ τις δὲ τῇ στήλῃ πο(σ)αμαρτη, περιπέσοιτο ἄωρου συνφορῶ. That whoever engraved those inscriptions knew about the Greek hexameter is beyond doubt, as we also find hexameters in bilingual texts such as 83, 123, and 124. However, it is worth noting that—as was the case for the trimeter—these hexameters are often imperfect (e.g., in 272 the first syllable of χῆρον would need to be a light syllable in order for the verse to scan properly; in 162, the entire sequence οἶκον χῆρον βίον ἔρημον only has in common with a correct hexameter the possible number of syllables). Despite the fact that there does not seem to be a specific distribution of such metrical sequences, which are in fact quite interchangeable, such metrical variation is significant, as it seems to be very

25 The apodosis can also be considered an iambic trimeter (though not a dodecasyllable) with resolution of the second element of the second metron (περιπέσοιτο ∼ ∼ – ∼).

similar to that in Phrygian inscriptions. In both corpora, syllable weight seems to matter less than syllable number, but at the same time—if one keeps in mind the “standard” hexameter or trimeter—one regularly finds extra syllables (e.g., in 26/36.1 and 40/24.1) which may point to resolved sequences (cf. what can be interpreted as a resolved sequence in Gk. περιέσοιτο, in 55). We shall see in the next section which scenario could best account for this similarity, but it seems clear from this set of data that we are mostly dealing with defective versions of Greek stichic metres (with traces of resolution of some elements!) in both corpora. This lack of attention to (or ignorance about) syllable weight may be indicative of adaptation processes in which the model was imperfectly understood, and the replica was similar to it in principle, but with a degree of variation which would otherwise be difficult to account for. At any rate, this hypothesis of Phrygian twelve-syllable sequences is compatible with the majority of the Greek data, and the presence of other sequences (decasyllables or pentasyllables) is possible but less clear.

6.8 Should the previous proposals then be discounted in their entirety? I do not think so. Lubotsky’s idea presented in §3.2, i.e. that the Dokimeion inscription is metrical, is very plausible, and West’s observation that there are pentasyllables at the end of the line (cf. §4.6) seems indeed to find confirmation in the data. Whether the Dokimeion inscription reflects one of the first attempts at reproducing hexameters or is one of the earliest Phrygian reflexes of IE metrical structures is less sure, though, because some of the supporting arguments for the hexameter theory need to be abandoned. As we have seen above, the presence of hexameters in NPhr. inscriptions is far from certain, and a form such as ζεμ]/ελωσι (92/27.1), on which West’s theory instead relies, is hardly secure.

6.9 If, on the other hand, one were to endorse the solution offered here, the Dokimeion inscription would become clearer, and even more “regular” than before, as all lines are composed of seventeen syllables and can be read as a dodecasyllable + a pentasyllable. Even more tentatively, and provided that one accepts the idea of taking a couple of syllables in synaloepha, even the Old Phrygian inscription W-01, whose syntax Obrador Cursach (2020a:153) compared to that of NPhr. curse formulae, would find a metrical explanation under the proposed solution: *yos esait materei_ eveteksetey_ ovevin* (twelve) + *onoman daKet* (five).²⁶

26 The obvious inference is that one cannot simply superimpose the NPhr. data onto an OPhr. model. The latter would in fact require a separate study, which goes beyond the aims of this article.

7 Possible transmission scenarios

7.1 This new proposal accounts for more attested forms than Lubotsky's and allows less variation than West's, being therefore more falsifiable. More importantly, though, it is more compatible with a plausible and realistic sociolinguistic scenario, which takes into account both the material in the two languages and the "epigraphic habit" of the area.²⁷ If, as I have argued, the Phrygian evidence is to be connected to the Greek, then a contact explanation is what we should be looking for. That Phrygian and Greek were in close contact is beyond any doubt,²⁸ and it is difficult to ignore this point of view when we have so many bilingual texts, and—as we have seen above—we find the same formulae in both languages. We find ourselves then in front of two obvious possibilities: either Phrygian influenced Greek or Greek influenced Phrygian.

7.2 While Lubotsky's solution only allows the latter option, West's allows neither of them. The theory proposed here, instead, is potentially compatible with both. One could argue, for instance, that what we see in our Phrygian corpus is an attempt at reproducing the Greek iambic trimeter, which was used in curses. However, one cannot really discard the opposite hypothesis, i.e., that the people living in that area, who were not originally Greek-speaking, tried to give a Greek "façade" to rhythms which were for them ancestral, and present in their or their parents' language. The current data do not allow us to make a strong case for either scenario, but if one looks at the geographical distribution of Greek metrical curse formulae, it appears that iambic trimeters are also found outside of Phrygia. Also, one must reckon with a prolonged period of contact between Phrygian and Greek, especially in light of the recently-established "Middle Phrygian" period (cf. n.6 supra), when the Greek alphabet started being used and Greek names are attested.

7.3 In light of the distribution of the inscriptional evidence and the compatibility with what we know about the linguistic landscape in Hellenistic and Roman Phrygia, the scenario that seems more realistic is therefore one in which the local Phrygian-speaking population adopted (and imperfectly adapted) the Greek iambic trimeter. They employed this verse mostly in its "standard" dodecasyllabic form, but they allowed for some variation, probably with the knowledge that such a

27 This term is traditionally employed (cf. McMullen 1982 and subsequent literature) to refer to the practice of recording information on stone and—by extension—to the conceptual space in which inscriptional practices take place over time.

28 On this and on contacts between Phrygian and Greek, cf. Anfosso 2017, 2019, 2021, Neumann 1988, Obrador Cursach 2020a:127–41, Obrador Cursach 2020b (all with further references).

metrical scheme could surface with a different number of syllables (as shown in the Greek inscriptions from the area, likely engraved by the same Phrygian communities). That before this process there was a native syllable-based metre is certainly possible, but at the moment it is difficult to prove whether people in this area were trying to translate a local metre into their L2 Greek.²⁹

8 Conclusions

In taking a new look at the issue of Phrygian metre, I have argued that the sequences that one finds in New Phrygian curse inscriptions can be traced back to a Greek model, namely an iambic trimeter in its prototypical dodecasyllabic form. I have also tried to show that an analysis of metre in a small corpus is potentially prone to interpretations of a completely different nature. By reassessing the available evidence, and by looking beyond Phrygian, I hope to have convinced the reader that the Greek material from the area should be taken into serious consideration when attempting an analysis of Phrygian metre. We shall see whether further data in the future will confirm or refute my theory, which for the time being may be considered not only alternative, but perhaps even complementary to some of the current solutions (in particular Lubotsky's), especially if one considers the possibility of multiple instances and points of contact.³⁰ From a typological point of view, it is fairly uncontroversial that metrical schemes can indeed be borrowed, as shown, e.g., by the Latin adaptation of Greek and Italic metres (cf. Eichner 1993), or the success of the Italian hendecasyllable in late Medieval and Modern European poetry. In the case of Phrygian, if we are ready to accept that the presence of similar formulae in Phrygian and Greek (and perhaps some Anatolian languages) is due to contact, why can we not accept the same for the metre that these were written in?

References

- Anfosso, Milena. 2017. Du grec au phrygien et du phrygien au grec: Changements et mélanges de code dans les inscriptions néophrygiennes (Ier–IIIe siècles après J.C.). *Camenulae* 18.1–22.
- . 2019. Greek and Phrygian Interactions in the Neo-Phrygian Inscriptions: A Pragmatic and Sociolinguistic Analysis. In David M. Goldstein, Stephanie W. Jamison, and

29 Similarly, it must remain an open question whether or not there is a connection with the dodecasyllables of Anatolian origin (as in Lydian, cf. Eichner 1986a and 1986b).

30 This is reminiscent, in a way, of the concept of “multiple causation” in language change (on which, e.g., Curnow 2001).

- Brent Vine (eds.), *Proceedings of the 30th Annual UCLA Indo-European Conference, November 9th and 10th, 2018*, 1–17. Bremen: Hempen.
- . 2021. Les inscriptions néo-phrygiennes: Une revendication d'identité ethnique. In Lauriane Locatelli, Emilie Piguet, and Simone Podestà (eds.), *Constructions identitaires en Asie mineure, VIIIe s. a.C.–IIIe s. p.C.*, 101–25. Besançon: Presses Universitaires de Franche-Comté.
- Arnold, Edward V. 1905. *Vedic Metre in its Historical Development*. Cambridge: Cambridge University Press.
- Brixhe, Claude. 1978. Études néo-phrygiennes. *Verbum* 1/1.3–21.
- . 1990. Comparaison et langues faiblement documentées: L'exemple du phrygien et de ses voyelles longues. In Juliette Dor and Jean Kellens (eds.), *La reconstruction des laryngales*, 59–99. Liège: Université de Liège.
- . 2004. Corpus des inscriptions paléo-phrygiennes. Supplément II. *Kadmos*. 43.1–130.
- Brixhe, Claude, and Günter Neumann. 1985. Découverte du plus long texte néo-phrygien: l'inscription de Gezler Köyü. *Kadmos* 24.161–84.
- Brixhe, Claude, and Thomas Drew-Bear. 1997. Huit inscriptions néo-phrygiennes. In Roberto Gusmani, Mirjo Salvini, and Pietro Vannicelli (eds.), *Frigi e frigio. Atti del I° Simposio Internazionale, Roma, 16–17 ottobre 1995*, 71–114. Rome: Consiglio Nazionale delle Ricerche.
- Brixhe, Claude, and Thomas Drew-Bear. 2010. Inscription phrygienne hellénistique de Prynnessos. *Kadmos* 49.161–8.
- Calder, William M. 1911. Corpus Inscriptionum Neo-Phrygiarum. *The Journal of Hellenic Studies* 31.161–215.
- Curnow, Timothy J. 2001. What Language Features Can be “Borrowed”? In Alexandra Y. Aikhenvald and Robert M.W. Dixon (eds.), *Areal Diffusion and Genetic Inheritance: Problems in Comparative Linguistics*, 412–36. Oxford: Oxford University Press.
- Drew-Bear, Thomas, Alexander Lubotsky, and Mevlüt Üyümez. 2008. Three New Phrygian inscriptions. *Kadmos* 47.109–16.
- Eichner, Heiner. 1986a. Die Akzentuation des Lydischen. *Die Sprache* 32.7–21.
- . 1986b. Neue Wege im Lydischen I: Vokalnasalität vor Nasalkonsonanten. *Zeitschrift für Vergleichende Sprachforschung* 99.203–19.
- . 1993. Il contributo greco ed italico allo sviluppo della poesia romana arcaica alla luce delle fonti recentemente scoperte. In Rosa B. Finazzi and Paola Tornaghi (eds.), *Lingue e culture in contatto nel mondo antico e altomedioevale: Atti dell'VIII convegno internazionale dei linguisti tenuto a Milano nei giorni 10-12 settembre 1992*, 297–321. Brescia: Paideia.
- Haas, Otto. 1966. *Die phrygischen Sprachdenkmäler*. Sofia: Académie Bulgare des Sciences.

- Jasanoff, Jay, H. Craig Melchert, and Lisi Oliver (eds.). 1998. *Mír Curad: Studies in Honor of Calvert Watkins*. Innsbruck: Institut für Sprachen und Literaturen der Universität Innsbruck.
- Ligorio, Orsat and Alexander Lubotsky. 2018. Phrygian. In Jared Klein, Brian Joseph, and Matthias Fritz (eds.), *Handbook of Comparative and Historical Indo-European Linguistics* III, 1816–31. Berlin: de Gruyter.
- Lubotsky, Alexander. 1998. New Phrygian Metrics and the δεως ζεμελωσ Formula. In Jasanoff, Melchert, and Oliver 1998, 413–21.
- . 2004. The Phrygian Zeus and the Problem of the “Lautverschiebung.” *Historische Sprachforschung* 117.229–37.
- . 2017. The Phrygian Inscription from Dokimeion and its Meter. In Ivo Hajnal, Daniel Kölligan, and Katharina Zipser (eds.), *Miscellanea Indogermanica: Festschrift für José Luis García Ramón zum 65. Geburtstag*, 427–31. Innsbruck: Institut für Sprachen und Literaturen der Universität Innsbruck.
- McMullen, Ramsay. 1982. The Epigraphic Habit in the Roman Empire. *American Journal of Philology* 103/3.233–46.
- Mitchell, Stephen. 1993. *Anatolia: Land, Men and Gods in Asia Minor I: The Celts in Anatolia and the Impact of Roman Rule*. Oxford: Clarendon.
- Neumann, Günter. 1988. *Phrygisch und Griechisch*. Vienna: Österreichische Akademie der Wissenschaften.
- Obrador Cursach, Bartomeu. 2019. The Luwian Origin of the Phrygian Imprecations. In Gocha R. Tsetskhladze (ed.), *Phrygia in Antiquity: From the Bronze Age to the Byzantine Period. Proceedings of an International Conference “The Phrygian Lands over Time: From Prehistory to the Middle of the 1st Millennium AD,” Eskişehir, Turkey, 2nd–8th November, 2015*, 145–59. Leuven: Peeters.
- . 2020a. *The Phrygian Language*. Leiden: Brill.
- . 2020b. Phrygian in Contact with Greek: An Overview. In María-Paz de Hoz, Juan L. García Alonso, and Luis A. Guichard (eds.), *Local Cultures and Greek Paideia*, 89–121. Leuven: Peeters.
- Ramsay, William M. 1887. Phrygian Inscriptions of the Roman Period. *Zeitschrift für vergleichende Sprachforschung* 28.381–400.
- . 1905. Neo-Phrygian Inscriptions. *Jahreshefte des Österreichischen Archäologischen Institutes in Wien* 8 (Beiblatt).79–120.
- Strubbe, Johan H. M. 1997. *ΑΠΑΙ ΕΙΠΤΥΜΒΙΟΙ: Imprecations Against Desecrators of the Grave in the Greek Epitaphs of Asia Minor, A Catalogue*. Bonn: Habelt.
- West, Martin L. 2003. Phrygian metre. *Kadmos* 42.77–86.

One or Many Homers? Using Quantitative Authorship Analysis to Study the Homeric Question

CHIARA BOZZONE

RYAN SANDELL

Ludwig-Maximilians-Universität München

This paper applies techniques of *quantitative authorship analysis* (QAA) to the Homeric corpus (*Iliad* and *Odyssey*) to attempt to shed light on the composition and internal structure of these works. The primary objectives are to demonstrate a) that QAA can replicate the modern *communis opinio* on major structural divisions within the corpus (e.g., that the *Iliad* and the *Odyssey* should be ascribed to minimally two different authors and that *Iliad* 10 stands out within the Homeric corpus), and b) that QAA can be used to evaluate which among existing models of the textualization of Homer’s epics appears more likely. Specifically, results obtained using hierarchical clustering techniques indicate a) that each of the two Homeric epics admits of groupings that appear independently credible in terms of language and content, and b) that a multi-event model of textualization involving multiple authors is overall more plausible than a single-event model.

1 Introduction

One of the most enduring puzzles in the study of Western literature is the so-called Homeric question, i.e., the set of interconnected problems concerning how and when the *Iliad* and the *Odyssey* were first composed and how they came to assume their current form. Numerous solutions have been explored since antiquity: already in Alexandria one could pit the lumpers (who thought both the *Iliad* and the *Odyssey* were the work of a single poet)¹ against the χωρίζοντες ‘splitters’ (who thought the *Iliad* and the *Odyssey* were the work of different authors); their nineteenth- and twentieth-century counterparts are the Unitarians (who believe each poem reflects the work of a single poet) and the Analysts (who aim to uncover “different hands” within each poem). The modern understanding of the technique

1 The most famous Unitarian in antiquity is perhaps the author of the treatise *On the Sublime* (IX.11–5), who believed that Homer composed the *Iliad* in his youth and the *Odyssey* in his old age.

of Homer as oral and traditional in nature (cf. Lord 1960, Parry 1971) has further complicated this issue, and produced new variations on the usual themes.²

Nowadays, based on a series of qualitative arguments, most scholars of Homer subscribe to the following views:

- The *Iliad* and the *Odyssey* were likely composed by at least two different authors³ (though a few radical Unitarians remain, such as, for instance, Wachter 2007 and Janko 2012).
- The *Iliad* was composed prior to the *Odyssey* (for an overview of the arguments, see Andersen and Haug 2012:1–19).
- Oral tradition played some part in the composition of the poems, either simply as a necessary premise, as a means of transmission, or as an actual means of composition.⁴
- The poems were not immune from later interpolations.⁵ While in most cases these should be understood as small additions or subtractions of individual lines, most scholars agree that *Iliad* 10 (the *Doloneia*) in its entirety is such an addition.⁶

Beyond these points, disagreements are sharp, and the theories are many. A simplistic division can be set up between two different models of *textualization* of the poems. The first, which we will call the *Single-event Hypothesis* (e.g., West 2010, 2014), posits an individual author for each poem, who would have composed (and re-composed) the text over several decades, or even a lifetime, and committed it to writing. Few alterations would have happened afterwards. Some of these models tie the textualization to a special occasion and see the poems as *oral-dictated*

2 For a short history of the Homeric question, see Nesselrath 2011 and Turner 2011.

3 As Wilamowitz (cited in Passa 2016:165) puts it: “whoever puts the language, religion, and customs of the *Iliad* and the *Odyssey* on the same plane does not deserve scientific consideration.”

4 Foley 2007 is a good basic introduction to how the theory of orality impacts our understanding of the poems.

5 As West 1998:v writes: “ab aliis interpolatum esse poema manifestum est, mirumque esset, si aliter se res haberet” [That the poem contained interpolations from other sources is evident, and it would be remarkable if this had not been the case].

6 “The *Doloneia* is the only single extended passage within the *Iliad* which has been labelled a ‘late addition’ or ‘not authentic’ by most Homeric scholars, starting from the famous note in the scholia” (Danek 2012:106). A classic treatment is Danek 1988.

texts.⁷ Some (such as West 2010, 2014) envision a writing poet. In any event, all of these models assume that each poem as we have it reflects a single grammar (possibly over the course of a few decades) and a grand design by an exceptionally gifted poetic mind.

The second model, which we will term the *Multiple-event Hypothesis* (Nagy 1996:52–4, 2009:4–6, 2020), views the *Iliad* and the *Odyssey* as the result of a long tradition, with both poems having reached their current forms gradually over the course of several centuries through the cumulative work of many individuals within that tradition, and not as the products of an individual author. In this scenario our texts (which represent the serendipitous results of a long textualization process, rather than a pre-existing grand design) would reflect the output of multiple grammars, over the span of many decades and perhaps even centuries. Under this model, no real difference holds between “original” and “interpolations,” and all the multiple forms and variants of the text as we can garner from the surviving evidence are of equal value.⁸

In this divided landscape our contribution to the problem of Homeric authorship is to introduce a new method, very much distinct from previous efforts. Our method is quantitative and, in many ways, “dumb”: it does not bring to the question all of the knowledge (and thus prejudices) that a trained philologist would, and it does not look at the same features that philologists have previously been taking into consideration. It is, however, a well-established method that has been successfully applied to numerous problems of authorship analysis over the past few decades. As such, we hope that it may provide *external support* for some existing theories and help to choose among them.

Our goals in this paper are modest: we aim to establish that techniques of quantitative authorship analysis can be profitably applied to the Homeric poems, and specifically to show:

- that they can replicate some of the main conclusions that scholars have converged upon using qualitative methods;

7 Viewing the poems as oral-dictated texts (following Lord 1991) usually implies positing a shorter time frame for composition, and no opportunity for the poet to revise and re-compose their work after dictation; these theories also bring attention to the role of the scribe(s) in the process of textualization. Recent studies bringing typological and comparative considerations to this issue are Jensen 2011 (who proposes a very specific time and place for the textualization of both epics, namely, the late summer of 522 BCE in Athens) and Ready 2019.

8 An editorial project reflecting this model of the Homeric text is being implemented in the Homer Multitext Project (<https://www.homermultitext.org>).

- that they can help to decide which of different existing models of the textualization of Homer's epics is perhaps most likely.

In what follows, we first provide a brief introduction to Quantitative Authorship Analysis (§2). In Section 3 we address the question as to whether a single author of the Homeric epics is likely. In Section 4 we turn to evaluating likely groupings within books of the *Iliad* in isolation from the *Odyssey*.

2 A short introduction to Quantitative Authorship Analysis

The core assumption underlying *Quantitative Authorship Analysis* (henceforth QAA) is that *linguistic style* present in a text ("document") can be used to determine likely *metalinguistic properties* of that text (e.g., genre, date of composition, the specific author) in opposition to other documents with different such properties (e.g., different genre, different author). For a general introduction to methods of QAA, see Juola 2006, Statamatos 2009, and Juola 2012.

The Homeric question belongs to the most difficult class of authorship problems, namely, unsupervised authorship analysis, which attempts to answer the following questions: do two or more documents of unknown authorship have the same author (*verification*)? How many distinct authors are likely present in a pool of anonymous documents? In contrast to *attribution* problems, in which documents belonging to plausible known authors are available, neither the *Iliad* nor the *Odyssey* can be attributed to a known author, nor do we know many authors we should seek to find in the corpus. No fail-safe methodology exists for this type of problem, i.e., to conclusively identify how many "distinct" authors are to be found among a set of documents.⁹ What we present in this paper is a reasonable first attempt at attacking the issue.

Performing an unsupervised authorship analysis can be broken down into three steps: 1) establishing a linguistic corpus, 2) choosing and gathering features therein, and finally 3) assessing the similarity of the documents under consideration and discovering plausible groupings (*clusters*) of the documents. For the studies in Sections 3 and 4, all documents were extracted from digital editions provided by the *Thesaurus Linguae Graecae* (TLG), where each document corresponds to a traditional book (e.g., Book 1 of the *Iliad* or Book 7 of *Herodotus*).¹⁰ The features

9 See Stover and Kestemont 2016 for one approach to a *verification* problem in Latin literature similar in nature to the Homeric question.

10 We are aware that the traditional book divisions employed for the Homeric epics may not correspond to their actual historical textualization; see Heiden 1998 and 2000 for discussion concerning the validity of the book divisions, with references to earlier literature.

Table 2 continued

<p> δέτ σικ έγὼ κακ εντ άλα ατρ αμέ ειπ καί ωνά χος ταπ ονῆ ειρ ἄρῆ αῦτ ρας δέκ αζά έπι έει κον ερο ομε ίλο θον πον ενέ οικ νπο ωνν τοκ εῖν υσι σιδ ταμ εγά ιτο οὐκ νπρ τῶν ότε χον αιτ τοδ ονπ έγα ενε ιος οςκ κτο ιτα άντ οιμ ινο αιά σσο άμε νμε ρεσ ζοῦ νάμ δέμ σιπ νάπ δέπ οκα τεδ χαλ τὸς που αιέ οσέ ςπρ νει νδα αικ λλε εύς ένη έλε δὲμ ρῶν τας εζά φρο άων τατ νάγ έμο ρου τοπ οῖο σιμ τιν πεί νησ ίην των αμε ςάχ ςαῦ ατέ τακ έων ἄργ αίν οςτ νει ίωv άγα σατ ωνέ έρο νπε ίον ππο ςπε ςει τρε σετ ασι ονε στῆ στή ησε ἔκτ τελ αστ ςάπ λέμ ῶτε δαῦ λων οςῆ οὐς ςδὲ τεμ ενέ αιν ντί ςάγ έσθ αιέ ταδ άτο ετε έντ αςῆ απά μαχ ινα ιῶν ἴππ ιμε νθα λει μεθ μάχ ῦτο ωνπ έτι εὔρ έεσ ομα τηλ σθε αἰτ ςμε εις ροτ άτε την ίoi ειδ υμὸ ῶφρ ὸςῆ φρα ήσε στε ῦδέ νεκ απο μὸν αλκ όνο θαλ ιού ἀπο απρ ίης νατ αιῶ τρώ ενδ γεν σῖν νδε μος αἰπ μνη ινε εθε λου υσε εζῆ έλα τρο οιδ ιθε ἔφα ῦτὸ εῖν δρῶ εῖρ νῶς τῆρ αιδ έκα ρισ ςτο ςὸδ ρες ρέπ ιμέ δον μην ερῖ έπέ αιπ αλέ χιλ εια φέρ ςπο ωνκ υσα άχι ιπο τοτ έον ὸςά δέο επο τότ λεύ οςο ασθ ίνο ηστ μοῖ κρα λευ την χει μήτ μελ στι ραδ νάρ αιδ ῆος έστ ετέ ραν οςμ νάλ νου ῆδὲ όεν αίμ ειδ κεῖ ὸνά ινῆ αθε πεπ ανα οςα σιτ δος νῆπ αςδ πρὸ αίμ ιςά νπα λισ ήνη άσσ έμα εἶδ έρω λεμ ωνο ταν οἰδ νύπ μητ αλλ δης ςᾶρ ὸςδ νήσ ονᾶ επα ικε αια δει ντω ελε ργε ρὸν νδέ ιπα νας σκε πεσ εικ νῆα εις δᾶπ </p>

Features were extracted using the R package *stylo* (Section 3) or functions written by the second author, Sandell, supported by the R package *ngram* (Schmidt and Heckendorf 2021); this work and all subsequent analyses were conducted in R Version 4.1.2 (R Core Team 2021). From a *feature matrix*, which contains the frequency of each feature in each document, normalized for the document’s length, the distance between each pair of documents may be calculated, imagining the documents in an n -dimensional space (where n = the number of documents).¹¹ Intuitively, the more similar the values in the feature matrix, the smaller the distance between two documents. Finally, the resulting *similarity matrix* may be passed to a *clustering algorithm*, which arranges objects into groups based on their similarity. Hierarchical clustering methods, such as the average linkage algorithm (which we

11 Specifically, we employed Burrow’s Classic Delta (Burrows 2002) for analyses in Section 3 and standard cosine distance for analyses in Section 4.

have employed throughout), generate *dendrograms* (see Figure 1), where each node in the tree may be interpreted as a potential group.¹²

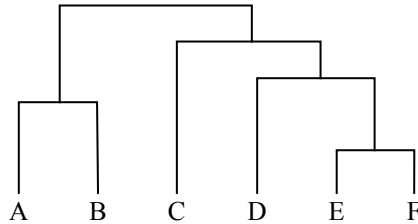


Fig. 1. A schematic cluster dendrogram

For more detailed exposition and technical details concerning the methodology outlined above, as well as code for reproducing the analyses and visualizations in Sections 3 and 4, we refer the reader to files available at <https://github.com/rpsandell/WeCIEC32>.

3 Is a single Homer likely?

The objective of this first study is to test whether a single “Homeric” authorial signal can be identified to the exclusion of other known ancient Greek authors, following the criterion of a *common root node*. This criterion is relatively weak, and potentially easy to satisfy; it merely proposes that, if all documents belonging to the *Iliad* and *Odyssey* are to be assumed to share a single author, a hierarchical clustering algorithm ought to create a node in the tree (cf. Figure 1) that includes precisely those documents and excludes all documents known (or typically believed) to have a different author.

Concretely, we fed the works of several known ancient Greek authors to a clustering algorithm, in order to test whether the features and algorithm could successfully group the works of known authors under a single root node for each author to the exclusion of documents by other known authors (thus picking up on some sort of *authorial signal*).¹³ Since that indeed turned out to be the case (with one single small but interesting exception), we were interested in verifying whether such an authorial signal could be identified for the Homeric corpus or parts thereof.

12 The dendrogram in Figure 1 should be read from the bottom up and was constructed as follows: documents E and F were the closest, and were grouped (i.e., clustered) together first; then A and B were the closest remaining, and were grouped together; then the average of E and F was closest to D; the average of DEF was then closest to C; finally, the two nodes AB and CDEF were joined at the root.

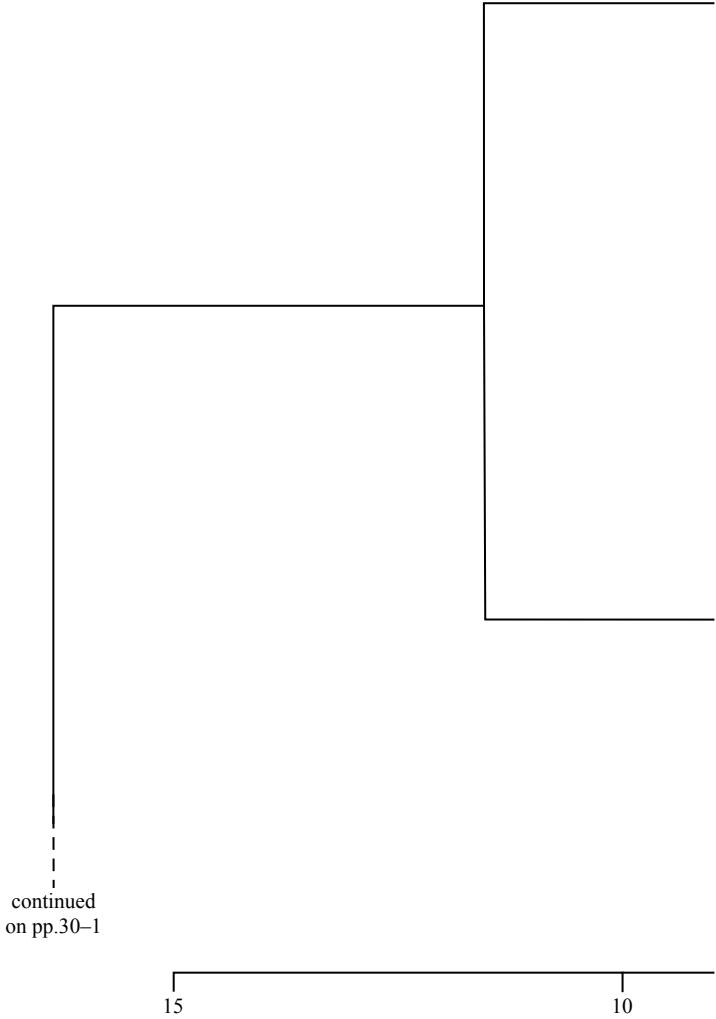
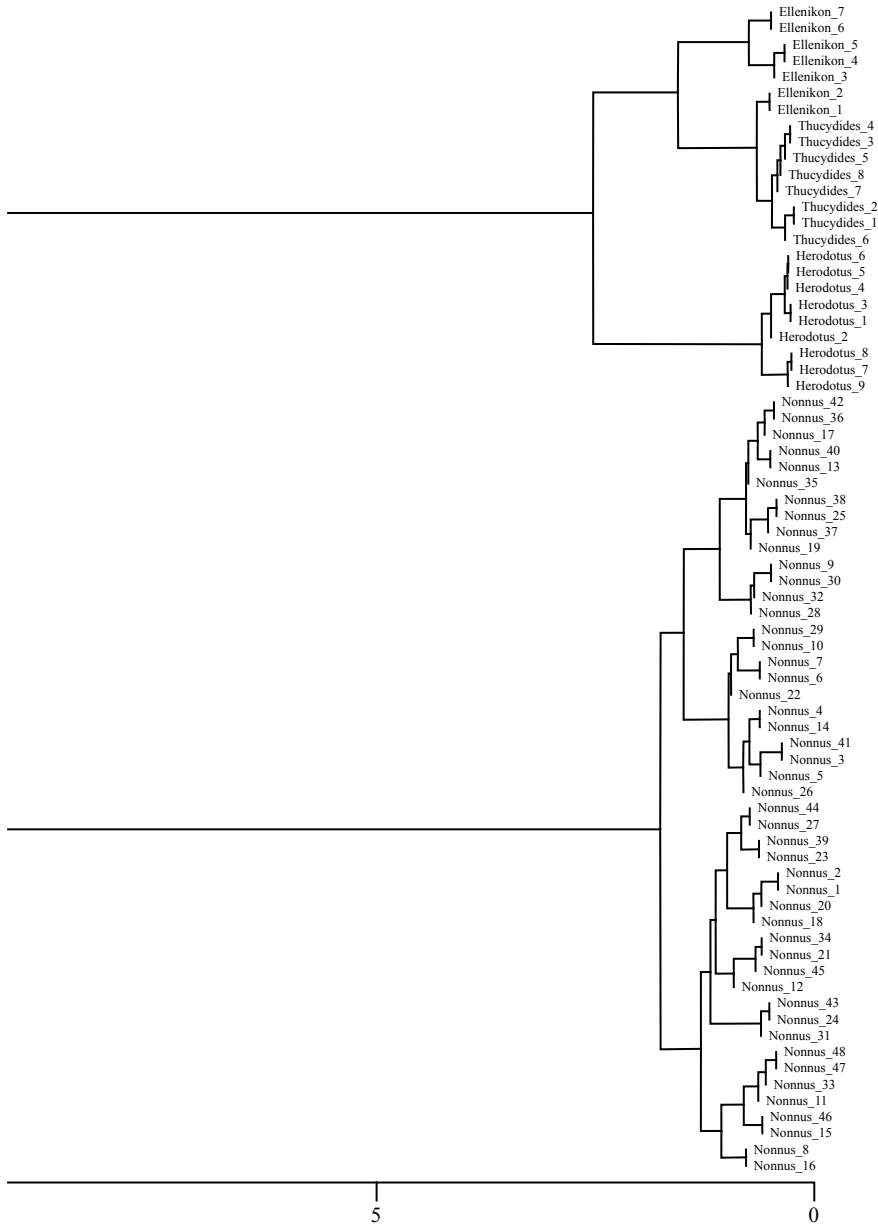


Figure 2. Dendrogram using top 53 word bigrams,



53 MFW Culled @ 0%
Classic Delta distance

Burrow's Classic Delta, average-linkage clustering

continued
from pp.28-9

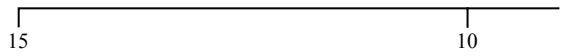
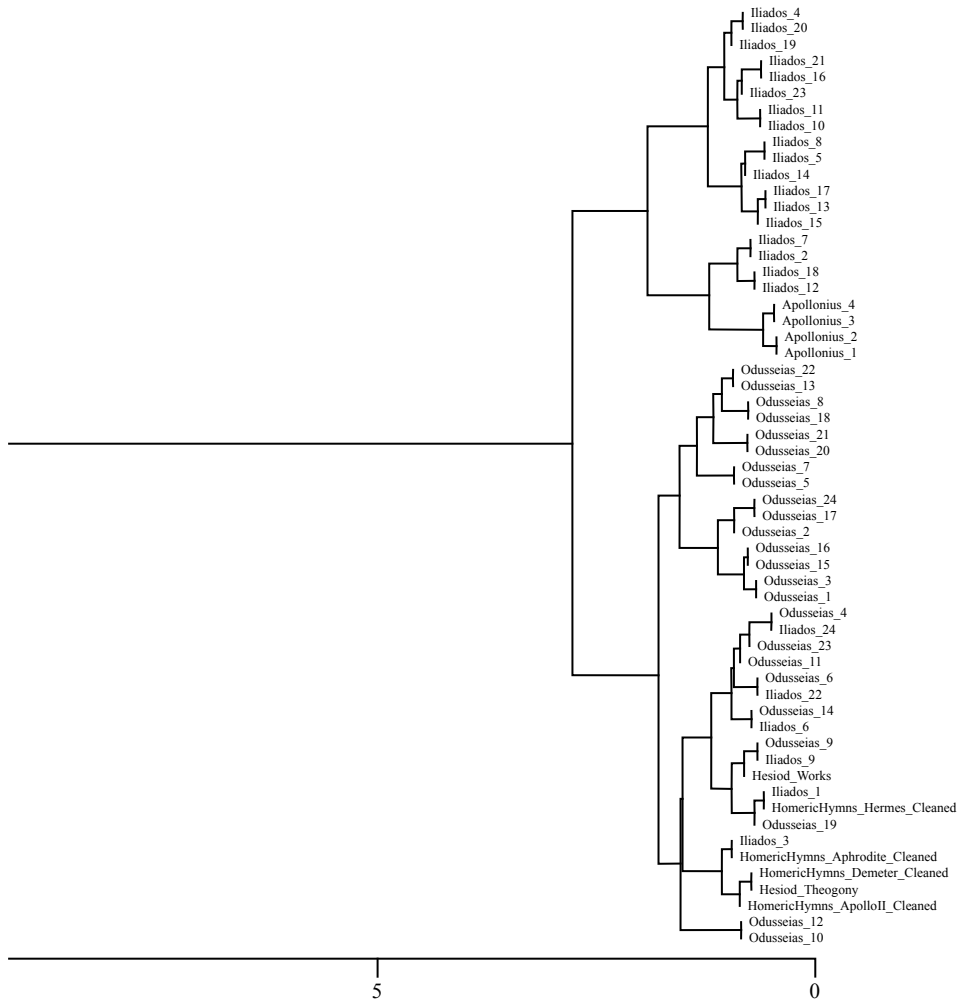


Figure 2



53 MFW Culled @ 0%
Classic Delta distance

continued

To these ends, we compiled a large corpus of ancient Greek hexametric poetry and historical prose, comprising a total of 130 documents and including the *Iliad* and *Odyssey* (48 documents in total); *Theogony* and *Works and Days* (Hesiod; two documents); four longer *Homeric Hymns* (Aphrodite, Demeter, Hermes, and Apollo; four documents); *Argonautica* (Apollonius Rhodius; four documents); *Dionysiaca* (Nonnus; 48 documents); *Historiae* (Herodotus; nine documents); *History of the Peloponnesian War* (Thucydides; eight documents); and *Hellenica* (Xenophon; seven documents). All texts were also purged of diacritics for reasons of known discrepancies (cf. n.23 below) in editorial practices.

The similarity between the documents was calculated by considering the 53 most frequent word bigrams,¹⁴ using Burrow's Classic Delta as a distance measure; clusters were then assembled using average-linkage clustering. The results are visualized in Figures 2 through 4.¹⁵

In Figure 2 on pp.28–31 we can observe a clear top node split between “older” hexametric poetry (Homer, Hesiod, Hymns, Apollonius Rhodius in a large node at the bottom), versus Nonnus (documents in the lower node on p.29) and the historians (under the node at the top). For each distinct known author, a single node dominates all documents that should with certainty be ascribed to that author: an authorial signal is thus clearly identifiable for Herodotus, Thucydides, Xenophon *Hellenica* 3–7 (see further below), Nonnus, and Apollonius Rhodius. Note, for instance, that all 48 of the documents pertaining to the *Dionysiaca* (in the continuation of Figure 2 on p.29) build a cluster that excludes documents pertaining to any other (known) author. Thus, for each known author, we can find a common root node at some depth in the tree for the documents to be ascribed certainly to that author; meanwhile, we may interpret higher nodes (e.g., the common node dominating all documents of Herodotus, Thucydides, and Xenophon) as detecting similarity due to genre and/or chronology (in this case, these are all of the prose

13 In other words, each node in a dendrogram can be understood as a potential author. When all the documents belonging to a known or attributed to some hypothesized author are contained under a single node, to the exclusion of documents by other known authors, then an “authorial signal” may be recognized.

14 These are the bigrams that all occur in at least ninety percent of the documents. By using only features that are attested in most of the documents, we limit similarity that would be discovered by the simple “absence” of a feature.

15 We present the results of this particular feature set since it allows for a clear visualization of the results, given that trials with other feature sets (e.g., 500 most frequent character trigrams) or treatments of the documents (e.g., more documents of all equal size) yielded qualitatively similar results as concerns the primary question.

documents in our sample). In Figure 3 we zoom in on the top node, pertaining to the historians.

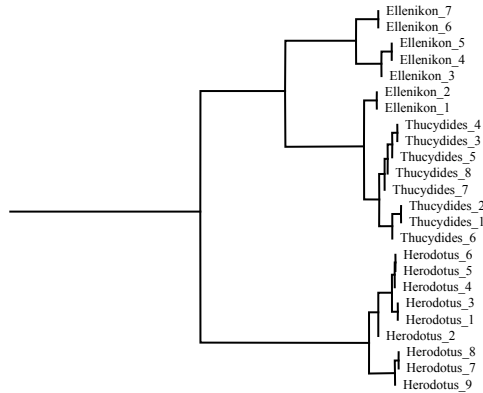


Fig. 3. The historians
(detail from the continuation of Figure 2 on p.29)

Here, we see an interesting wrinkle in our results: Books 1 and 2 of the *Hellenica* share a common root node with Thucydides. This corresponds to a known authorship problem, and it is widely believed that the first two books of the *Hellenica* may be based on original source material from Thucydides (cf. Thomson 1969). This combination of feature set and clustering algorithm thus seems to have correctly recognized Thucydides’ authorial signal even “disguised” among Xenophon’s writings.¹⁶

Emboldened by these results, we can now turn to the node comprising older hexametric poetry (Figure 4). Here our grounds for optimism seem to vanish—at least if we were interested in finding a clear authorial signal for Homer. The method successfully identifies a single authorial signal corresponding to Apollonius Rhodius, though the books of the *Argonautica* are in turn clustered with some (but not all) books of the *Iliad*. For Homer the situation is dire: no single node dominates all books of the *Iliad* and *Odyssey*. Their “last common ancestor” includes the *Argonautica*, Hesiod, and the four *Homeric Hymns*. As far as the individual poems are concerned, the books of the *Iliad* are split between two different top nodes (all including other materials); and even the *Odyssey*, which is grouped under a single

16 Other feature sets, meanwhile, instead cluster Books 1 and 2 of the *Hellenica* more closely with the remainder of the *Hellenica*. The most plausible interpretation, in accord with the existing literature on the problem, is that the first two books of the *Hellenica* indeed reflect a case of mixed authorship.

lower node, shares this node with parts of the *Iliad*, Hesiod, and the *Homeric Hymns*.¹⁷

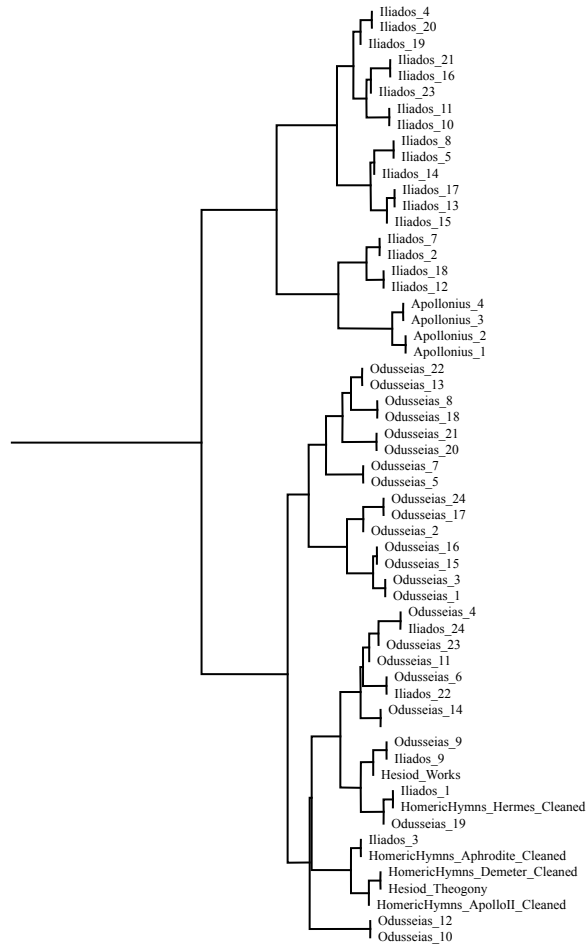


Fig. 4. Older hexametric poetry
(detail from the continuation of Figure 2 on p.31)

17 Interestingly, the works attributed to Hesiod seem to exhibit the same problem as Homer: the *Works and Days* and *Theogony* are not clustered together. This is consistent with the ancient Boeotian testimony that only the *Works and Days* were Hesiod's genuine work (Pausanias 9.31.4). Note that this skepticism is not shared by the modern critics, who usually see *Works and Days* and *Theogony* as stemming from a single author. See Cingano 2009 for the ancient evidence on the composition of the Hesiodic corpus.

A few comments are in order: our method seems to have yielded different results for texts created using oral formulaic technique (Homer, Hesiod, the *Homeric Hymns*), as opposed to texts composed in writing and by a known author (whether in verse or prose). The former yield no clear authorial signal, while the latter consistently do. Why should this be the case?

An oral-dictated text should in principle be no different from one that is written down by its author, in that it ought to reflect a single grammar. The peculiarities of such a single grammar ought to yield a particular authorial signature, which our method in turn attempts to detect.¹⁸ If a single author were responsible for the *Iliad* (or most of the *Iliad*) as we have it, and if their text had been committed to writing, why does the signal of this author seem irrecoverable? To be sure, oral-formulaic texts (such as Homer, Hesiod, and the longer *Homeric Hymns*) share some general similarities in style (due to their reliance on traditional phraseology), but it is unclear that the traditionality of the style should make any authorial signal impossible to recover (we know, for instance, that there are many and clear differences in language and technique between Homer and Hesiod¹⁹).²⁰ At first sight, these results appear more compatible with a multiple-event scenario, or, at the very least, with a multiple-author-for-each-epic scenario. If this is indeed the case, could our methods tell us more about the internal structure of the epics, and how the different parts came to be assembled? It is to these questions that we next turn.

18 See Bozzone 2014:68–82 for the concept of an individual poetic grammar within an oral-formulaic tradition.

19 For the language and style of Hesiod, see Cassio 2009 and Hunter 2009 respectively.

20 We should not be tempted to believe that oral-formulaic composition in performance would have allowed for the verbatim faithful transmission of a patchwork of pieces composed by various poets, thereby preserving the individual signature of many different authors. As put in Bozzone 2014:78:

I do not believe that there could be *verbatim* oral transmission of the poems after they were composed: at every new performance, the poems had to be generated anew through the I-Language [i.e., the individual grammar] of the poet who was performing them: they will then bear the constructional signature of this last individual in the chain of transmission. This is the classic oralist position (Lord 1960). While *verbatim* oral transmission is documented for some oral traditions (like that of the Rigveda), nothing leads us to believe that such methods of transmission were employed for Greek epic poetry; such transmission would require a kind of training and technique completely different from what Lord has described for the Serbo-Croatian tradition.

4 Internal groupings in the Homeric corpus

Can QAA establish any reliable internal groupings for the Homeric corpus, and do these groupings seem to align in some way with the scholarly consensus described above? In this section, we first examine the *Iliad* and the *Odyssey* taken together and then the *Iliad* individually.²¹ In order to deliver results that are as informative and fine-grained as possible, some extensions of the basic method described in Section 2 are employed.

As far as features are concerned, we used both the top 100-word bigrams and the top 500-character trigrams, with analyses of the latter employing the Source Code Author Profiling (SCAP) method of Frantekou et al. 2007.²² For the analyses using word bigrams, we manually removed any personal and place names and other potentially contentful words (such as unique epithets) from the feature set. This was done to avoid topical effects (for example, that all books featuring Achilles might be grouped together on that basis). We also recombined some “duplicate features” that were due to different editorial practices in the respective texts of *Iliad* and the *Odyssey*.²³

Instead of simply relying on a similarity matrix to quantify the distance between our documents, we applied *k-means clustering* prior to generating dendrograms, in order to obtain a clearer signal from our data. *K-means clustering* is a heuristic algorithm that sorts objects into groups, provided it knows ahead of time how many groups should be assumed to be present. Since the correct number of groups for Homer is unknown, the best approach here is to run *k-means clustering* hundreds of times, each time specifying a different number of groups (i.e., clusters), and see what groupings appear most robust (i.e., which documents are clustered together with greatest frequency). In this way one can build a *co-association matrix* (Layton, Wetters, and Dazeley 2011). This is essentially a spreadsheet with one

21 A similar individual treatment of the *Odyssey* is available in the online appendices at <https://github.com/rpsandell/WeCIEC32>.

22 Under SCAP, the feature set is converted to a distance between each pair of two documents, where distance is measured as the proportion of overlap between the N most frequent character trigrams in each document.

23 Specifically, the edition of the *Odyssey* of von der Mühl (1962) frequently prints instances of the definite article or demonstrative pronoun ὃ, ῥῆ, τό without a grave, whereas Allen’s (1931) edition of the *Iliad* prints a grave in most cases. For example, Allen’s text contains exclusively οἱ δ’, whereas von der Mühl’s contains only οἱ δ’ (without grave). The number of such highly frequent words that would be recognized by the computer as distinct would artificially inflate the degree of dissimilarity between documents belonging to the *Iliad* and *Odyssey*, respectively, when left uncorrected.

column and one row for each of the documents under study (an example is shown in Figure 5). Specifically, we applied k -means clustering one thousand times, each time selecting a different random value for the number of clusters, k ($10 \leq k \leq 24$, where the number of documents is 48); the number of times that two documents were assigned to the same cluster was then recorded in the spreadsheet (in the cell corresponding to that specific combination of books). Precisely because the k -means algorithm is heuristic, somewhat different results may be produced by each run of the algorithm; intuitively, objects that consistently fall into a cluster together when different values for k are selected may be regarded as constituting a more robust grouping.

	lliados_1.txt	lliados_10.txt	lliados_11.txt	lliados_12.txt	lliados_13.txt	lliados_14.txt	lliados_15.txt	lliados_16.txt	lliados_17.txt
lliados_1.txt	1000	3	0	0	0	0	0	0	0
lliados_10.txt	3	1000	2	0	0	0	0	0	0
lliados_11.txt	0	2	1000	173	804	163	564	819	602
lliados_12.txt	0	0	173	1000	180	0	15	195	26
lliados_13.txt	0	0	804	180	1000	214	746	983	712
lliados_14.txt	0	0	163	0	214	1000	431	202	432
lliados_15.txt	0	0	564	15	746	431	1000	729	944
lliados_16.txt	0	0	819	195	983	202	729	1000	705
lliados_17.txt	0	0	602	26	712	432	944	705	1000
lliados_18.txt	448	5	7	0	0	0	0	0	0
lliados_19.txt	368	3	0	0	0	0	0	0	0
lliados_2.txt	0	0	2	630	1	0	0	2	2

Fig. 5. Example of co-association matrix

The co-association matrix was then used to calculate the cosine distance between the objects, and the result was in turn used to generate a dendrogram using average linkage clustering.²⁴ Summing up, the individual steps for QAA for each type of feature set were as follows:

- Word Bigrams: features (manual cleaning) > co-association > cosine distance > clustering
- SCAP (Character Trigrams): features > SCAP distance > co-association > cosine distance > clustering

24 Cosine distance was employed here for two reasons: 1) Burrow's Delta does not appropriately apply as a distance measure where the inputs are not frequencies of linguistic objects; 2) cosine distance has shown better performance on problems of authorship analysis as opposed to other standard measures of distance (e.g., Euclidean or Manhattan distance); cf. generally Evert et al. 2017. All of the figures below that have been generated using cosine distance will represent this distance as "Height," with values ranging from 0 to 1.

4.1 The Iliad and the Odyssey taken together

Our first goal was to test whether our methodology would be able to replicate some of the most agreed-upon conclusions concerning the Homeric question, namely, that the *Iliad* and the *Odyssey* stem from different times (and arguably different authors), and that *Iliad* 10 is an outlier in our corpus.

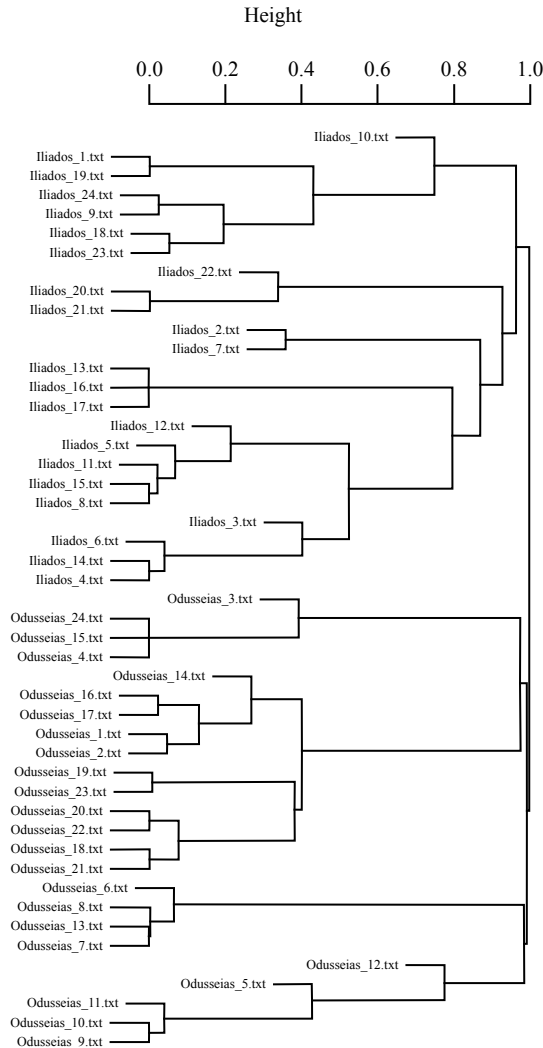


Fig. 6. SCAP 500 co-association matrix; cosine average

The results shown in Figure 6 seem to easily capture both statements: the dendrogram shows a clear split between the *Iliad* and *Odyssey* at the top, where each

poem falls under a single node; *Iliad* 10, moreover, is clearly isolated within the *Iliad*, being the very last document added to its cluster, and much higher up than the rest (where height on the tree corresponds to distance).²⁵ In addition, one may observe some promising internal structures for the individual epics themselves,²⁶ to which we will return in the following sections. While Figure 6 exhibits a clear split between the *Iliad* and *Odyssey*, it is important to stress that these methods can successfully capture similarities between the two epics as well. In Figure 7 the distance between our documents (i.e., individual books of the *Iliad* and *Odyssey*) is visualized in a 2-dimensional space, having applied a principal components analysis.²⁷ This visualization drives home two important points:

- It confirms how isolated *Iliad* 10 is among the Homeric corpus, having no close neighbors whatsoever.
- It shows that a few books of the *Iliad* lie “on the border” with the *Odyssey*: namely *Iliad* 1, 9, 23, and 24. These are precisely the books that have long been suspected of being later on the basis of linguistic features (as already observed by Monro 1891, as reported by Leaf 1900–1902:370).²⁸

25 Among the books of the *Odyssey*, *Odyssey* 12 stands out in a fashion somewhat comparable to *Iliad* 10: the distance between it and the nearest cluster is greater than for any other book of the *Odyssey*.

26 For instance, the fact that *Iliad* 10 is clustered, within the *Iliad*, with several other books (such as *Iliad* 1, 9, 23 and 24, among others) that are known to exhibit late linguistic features (see the discussion below).

27 Principal component analysis (henceforth PCA) is a process that can be employed to reduce the dimensionality of the data. Instead of working with 100 dimensions (one for each feature), PCA will create new features that combine tiny pieces of all existing features, crafting the smallest number of features necessary to capture all variance in the data. Each further principal component explains a progressively smaller proportion of variance, for which reasons the first two principal components are usually best representative of patterns in the data. The two features represented in Fig. 7 explain 15.3% and 9.9% of the variance in the data (25% total). While this only represents a fraction of the total, this is enough to capture the sharpest distinctions.

28 Per Monro, linguistic features shared among these books are as follows: perfects in -κα from verbs in -έω; use of ἐπί with the accusative of extension over; ἐνί for μετά meaning ‘among’ with persons, and with abstract words; ἐκ meaning ‘in consequence of’; use of the definite article (on which see Bozzone and Guardiano 2015, 2018); ἄν with the first person of the optative; ὃς τε with the infinitive; δεῖ for χρή; ἄν with the infinitive. A full treatment of each feature goes beyond the scope of this paper.

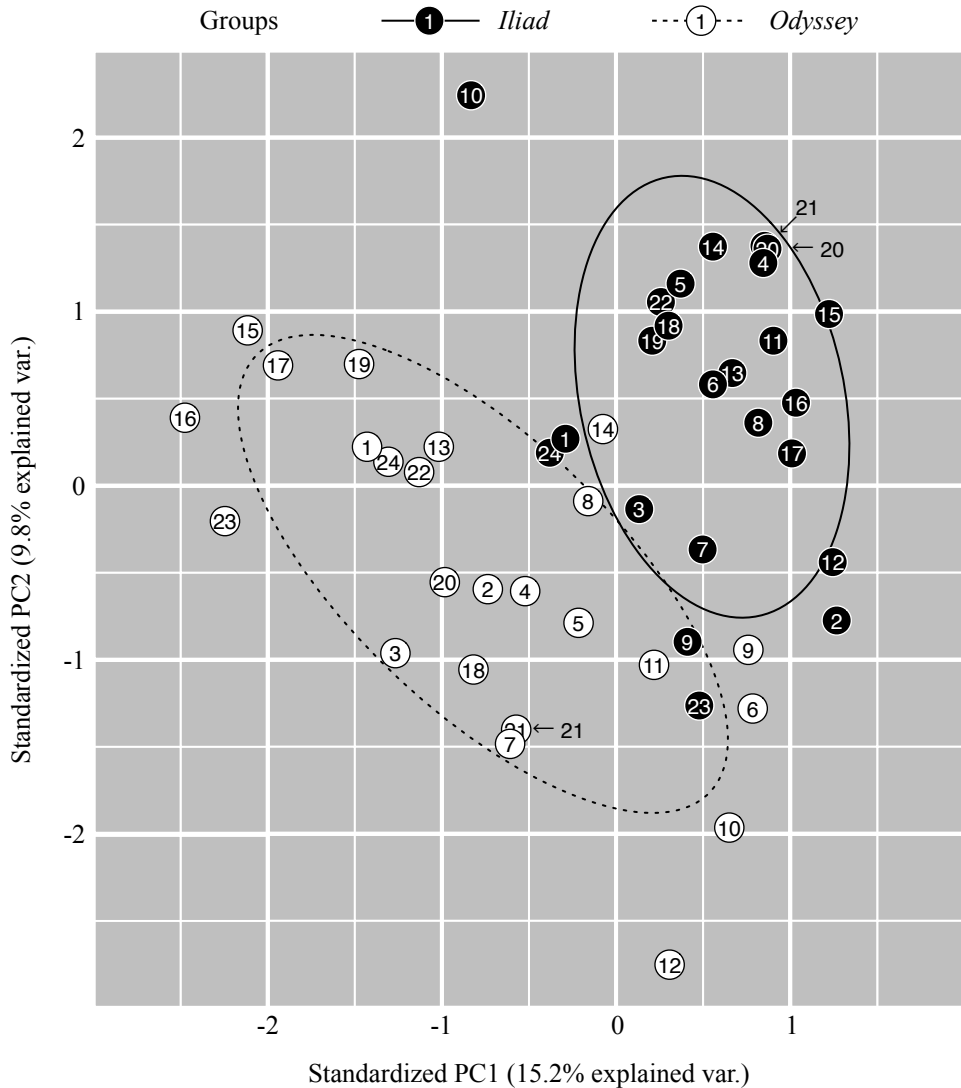


Fig. 7. Principal components analysis, top 100-word bigrams

4.2 *The Iliad by itself*

We will now consider the *Iliad* by itself and see whether our methods can help us to recover some plausible units of textualization. In Figure 8 we generated a dendrogram using the top 100 bigrams, a co-association matrix, cosine distance, and average linkage clustering, and cut it into four groups (an arbitrary number, given that the true number of clusters is unknown). The results obtained are in many

respects interesting (and, moreover, representative of several analyses using other feature sets tested for this study):

- *Iliad* 10 once again stands apart, forming its own group (Group 1)
- Group 3 represents a recurrent cluster (over several different QA analyses) consisting of well-behaved, unproblematic books. Content-wise, these are relatively less exciting books: Achilles is away from the battlefield, and a great deal of fighting takes place (most of it not particularly high-stakes, with the exception of *Iliad* 16).
- Groups 2 and 4, on the other hand, appear to cluster together some famous “troublemaker” books in the structure of the poem.

Quite remarkably, Group 2 contains some of the most famous analytical problems in the *Iliad*: these are all books that have been suspected of being secondary additions to the story of the μῆνις in terms of both content and language.²⁹ Several of these (*Iliad* 2, 3, 7) are almost universally regarded as adaptations of other materials, originally belonging to the first year of the war. In other cases, the language or content singles them out as late (*Iliad* 9, 12, 23).

Specifically, *Iliad* 2 contains the catalogue of the ships, which “as modern critics have almost unanimously recognized, was not composed for its present place, but was adapted to it” (Leaf 1900–1902:86). *Iliad* 3 comprises the τεῖχοςκοπία ‘viewing from the walls’, in which Priam does not recognize the main Greek chieftains (Agamemnon, Odysseus, Ajax, and Idomeneus) in the tenth year of the war.³⁰ Perhaps less famously, *Iliad* 7 contains arguably the greatest problem in all of the *Iliad*, namely, the construction of the wall protecting the Achaean ships in the tenth year of the war (another event that would be better suited for the earliest stages of the conflict). *Iliad* 9 contains the embassy to Achilles, also long suspected of being a later interpolation (and, as noted above, the language here is similar to *Iliad* 10, 23, and 24).³¹

29 Here and below, we rely on Leaf 1920 as a compact reference summarizing the results of the analytical line of inquiry concerning the structure of the *Iliad*. Another, more up-to-date (and extensive) resource on this topic is Zambarbieri 1988–1990. Zambarbieri 2002–2004 covers the *Odyssey*.

30 See Jamison 1994 for a comparative perspective on the episode and its meaning within the theme of the “counterabduction” of a bride. On the Helen myth in general, see now Edmunds 2016.

31 It is a known Homeric paradox that material alleged to be particularly ancient might be nested among the most recently textualized passages. This is the case for the alleged reflex of the PIE formula **kléwos ἠdʰgʷhítom* “imperishable fame,” occurring as κλέος ἄφθιτον (*Il.* 9.413) in

Iliad 12, which recounts the battle at the wall protecting the Achaean ships (and the exploits of the Trojan allies Glaucus and Sarpedon), according to Leaf (1900–2:524) “cannot belong to any but the last strata of the *Iliad*” and is “lacking real artistic unity.” Finally (as already noted) *Iliad* 23, which contains the funeral and funeral games of Patroclus, is closer in language and phraseology to *Iliad* 24, as well as the *Odyssey*.³²

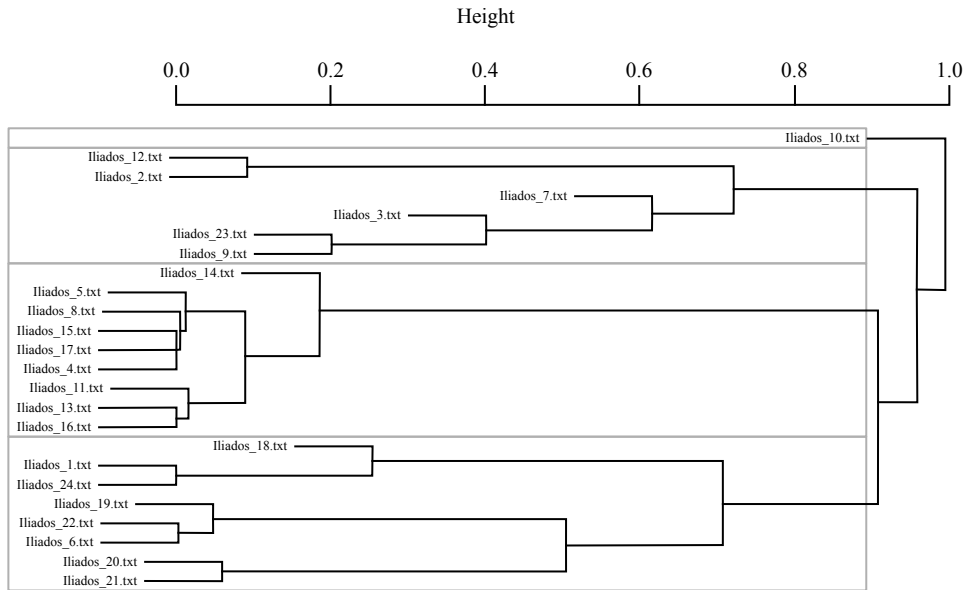


Fig. 8. Word bigrams top 100
(co-association matrix, cosine distance, average-linkage clustering)

Group 4 is also interesting in that it appears to contain some clear thematic units (despite the fact that our method relies on the frequency of non-content words). It is suggestive, for instance, that *Iliad* 1 and *Iliad* 24 would be grouped together, marking the beginning and end of the poem. This grouping could be interpreted as a trace of the process of textualization of the monumental poem. This configuration is perhaps reminiscent of the *R̥gveda*, where the scholarly consensus

Achilles’ famous reply to Agamemnon’s offer (the closest comparandum is Vedic *śrávas ... akṣitám* in *R̥gveda* 1.9.7; see discussion in Watkins 1995:12–3, 173–8). A similar paradox exists in *Iliad* 10.260–5, which accurately describes a Mycenaean-age boar-tusk helmet, an item that would not have been in use in Greece for several centuries at the moment of textualization of the epics (Everson 2004:7–10).

32 See Bozzone 2014:81–3 for a list of *Odyssey*-like phraseological features in *Iliad* 23.

is that parts of Books 1 and 10 (the first and the last book respectively), which contain some of the youngest materials, make up a layer of textualization distinct from the Family Books (Books 2–7), which constitute the oldest nucleus of the *R̥gveda*.³³ Specifically, one could envision a scenario in which the same poet, operating at a relatively more recent stage in the tradition (hence the more modern linguistic features in *Il.* 1 and 24) would have taken care to compose (or re-compose) a beginning and an end for an *Iliad* that would have included a multitude of previous materials.³⁴

Another intriguing grouping is that of Books 6 and 22, which contain the tragedy of Hector (and Andromache), as well as the most vivid rendering of their characters (these are also some of the most beloved and anthologized passages in Homer). In this node, one might tentatively want to see the (very skilled) hand of an individual poet.

The other books in this group are the preparation for Achilles' return to battle (*Iliad* 18 and 19) and his actual return (20 and 21). Perhaps unsurprisingly, *Iliad* 18, which contains the long description of the design of Achilles' shield (perhaps the most famous example of *ekphrasis* in ancient Greek literature), is the most isolated book in this group.

A SCAP analysis of the books of the *Iliad* delivers some results that are similar, though not identical, to what was just discussed. Again, *Iliad* 10 appears fairly isolated (it is the document that merged into a cluster tree at the greatest height, though not fully apart from all other documents, as in Figure 8), and we can contrast a cluster (on the right) of relatively unproblematic books (*Iliad* 5, 13, 16, 17, 12, 15, 11, and 8),³⁵ with a couple of clusters collecting “troublemaker” books: on the left, we can observe a cluster largely pertaining to Achilles (comprising *Iliad* 9, 1, 19, 18, 23, 22, and 24) and containing many linguistically recent books. In the middle, we can identify a subcluster containing all of the books pertaining to the first year of the war (namely, *Iliad* 2, 3, and 7).

Of course, there are some differences between the two models: some books are grouped differently in SCAP, such as *Iliad* 4, 14, 6 (here belonging to the middle cluster), and 12 (here grouped in the right-hand cluster). Some of the promising thematic units we discussed earlier (like *Iliad* 1 and 24, and *Iliad* 6 and 22) are also

33 See Jamison and Brereton 2014:14–8 on the textualization and transmission of the *R̥gveda*.

34 To further support this scenario, one could also point to some clear thematic parallels between *Iliad* 1 and 24, where *Iliad* 1 begins with a father (Chryses) attempting to ransom his daughter, and *Iliad* 24 ends with a father (Priam) successfully ransoming his dead son (Hector).

35 Of these, however, we might remember that *Iliad* 12 was previously grouped with “troublemaker” books by the word bigram feature set.

not so clearly on view here. On the one hand, we should take this fact as a reminder not to become immediately attached to some appealing interpretations of the data, and not to take the results of a given QAA configuration as incontrovertible truth.³⁶ On the other hand, it is important to remark that some of these groupings are indeed stable across parameters of analysis, so that it is reasonable to assign them some validity.

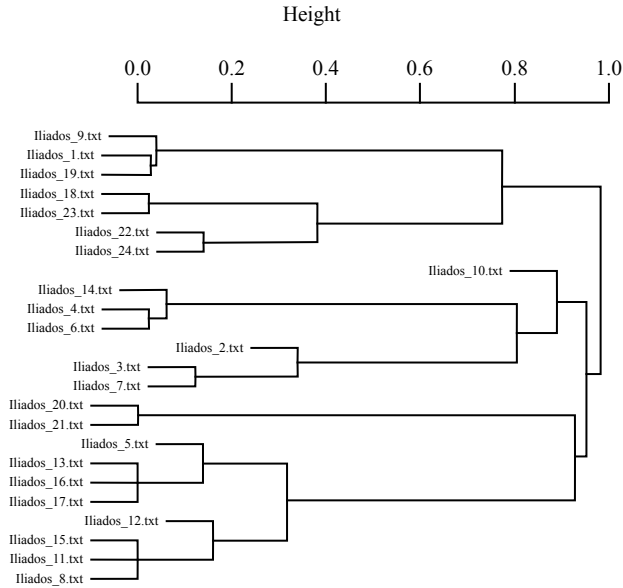


Fig. 9. SCAP 500 trigrams, *Iliad* only
(co-association matrix, cosine distance, average-linkage clustering)

5 Conclusion

The results presented here should be regarded as very much preliminary: much more work needs to be done in both refining the quantitative methods employed and aligning them more closely with existing theories of the composition of the Homeric epics. Nevertheless, the fact that some quantitative analyses based on innocuous-seeming linguistic features should yield results that replicate some key points of the current scholarly consensus (the isolation of *Iliad* 10, a clear split between *Iliad* vs. *Odyssey*), and that match known thematic groupings in the poems

36 It might be the case, however, that one method might prove better at “recovering the signal from the noise” than another one; only further research in this direction can provide such answers.

(the “first year of the war” books in the *Iliad*, or the ἀπόλογοι in the *Odyssey*³⁷) is very encouraging. Concretely, we believe that this first pilot study supports the following conclusions.

5.1 *Iliad and Odyssey together: A single author unlikely*

The results of Section 3 speak against a single authorial presence for *Iliad* and *Odyssey* taken together. They also speak against a single authorial presence for the whole *Iliad* or the *Odyssey* taken in isolation (since individual books of Homer are routinely grouped together with other archaic or even Hellenistic hexametric poetry). In this light, the fact that the methods in Section 4 can find a clear division between the *Iliad* and the *Odyssey* most likely reflects a difference in the time of textualization (*Odyssey* overall later than *Iliad*), rather than two clear distinct authorial hands. Some books of the *Iliad* (exactly the ones that one might expect) stand closer to the *Odyssey*, which may also reflect a later chronology (this observation could be pushed towards speculation that the textualization of the *Odyssey* partially overlapped with the textualization of the youngest parts of the *Iliad*).

5.2 *Within the individual epics: A multiple-event model more likely*

Following the conclusions in Section 3, our results in Section 4 seem to better accord with a multiple-event model of textualization of the individual epics. The recurrent clusters that we have found and that correspond to recognized “thematic units” could reflect units of composition/textualization. These units might, in some cases, be ascribed to the work of a given individual poet (e.g., a “Hector’s poet” for *Iliad* 6 and 22). Some might be linked specifically to the compilation of the *Iliad* as a single monumental poem (e.g., the cluster of *Iliad* 1 and *Iliad* 24). In some cases, they could simply reflect chronology (e.g., later additions to the *Iliad*, such as Book 10).

All of these observations are complicated by many additional considerations (such as the issue of book divisions, mentioned in n.10), to which we plan to turn in future work. Nevertheless, we hope to have shown that, when properly tuned, the techniques of QAA have the potential to help us to detect the subconscious habits of individual poets involved in the creation of the epics, and thus contribute to an untangling of the problem of Homeric authorship.

37 For which visit <https://github.com/rpsandell/WeCIEC32>.

References

- Andersen, Øivind, and Dag T. T. Haug (eds.). 2012. *Relative Chronology in Early Greek Epic Poetry*. Cambridge: Cambridge University Press.
- Bozzone, Chiara. 2014. *Constructions: A New Approach to Formularity, Discourse, and Syntax in Homer*. Ph.D. diss., University of California, Los Angeles.
- Bozzone, Chiara, and Cristina Guardiano. 2015. Adnominal ὁ ἦ τό in Homer: Tracking the Spread of a Syntactic Innovation. Paper 23 March presented at the Colloquium on Ancient Greek Linguistics, Rome.
- . 2018. Adnominal ὁ ἦ τό in the Language of Homer: Syntactic Change or Stylistic Variation? Paper 19 April presented at the conference “Variation and Contact in the Ancient Indo-European Languages,” Oxford and Pisa.
- Burrows, John. 2002. “Delta”: A Measure of Stylistic Difference and a Guide to Likely Authorship. *Literary and Linguistic Computing* 17.267–87.
- Cassio, Albio Cesare. 2009. The Language of Hesiod and the *Corpus Hesiodicum*. In Montanari, Tsagalis, and Rengakos 2009, 179–201.
- Cingano, Ettore. 2009. The Hesiodic Corpus. In Montanari, Tsagalis, and Rengakos 2009, 91–130.
- Danek, Georg. 1988. *Studien zur Dolonie*. Vienna: Österreichische Akademie der Wissenschaften.
- . 2012. The Doloneia Revisited. In Andersen and Haug 2012, 106–21.
- Eder, Maciej, Jan Rybicki, and Mike Kestemont. Stylometry with R: A Package for Computational Text Analysis. *R Journal* 8.107–21.
- Edmunds, Lowell. 2016. *Stealing Helen: The Myth of the Abducted Wife in Comparative Perspective*. Princeton: Princeton University Press.
- Everson, Tim. 2004. *Warfare in Ancient Greece: Arms and Armour from the Heroes of Homer to Alexander the Great*. London: Sutton.
- Evert, Stefan, Thomas Proisl, Fotis Jannidis, Isabella Reger, Steffen Pielström, Christof Schöch, and Thorseten Vitt. 2017. Understanding and Explaining Delta Measures for Authorship Attribution. *Digital Scholarship in the Humanities* 32.ii4–ii16.
- Foley, John Miles. 2007. “Reading” Homer through Oral Tradition. *College Literature* 34.1–28.
- Frantsezkou, Georgia, Efstathios Stamatatos, Stefanos Gritzalis, Carole E. Chaski, and Blake Stephen Howald. 2007. Identifying Authorship by Byte-Level N-Grams: The Source Code Author Profile (SCAP) Method. *International Journal of Digital Evidence* 6.1–18.
- Heiden, Bruce. 1998. The Placement of “Book Divisions” in the *Iliad*. *Journal of Hellenic Studies* 118.68–81.
- . 2000. The Placement of “Book Divisions” in the *Odyssey*. *Classical Philology* 95.247–59.

- Hunter, Richard. 2009. Hesiod's Style: Towards an Ancient Analysis. In Montanari, Tsagalis, and Rengakos 2009, 253–69.
- Jamison, Stephanie W. 1994. Draupadi on the Walls of Troy: *Iliad* 3 from an Indic Perspective. *Classical Antiquity* 13.5–16.
- Jamison, Stephanie W., and Joel P. Brereton (trans.). 2014. *The Rigveda: The Earliest Religious Poetry of India*. New York: Oxford University Press.
- Janko, Richard. 2012. πρῶτον τε καὶ: Relative Chronology and the Literary History of the Early Greek Epos. In Andersen and Haug 2012, 20–43.
- Jensen, Minna Skafte. 2011. *Writing Homer: A Study Based on Modern Fieldwork*. Copenhagen: The Royal Danish Academy of Sciences and Letters.
- Juola, Patrick. 2006. Authorship Attribution. *Foundations and Trends in Information Retrieval* 1.233–334.
- . 2012. An Overview of the Traditional Authorship Attribution Subtask. *Proceedings of PAN/CLEF 2012*. Rome. https://pan.webis.de/downloads/publications/papers/juola_2012.pdf (12 October 2021).
- Layton, Robert, Paul Wetters, and Richard Dazeley. 2011. Automated Unsupervised Authorship Analysis Using Evidence Accumulation Clustering. *Natural Language Engineering* 19:95–120.
- Leaf, Walter. 1900–2. *The Iliad, Edited, with Apparatus Criticus, Prolegomena, Notes, and Appendices*. London: Macmillan.
- Lord, Albert Bates. 1960. *The Singer of Tales*. Cambridge, MA: Harvard University Press.
- . 1991. *Epic Singers and Oral Tradition*. Ithaca: Cornell University Press.
- Monro, Daniel Binning. 1891. *A Grammar of the Homeric Dialect*. Oxford: Clarendon Press.
- Montanari, Franco, Christos Tsagalis, and Antonios Rengakos (eds.). 2009. *The Brill Companion to Hesiod*. Leiden: Brill.
- Nagy, Gregory. 1996. *Homeric Questions*. Austin: University of Texas Press.
- . 2009. *Homer the Classic*. Washington, DC: Center for Hellenic Studies.
- . 2020: Review of Jensen 2011. <https://chs.harvard.edu/curated-article/gregory-nagy-review-of-writing-homer-a-study-based-on-results-from-modern-fieldwork-by-minna-skafte-jensen/> (4 February 2022).
- Nesselrath, Heinz-Günther. 2011. Geschichte der Homerforschung. In Antonios Rengakos and Bernhard Zimmermann (eds.), *Homer-Handbuch: Leben – Werk – Wirkung*, 175–98. Stuttgart: Metzler.
- Parry, Milman. 1971. *The Making of Homeric Verse: The Collected Papers of Milman Parry*. Ed. Adam Parry. Oxford: Oxford University Press.
- Passa, Enzo. 2016. L'epica. In Albio Cesare Cassio (ed.), *Storia delle lingue letterarie greche*, 139–96. Florence: Le Monnier.
- R Core Team. 2021. *R: A Language and Environment for Statistical Computing*. Vienna: R Foundation for Statistical Computing. <https://www.R-project.org>.

- Ready, Jonathan. 2019. *Orality, Textuality, and the Homeric Epics: An Interdisciplinary Study of Oral Texts, Dictated Texts, and Wild Texts*. Oxford: Oxford University Press.
- Schmidt, Drew, and Christian Heckendorf. 2021. Fast n-Gram “Tokenization,” Version 3.2.0. <https://cran.rproject.org/web/packages/ngram/> (16 February 2022).
- Statamatos, Efstathios. 2009. A Survey of Modern Authorship Attribution Methods. *Journal of the American Society for Information Science and Technology* 60.538–56.
- Stover, Justin A., and Mike Kestemont. 2016. The Authorship of the *Historia Augusta*: Two New Computational Studies. *Bulletin of the Institute of Classical Studies* 59.140–57.
- Thomson, Norman D. 1969. A Computer Experiment on the Chronology of Xenophon. *Computers and the Humanities* 4.109–13.
- Turner, Frank. 2011. The Homeric Question. In Ian Morris and Barry Powell (eds.), *A New Companion to Homer*, 123–45. Leiden: Brill.
- Wachter, Rudolf. 2007. Greek Dialects and Epic Poetry: Did Homer Have to Be an Ionian? In Miltiade Hatzopoulos (ed.), *Φωνῆς χαρακτήρ ἔθνικός: Actes du Ve congrès internationale de dialectologie greque*, 317–28. Paris: Boccard.
- Watkins, Calvert. 1995. *How to Kill a Dragon: Aspects of Indo-European Poetics*. New York: Oxford University Press.
- West, Martin (ed.). 1998. *Homeri Ilias*. Stuttgart: Teubner.
- . 2010. *The Making of the Iliad: Disquisition and Analytical Commentary*. Oxford: Oxford University Press.
- . 2014. *The Making of the Odyssey*. Oxford: Oxford University Press.
- Zambarbieri, Mario. 1988–90. *L'Iliade com'è*. Milan: Cisalpino-Goliardica.
- . 2002–4. *L'Odissea com'è*. Milan: LED Edizioni Universitarie.

Myc. *a-mo* and Gk. ἄρμα: The Enigma that Keeps on Rolling*

ISABELLE DE MEYER

Ghent University | École Pratique des Hautes Études

It is commonly accepted that the etymology of Mycenaean *a-mo* ‘wheel’ and alphabetic Greek ἄρμα ‘chariot’ was resolved decades ago: they go back to a *men*-stem based on the root that can be found in ἀραρίσκω ‘join, fit together’, and thus *a-mo* originally meant ‘the assembled thing’, indicating ‘a spoked wheel’. However, an in-depth analysis of ἀραρίσκω showing that this verb never expressed ‘to assemble’ and thus never occurred with a result noun, along with the observation that such a reconstruction lacks semantic motivation (as wheels had always been ‘assembled things’), leads to the conclusion that the semantic part of the standard etymology is wrong. Next, it is proposed that the word for ‘wheel’ reflects an object noun ‘the thing that is attached or adjusted (to the axle)’. Support can be found in Mycenaean and Archaic Greek texts where reference is made to the practice of detaching or attaching wheels from/to the chariot, and in Vedic where the same verb root is used for the action of attaching wheels to the axle.

1 Introduction

In the different Indo-European languages several words for ‘wheel’ can be discerned. The most famous ones, like Latin *rota*, Greek τροχός and κύκλος, or Vedic *cakrá-* go back to verbal roots (**ret-* LIV² 507, **d^hreg(/ǵ)-* LIV² 154, **k^welh₁-* LIV² 386–8) that indicate the action or movement of the wheel: it runs, it turns. The Mycenaean term for ‘wheel’, however, which was written *a-mo* (*DMic* I:58–61) and whose alphabetic Greek counterpart ἄρμα(τα) became a synecdoche for

* I thank Prof. G. De Boel, Prof. G. Galdi, Prof. G.-J. Pinault, and the editors of this volume for their precious comments on earlier drafts of this article and the talk from which this paper originates. Possible remaining errors are of course mine. This research is funded by the Flemish Research Fund (FWO 1167921N).

All Greek texts and translations are taken from the most recent corresponding volume of the Loeb Classical Library, and the Mycenaean attestations are cited from *KT*⁶.

‘chariot’ (cf. colloquial English “wheels” for ‘automobile’),¹ would not have been named after its central activity, but rather after one of its other principal characteristics, namely the fact that it consisted of several parts that were carefully put together (Lejeune 1967:285; Ruijgh 1976:179). This specific crafting method would explain the semantic motivation for different Greek words with the same basic meaning ‘wheel’: while the spoked wheel is expressed by *a-mo*, the non-spoked wheel is expressed by *τρόχος* and *κύκλος* (see Ruijgh 1976:179, “‘roue à rayons’, par opposition à κύκλος”). The fact that the verb *ἀραρίσκω* (allegedly ‘to assemble’) shares its root with Myc. *a-mo*, as well as the fact that Myc. *a-mo* occurs with ideogram *243 (ROTA) ‘spoked wheel’, has been thought to strongly support the etymological conception of *a-mo* as *‘the assembled thing’. Consequently, recent studies dedicated to *a-mo/ἄρμα* have been restricted to the discussion of two phonological issues, one involving uncertainties about the reconstruction of the underlying PIE root as **h₁ar-* or **h₂er-*,² and a second concerning the origin of the initial aspiration in *ἄρμα* (which may be a phonologically induced effect ultimately due to an *s*-stem, or which may have arisen by analogy), and its possible absence in the Mycenaean form.³

Here, however, I will focus on the seemingly unproblematic etymology: I will argue that it is untenable in its traditional form and I will propose a new version. First, I give an overview of the formation and function of PIE and Greek *men*-stems. Next, two different arguments will be advanced against the traditional reconstruction: one based on an analysis of the verb *ἀραρίσκω*, and another on the history of wheel construction. It will then be shown that the semantic analysis arising from these considerations points to a different etymological conception. Finally,

-
- 1 Besides the cross-linguistic phenomenon of using the (plural of the) noun ‘wheel’ via metonymy as a term for ‘wheeled vehicle’, several languages, including ancient IE ones, used processes of external or internal derivation to derive the latter from the former: e.g. Ved. *rātha-* ‘chariot’ subst. ← **rathá-* adj. < **rot-h₂-ó-* ‘provided with wheels’, cf. Latin *rota* ‘wheel’ < **rot-e-h₂*, and Toch. B *kokale*, A *kukäl* ‘chariot’, cognate with Gk. *κύκλος*; see, among others, Buck 1949: 72 and Adams 2013:214. For possible relics of *ἄρμα* in the meaning ‘wheel’ in alphabetic Greek, see n.21.
 - 2 The root reconstruction as **h₂er-* (*LIV*² 269–70) vs. **h₁ar-* varies depending on opinions about possible related Anatolian material (cf. *LIV*² 270, n.0). See Pinault 2019 for an introduction to and arguments about the issue of the root(s).
 - 3 It is often assumed that this aspiration finds its origin in a suffix allomorph **-smen* beside the usual **-men*. Thus the medial /-s-/ in the Mycenaean form would not yet have developed into initial aspiration, as indicated by the absence of spellings with the sign ⟨*a₂*⟩ (generally indicating /ha/); see e.g. Delgado 2007:17–8. It remains uncertain, however, whether this is the correct interpretation of the aspiration in *ἄρμα*.

the new semantic reconstruction will be strengthened by data from another Indo-European language, Vedic. (Since the two phonological issues identified above are irrelevant for the semantic reconstruction, I will use **(h)ar(s)-*, informally, when referring to prestages of *a-mo/ἄρμα*.)

2 PIE and Greek *men*-stems

Before entering into further detail, it should first be recalled how PIE and Greek *men*-stems were formed and what their function was. PIE *men*-stems followed proterokinetic inflection (strong stem R(é)-S(∅)-D(∅), weak stem R(∅)-S(é)-D(∅)), with R(*e*) subsequently extended by analogy (Meier-Brügger 2010:344). In Greek, moreover, the root vowel of the *men*-stem often adopted the root vocalism of the corresponding verb in the present tense. In both PIE and Greek, **-men-* was in the first place a primary suffix forming deverbal action nouns, which developed, according to the argument structure of the underlying verb, into a corresponding action noun, which could then become concretized. More precisely, this means that the *men*-stem derivative of an intransitive verb with an inanimate subject typically resulted in a noun with agentive value, corresponding to the inanimate subject, e.g. **srew-* ‘to flow’ → **sréu-mṇ* ‘flowing’, concretized as ‘flowing [thing], that which flows’ > Greek ῥεῦμα ‘stream’; *men*-stems based on an intransitive verb with an animate subject and an object involving a location could develop into a noun expressing location corresponding to the latter, e.g. **h₂eg-* ‘to drive’ → **h₂ég-mṇ* ‘driving [over some area]’, concretized as ‘driving [area], that on which one drives’ > Vedic *ájman-* ‘road’; *men*-stem derivatives of a transitive verb with a necessary complement could develop into a result noun corresponding to this complement, e.g. **ter(h)-* ‘pass through something’ → **tér(h)-mṇ* ‘passing through something’, concretized as ‘the thing that is being passed through’ > Latin *termen* ‘boundary’; and finally, *men*-stem abstracts based on a transitive verb with an instrument complement could develop into an instrument noun, as in **deh₁-* ‘to link or bind, to attach someone/something to someone/something with something’ → **déh₁-mṇ* ‘binding (by means of something)’, concretized as ‘the thing by which one binds’ > Vedic *dā́man-* ‘bond’.⁴

4 See, among others, Melchert 1983, Stüber 1998:45–53, and Wodtke 2005, from which these examples have been drawn and where many others can be found. Further study of (P)IE noun formation will be necessary in order to refine the scheme, which does not yet allow one to predict which type of complement will be the basis of the *men*-stem when a verb requires several complements or allows divergent ones depending on different argument structures. See, however, de la Villa (2016), who nevertheless focuses solely on data from Herodotus.

As a result only two steps need to be undertaken to find the precise etymology and meaning of a *men*-stem: 1) authenticate the underlying root; and 2) determine its argument structure, and subsequently the precise argument to which the deverbal *men*-stem would correspond.

As to the first point, both Lejeune (1967:285) and Ruijgh (1976:177–9) considered that *a-mo* and ἄρμα go back to a *men*-stem based on the root of ἀραρίσκω. Furthermore, as this Greek verb occurs in passages focusing on the assembly of objects related to woodworking, carpentry, or masonry, the two scholars concluded that the verb could mean ‘to assemble something’ and that the *men*-stem in question must be a result noun, pointing to the thing that is assembled. Lejeune proposed that the word literally meant ‘assemblage’ and Ruijgh “le produit de l’ajustement des pièces de la jante, des rayons et du moyeu.” This can be rendered as follows: **(h)ar-* ‘to assemble something’ → **(h)ár(s)mq-* ‘assembling’, concretized as ‘thing that is assembled’ > ‘wheel’. However, this reconstruction is questionable both semantically and in terms of human history.

3 Counterarguments

3.1 Ἀραρίσκω

The whole etymology is based on the assumption that the verb ἀραρίσκω could mean ‘to assemble; to put or join together into something; to build’ and the consequent premise that a result noun with similar meaning could be derived from its root. However, a closer look reveals that no traces of such a usage can be found in extant Greek texts. An in-depth analysis of all the (simplex and compound) forms of ἀραρίσκω shows that the verb in its most elementary use expresses the idea that someone joins some object₁ to another object₂ by means of an instrument. In other words, the basic valency of ἀραρίσκω is as follows:

[ἀραρίσκω] + [subject] + [object₁] + [object₂] + [object_{3instrument}]

All other valency patterns (such as usage without an instrument noun, or in which the verb is intransitive) can be derived from this argument structure via known verbal alternations, as illustrated by the following basic examples from alphabetic Greek:

ἄραρεν ἦδε γ’ ὠλένη δυσεκλύτως.

Well, this arm is fixed so it can hardly be freed.

οἱ δ' ἐπεὶ ἀλλήλους ἄραρον τυκτῆσι βόεσσι

These then when they had fenced one another with their well-made shields of bull's hide

Il. 12.105

Ἥφαιστος, πυκινὰς δὲ θύρας σταθμοῖσιν ἐπῆρσε
κλιῖδι κρυπτῆ, τὴν δ' οὐ θεὸς ἄλλος ἀνῶγεν

Hephaestus [...] fitting strong doors to the doorposts with a secret bolt that no other god could open

Il. 14.167–8

This structure is also applicable to the Mycenaean attestations, even though only two forms of ἀραρίσκω can be read in the tablets: a perfect active participle used intransitively and a related compound form, both occurring only in the Knossos tablets. The participle, to begin with, can be found in the Ra series, with the ideogram PUG (*233 'dagger'), and in the Sd series, with the ideogram CUR (*241 'wheel-less chariot'). The same structure is used twice: a variant of the basic structure, indicating that object₂ is fitted with object₁. The dagger series consists of twenty-six tablets (some with joins), of which nine show traces of the participle, written by the same hand (126). Of these nine tablets, KN Ra(1) 1548 is the most complete:

- .a *de-so-mo*
- .b *ku-ka-ro / pi-ri-je-te pa-ka-na a-ra-ru-wo-a* PUG 3

Kukalos the sawyer,⁵ three daggers fitted with a sword belt.

KN Ra(1) 1548

De-so-mo is probably a masculine instrumental (singular or plural), indicating 'something that links' (cf. δεσμός 'band, bond, etc.'). In this case possibly a sword belt.⁶ *A-ra-ru-wo-a* is a neuter plural perfect active participle (cf. ἀρηρότα), agreeing with *pa-ka-na* 'daggers' (cf. φάσγανα 'id.'). Thus this text indicates that this person has three daggers, fitted/provided with sword belts. The same structure can

5 My translation. *Pi-ri-je-te* (*DMic* II:124–5) most probably indicates Kukalos' profession, of which the alphabetic Greek counterpart may be πιστήρ. See *ibid.* for other proposals.

6 The three most popular interpretations are '(sword) belt', 'handle', and 'rivet'. The first is deemed the most plausible by *DMic* I:167.

be found in the Sd series, containing twenty-four tablets, of which seven (written by hand 128) contain the corresponding feminine participle, e.g.:

- .a]*a-ra-ru-ja* , *a-ni-ja-pi* , *wi-ri-no-jo* , *o-po-qa* , *ke-ra-ja-pi* , *o-pi-i-ja-pi* CUR[
 .b *i-qi-jo* , / *a-ja-me-no* , *e-re-pa-te* , *a-ra-ro-mo-te-me-no po-ni-ki[-jo*

two wheel-less chariots, fitted with bridles, leather blinkers and horn bits, inlaid with ivory, assembled, Phoenician red⁷

KN Sd 4401 + 8718 + fr.

The first word is the same participle, this time feminine nominative plural (cf. ἄραρυῖαι), corresponding to the dual *i-qi-jo* in the bottom left.⁸ This word, related to ἵππος ‘horse’, means here ‘horse chariot’. Next to the participle is the equivalent of neut. ἡνία ‘bridles, reins’ in the instrumental plural (cf. Hom. -φι). This means that the chariot is provided/fitted with bridles, probably indicating that the bridles were attached in some way to the chariot frame. The other tablets of the CUR series always mention the same features: 1) the parts which the chariot contains (*a-ra-ru-ja* ‘fitted [with]’, absent on some tablets) or lacks (*o-u-qa*, cf. οὔτε); 2) its decorative elements and color; and 3) the fact that the chariot is *a-ra-ro-mo-te-me-no*.⁹

Finally, next to the participles, a compound form related to ἄραρίσκω was also present in Mycenaean:

e-]ke-a / ka-ka re-q HAS 12

KN R 1815

The first word is the equivalent of neut. ἔγχος ‘lance, spear’ in the nominative plural. What follows is most probably an *s*-stem compound adjective consisting of the word for ‘bronze’ (cf. χαλκός) as first member and a second member -ήρης/ἄρης based on the root of ἄραρίσκω: ‘12 lances tipped with bronze’.¹⁰

The major consequence is that even though the argument structure of ἄραρίσκω could vary, it seems that it could not include an object indicating the result of the verbal action (as in, say, κτίζω ‘to build’ → κτίσμα ‘foundation’, or

7 My translation.

8 See, for example, Delgado 2016:30–1 for the phenomenon of plural adjectives with dual nouns.

9 The exact meaning of this participle as well as the nature of its relationship with *a-mo* has been debated among Mycenologists. Piquero Rodríguez (2019:105, 116–7, 119–21) provides an overview of the issue and bibliography.

10 This compound (χαλκήρης) is frequent in the Homeric epics (about 25×), describing helmets, lances, arrows, etc.

English *to build* → *building*).¹¹ In other words, it is unlikely that the verb ἀραρίσκω (or its root) could ever express the idea of joining things together into a ship, a chariot, a wheel, or something else, and thus ‘to assemble’, and therefore it is unlikely that a derivative meaning ‘assemblage’ could have been based on this verb.

3.2 Possible exceptions

First, according to *DMic* (I:95–6, s.v. *a-ra-ru-ja*, following Chantraine 1967:20 and Kerschensteiner 1970:74), the participle in the PUG series tablets that contain no explicit mention of sword belts or any other instrument should be translated as ‘assembled’. However, as all those tablets are extremely fragmentary, it seems to me that this is a risky assumption.

Second, in most authoritative Greek dictionaries such as the *Lfgre*, *LSJ*, *DGE*, *Bailly*, or (most recently) the *Cambridge Greek Lexicon*, two passages are cited in which a form of ἀραρίσκω is translated as ‘to fit together into something; to construct (or the like)’.¹² However, the larger context of the passages in which the words occur indicates that such an interpretation may be erroneous. The first attestation is found in *Il.* 16.210–7:

- 210 Ὡς εἰπὼν ὄτρυνε μένος καὶ θυμὸν ἐκάστου.
 μᾶλλον δὲ στίχες ἄρθεν, ἐπεὶ βασιλῆος ἄκουσαν.
 ὡς δ’ ὅτε τοῖχον ἀνήρ ἄράρη πυκνοῖσι λίθοισι
 δώματος ὑψηλοῖο, βίας ἀνέμων ἀλεείνων,
 ὡς ἄραρον κόρυθές τε καὶ ἀσπίδες ὀμφαλόεσσαι.
 215 ἀσπίς ἄρ’ ἀσπίδ’ ἔρειδε, κόρυς κόρυιν, ἀνέρα δ’ ἀνήρ·
 ψαῦον δ’ ἱπτόκομοι κόρυθες λαμπροῖσι φάλιοισι
 νευόντων, ὡς πυκνοὶ ἐφέστασαν ἀλλήλοισι.

So saying, he roused the might and heart of every man, and yet more tightly were their ranks compacted when they heard their king. And as when a man compacts the wall of a high house with close-set stones, to avoid the might of the winds, so close were compacted their helmets and bossed shields; shield pressed on shield, helmet on helmet, and man on man. The horsehair crests on

11 Strikingly absent next to other Ancient Greek verbs meaning ‘to construct’ or the like are compounds based on the root of ἀραρίσκω indicating that something is well constructed, similar to εὐκτίμενος, εὐδμητος, εὐεργός, εὐπηγής, εὐποίητος, εὐτυκτος (all meaning ‘well-built’ et sim.).
 12 *Lfgre* I s.v. ἀραρίσκω, sense 1b ‘trans. zusammenfügen, errichten’, 2b ‘herstellen, bereiten’; *LSJ* s.v. ἀραρίσκω, sense II. ‘fit together, construct’; *DGE* s.v. ἀραρίσκω, sense B I. ‘artesanamente’, §1 “gener. ‘ajustar, armar, fabricar’”; *Bailly* s.v. ἀραρίσκω, ‘construire un mur avec des pierres’; *Cambridge Greek Lexicon* s.v. ἀραρίσκω, sense 4 ‘create by fitting together; construct’.

the bright helmet-ridges touched each other, as the men moved their heads, in such close array did they stand by one another.

It is tempting to translate v.212 (ὥς δ' ὅτε ...), when taken out of context, “as when a man builds a wall with closely-fitting stones.” Although this translation is syntactically sound, a translation ‘consolidates, compacts’ for ἀράρη may be semantically preferable. To begin with, the main theme of the passage is proximity, closeness, compactness, as indicated first by the simile of the wall and the soldiers, and second by the lexical field of fixation and closeness, as in ἐρείδω ‘cause to lean, prop’ (215), ψαύω ‘touch’ (216), πυκ(ι)νός ‘close, compact’ (212, 217), and forms of ἀραρίσκω in 211 and 214.¹³ The next argument concerns the three occurrences of ἀραρίσκω in this passage: since two express compactness, we should be inclined to interpret the other one along the same lines. The hapax ἄρθεν (211) is an athematic aorist passive (equivalent to ἤρθησαν): ‘the ranks were compressed’. The active reduplicated aorist ἄραρον (214) has a (unique) intransitive sense: the helmets and shields ‘were close to each other’, ‘were compact’. The form ἀράρη (212, also a hapax) is an active reduplicated aorist which, I argue, represents the active causative version of the other two: the man ‘makes compact’, ‘compacts’ a wall. Finally, my translation is further supported by the presence in this passage of two broader intertwined and recurring images in the *Iliad* in which compactness and firmness are thematized: on the one hand the Greek walls, both the figurative one (πύργος Ἀχαιῶν, cf. the passage above from Book 16) and the literal one made with palisades (τεῖχος Ἀχαιῶν); and on the other hand the (literal and figurative) firmness of the Greek/Trojan soldiers. I limit myself here to one example, *Il.* 15.615–22:

615 καί ῥ' ἔθελεν ῥῆξαι στίχας ἀνδρῶν πειρητίζων,
 ἧ δὴ πλεῖστον ὄμιλον ὄρα καὶ τεύχε' ἄριστα·
 ἀλλ' οὐδ' ὧς δύνατο ῥῆξαι μάλα περ μενεαίνων·
 ἴσχον γὰρ **πυργηδὸν ἀρηρότες**, ἠύτε πέτρῃ
 ἠλίβατος μεγάλη, πολιῆς ἀλδὸς ἐγγυὸς ἐοῦσα,
 620 ἧ τε μένει λιγέων ἀνέμων λαιψηρὰ κέλευθα

13 It is remarkable that, even though the context makes clear that a meaning ‘to construct’ is not adequate here, and that as a result all of the major translations and commentaries operate with a meaning ‘to consolidate’ or the like (translations: e.g. the Loeb series, given above; also Les Belles Lettres (Budé), “Comme un homme, au moyen de moellons bien serrés, raffermir la muraille de sa haute maison”; commentaries: note, for example, the *Basel Commentary* [Brügger 2018:103, though not fully explicit]), the sentence in vv.212–4 continues to be cited in dictionaries (cf. n.12 above) as an example of ἀραρίσκω in a meaning ‘to construct’.

κύματά τε τροφόντα, τά τε προσερεύγεται αὐτήν·
ὡς Δαναοὶ Τρῶας μένον ἔμπεδον οὐδὲ φέβοντο.

But not even so was he able to break them, though he was very eager; for they held firm-fixed like a wall, like a crag, sheer and great, hard by the gray sea, that withstands the swift paths of the shrill winds and the swelling waves that belch out against it; so the Danaans withstood the Trojans steadfastly, and fled not.

In this passage Hector tries to break through a rank of Greek soldiers. As they remain stuck together—like a wall—he does not succeed.¹⁴

The second attestation is more enigmatic: Ἥφαιστοςποίησε σάκος μέγα τε στιβαρόν τε,/ ἄρσάμενος παλάμησι (“Hephaestus had made the shield, big and massive, fitting it together with his skilled hands”; Hes. *Sc.* 319–20). Before going deeper into the precise semantics, one could even wonder whether the peculiar verb form ἄρσάμενος should even be used at all as proof for the reconstruction of the semantics of ἀραρίσκω. Not only is this form a hapax, as the only middle sigmatic aorist of ἀραρίσκω in the history of Greek, but it also points to a rather unorthodox use of a middle, as it is a transitive seemingly without any special relation to the subject himself: Hephaestus makes the shield for Heracles, not for himself. Nevertheless, in order to erase all doubts, it will be argued in what follows that even in these lines ἀραρίσκω should not be translated as ‘construct’ or the like.

These lines end the long ecphrasis of the shield made by Hephaestus for Heracles. As a consequence they have been interpreted as belonging to expressions indicating Hephaestus’ crafting skills, a standard feature in ecphraseis referring to Hephaestus’ creations. Consider for example lines 219–20 in the same ecphrasis: τὼς γάρ μιν παλάμαις τεῦξεν κλυτὸς Ἄμφιγυήεις,/ χρύσειον (“For that was how with his skilled hands the renowned Lame One had wrought him, made of gold”), or, strikingly similar, *Theogony* 579–80, preceding a short ecphrasis of a headband: τὴν αὐτὸςποίησε περικλυτὸς Ἄμφιγυήεις/ ἀσκήσας παλάμησι, χαριζόμενος Διὶ πατρὶ (“which the much-renowned Lame One made himself, working it with his skilled hands, to do a favor for Zeus the father”). The verb form ἄρσάμενος (at *Sc.* 320) would indicate a specific crafting skill, namely the putting together of different pieces, cf. the Loeb translation of lines 319–20, provided above. Even though

14 For the metaphor on the wall-like formation, see also *Il.* 12.43–4 and 13.151–2 where the same adverb πυργηδὸν is used in combination with ἀρτύνω ‘arrange, put in order’, and *Il.* 15.565–7 and 17.267–8, where the verb φράσσω ‘fence in’ is used. For the steadfastness of the real wall, see *Il.* 12.1–12. For other references to the compactness or steadfastness of the Greeks/Trojans, see, e.g., *Il.* 12.105, 12.132–4, 13.125–54, and 13.800.

no one—to my knowledge—has questioned this interpretation, as it seems quite evident, one could object that it is rather surprising that a form of the verb ἀραρίσκω is nowhere else to be found in such crafting scenes. This observation leads to a different and preferable interpretation.

Indeed, not only do these lines conclude the ecphrasis of the shield, but, more importantly, they close the long armoring scene of which the ecphrasis is only a part. This scene starts in line 122 and is parallel to the four armoring scenes of the *Iliad*.¹⁵ A remarkable feature of these scenes is the high frequency of ἀραρίσκω and the related verb ἀρμόζω ‘fit together, join’. Different forms are employed to indicate several features; one of them is the active aorist participle and/or a form of ἀρμόζω to indicate the well-fitting or close-fitting nature of (a part of) the armor. Of both Paris/Menelaus and Patroclus it is said that they took a lance “that fit his grasp”: ἔγχοϛ/δοῦρε ὄ/τά οἱ παλάμηφιν ἀρήρει (3.338 and 16.139). Next, of both Paris/Menelaus and Achilles it is said that the armor fit them perfectly: ἤρμοσε δ’ αὐτῶ; οἷ ἔφαρμόσσειε (3.333 and 19.385). In other words, a form of ἀραρίσκω (or ἀρμόζω) indicating the close-fitting nature of (a part of) the armor is expected in an armoring scene. Moreover, even though the parallel between lines 319–20 of *The Shield* and lines 579–80 of the *Theogony* is remarkable, there is an even closer one between the former and another formula indicating the well-fitting nature of tools. Indeed, there seems to have existed a formula ‘X (= a tool) ἄρμενον ἐν παλάμη(σι(ν))’ “a tool, well-fitting/fixed for/in his hands” (see *Il.* 18.600, *Od.* 5.234, *h.Merc.* 108–9). Since, in the case of *Sc.* 319–20, Hephaestus and not the tool/armor (neut. σάκος) must be the subject, the sense of the passage must be: “Hephaestus made it [the shield] fitting for his [i.e. Heracles’] hands.”¹⁶

Such an interpretation may be strengthened by two further points, of which the first concerns the content of the words that follow. In *Sc.* 321, Heracles is said to ‘wield the shield forcefully’: πάλλεν ἐπικρατέως. Although the verb πάλλω occurs regularly in Greek epic poetry, it only rarely means ‘wield (a weapon)’ (14×, including the compounds ἐγχέσπαλος ‘wielding the spear’ [3×] and σακέσπαλος ‘wielding a shield’ [1×]). More precisely, where there is sufficient context, the verb

15 Those of Paris/Menelaus (3.330–8), of Agamemnon (11.17–45), of Patroclus (16.131–44), and finally of Achilles (19.369–91). All these scenes are built up in the same way: putting on the greaves and corselet, taking up the sword and shield, wearing the helmet, and finally grasping the spear. Those of Agamemnon and Achilles differ from the other two in that they also include an ecphrasis of the corselet and/or shield.

16 Russo (1965:157) is the only one who mentions this option, saying it is not the correct one, though without giving any arguments: “ἀρσάμενος παλάμησι equivale ad ἀσκήσας παλάμαις (Hes. *th.* 580) e non ad ἄρμενον ποιήσας ταῖς παλάμαις (di Eracle).”

does not indicate that the subjects are simply wielding their weapon, but that they excel at it, as in e.g. *Il.* 5.302–5:

σμερδαλέα ἰάχων· ὁ δὲ χερμάδιον λάβε χειρὶ
 Τυδεΐδης, μέγα ἔργον, ὃ οὐ δύο γ' ἄνδρε φέροιεν,
 οἷοι νῦν βροτοὶ εἰς· ὁ δέ μιν ῥέα πάλλε καὶ οἷος.

But the son of Tydeus grasped in his hand a stone—a great deed—one that not two men could carry, such as mortals now are; yet easily did he wield it even alone.

One could argue that the ability to wield a weapon extremely well is conditioned by the manner in which the weapon fits in the hands of the user. This would indicate a possible link between *πάλλω* in the sense of ‘to wield’ and *ἀραρίσκω* in the sense of ‘to fit’. Such a link may indeed be found (at least implicitly) in the passages describing how Achilles’ spear could only be handled by Achilles himself, such as *Il.* 16.139–42:

εἴλετο δ' ἄλκιμα δοῦρε, τὰ οἱ παλάμηφιν ἀρήρει.
 ἔγχος δ' οὐχ ἔλετ' οἷον ἀμύμονος Αἰακίδαο,
 βριθὺ μέγα στιβαρόν· τὸ μὲν οὐ δύνατ' ἄλλος Ἀχαιῶν
 πάλλειν, ἀλλὰ μιν οἷος ἐπίστατο πῆλαι Ἀχιλλεύς

And he took two valiant spears that fitted his grasp. Only the spear of the incomparable son of Aeacus he took not, the spear heavy and huge and strong; this no other of the Achaeans could wield, but Achilles alone was skilled to wield it.

and *Il.* 19.389–91:

ἐκ δ' ἄρα σύριγγος πατρώιον ἐσπάσατ' ἔγχος,
 βριθὺ μέγα στιβαρόν· τὸ μὲν οὐ δύνατ' ἄλλος Ἀχαιῶν
 πάλλειν, ἀλλὰ μιν οἷος ἐπίστατο πῆλαι Ἀχιλλεύς.

And from its stand he drew his father’s spear, heavy and huge and strong, that no other of the Achaeans could wield, but Achilles alone was skilled to wield it.

The first line of the first passage, which is also present in the armoring scene of Paris and Menelaus (*Il.* 3.338), contrasts with the second line: Patroclus takes the two spears which fit his hands but not the spear of Achilles, which he cannot wield, or which, in other words, does not fit his hand. In the second passage the opposite happens: whereas the armoring scene of Achilles should conclude with him seizing a spear that fits his hand, in this passage he seizes the spear that he can wield. Thus,

the juxtaposition of ἀρσάμενος and πάλλεν (Hes. *Sc.* 320–1) may not be coincidental and could indicate that ἀρσάμενος means ‘made it fitting’.

Next, this interpretation, unlike the more common one, might explain the odd choice of a sigmatic middle: this might be a blend of the more common intransitive middle in the formula ‘X (= a tool) ἄρμενον ...’ (see above) and the sigmatic aorist with causative function as in ἀλλ’ εἰ μὲν δώσουσι γέρας μεγάθυμοι Ἀχαιοί,/ ἄρσαντες κατὰ θυμόν, ὅπως ἀντάξιον ἔσται (*Il.* 1.135–6, “Let the great-hearted Achaeans give me a prize, suiting it to my heart so that the recompense is equal!”).

In sum, the passage in *The Shield* typically cited in lexica does not refer to what was engraved by Hephaestus and mentioned in the ecphrasis, something that is nowhere else expressed with a form of ἀραρίσκω. Rather, it is more probable that the expression indicates the well-fitting nature of the shield as is common in armor scenes and which could be expressed by a similar formula. Consequently, there is not a single instance of ἀραρίσκω that is interpretable as ‘to fit something together into something; to construct’.

3.3 *Wheels*

I now turn to a second counterargument against the traditional etymological conception: wheels have been from the start objects that are carefully put together out of different pieces. The plain disk was immediately replaced by the “composite disk,” consisting of several boards precisely put together, an external hub, and sometimes even a tire. This was most probably all joined together by a professional. Next, there was the “cross-bar wheel,” which also consisted of several pieces, and finally the “spoked wheel”. Each of these three main wheel categories had several subcategories.¹⁷ As a result, there would have been no semantic motivation to call a spoked wheel “the product of joining together,” as any kind of wheel had been exactly that from the very beginning.

Moreover, if the word for ‘wheel’ had originated from the characteristic of being made out of spokes, it would most probably have been derived from the term for ‘spoke’ itself. Vedic provides a parallel for such a development, where the word *arati-* ‘spoked wheel’ is derived from the word for ‘wheel spoke’, i.e. *ará-* m., itself most likely a derivative of *(h)ar-.¹⁸ Since, morphologically, our *men-*stem cannot have been formed on the basis of any known PIE or Greek word for ‘spoke’, we

17 I refer to Crouwel (1992) and Littauer and Crouwel (2002) for an overview of the different wheel types, with many images.

18 See *EWAla* I:107–9.

must conclude that the etymological background of the Mycenaean word for ‘wheel’ does not appear to be related to spokes or to the crafting together of a wheel.

4 A “new” etymology

4.1 Inner-Greek data

The results of the above analysis raise the question of the derivational category to which the word for ‘wheel’ belongs if it is not an “effected” result noun. For the root in question it can be neither an agent noun nor an instrument noun; it must therefore be an “affected” result noun, that is, an object that underwent the change expressed by the action of the verb.¹⁹ In other words, the wheel would originally have indicated the object of the attaching, i.e. the thing that is attached to something else, namely the chariot axle: **(h)ar-* ‘to adjust or attach something’ → **(h)ár(s)μη-* ‘adjusting, attaching’, concretized as ‘adjusted/attached object’ > ‘wheel’.²⁰ One of the main characteristics of a chariot wheel, after all, is precisely the fact that it was often detached from or attached to the chariot body. Proof of this can be found both in the Mycenaean tablets and in Archaic Greek texts. First, in the Mycenaean writing system, different ideograms were used for chariot frames with and without wheels (*240 BIGAE vs. *241 CURRUS), which proves that the wheels could be detached for stocking. Next, in the Homeric epics reference is made to the action of putting wheels back onto the chariot, e.g.:

Ἡβη δ’ ἄμφ’ ὀχέεσσι θοῶς βάλε καμπύλα κύκλα,
χάλκεα ὀκτάκνημα σιδηρέῳ ἄξονι ἄμφις.

19 To my knowledge, this distinction is not exploited in scholarship on PIE noun formation, where the effected and affected objects are both subsumed under the broader category of *nomina rei actae* (“result nouns”).

20 It is remarkable that none other than Lejeune (1955:160, 166, originally followed even by Chantraine 1956:52) had made a proposal in the same direction. He thought that *a-mo-ta* was the equivalent of ἄρμυστά, a neuter plural attributive of omitted κύκλα, i.e. ‘(roues) ajustées’: “Aussi vaut-il mieux songer à un autre sens: ἄρμυστος s’appliquerait aux ‘pièces détachées’, ἄρμυστός aux pièces déjà ajustées, par montage, dans un ensemble. [...] Il nous paraît probable que les roues étaient stockées, soit en vrac, soit montées, deux par deux, sur des essieux; ce dernier serait celui que les inventaires signalent par *a-mo-ta* [...]” Nevertheless, a few years later the link would be made between Mycenaean singular *a-mo*, dual *a-mo-te*, plural *a-mo-ta*, and alphabetic Greek ἄρμα, ἄρματα, after which it became clear that *a-mo-ta* was not an attributive adjective but the noun itself for ‘wheels’ and that it was based morphologically on a *men-* stem. As a result, the link between *a-mo-ta* and wheels as attachments was left behind.

And Hebe quickly put to the chariot on either side the curved wheels of bronze, eight-spoked, around the iron axle.²¹

Il. 5.722–3

4.2 Vedic

A possible objection is that no passages are found in which ἀραρίσκω is used for the action of adjusting or attaching wheels to the chariot axle itself. Nevertheless, evidence that its root could express exactly that may be found in Vedic. Even though there is no trace of the same *men*-stem in Vedic,²² there are remnants of the verb root in the Indo-Aryan branch. But finding relics of the PIE root of ἀραρίσκω in this branch is not an easy task. Indeed, as the vowels **e* and **o* merged with **a*, the following PIE roots became homophonous in the form /ar-/: **h₁er-* (*LIV*² 238 ‘wohin gelangen, geraten’), **h₂er-* (*LIV*² 269–70 ‘sich (zusammen)fügen’), **h₃er-* (*LIV*² 299–300 ‘sich in (Fort-)Bewegung setzen’), to which one may add, at least in theory, **h₁ar-*.²³ As a consequence it is not always easy to determine with certainty which Indo-Aryan verb stem goes back to which PIE root. Remarkably, it has only rarely been proposed, let alone proven, that some of them may go back to **(h)ar-* ‘join, attach’.²⁴ One of the few such forms proposed can be found in a passage concerning the wheel and the chariot. This would not be surprising given that these play a major role in the *Rigveda*, were it not for the fact that the (nasal) verb stem occurs in the only line in which the wheels are added to the chariot axle:

á [...] | ṛṇór ákṣam ná cakryòḥ

21 The editors of this volume brought to my attention the possibility that the term ἀρματοπηγός (*Il.* 4.485), traditionally interpreted as the semantic equivalent of Myc. *a-mo-te-wo* (**ἀρμοτεύς*, see *DMic* I:61 and Piquero Rodríguez 2019:119–20) ‘chariot-maker; wheelwright’, may originally have referred specifically to the person who fastens the wheels onto the chariot axle: ‘wheel-fastener’. The second member of the compound is based on the root of πῆγνυμι, the primary meaning of which is ‘to fasten/fix into or onto’. See Panagl 1992 and Hajnal 1998:17–8 for arguments in support of the translation ‘wheel’ for Hom. ἀρματο- in this compound (cf. the meaning of Myc. *a-mo*), as opposed to ‘chariot’ (as in standard alphabetic Greek), as well as in ἀρματο-τροχή ‘wheel-track’ (*Il.* 23.505).

22 For possible relics of the same *men*-stem in Latin and the Slavic languages, see de Meyer 2022.

23 Cf. n.2 above. See Kümmel 2000 for an overview of these three homophonous roots in Vedic, and *Rivelex* I:458–70 for all of the attestations of (forms of) *ar-* in the *Rigveda*.

24 For such claims, see e.g. Harðarson 1993:199–200 and Werba 1997:166.

you fit out (the refreshments) (as you) fit an axle between two wheels.

RV 1.30.14c (trans. Jamison and Brereton 2014:130)²⁵

Consequently, it may be no coincidence that one of the few occurrences of this root that survived in Old Indic appears exactly in the context of wheels being attached to the axle. As such, the *Rigveda* provides a supporting argument for the “new” etymological conception of *a-mo* and ἄρμα.

5 Conclusion

Even though the morphological reconstruction of Myc. *a-mo* ‘wheel’ and Gk. ἄρμα ‘chariot’ as a *men*-stem based on the PIE root that underlies ἀραρίσκω is solid, the word’s generally accepted semantic reconstruction as ‘the assembled thing; the spoked wheel’ is flawed. As the verb ἀραρίσκω could apparently never express a resultative action ‘to assemble; to create; to put s.th. together into s.th. else’, it is unlikely that its root could have served as the basis of an “effective” result noun. Moreover, as wheels were an assemblage from the beginning, there was no semantic motivation to call a spoked wheel ‘the assembled thing’. The facts that there were two different Mycenaean ideograms for chariots with and without wheels, and that the Greek epics mention the practice of detaching/attaching wheels from/to the chariot, lead to the reconstruction of an “affective” object noun ‘the thing that is attached/adjusted (to the axle)’, i.e. **(h)ar-* ‘to adjust or attach something’ → **(h)ár(s)mḡ-* ‘adjusting, attaching’, concretized as ‘the thing that is adjusted/attached’ > ‘wheel’. Finally, this new etymological conception finds support in Vedic, where the same verb root is used for the action of attaching wheels to the axle.

References

- Adams, Douglas Q. 2013. *A Dictionary of Tocharian B*². Amsterdam: Rodopi.
 Bailly = Anatole Bailly (ed.). 2000. *Dictionnaire grec-français*. Ed. Louis Séchan, Pierre Chantraine, and Émile Egger. Paris: Hachette.
Basel Commentary = Claude Brügger. 2018. *Homer’s Iliad. The Basel Commentary: Book XVI*. Trans. Benjamin W. Millis and Sara Strack. Ed. S. Douglas Olson. Berlin: De Gruyter.

25 The fact that in this sentence the axle is adjusted between the wheels rather than the wheels adjusted onto the axle is not problematic; cross-linguistically many examples can be found of such an alternation of objects with locative meaning, see most recently Ginevra 2021 regarding (P)IE.

- Buck, Carl D. 1949. *A Dictionary of Selected Synonyms in the Principal Indo-European Languages*. Chicago: University of Chicago Press.
- Cambridge Greek Lexicon = James Diggle, Bruce L. Fraser, Patrick James, Oliver B. Simkin, Anne A. Thompson, and Simon Westripp (eds.). 2021. *The Cambridge Greek Lexicon I: A–I*. New York: Cambridge University Press.
- Chantraine, Pierre. 1956. Quelques termes mycéniens relatifs aux chars. *Minos* 4(1).50–65.
- . 1967. Le parfait mycénien. *Studi Micenei ed Egeo-Anatolici* 3.19–27.
- Crouwel, Joost H. 1992. *Chariots and other Wheeled Vehicles in Iron Age Greece*. Amsterdam: Allard Pierson Museum.
- Delgado, José M. J. 2007. Situación de *s heredada entre consonantes en griego micénico. *Faventia* 29.9–21.
- . 2016. *Sintaxis del griego micénico*. Seville: Universidad de Sevilla.
- DGE = Francisco R. Adrados and Elvira Gangutia (eds.). 1991. *Diccionario Griego-Español III: ἀποκοιτέω-Βασιλεύς*. Madrid: Consejo Superior de Investigaciones Científicas.
- de Meyer, Isabelle. 2022. Take up Your Arms: On Two *m*^o-stems of the root *(h)ar-. *Indogermanische Forschungen* 127.91–130.
- DMic = Francisco Aura Jorro. 1985–93. *Diccionario micénico*. 2 vols. Madrid: Consejo Superior de Investigaciones Científicas.
- EWaia = Manfred Mayrhofer. 1992–2001. *Etymologisches Wörterbuch des Altindoarischen*. 3 vols. Heidelberg: Winter.
- Ginevra, Riccardo. 2021. Locative Alternation in Proto-Indo-European: A Lexical-Constructional Approach to Historical Semantics and Root Polysemy. Paper presented at the 54th Annual Meeting of the Societas Linguistica Europaea.
- Hajnal, Ivo. 1998. *Mykenisches und homerisches Lexikon: Übereinstimmungen, Divergenzen und der Versuch einer Typologie*. Innsbruck: Institut für Sprachwissenschaft der Universität Innsbruck.
- Harðarson, Jón A. 1993. *Studien zum Urindogermanischen Wurzelaorist und dessen Vertretung im Indoiranischen und Griechischen*. Innsbruck: Institut für Sprachwissenschaft der Universität Innsbruck.
- Jamison, Stephanie W., and Joel P. Brereton (trans.). 2014. *The Rigveda: The Earliest Religious Poetry of India*. 3 vols. New York: Oxford University Press.
- Kerschensteiner, Julia. 1970. *Die mykenische Welt in ihren schriftlichen Zeugnissen*. Munich: Heimeran.
- KT⁶ = José L. Melena and Richard J. Firth (eds.). 2019. *The Knossos Tablets*⁶. Philadelphia: INSTAP Academic Press.
- Kümmel, Martin J. 2000. Der Aorist der Wurzel(n) ar im Vedischen. In Bernhard Forssman and Robert Plath (eds.), *Indoarisch, Iranisch und die Indogermanistik: Arbeitstagung der Indogermanischen Gesellschaft vom 2. bis 5. Oktober 1997 in Erlangen*, 253–66. Wiesbaden: Reichert.

- Lejeune, Michel. 1955. Essais de philologie mycénienne. *Revue de philologie, de littérature et d'histoire anciennes* 29.147–71.
- . 1967. Une présentation du Mycénien. *Revue des Études Anciennes* 69(3/4).280–8.
- LfgfE = Bruno Snell. 1979. *Lexikon des frühgriechischen Epos I: A–Aōtos*. Göttingen: Vandenhoeck & Ruprecht.
- Littauer, Mary A., and Joost H. Crouwel. 2002. *Selected Writings on Chariots and Other Early Vehicles, Riding and Harness*. Ed. Peter Rauwling. Boston: Brill.
- LIV² = Helmut Rix (ed.). 2001. *Lexikon der Indogermanischen Verben: die Wurzeln und ihre Primärstambildungen²*. Wiesbaden: Reichert.
- LSJ = Henry G. Liddell, Robert Scott, Henry S. Jones, and Roderick McKenzie (eds.). 1996. *A Greek-English Lexicon, with a Revised Supplement*. Oxford: Clarendon.
- Meier-Brügger, Michael. 2010. *Indogermanische Sprachwissenschaft⁹*. Berlin: de Gruyter.
- Melchert, H. Craig. 1983. A “New” PIE **men* Suffix. *Die Sprache* 29.1–26.
- Panagl, Oswald. 1992. Mykenische Fossilien in Homertext? Zur Bedeutung von ἄρματοπηγός und ἄρματροχή. In Bela Brogyanyi and Reiner Lipp (eds.), *Historical Philology: Greek, Latin, and Romance: Papers in Honor of Oswald Szemerényi II*, 137–46. Amsterdam: Benjamins.
- Pinault, Georges-Jean. 2019. Hittito-Tocharica: Tracking the Bear Once More. In Natalia Bolatti-Guzzo and Piotr Taracha (eds.), “*And I Knew Twelve Languages*”. *A Tribute to Massimo Poetto on the Occasion of His 70th Birthday*, 496–509. Warsaw: Agade bis.
- Piquero Rodríguez, Juan. 2019. *El léxico del griego micénico*. Nancy: A.D.R.A.
- Rivelex = Thomas Krisch. 2006. *Rivelex. Rigveda-Lexikon I: Wörter beginnend mit “a.”* Graz: Leykam.
- Ruijgh, Cornelis J. 1976. *Chars et roues dans les tablettes mycéniennes: La méthode de la mycénologie*. Amsterdam: North-Holland.
- Russo, Carlo F. (ed.). 1965. *Hesiodi Scutum, Introduzione, testo critico e commento con traduzione e indici²*. Florence: La Nuova Italia.
- Stüber, Karin. 1998. *The Historical Morphology of n-Stems in Celtic*. Maynooth: Department of Old Irish, National University of Ireland.
- de la Villa, Jesús. 2016. Verbal Nouns in *-ma*: Their Formation and Semantic Reinterpretation. In Elena Redondo-Moyano and María J. G. Soler (eds.), *Nuevas interpretaciones del mundo antiguo. Papers in Honor of Professor José Luis Melena on the Occasion of his Retirement*, 111–20. Vitoria-Gasteiz: Universidad del País Vasco.
- Werba, Chlodwig H. 1997. *Verba Indoarica: Die primären und sekundären Wurzeln der Sanskrit-Sprache, Pars I: Radices Primariae*. Vienna: Verlag der Österreichischen Akademie der Wissenschaften.
- Wodtko, Dagmar S. 2005. Nomen und Nominalisierung im indogermanischen Lexikon. *Indogermanische Forschungen* 110.41–85.

The *ber* Necessities: The Second Singular Aorist Imperative in Armenian*

BENJAMIN W. FORTSON IV

University of Michigan

This paper proposes a new diachronic account of the truncation that occurs in the 2nd singular aorist active imperative of polysyllabic *c'*-final aorist stems in Armenian. After a discussion of previous treatments, the likely prehistoric situation that led to the rise of the truncation rule is outlined in some detail. The truncation is claimed to have resulted from a reanalysis of the deletion of the augment that occurs in the imperatives to monosyllabic stems, to produce a morphological subtraction rule that targeted stem-final *-c'*. The typological interest of such a rule is briefly discussed before concluding.

1 Descriptively, the second singular of the Armenian aorist active imperative is formed according to the following procedures.¹ It will be convenient for our purposes to divide Armenian verbs according to the length of the aorist stem, rather than according to the traditional categories of strong and weak.²

1.1 If the stem is a monosyllable, the imperative is identical to the stem. The stem of any Armenian aorist can be most easily gotten from the 3rd singular, which has no inflectional ending. Monosyllabic 3rd singulars evince the augment *e-*, and so one can think of the imperative of such verbs as the 3rd singular minus the augment. See (1a) for the basic pattern. In a number of verbs, the stem is reduced outside the 3rd singular due to phonotactic rules that weaken vowels in pretonic syllables (the language is end-stressed). The forms in (1b) illustrate some of the resulting vocalic alternations, which, however, are otherwise of little importance for what follows.

* I am grateful for inquiries and comments I received after the oral delivery of this paper from Jared Klein, Olga Levaniouk, Thomas Motter, Philomen Probert, and especially Petr Kocharov. All errors remain my own.

1 I leave out one or two unimportant subrules and special forms.

2 Strong verbs comprise two groups, those whose aorist stem is equivalent to the synchronic verbal root, and the causatives/factitives built with the suffix *-owc'* (see below in the main text). Weak verbs are those whose aorist stem is formed by suffixation with the formant *-c'* or *-ac'*. Each of the groups in my classification below contains both strong and weak verbs.

(1)	indicative		imperative	
	1sg.	3sg.	2sg.	gloss
a.	<i>beri</i>	<i>eber</i>	<i>ber</i>	carry
	<i>toli</i>	<i>etol</i>	<i>tol</i>	allow
	<i>bac'i</i>	<i>ebac'</i>	<i>bac'</i>	open
b.	<i>lc'i</i> [lə'ʰhi]	<i>elic'</i>	<i>lic'</i>	fulfill
	<i>t'ki</i> [tʰə'kʰi]	<i>et'owk'</i>	<i>t'owk'</i>	spit
	<i>kizi</i>	<i>ekēz</i>	<i>kēz</i>	burn
	<i>lowc'i</i>	<i>eloyc'</i>	<i>loyc'</i>	kindle

1.2 In stems consisting of more than one syllable, things are a bit more interesting. If the stem is synchronically the bare verbal root, the imperative is again the same as the stem and simultaneously the 3rd singular indicative (there being no augment attached to polysyllables), see (2a). However, if the stem is formed with or contains a suffix ending in the affricate $-c'$, a curious thing happens: the affricate is dropped in forming the imperative, as in (2b). The last two verbs of this subset respectively represent highly productive formations: the aorists in $-ec'$, 3sg. $-eac'$, which stand alongside presents built with the all-purpose verb-deriving suffix $-e-$ (thus pres. *sir-e-m* 'love', aor. *sir-e(a)c'*); and the deverbatives in pres. $-owc'anem$, aor. $-owc'$, 3sg. $-oyc'$, which forms causatives and factitives. A small handful of causative bases end in a sibilant instead of an affricate but follow the same pattern, exemplified in (2c).

(2)	indicative		imperative	
	1sg.	3sg.	2sg.	gloss
a.	<i>yaweli</i>	<i>yawel</i>	<i>yawel</i>	increase
	<i>anici</i>	<i>anēc</i>	<i>anēc</i>	curse
b.	<i>alac'i</i>	<i>alac'</i>	<i>ala</i>	grind
	<i>asac'i</i>	<i>asac'</i>	<i>asa</i>	say
	<i>sirec'i</i>	<i>sireac'</i>	<i>sirea</i> ³	love
	<i>zatowc'i</i>	<i>zatoyc'</i>	<i>zato</i> ⁴	separate
c.	<i>əndelowzi</i>	<i>əndeloyz</i>	<i>əndelo</i>	attach
	<i>korowski</i>	<i>koroyz</i>	<i>koro</i>	destroy

3 The (ea) in *sirea(c')*, etc. represents a falling diphthong [ja] in traditional pronunciation.

4 < **zatoz*, see §4.4.1 below.

1.3 The active aorist imperatives with *c*'-deletion contrast with the corresponding mediopassive imperatives, which normally retain the final affricate. Thus alongside active *sirea* 'love!' with deletion there stands the passive imperative *sireac*' 'be loved!' (to passive *sirec'ay* 'I was loved') without; and similarly, the medium tantum aorist *bazmec'ay* 'I sat down' has imperative *bazmeac*' 'sit down!'. We will come back to this relationship further below.

2.1 The source of the imperatives in (1) is not in dispute. Most of these continue or are modeled on inherited thematic imperatives where the final **-e* disappeared during the prehistoric loss of final syllables. These include old present imperatives such as *ber* 'carry!' < **bhere* (cp. Gk. φέρε, Ved. *bhára*, Goth. *bair*, etc.) as well as old thematic aorist imperatives (if they existed at the relevant ancestral stage), such as *lik*' 'leave!' < **lik^we*. Most of the monosyllabic imperatives ending in the weak aorist suffix (see n.2) like *bac*' 'open!' have the same explanation, since the affricate is usually regarded as continuing the iterative-durative or inceptive present-stem formant **-s^ke-* that later got specialized as a preterite formant; thus *bac*' continues virtual **bhas^ke*. But the polysyllabic forms that lack the final affricate, like *sirea* and *zato*, cannot be generated from anything similar by regular sound change.

2.2 The basic problem is the final vowel. There are some synchronic final vowels in Armenian that arose through prehistoric contraction following the loss of a lenited intervocalic consonant; but because of the specifics of the different chronological stages and targets of prehistoric final-syllable loss, coupled with constraints on the theoretically thinkable preforms imposed by the comparative morphological evidence, none of those developments could have produced a word-final *-a* or *-o* except in monosyllables.⁵ And it is precisely monosyllables that do *not* end in a vowel in the imperative; only the polysyllabic aorists do so. One can, of course, try to play the game of positing the creation (by whatever means) of monosyllabic imperatives in *-a* (or *-o*) with subsequent analogical spread of the final vocoid to polysyllables; but this requires that the original monosyllables were later refashioned with the addition of *-c*', for which there would have been no model

5 Space does not allow an exhaustive treatment of every possibility, but the standard candidates would generate forms that would have wound up ending in a consonant after final-syllable loss (**-dhi* added to any kind of stem; 2sg. injunctives of any kind; thematic imperatives in **-e*). Only a monosyllabic form of the type **Cā(s)/*Cō(s)* (after laryngeal loss) or a disyllabic *si-*imperative of the type **Cāsi/*Cōsi* would have produced a form in final *-a/-o*, but see immediately following in the main text. Any word-final sequence **-ā(s)/*-ō(s)* in a polysyllable or **-āsi/*-ōsi* in a form longer than two syllables would have completely disappeared.

or motivation. There is at any rate no evidentiary basis for assuming that *bac*^ʿ was once a sheepish **ba*, and this approach will not be further pursued here.

2.3 I am aware of only one relatively in-depth attempt to explain the truncated imperatives, which is that of Klingenschmitt 1982:48. He derived the active imperative in *-a* from a proximate **-ac*^ʿ*e* and the fuller mediopassive *-ac*^ʿ from **-ac*^ʿ*a*, claiming that **-e* was lost first, then **-c*^ʿ, and then **-a*. This account is unconvincing for several reasons. The relative chronology is ad hoc and enormously costly for the historical phonology of numberless other forms. We know that the loss of **-e* must have happened after at least the loss of final stops (e.g. 3sg. impf. **ebheret* > **ebhere* > aor. *eber* ‘s/he carried’; **penk*^{we} > *hing* ‘five’, not †*hin* like 3pl. **-enti* > **-ent* > *-en*), and it is usually thought that all final obstruents were lost more or less simultaneously with one another; so it would complicate things if we had to assume a second, otherwise unmotivated round of final-obstruent loss just to get rid of **-c*^ʿ or its ancestor. Secondly, *-c*^ʿ and all other affricates that came to stand in auslaut after final-syllable loss are otherwise faithfully preserved (in desinences like the genitives plural in *-c*^ʿ and in words like *anēc* ‘s/he cursed’, *ebarj* ‘s/he removed’, *oč* ‘not’, and *ēj* ‘s/he descended’). Third, it has in fact traditionally been assumed (by Klingenschmitt also, 1982:61, continuation of n.1) that in at least one word, *vec*^ʿ ‘six’ < **suyek*^s, the final affricate was word-final going all the way back to its origin in a word-final consonant cluster in PIE, though this is not unproblematic.⁷ Regardless of the status of the numeral in this context, there are legions of words ending in final affricates, of which the most embarrassing one for Klingenschmitt’s account is the 3sg. aorist *-c*^ʿ from (anachronistic) **-c*^ʿ*et*. To justify its preserved affricate he must suppose *two* rounds of final *e*-loss, one before the loss of final dentals and one after, which just adds additional complications. Lastly, there is no independent evidence that **-e* was lost at a different time from **-a*;⁸ only **-i* appears to have disappeared earlier than the other vowels. Most likely, all vowels in auslaut after the disappearance of **-i* were reduced to **-ə* before disappearing.

2.4 All these difficulties arise because Klingenschmitt interpreted the difference between shortened *sirea* and unshortened *sireac*^ʿ as ancient and inherited. This is not the tack taken by Jasanoff (1979:144), the only other scholar known to me who

6 Assuming the traditional reconstruction for pre-Armenian; Kim (2016) argues for an early change of **-e* > **-i*.

7 See Viredaz 2004–5:94, n.52, though the problems he raises are not insurmountable. I hope to discuss this matter elsewhere.

8 Again assuming the traditional account over Kim’s (2016) alternative hypothesis (above in n.6).

has offered an explanation of these forms. Unfortunately he devotes only a single sentence to the topic, wherein he avers that the mediopassive singular is the regular continuant of the inherited active imperative **-s $\hat{k}e$* and that the later active forms are generalized “hypershorts” variants of the longer inherited forms, comparable to Latin apocopated imperatives like *dīc* ‘say!’, *dūc* ‘lead!’, and *fac* ‘do!’. The brevity of his treatment leaves too many questions open to be satisfactory. In particular, the comparison with Latin, upon closer inspection, is not apposite. The shortened Latin imperatives form a tiny and irregular group of extremely common verbs, and the apocope that they underwent is also found in a variety of function words and particles (e.g. *uīn* < **uīne* < **uīs-ne* ‘don’t you want? = you oughta ...’, Plautine *nemp*’ = *nempe* ‘of course’, *ill*’ = *ille* ‘he, that’, etc.). That is to say, the imperatives in question underwent a sound change that affected other, typically grammaticalized forms in exclamations and acoustic dips—environments generally detrimental to word-edges. This sort of thing, where a handful of especially common imperatives, terms of address, and function words share phonological reductions, is typologically unremarkable. By contrast, in the Armenian imperatives the shortening is not limited to a handful of the commonest verbs but is regular and pervasive; it is also not the result of a phonological process found elsewhere in the language. Exactly what that process was and, importantly, the motivation for it, remain unexplored in Jasanoff’s treatment.

2.4.1 However, the basic kernel of his approach is much to be preferred over Klingenschmitt’s for its simplicity, and also, as will emerge shortly, for its fundamental assumption that the active and mediopassive forms arose from the same unshortened ancestor. The desiderata, then, are, first, to demonstrate with arguments and evidence why that assumption is indeed a good one (§§3.1–3.5 below); and second, to establish the specific mechanism for the shortening in the active (§§4ff.).

3.1 Regarding the first desideratum, there are several reasons why we might want to think that the shorter active imperatives and the longer passive imperatives were one and the same in the not-too-distant prehistory of the language—in other words, that the singular imperative was diathetically neutral (or bivalent). The following discussion synthesizes the common scholarly understanding of the diachrony with my own personal take on various details. Just to be clear, I am not claiming that the singular imperative was diathetically neutral going all the way back to PIE, and in fact I would not quite conceive of things the way Jasanoff does when he takes the unshortened mediopassive directly from the inherited active. Other Indo-European languages consistently distinguish active from mediopassive imperatives as

far back as we can trace them; there is no reason to think pre-Armenian was any different. Plus, the plural of the aorist imperative has distinct active (*-ikʻ* or *-ēkʻ*) and mediopassive (*-arowkʻ*) forms,⁹ and there is likewise no reason to consider that a late innovation. Surely what happened was that there originally existed diathetically distinct forms in the singular, but they merged by sound change into a single bivalent form. Indeed, given the most likely starting points, that is the very outcome we would expect: if singular active imperatives like *bacʻ* normally continue thematic **-sĕke*, then the most likely candidate for a corresponding inherited singular middle ending would have been **-sĕkeso*,¹⁰ which would have undergone early contraction (**^oeso > *^oeho > *^oeo > *^oo*)¹¹ and subsequent apocope (just like **-e*) during final-syllable loss.

3.2 Naturally, we expect that this happened also in the strong aorists—the ones not suffixed with **-sĕke-*. In the attested language, strong aorists form their singular mediopassive imperatives with an ending *-ir* (e.g. *ber-ir* ‘be carried!’), more on which below. But on the basis of the disappearance of **-e* and **-eso*, we would predict that there was an earlier stage where both active and mediopassive singular imperatives were endingless (**ber*). Indeed we have direct evidence for this in the form of four strong middle aorists whose imperatives are formally identical to actives: *nist* ‘sit down!’ (: *nstay*), *kal* ‘have!’ (: *kalay*), *darj* ‘go back!’ (: *darjay*), and *ari* ‘get up!’ (: *yareay*). These can only be survivals from that earlier stage.¹²

3.2.1 The last of these, *ari*, is especially instructive. It belongs to the *eay*-class of middle aorists, whose singular imperatives otherwise end in *-ir*, e.g. *hangeay* ‘I rested’ : imper. *hangir*. Not only does *ari* lack the *-r* of its classmates (so to speak), but it also lacks the initial *y-* that the verb sports elsewhere (pres. *yarnem*, aor. *yareay*), which was a preverb originally. Neither of these features has a synchronic

9 See now Kölligan 2019:126–33 on the synchronic distribution of 2pl. *-arowkʻ*, who shows that it is not a specifically imperativial ending, contra depictions in the handbooks.

10 Conceivably remodeled at some point by replacing *-e-* with *-a-* under the influence of the other mediopassive aorist forms in *-a-*. The overall phonological development is the same either way.

11 For the contraction of **eso > o* cp. **susesores* ‘sisters’ > **χwehoreχ* (vel sim.) > **k^heorek^h* > **k^horek^h* > *k^hork^h*.

12 A possible fifth one is **oyñ* ‘have!’ to *ownim* if de Lamberterie’s (1978:279–80; 2005:337–8) analysis of *oljoyn* ‘salutation; good health’ as a hypostasis of **olj^hoyñ* ‘be alive/well/sound!’ is correct. This assumes a prehistoric aorist **ownay* alongside *ownim* like *nstay* alongside *nstim* that was later replaced by the suppletive *kalay*. Whether or not that is a difficulty, the otherwise unparalleled construal of this verb with an adjective to mean ‘be (in a particular state)’ like Gk. ἔχειν is a greater challenge that the author acknowledges but cannot decisively overcome (the example he gives at de Lamberterie 2005:338 is hardly probative and could be a calque).

model;¹³ *ari* thus provides a precious window on the earlier formation of the singular imperatives in the *eay*-class, indicating that they all once ended just in *-i*, with *-r* added later. The *-r* probably spread from old root aorist imperatives of the type that survives into the historical period in the three middle imperatives *low-r* ‘hear!’ (: *loway*), *ta-r* ‘lead!’ (: *taray*),¹⁴ and *le-r* ‘be!’ (: *elew*) and the (n.b. morphologically indistinguishable!) actives *tow-r* ‘give!’ and *di-r* ‘put!’. Thus *hangir* and its ilk replaced earlier **hangi*, etc., and since the *-i* of *ari*, *hangi(+r)*, etc. is historically the same vowel as the *-e-* of the indicatives *yareay*, *hangeay*, etc., we see that these middle verbs, in their relatively shallow prehistory, once formed their 2sg. imperatives using the synchronic bare stem just like the actives.¹⁵ Only *ari* escaped the refashioning (though eventually a regular imperative *yarir* was invented alongside it).

3.3 The *-ir* of the *hangeay* class, as is known, is what spread to other verbs as a new mediopassive singular imperative ending, including the weak aorists, where they became an alternative for the passives (e.g. *sirec’-ir* ‘be loved!’ alongside *sireac’*).¹⁶ The three irregular middle root imperatives we saw above—*nist*, *kal*, and *darj*—show that *berir* and the like are recharacterizations of **ber* in its function as a mediopassive with a specifically mediopassive suffix.

3.4 The earlier situation just outlined, where verbs formed both active and middle singular aorist imperatives to the bare aorist stem, is probably further reflected in some additional data from early texts that has not to my knowledge been discussed. In the Bible, certain middle aorists in *-ac’ay* are only attested with formally active imperatives in *-a*, alongside others that have only the expected *-ac’ir*. *HK* 145–6 lists the following examples of the former kind (I have added attestations): *gt’a* ‘pity!’ 3 Mac. 6:10, *dola* ‘tremble!’ Hab. 2:16 (some active forms), *ənt’a* ‘run!’ 4×, *ima* ‘understand!’ Sir. 11:7, 2 Tim. 2:7, *moʀa* ‘forget!’ Ps. 44:11 (= 45:10 in the

13 Cf. now Kocharov 2019:115–6.

14 *taray* is built to a neo-stem *tar-* abstracted from the imperative; see now also Kocharov 2019:114. The problem of the disputed origin of the *r*-imperative in these forms is not of relevance here.

15 I see no reason why *ari* should continue an **ara* or **are* plus a “nachgestellte[s] Präverb **r*” (Klingenschmitt 1982:51). Jasanoff (2003:93) reconstructs **arije*.

16 The spread of *-ir* to weak aorists in *-ec’-* appears to have happened during the historical period; I have found no examples in the Gospels or the first dozen books of the Old Testament, where, however, the endingless form in *-eac’* is well-represented, as are imperatives in *-ac’ir* to middle aorists in *-ac’ay*. Interestingly, *-ir* also spread to at least three verbs that conjugate actively but have stative semantics: *kac’ir* (alongside *kac’*) to *kam*, aor. *kac’i* ‘be, exist’ (*HK* 141), *karac’ir* to *karem*, *karac’i* ‘be able’, and *mart’ac’ir* to *mart’em*, *mart’ac’i* ‘id.’ (*HK* 149). None of these forms is found in the Bible either.

RSV), *yowsa* ‘hope!’ 7×, *orsa* ‘hunt!’ Gen. 27:3 (note active subjunctive), *c’anka* ‘desire!’ Sir. 1:33 (≈ 1:26 RSV), *c’nca* ‘rejoice!’ Lam. 4:21, Tob. 13:17 (some active forms), *p’owt’a* ‘hurry!’ 8×. *HK* also lists *złja* ‘repent!’ (not in the Bible), *hoga* ‘provide!’ (item; some active forms), *řana* ‘take pains!’ (not in the Bible), and *margarea* or *margarēa* ‘prophesy!’ (the Bible only has *margareac* 30×).¹⁷ The Biblical forms in *-ac’ir* are *zawrac’ir* ‘be strong!’ 19×, *lowac’ir* ‘wash (yourself)!’ 2 Ki. 5:13, *stac’ir* ‘acquire!’ 15×; and to be added to the lists in *HK*, *arjanac’ir* ‘stop!’ 2 Sam. 1:19, 18:30, *hiwandac’ir* ‘make yourself sick!’ 2 Sam. 13:5, *p’esayac’ir* ‘become the son-in-law of!’ 1 Sam. 18:22. There may be others, but these will suffice to illustrate the phenomenon. The middle or passive aorists in *-ec’ay* almost uniformly have the expected forms in *-eac’*, but occasionally variation with *-ea* is found. From the Gospels I can report the common *olormea* ‘have mercy!’ (20× in the OT, plus a few times in ms. M of the Lazarean Gospels, in the colophon after Lu. 24:53 [prima manus]) alongside regular *olormec’* (12× OT, 11× Gospels) and *řrjea* ‘walk!’ 2 Ki. 24:2 alongside *řrjeac’* 4×.¹⁸

In one way or another these data probably reflect a stage that obtained from the late prehistoric and into the early historical period where the new truncated imperatives in *-(e)a*, which *ex hypothesi* were not yet universally established, could get interpreted by some learners as diathetically bivalent just like *kal*, *ari*, **ber*, etc. before (almost all of) the latter were fitted out with *-ir* in mediopassive function. In the end this usage did not prevail and the competition among the various available forms sorted itself out into the system reflected in the handbooks, but this had not fully run its course by the time of the translation of the Bible and some other early texts.

3.5 These facts are sufficient to establish that the active and mediopassive singular weak imperatives were identical at least as far back as the immediate post-apocope period, and that *sirea* arose from *sireac’* by some kind of secondary specialization. To these considerations we can add two more of a purely conceptual nature. First, there is nothing odd from the Armenian perspective about the aorist imperative being diathetically bivalent in its recent prehistory, since Armenian has many other verbal categories that partially or completely lack a voice distinction.¹⁹ While this

17 *HK* also lists here *gita* to *gitanam* or *gitenam*, a variant of *gitem* ‘know’; while *gita* is attested once (3 Ki. 20:22), this is a byform of the usual (irregular) imperative *gitea* (4×) of *gitac’i*, the active aorist of *gitem*, and *gitanam/gitenam*, *gitac’ay* does not occur in this text.

18 On *dadareac’* (M) for *dadarea* at Mk. 4:39a to active *dadarem*, *-ec’i* ‘stop’, see Künzle 1984 s.v.

19 Cf. the survey in Luraghi, Inglese, and Kölligan 2021:374–8 (though without mentioning imperatives) and Godel 1975:46–9.

is somewhat less true overall in the aorist than in the present,²⁰ even there it is clear that the synchronic voice distinction arose secondarily in some other cases outside the imperative. In particular, in the aorist subjunctive, the distinction between active and mediopassive is a recent one that has not spread to every verb, as a number of old middle verbs as well as the entire *eay*-class still have active subjunctive paradigms outside the 1st singular.²¹ Second, if *sirea* etc. is an innovative replacement of earlier diathetically neutral **sireac* in its primary function as an active imperative, this would be a textbook case of Kuryłowicz's Fourth Law of Analogy, with the old form remaining unchanged in its secondary function as a mediopassive.²²

4 We can now turn to the second desideratum from §2.2.1 above—identifying the mechanism for the deletion of the *-c* in polysyllabic weak forms to renew the active. Since, as we saw earlier, regular phonological processes are not available to account for this, I propose that it is ultimately the result of an abstract structural reanalysis of the rule for forming the monosyllabic active imperatives like *ber* and *bac*. I will divide the exegesis of this into two brief parts—the reanalysis itself (§§4.1–4.1.1) and then its extension (§§4.2ff.).

4.1 Before the loss of final syllables, the 3sg. **ebheret* and the imperative **bhere* would likely not have been connected in any obvious way in speakers' minds. Subsequently, however, the forms almost fully converged,²³ differing by only one

20 The aorist indicative and subjunctive distinguish active from mediopassive except in the 1st plural. The present subjunctive distinguishes them in the *e*- and *a*-conjugations; the indicative and imperative, only in the *e*-conjugation. The imperfect, cohortative, infinitive, and participle have no distinction aside from the 3sg. passive imperfect in *-iwr* (on which now see Klein 2017:380–3).

21 See e.g. Meillet 1913:95, Jensen 1959:99, and Klingenschmitt 1982:34–5. The pattern was extended to some other aorists outside this class. For a new comprehensive treatment, see Kocharov to appear, who argues for a semantic account of why such forms are active. Note that one of his distributional findings is that the most robustly attested active aorist subjunctive forms in otherwise mediopassive paradigms are those in imperatival or quasi-imperatival usage.

22 Petr Kocharov (p.c.) notes that agentive imperatives are semantically less marked than patientive ones, and morphological markedness theory would predict that a more marked form would be longer than a less marked one. This may also be why originally diathetically neutral strong imperatives like **ber* were renewed instead in their secondary function as mediopassives with the addition of *-ir* (see above).

23 Actually, the convergence preceded the last stages of final-syllable loss and dates to the loss of final stops, which produced 3sg. **ebhere* alongside imper. **bhere*. The reanalysis that I sketch in this paragraph thus could have happened already at that stage, but the crucial extension of it (below in §§4.2ff.) must nonetheless postdate final-syllable loss to produce the attested forms.

unstressed segment, the augment. I propose that the formation of the singular imperative came to be attributed by learners to a deletion rule operating on the 3sg. aorist indicative whereby (in surface terms) the overt marker of the aorist, the augment, was deleted.²⁴ I am, in other words, claiming that the relationship between the 3sg. aorist indicative and the 2sg. imperative that I set up purely for convenience in §1.1 actually came to exist in the grammar.

4.1.1 This reanalysis was aided and abetted by at least two factors. The first is that the aorist imperative in Armenian, unlike Greek, is not distinct from the present imperative in aspect. It is the basic unmarked imperative, used for positive commands and injunctions, while the present is used only in prohibitions, always accompanied by the negator *mi*. The other factor is a well-known universal tendency to use a bare root or stem for imperatives, as occurs in perhaps a third of the world's languages (Aikhenvald 2010:18–9).²⁵

4.2 The second half of my proposal regards the rule's extension to the polysyllabic *c'*-aorists. For the ones traditionally classified as weak aorists like *sireac'*, the salient indicator of their aoristhood, bzw. the surface exponent of the aorist tense feature, is the stem-final affricate. As a result of the newly abduced principle for singular imperative formation, the affricate underwent deletion. This did not affect monosyllabic weak aorists like *elic'* and *ebac'*, where apparently the augment was ranked higher on the aorist-marking scale than the affricate and no need was felt to delete the latter in the absence of the former in the imperative.

4.2.1 It might be objected that, for the *sireac'* class, the aorist suffix was not merely *-c'* but *-ac'*.²⁶ This was probably true at an early stage, when speakers abstracted from aorists like *ba-c'* – the sequence *-ac'* – that subsequently spread to build aorists to various secondary presents to produce the productive *-ec' / -eac'* aorists.²⁷ But the truncation of the *-c'* in the causatives in *-owc'*, discussed directly below, shows this cannot have been true synchronically anymore in the later prehistoric stage. At

24 Thomas Motter (p.c.) suggests as an alternative analysis that the aorist tense/aspect feature was deleted, making reference to a more abstract level of derivation; but one of the reviewers cautions that if my claim in the next sentence in the main text is correct, it would effectively preclude anything but the more Priscianic formulation just presented.

25 Exactly how one formally operationalizes such universal tendencies in our models of acquisition and reanalysis is beyond my scope; I simply suggest that it played some role at some level in enabling or inducing the reanalysis.

26 I thank Petr Kocharov for raising this issue and discussing it with me.

27 Fortson 2021, arguing against the view that the *-a-* is an old preterite marker, for which see Kim 2018 with references.

any event, there is good reason why $-c'$ was the natural thing to truncate rather than $-ac'$: in the termination $-eac'$, the a bears the word-stress, cross-linguistically a strong barrier against deletion. And even if one were to flout that, recall (n.3) that $\langle ea \rangle$ in e.g. $-eac'$ represents the falling diphthong $[ja]$, and hiving off the vocalic half of a diphthong would be awkward.²⁸

4.3 Even though the $-c'$ of the causative/factitive aorist stem is not synchronically an aorist marker per se since it is also part of the present stem ($-owc'$ -*ane*-),²⁹ it is practically a foregone conclusion that it was going to be targeted by the c' -deletion rule by a trivial surface analogy. The rule then spread straightforwardly to the few causatives in $-oyz$ or $-oys$, most of which pattern together semantically: *ankloyz* ‘caused to sink’: *anklo*, *p'loyz* ‘caused to fall, destroyed’: *p'lo* (*HK*^c 154), *koroys* ‘lost, destroyed’: *koro*, *andelayz* ‘fit into’: *andelo* (*HK*^c *ibid.*). Note that for *p'loyz* there is also a variant stem of the normal type (*p'lowc'*-), a marginal form occurring only in the Bible and perhaps an older survival.

4.4.1 Though this extension of the deletion rule is natural enough, the attested auslaut of the causative imperatives is unexpected: deletion of the final obstruent from the sequence $*-oyC$ should have produced $\dagger-oy$ rather than $-o$. During the historical period, all words ending in final y -diphthongs lost the offglide except monosyllabic nouns,³⁰ but the demonstratives *sa*, *da*, and *na* < $*say$ $*day$ $*nay$ (plus their various inflectional forms and compounds in $-a$) already lost it prehistorically.³¹ It is thus thinkable that the same precocious loss affected these imperatives. But the loss in the pronouns surely has to do with their weaker prosodic status, an explanation that will not work for the imperatives for the same reasons enumerated above in §2.2. Petr Kocharov (p.c.) suggests instead that it arose by a kind of loose analogy to the larger class of $-(e)a$ imperatives, which end in a pure vowel rather than a diphthong. Whether this transpired in one fell swoop by deletion of the whole sequence $*-yc'$ (Kocharov, p.c.) or as a two-step process ($*-oyc' > *-oy >> -o$) can be debated—I prefer the latter for the same reasons given at the end of §4.2.1—but the idea is plausible since the direction of the spread of the deletion

28 How far back into prehistory there was a diphthong here is unclear.

29 The present is back-formed to the aorist; the $-c'$ may or may not have originally been the same aorist formant as the $-c'$ of the weak aorists. See now Kocharov 2022 for a review and a new approach (I am grateful to the author for providing me the slides from his presentation). The back-formation, at any rate, probably transpired well before the formation of the imperatives under discussion.

30 This is the traditional description, but see now Macak 2016:Ch. 5.

31 On the process, see Fortson 2018–9 [2020]:70–1, with references, and Macak 2016:Ch. 5.

rule was from the *-(e)a* type to the causatives anyway. It is, at any rate, not possible to see *-o* as anything particularly archaic (cf. §1.3 above).³²

4.5 The reanalysis that I have proposed and the deletion rule that it engendered are of interest because the latter takes the form of a synchronic subtraction rule not only motivated by a morphological property, but actually targeting an item best characterized morphologically rather than phonologically, which is not common typologically (cf. Dressler 2000, Manova 2011:Ch. 4). Very informally, the rule was to delete the overt marker of the aorist—the augment if present, otherwise stem-final *-c'*, *-s*, or *-z* if it is an aorist marker or a pseudo-aorist marker. This is shown by the fact that, with the possible exception of a couple of ambiguous counterexamples (discussed below, §5.1.1), the rule did not spread to target just any stem-final consonant.

4.5.1 I have found two possible parallels for morphological subtraction among imperatives in other languages; there may well be others too. In Modern Colloquial Hebrew, where the future has come to be used for the imperative, a new future-derived imperative has arisen by deletion of the person-marking prefixes from the future, in analogy to their absence from the traditional imperative. Thus e.g. 2sg. masc. fut. *ti-ftax* ‘you (m.) will open’, imper. *ptax* ‘open!’ → new imperative *ftax* ‘open!’; fem. *ti-ftexi*, imper. *pitxi* → new imper. *ftexi* (Aikhenvald 2010:343). Superficially more like the Armenian deletion, but apparently with a different kind of motivation, is the truncation seen in perfective imperatives in Triglia Bithynian Greek. Here, the final syllable of perfective imperatives of verbs in *-ώνω* and *-άζω* is deleted: thus for example to *γράφω* ‘grab’ the perfective imperative second singular *γράψωσε* gets truncated to *γράπω*, and to *φωναίω* ‘shout’ we see *φώναξε* truncated to *φώνα* (Koutsoukos and Pantelidis 2019). The authors attribute this to a subtraction rule that operates to produce the favored trochaic word-ending, since without it the stress would be antepenultimate.

32 Ms. M of the Lazarean Gospels sometimes spells imperatives in *-a* with *⟨-ay⟩*: *gorceay* Mt. 21:28, *loway* Jh. 9:11a; and the imperative *hawata* ‘believe!’ is consistently spelled *hawatay* in E (Mk. 5:36, Lk. 8:50, Jh. 4:21; the last two passages are missing from M, and in the first one M has *hawata* at a line-break). But these are hypercorrections of a type found in many other words and are of no historical significance. More frequently we get *⟨-oy⟩* for *-o* in the causative imperatives: *aprec'oy* Jh. 12:27, *darjoy* Mt. 5:39, 26:52, *hatoy* Mt. 18:28, *matoy* Mt. 8:4, Lk. 9:41, *owsoy* Lk. 11:1. Although hypercorrect *⟨-oy⟩* for *-o* occurs in general like hypercorrect *-ay*, here there may also be influence from the *⟨oy⟩* of the 3sg. indicative (*-oyc'*).

5.1 As already mentioned, it is not clear whether any subsequent learners further reanalyzed the final-consonant-truncation component of the subtraction rule as one that deleted any final nonsyllabic segment. There is no reason they could not have in theory, but the evidence is both scanty and ambiguous. A few handbooks wrongly say or imply that all imperatives of two syllables or more lose their final consonant (Meillet 1913:96, Schmitt 2007:152, 153), but cf. *yawel* ‘increase!’, *argel* ‘hinder!’, *anēc* ‘curse!’. Schmitt bases his statement on the imperative *ara* ‘make/do!’ to the reduplicated strong aorist *arari*, 3sg. *arar* (“da mehrsilbig”). However, he does not mention a complicating factor, which is that the subjunctive to this aorist, outside the 1st singular (*araric*’), is built as though to an otherwise unattested weak aorist stem **arac*’- (2sg. *arasc*’*es*, 3sg. *arasc*’*ē*, etc.)—a stem that could also have been the regular source of imperative *ara*.³³ Alternatively, given the close relationship between 2sg. aorist subjunctives and imperatives (cf. n.21 above ad fin.), *ara* could have arisen on the basis of *arasc*’*es* by analogy to other such pairs. A second possible but equally ambiguous case appears at Lu. 17:5 in the Lazarean Gospels, where the imperative *yawel* is written *yawe* in ms. M. This copy is regarded as more faithful than E in spite of being younger; but *yawe* could just be a *lapsus calami*. Finally, there are two instances of the imperative *kal* being spelled *ka* in ms. E at Lu. 16:6 and 16:7. While this could indicate that some speakers extended the rule to monosyllables, it is unclear how much weight to accord such a tiny number of examples given how common this verb is.

5.2 By way of conclusion, I shall broach one further topic for future research: the question of whether we can leverage any of the preceding to deal with the broader conspiracy in Armenian that results in the reduction of several types of polysyllabic aorist forms. Besides the deletion of the augment in polysyllabic indicative forms and the stem-final truncation of polysyllabic *c*’-aorists to form the imperatives, the language also reduces the aorist *-c*’- to *-s*- before the affricate of the subjunctive marker (*-c*’- or *-j*’-, depending on the desinence) if the stem is two syllables or longer. Thus *bac*’-*c*’*es* and *bac*’-*j*’*ir* with monosyllabic stems and no dissimilation, but *sires*-*c*’*es*, *sires*-*j*’*ir* with disyllabic stem (*sirec*’-) and dissimilation. This dissimilatory reduction is not due to a general phonological rule in the language.³⁴

33 Differently on *ara* Klingenschmitt 1982:47, n.14.

34 This is disputed by Macak (2016:Ch. 7). His treatment deserves a fuller engagement than I can offer here, but briefly, he argues that the orthographic sequence ⟨*bac*’*c*’*es*⟩ (2sg. aor. subj.) can be interpreted as representing either [bats^h’ts^hes] (the traditional pronunciation) or [bats^hə’ts^hes] with epenthetic schwa. He opts for the latter. The lack of dissimilation, he claims, is therefore due to the two fricatives not being in contact, not to the monosyllabicity of the stem. (In longer

5.2.1 The fact that all three of these processes not only are restricted to the aorist but also specifically target a marker of the aorist in forms of a particular length and reduce or eliminate it, is unlikely to be coincidental.³⁵ Surely relevant in this context is that subjunctives frequently fill in for imperatives in Armenian. It may therefore be promising to pursue the possibility that the affricate reduction in the aorist subjunctive flows somehow from the same set of learner reanalyses and extensions that I have proposed, which might allow us to better model how it came about.³⁶

References

- Aikhenvald, Alexandra Y. 2010. *Imperatives and Commands*. Oxford: Oxford University Press.
- Dressler, Wolfgang U. 2000. Subtraction. In Geert Booij, Christian Lehmann, and Joachim Mugdan (eds.), *Morphologie: Ein internationales Handbuch*, 581–7. Berlin: de Gruyter.
- Fortson, Benjamin W. IV. 2018–9 [2020]. Never Say Never: A New Proposal for Armenian *oč'*. *Die Sprache* 53.65–84.
- . 2021. A Hay Ride: Armenian Notes. Paper presented 18 June at the 40th East Coast Indo-European Conference, Cornell University and Virginia Tech.
- Godel, Robert. 1975. *An Introduction to the Study of Classical Armenian*. Wiesbaden: Reichert.
- HK' = Arsēn Komitas Bagratuni. 1852. *Hayerēn k'erakatow'iwn*. Venice: Tparan i Srboyn Łazarow.
- Jasanoff, Jay H. 1979. Notes on the Armenian Personal Endings. *Zeitschrift für vergleichende Sprachforschung* 93.133–49.
- . 2003. *Hittite and the Indo-European Verb*. Oxford: Oxford University Press.
- Jensen, Hans. 1959. *Altarmenische Grammatik*. Heidelberg: Winter.

forms, in his system, the two fricatives were in contact and the first one underwent dissimilation.) In support of the dissimilation being found outside the aorist, he points to reduplicated forms like *kskic* 'twitching pain' < **kickic-* and *koškočem* 'I strike' < **koč-koč°*. The problems with this analysis are, (1) as far as I can tell, Macak's interpretation of ⟨*bac'c'es*⟩ as representing [bats^hə'ts^hes] rather than [bats^h'ts^hes] is stipulative and offered without independent evidence (though it does agree with epenthesis patterns in the modern language), and (2) the affricates are not in contact with each other in the reduplicated forms either, yet dissimilation occurs there nonetheless, suggesting a different phenomenon at work.

- 35 The only difference among the targeted forms is that affricate reduction applies in aorists with stems of the shape *sCac'*- (phonetically *əscac'*-), but augment deletion does not. For a theoretical account see Vaux 1998:123–5.
- 36 The causative aorist *koroy's* 's/he destroyed' has *-s-* by default before the subjunctive affricate (1sg. *korowsc'em* etc.), but while this is quite a common verb, it cannot easily constitute a sufficiently robust starting-point for the spread of such a feature.

- Kim, Ronald I. 2016. Studies in Armenian Historical Phonology (II): Early Raising of Mid Vowels in Auslaut. *Indogermanische Forschungen* 121.39–51.
- . 2018. The Prehistory of the Classical Armenian Weak Aorist. *Acta Linguistica Petropolitana* 14.86–136.
- Klein, Jared S. 2017. Two Notes on Classical Armenian: 1. *erkin(kʷ) ew erkir*. 2. The 3rd Pers. Sg. (Medio)passive Imperfect in *-iwr*. In Bjarne Simmelkjær Sandgaard Hansen, Adam Hyllested, Anders Richardt Jørgensen, Guus Kroonen, Jenny Helena Larsson, Benedicte Nielsen Whitehead, Thomas Olander, and Tobias Mosbæk Søborg (eds.), *Usque ad Radices: Indo-European Studies in Honour of Birgit Anette Olsen*, 377–84. Copenhagen: Museum Tusulanum.
- Klingenschmitt, Gert. 1982. *Das altarmenische Verbum*. Wiesbaden: Reichert.
- Kocharov, Petr. 2019. Old Armenian Nasal Verbs: Archaisms and Innovations. Ph.D. diss., Leiden University.
- . 2022. A Note on the Origin of the Classical Armenian Causative. Paper presented 4 April at the workshop “The Lexicon–Grammar Interface in the Synchrony and Diachrony of Armenian,” Julius-Maximilians-Universität Würzburg.
- . To appear. The Mixed Aorist Subjunctive in Classical Armenian. *Indogermanische Forschungen* 127.
- Kölligan, Daniel. 2019. *Erkinkʷ ew erkir: Studien zur historischen Grammatik des Klassisch-Armenischen*. Hamburg: Baar.
- Koutsoukos, Nikos, and Nikolaos Pantelidis. 2019. Subtractive Imperative Forms in Bithynian Greek. In Angela Ralli (ed.), *The Morphology of Asia Minor Greek: Selected Topics*, 255–83. Leiden: Brill.
- Künzle, Beda O. 1984. *Das altarmenische Evangelium II: Lexikon*. Bern: Lang.
- Lamberterie, Charles de. 1978. Armeniaca I–VIII: Études lexicales. *Bulletin de la Société linguistique de Paris* 73.243–83.
- . 2005. Le verbe arménien *unim / kalay*. In Günter Schweiger (ed.), *Indogermanica: Festschrift Gert Klingenschmitt. Indische, iranische und indogermanische Studien dem verehrten Jubilar dargebracht zu seinem fünfundsechzigsten Geburtstag*, 333–58. Tübingen: Schweiger.
- Luraghi, Silvia, Guglielmo Inglese, and Daniel Kölligan. 2021. The Passive Voice in Ancient Indo-European Languages: Inflection, Derivation, Periphrastic Verb Forms. *Folia Linguistica Historica* 42.339–91.
- Macak, Martin Jakub. 2016. Studies in Classical and Modern Armenian Phonology. Ph.D. diss., University of Georgia.
- Manova, Stela. 2011. *Understanding Morphological Rules: With Special Emphasis on Conversion and Subtraction in Bulgarian, Russian and Serbo-Croatian*. Dordrecht: Springer.
- Martirosyan, Hratch. 2010. *Etymological Dictionary of the Armenian Inherited Lexicon*. Leiden: Brill.
- Meillet, Antoine. 1913. *Altarmenisches Elementarbuch*. Heidelberg: Winter.

- NBHL = Gabriël Awetik'eān, Xaç'atowr Siwrmēlean, and Mkrtič' Awgerean. 1836–7. *Nor bārgirk' Haykazeān lezowī*. 2 vols. Venice: Tparan i Srboyn Łazarow.
- Schmitt, Rüdiger. 2017. *Grammatik des Klassisch-Armenischen mit sprachvergleichenden Erläuterungen*. Innsbruck: Institut für Sprachen und Literaturen der Universität Innsbruck.
- Vaux, Bert. 1998. *The Phonology of Armenian*. Oxford: Clarendon.
- Viredaz, Rémy. 2004–5. Notes on Armenian Historical Phonology I. *Annual of Armenian Linguistics* 24–5.85–104.

The Greek Infinitives in Aor. -σαι, Med.-Pass. -εσθαι, -σθαι*

JOSÉ L. GARCÍA RAMÓN

Università Cattolica del Sacro Cuore, Milan

The interpretation of the aorist infinitive -σαι as the outcome of PGk. $*-t^h\dot{a}i$ (IE $*-d^h\dot{i}eh_2i$) is incompatible with the evidence for -σαι (not †-σσαί or †-τταί) in the Western dialects and Boeotian. Greek -σαι (PGk. $*-s-a\dot{i}$) and -εσθαι (by remodeling of $*-es-a\dot{i}$) may be traced back to $*-s-éh_2(i)$ and $*-és-eh_2(i)$ respectively, i.e. to locative-directive $*-eh_2$ attached to the weak stem of -s-neuters. The grammaticalization of PGk. $*-saj$ and $*-est^h\dot{a}i$ as infinitives is a Greek innovation.

PGk. $*-saj$ continues both $*CeC-s-éh_2(i)$ (e.g. τεῦξαι ‘produce’ : $*d^h\dot{e}ug^h-s-éh_2$; cf. τεῦχος : $*d^h\dot{e}ug^h-es-$) and $CC-s-éh_2(i)$ (e.g. θῦσαι ‘(produce) smoke’ : $*d^huh_2-s-éh_2$; cf. θύος : $*d^huh_2-es-$), and was secondarily assigned to the -s(a)-aorist (τεῦξα-, θῦσα-).

PGk. $*-est^h\dot{a}i$, reanalyzed as $*-e-st^h\dot{a}i$, continues $*-es-t^h\dot{a}i$ ($*-és-eh_2(i)$, parallel to $*-és-en$), with medializing -t^h- (cf. 2pl. $*-est^he$), namely both $*CeC-és-eh_2$ (e.g. τεύχεσθαι) and $*CC-és-eh_2$ (e.g. θύεσθαι); cf. thematic τεύχο/ε-, θύο/ε-. Its assignment to the middle (as against active $*-es-en$, reanalyzed as $*-e-sen$: τεύχειν, θύειν) can be aligned with the fact that -εσθαι and -s-neuters are frequent with *medium tantum* verbs, e.g. γενέσθαι (: γένος), εὔχεσθαι (: εὔχος).

Starting from a core of lexemes with attested (or assured) $*-s$ -neuters, -σαι and -εσθαι spread to all types of verbs. Athematic -σθαι is a secondary creation on the model of thematic -εσθαι (θέσθαι : ἔχεσθαι), with further spread to other athematic lexemes or stems (e.g. δίεσθαι, θέσθαι, and ἴστασθαι, κῆσθαι).

1 The Greek infinitives in -σαι (active, -s(a)-aorist) and in -εσθαι, -σθαι (medio-passive, all verbal stems), attested in all dialects, remain elusive: the -αι in -σαι and -(ε)σθαι (so conventionally in what follows) is the same as that in Lesb. -μεναι, Cypr. /-wenai/, Att.-Ion., Arc. -(ε)ναι, but its explanation and the form to which

* For Kazuhiko Yoshida.

My warm thanks to Alan J. Nussbaum and Brent Vine for their remarks and discussion, and to the editors of this volume for their meticulous attention to my draft submission in matters of both style and substance.

both morphemes may be traced back remain controversial. It has been assumed since early research that $-\sigma\alpha\iota$ reflects the original form and has been secondarily assigned to the $-s(a)$ -aorist, whereas $-(\varepsilon)\sigma\theta\alpha\iota$ is based on a remodeling of $-\sigma\alpha\iota$ by adaptation to the desinences $-\sigma\theta\varepsilon$, $-\sigma\theta\omicron\nu$, $-\sigma\theta\omega\nu$. Hence the widely accepted interpretation proposed by H. Rix: “ursprünglich wohl Ausgang $-(s)sai < *-t^h\dot{\iota}aj < *-d^h\dot{\iota}e\dot{\alpha}_2-i$, vom Lok. eines $*-d^h\dot{\iota}eh_2$ -Abstraktums, wegen des anlautenden $-(s)s$ -sekundär dem $-s$ -Aor. zugeordnet: gr. $*ela-t^h\dot{\iota}aj$ ($< *_{\dot{\alpha}1}el\dot{\alpha}_2-d^h\dot{\iota}e\dot{\alpha}_2-i$): hom. $\acute{\epsilon}\lambda\acute{\alpha}\sigma\sigma\alpha\iota$, att. $\acute{\epsilon}\lambda\acute{\alpha}\sigma\alpha\iota$... $*-st^h\dot{\iota}aj$... griech. Neuerung ... Eine Zusammenhang von $*-st^h\dot{\iota}aj$ mit $(s)sai$ des $-s$ -Aor. ist wahrscheinlich; der Vorgang der Entstehung ist unklar. [Med. $-(\varepsilon)\sigma\theta\alpha\iota$] sekundär dem Med. zugeordnet ... etwa aufgrund des Anklangs an die Endung $-st^he$ der 2. Pl.” (1976a:238–9).¹

The interpretation of $-\sigma\alpha\iota$ (and $-\sigma\sigma\alpha\iota$ in Homer and in the Aeolic dialects) as the phonetic outcome of PGk. $*-t^h\dot{\iota}aj$ is incompatible with the unmistakable evidence for $/-sai/$ ($\langle -\sigma\alpha\iota \rangle$) in the West Greek dialects and, indirectly, in Boeotian, as has already been pointed out:² PGk. $*-t^h\dot{\iota}aj$ should have yielded Dor.NWGk. $\dot{\tau}/-ssai/$ ($\langle -\sigma\sigma\alpha\iota \rangle$), as well as Cret. $\dot{\tau}/-t^{\ast}ai/$ (later $\dot{\tau}/-ttai/$), Boeot. $\dot{\tau}/-ttai/$ ($\langle -\tau\tau\eta \rangle$), but in no case $/-sai/$. Infinitival $-\sigma\alpha\iota$ may indeed be explained as analogical to $-\sigma\alpha-$ of the aorist stem, but with this assumption the search for a protoform would become unnecessary and ultimately hopeless. Other interpretations proposed for $-\sigma\alpha\iota$ (§2) and for $-(\varepsilon)\sigma\theta\alpha\iota$ (§3) are in my opinion likewise unsatisfactory.

The present contribution assumes the existence of a locative-directive postposition PIE $*-eh_2$ (like $*-en$ and $*-er$), attached to different nominal stems, recharacterized by means of a deictic particle $-i$, and grammaticalized as an infinitive marker in Greek (§4); $-\sigma\alpha\iota$ will be traced back to $*-s-\acute{e}h_2i$ and $-\varepsilon\sigma\theta\alpha\iota$ ($*-es-t^h-aj$ remodeled from $*-es-aj$) to $*-\acute{e}s-eh_2i$, formed (like $*-\acute{e}s-en$)³ from the weak stem of nominal $-s$ -stems, some of which are attested or assured by comparative evidence (§§5–7). Taking into account all of the evidence for $-\sigma\alpha\iota$ and for $-\varepsilon\sigma\theta\alpha\iota$ (§9), especially for lexemes underlying both a verb and an $-s$ -stem, will allow for the reconstruction of a series of forms that constitute the nucleus from which $-\sigma\alpha\iota$ (§8) and $-\varepsilon\sigma\theta\alpha\iota$ (§9), once grammaticalized as infinitives already in Proto-Greek, spread to other verbs, and will also allow athematic $-\sigma\theta\alpha\iota$ to be explained as the result of a reanalysis of $-\varepsilon\sigma\theta\alpha\iota$.

1 Cf. Hardarson 2011:159; Stüber 2018:54–5; Willi 2018:23. Less probable: $*-st^h\dot{\iota}aj$ abgelöst von einem $*es-t^h\dot{\iota}aj$ ‘sein’ $< *es-t^h\dot{\iota}aj$?” (Rix 1976a:239).

2 García Ramón 1990b:152 n.50. The same stricture appears in Hardarson 2011:159 n.9 and Fortson 2013:52 n.15.

3 García Ramón 1990a:161–2 n.37: “Inf. $*(e)saj$... neben $*-esen$ lassen sich als $*(e)s-aj$ (“Lokativ-Direktiv”) bzw. $*(e)s-en$ zu einem $-(e)s$ -Stamm verstehen.”

2 Rix's interpretation of -σαι as from PGk. **-t^hiaǵi* involves an insurmountable phonological difficulty,⁴ which must be stressed again once and for all. The evidence for /-sai/ (-σαι), Boeot. /-se:/ (**-sai*) as the infinitive of the -s(a)-aorist in the West Greek dialects and in Boeotian (also in texts in the Ionic alphabet, in which ⟨σ⟩ surely notes /s/, not /ss/) points unequivocally to PGk. **-sai* and rules out any possibility of PGk. **-t^hiaǵi*. The phonetic outcome of PGk. **/t^(h)j/* is /ss/ (not /s/) in the West Greek dialects (type ὄσσοσ 'as great/much as', μέσσοσ '[in the] middle'), and /tt/ in Cretan (earlier /t^s/) and in Boeotian; cf. Cret. στοι (archaic οἶσοι), μεττον (: Att. ὄσοι, μέσον), Boeot. μεττος, οποττος (: Att. μέσσοσ, ὄποσσοσ 'as many as').⁵ Accordingly **-t^hiaǵi* would have yielded Dor.NWGk. †/-ssai/ (⟨-σσαί⟩), Cret. †/-ttai/ (earlier †/-t^sai/, noted ⟨-τται⟩, ⟨-ζαι⟩ respectively), and Boeot. †/-ttai/ (⟨-τται⟩, once **/ai/ > /e:/*). Yet this is not the case: -σαι (e.g. καλεσαι 'to call', ομοσαι 'to swear') is the only form attested in the West Greek dialects (not †καλεσσαί, †ομοσσαί), including Cretan (*LGort.* 5th c.+, epichoric alphabet: not †καλεζαι, †ομοζαι, or later †καλετται, †ομοτται). In Boeotian there is, as far as I know, no direct evidence:⁶ the hapax συνκαλεσσαντες (: Att. συγκαλέσαντες; Tanagra, 3rd c.) may point to an infinitive **^okalessai* (spelled ⟨καλεσση⟩),⁷ but this does not support **-t^hiaǵi*, which would have yielded †[-ttai] (⟨-τται⟩). Further Boeotian evidence points unmistakably to **-sai*; cf. ανγραψη (: Att. ὀγραψαι 'write', **^ograph^h-sai*), αποστειλη (: Att. ὀστειλαι 'send', **^ostel-sai*), παρμενη (: Att. ὀμεῖναι 'remain', **^omen-sai*), as well as κατασκευατη (: Att. ὀσκευάσαι 'prepare', **-ad-sai*, with dialectal assimilation **/Ds/ > /tt/*).

Given the evidence for -σαι /-sai/ in the -s(a)-aorist infinitives in the West Greek dialects and in Boeotian, which rules out PGk. **-t^hiaǵi* and points unequivocally to a PGk. **-sai*, the possibility remains that /-sai/ in these dialects is analogical with -σα- of the aorist stem. The phonetic difficulties raised by the alleged PGk. **-t^hiaǵi* would thereby disappear; but if the attested forms are explained away as due

4 Morphologically, his locative **-d^hieh₂-i* would be conceivable, even if not supported by direct evidence: Ved. -(a)dhyai, Av. -diiāi could a priori reflect dat. **-d^hieh₂-eǵ*, but dat. **-d^hio-eǵ* (Rix 1976b) is preferable, and allows positing instrumental **-d^hie-h₁* for PSabell. **/-fǵē/* in O.-fir, U.-f(e)i.

5 For Cretan cf. Bile 1988:144–6, 155; for Boeotian cf. Blümel 1982:118–9, 187, 191, 213–4.

6 In stems in long vowel, Boeot. -ση (**-sai*), like Cret. -σαι (ὀτσεισαι, 6/5th c.), fits into the [*V̄-sai*] pattern, e.g. ἀδικεση (: Att. ἀδικῆσαι 'do wrong'; Thisbe, 2nd c.), σιτωνιση (: Att. σιτωνῆσαι* 'buy grain'; Chaeronea, 3rd c., *SEG* 43:205.9 beside σιτωνεοντα[ς] 10).

7 The type καλε-σσα-, ὀμο-σσα- (i.e. [*V̄-ssa*]), specific to Boeotian, Lesbian, and also Thessalian (ptc. ὀμοσσαντ[ε]σ, ὀμο/[σ]σαντ[ε]σ [Atrax, end of 3rd c.; cf. García Ramón 2007:97–9]), also attested in Homer (alternating with -σα-: e.g. ἔλασσα ~ ἔλασσα- 'drove'), is based on the extension of /ss/ from τελεσσα- 'accomplished' by reanalysis of **teles-sa-* as **tele-ssa-*.

to analogy, any attempt at reconstructing a protoform becomes hopeless, as it can be neither confirmed nor refuted.

Other proposals are no more convincing. Explaining -σαι as a “base élargie par -s-” with addition of **-aj* as a “particle de renforcement ...” (Benveniste 1935:131–2) does not go beyond mere description, and the assumption that infinitive -σαι and imperative -σαι are the same form⁸ is untenable: impv.med.2sg. -σαι (e.g. δέξαι ‘accept!’, ἴλεξαι ‘lay down!’, τεῖσαι ‘punish!’) is the outcome of **-soj* or of **-s-e-soj*, subjunctive of an -s-aorist, by haplology.⁹ On the other hand, -σαι can hardly be connected with Hitt.Luv. -šha- making abstract or result nouns (Bermann 1977): -šha- is the outcome of **-sh₂o-* and may be analyzed as **-s-h₂o-*, a secondary -o-derivative of a **-s-eh₂-* stem formed from an -s-stem or from a root in -s- (Zhang 2022).

3 The communis opinio, namely that -εσθαι, -σθαι has been created secondarily with respect to -σαι (or to its protoform) within Greek by analogy with med. -σθε, -σθον, is surely right,¹⁰ although the details of the process and the precise formal basis remain controversial. This is surely preferable to the assumption of an inherited, specifically medio-passive infinitive **-dʰiāi* (Benveniste 1935:208–9), which could apply to Ved. -(a)dhyai : Av. -diiāi, but leaves Gk. -σθαι unexplained.

The recent interpretation of -σθαι as “forme en -θι sur base athématique ... recharacterisée par finale adverbial -αι (χαμαί),” “... φέρεσ-θαι ... re-caractérisation en -αι ... d’un doublet *φέρεσ-θι [adv.] ‘pour emporter (chez soi) ... pour être importé’” (Garnier and Pinault 2020:330–3) relies on the assumption of “formes en -θι dont il existe de nettes traces sur base athématique” and “... vestiges indirects de formes en **-θι* athématiques sur base sigmatique.” The “nettes traces” adduced by the authors are (a) **ῥεσθι* ‘sur la montagne’ (allegedly underlying the MN Ὀρεσθεύς and the place names Ὀρεσθέσιον, Ὀρεσθίς), which would be a doublet of ῥεσφι, as with Hom. αὐτόθι and αὐτόφι, Ἰλιόθι and Ἰλιόφι, and (b) three conjectural forms, namely **κύαθι* (“**ἐν κύαθι* ‘dans la cratère’, ... *κύαρ*”), **λήκυθι* (“**ἐν λήκυθι* ‘dans la fiole’ ... d’où *ληκύθιον*”), and *κόρυθι* (“**ἐπὶ κόρυθι* ‘sur la

8 Benveniste 1935:132 (“**-ai* porte ... une simple valeur d’exhortation”; “une forme telle que **deiks-ai* doit a priori servir indifféremment d’infinitif ou d’impératif”).

9 García Ramón 2002:34–5 and passim: the haplology of middle 2sg. -σαι (**-s-e-soj*) is parallel to that of the active Vedic “imperatives” in -si (from subj. **-s-a-si*), which live on in Greek as -σ-ον, e.g. Hom. ἰπλήσον ‘fill!’, χεῦον ‘pour!’ (cf. Ved. *prāṣi*, *hoṣi* from **prās-a-si*, **hóṣ-a-si*).

10 Pace Benveniste 1935:208 (“il est ... gratuit d’imaginer que -σθαι ait acquis sa valeur médio-passive en grec même et par contact avec les formes personnelles de pluriel en -θ- du moyen”), though he rightly rejects previous explanations of -σθαι as from **-o-θαι* (dative), with reanalysis **εἶδεσ-θ-αι* → *εἶδε-σθαι*.

tête”’).¹¹ Irrespective of whether the forms under (a)¹² and (b) ever existed, and of how plausible the interpretations proposed for them may be, it is unclear how the alleged *ὄρεσθι or the proposed derivative chains of (b) could shed light on the creation of infinitives. None of the lexemes involved is a verbal abstract, and they are therefore inconceivable as a basis for infinitives.

4 In what follows, an attempt will be made to trace back the infinitives in -σαι and -εσθαι to the weak stem of neuter *-s-stems, with full- and zero-grade suffix and a locative-directive postposition PIE *-eh₂, i.e. PIE *-s-éh₂ and *-és-eh₂ (§6). This proposal is based on the following three assumptions:

- (1) A locative-directive postposition PIE *-eh₂, functionally equivalent to *-en (and *-er), was occasionally recharacterized in Core (i.e. non-Anatolian) IE as *-eh₂-i by means of deictic -i, whence *-ai, like *-en-i and *-er-i beside *-en, *-er, as in Ved. loc. *āsán* and *āsáni* (to *ás** ‘mouth’; cf. instr. *āsá* and *āsáná*) and especially the *aequabilia* attested for *d^hǵ^hom- / *d^hǵ^hm- ‘earth’, e.g. Gk. *χαμαί* ‘in(to) the earth’ (PIE *d^hǵ^hηm-éh₂ : Hitt. *taknā* [allative case]), as well as Ved. *jm-án* (*d^hǵ^hm-én)¹³ and YAv. *zamarə, zəmarə*^(o) (*zəmarə-guz-* ‘hidden in the earth’).¹⁴ PIE *-eh₂ is assured *ex Anatolico ipso*, where it was grammaticalized as an allative case, by Hitt. *měn-ahh** ‘to the face’ in univerted *měnahh-anda* (: IGI-*an-da*, based on c. *měnali-* ‘face, cheek’) ‘opposite, against, facing, toward’ < *’into the face’, as per Nikolaev 2010.
- (2) Locative-directive *-eh₂i lives on in PGk *-ai in grammaticalized infinitives, at least in *-uen-ai (*-uer/n-: Cypr. /-wenai/) and *-men-ai (*-men-/ *-mn-: -μεναι), as against *-eh₂ (not *-eh₂i) in their Anatolian counterparts, namely infinitival Luv.Pal. -una, Lyc. -(u)ña (~ PGk. *-uenai) and quasi-infinitival deontic HLuv. -mi-na /-m(m)na/ (~ PGk. *-menai) respectively.¹⁵ Whether

11 E.g. “*ἐπὶ κόρυθι ... source d’un verbe parasythétique gr.com. *ἐπικορύθω ‘mettre sur la tête, casquer’, ... source d’un postverbal *sui generis* [fém.] κόρυθ- ... ‘casque’” (Garnier and Pinault 2020:333).

12 That the place names with ὄρεσθ- are based on *ὄρεσθι is not impossible, but there is no evidence for names in -σφεύς based on ὄρεσφι. MN ὄρεσθεύς may equally be a truncated form of *ὄρεσθένης (with °σθεύς for °σθένης, like Εὐροσθεύς for Εὐροσθένης; cf. Neumann 1994–5: 210), albeit with no recognizable sense; cf. Μενεσθεύς (very frequent) beside Μενεσθένης (Rhamnous, end of the 4th c.).

13 Beside loc. *ksám-i* (*d^hǵ^hém-i), and secondary *ksám-an* and *ksám-ani* ‘id.’.

14 Hajnal 1992; Melchert 2017; García Ramón 1997:61–2 n.52 and 2021:173–7.

15 García Ramón 2017. Whether the Greek and Anatolian comparanda reflect common areal development or point to an Anatolianism in Greek is irrelevant for our purposes.

*-eh₂i may be assumed for -αι in the athematic infinitives in -εναί (ιέναι ‘to go’: *i-enaj, εἶναι ‘to be’: *es-enaj) and -ναι (διδό-ναι ‘to give’, τιθέ-ναι ‘to place’) in the East Greek dialects (i.e. *-en-eh₂i, *-n-eh₂i) may be left open at this point: there remains the possibility of an early locative *(e)neh₂-i of an *-eneh₂-stem of the type Ved. *vanānā*- ‘desire’ (Rix 1976a:238).¹⁶ What is crucial is that PIE *-u(e)n-eh₂ and *-m(e)n-eh₂ justify the reconstruction of PIE *-s-éh₂ and *-és-eh₂, to which *-saj and *-esaj may ultimately be traced back.

- (3) Anatolian, the only branch where locative-directive *-eh₂ was grammaticalized (as an allative case-ending, also as infinitive: Hitt. -anna, Luv.Pal. -una), did not take part in the development assumed for Greek. The evidence for -šša /-s-a/, -išša /-es-a/ (*-/s-eh₂/, */-es-eh₂/) in primary *-s-stems is very scanty and limited to nominal case forms, e.g. Hitt. *išša* (: *aiš-*, *išš-* ‘mouth’), *nepiša* (: *nepiš-* ‘sky’).¹⁷ The position and types of the -s-stems in Anatolian at the time of its split remain controversial,¹⁸ but it is beyond doubt that the outcomes of *-s-éh₂, *-és-eh₂ have not been recharacterized by -i, much less grammaticalized as infinitives. This confirms the idea that the creation of infinitives from *-s-stems (*-(e)s-eh₂, also *(e)s-en) cannot be assumed for Proto-Indo-European.

-
- 16 The evidence for *-eneh₂- is rather scanty in Vedic and in Celtic, and there is no sure trace in Greek (Lit.Lesb. φέρενα [ǎ!], a variant of φέρων ‘dowry [brought by the wife]’, is not the direct outcome of an IE *b^héreneh₂-). In Vedic, besides *vanānā*- ‘desire’ (: OAv. *vananā*- ‘victory’), cf. only *rodhanā*- ‘obstruction’, *asanā*- ‘shot’ (also *ásana*- ‘action of throwing’; cf. RV 1.130.4ab *dādṛhāṇō vājram indro gábhastiyoh / kṣádmeva tigám asanāya sám śiyad* ‘Firmly holding the mace in his hands, Indra honed it sharp like a carving knife, for throwing’; transl. Jamison and Brereton 2014). For PCelt. *-enā- cf. only OIr. *orcun* ‘(act of) killing’ (**org-enā*; cf. *orcaid* ‘kills’) and compounds (Stüber 2015:116–8, 467–9). Cf. further *-oneh₂- (ήδονή ‘pleasure’: **syād-onā*-, OIr. *fedan* ‘conduction’: **ued-onā*-) and thematic *-ono- (OIr. *mlegon* ‘milking’: **m_lg-ono*-), which underlies the Germanic infinitives in *-anam (e.g. Goth. *bairan* ‘to bear’; cf. Ved. *bhāraṇam* ‘Ort zum Tragen’, Kim 2010:304).
- 17 On *aiš-*, *išš-* cf. Melchert 2010 (**h₁oh₁-*, not *hseh₁-*; aliter Rieken 1999:185–7, also Schindler 1975:264: proterodynamic **h₃éh₁-os / *h₃h₁-és-*); on *nepiš-* cf. Rieken 1999:187–9 (acrodynamic **néb^hes-* / **neb^hes-*; cf. CLuw. *tappaš-*, HLuw. *tipaš-*). Amphidynamic **o-d^huéh₂-ōš-* / **o-d^huh₂-s-él/ós* underlies *antuaḥḥa-* / *antuḥša-* c. ‘human being’ (reanalyzed as an -a-stem), and hystero-dynamic **h₃ed^h-és-* may be assumed for ^(URUDU)*atešš-* n. ‘axe, hatchet’ (Rieken 1999:190–3).
- 18 Cf. Rieken 1999:197–220. The different types of stems in -s-, as attested in Core IE languages, are unequally represented in Anatolian: some have disappeared, others have not been fully developed, and others are secondary enlargements of vocalic stems (cf. the discussion by Höfler 2017).

5 The essential evidence for oblique cases of the *-s-stems underlying infinitives (or quasi-infinitives) in at least one language may be set forth as follows:

Dative	*-s-éj̄	*-és-ej̄
Locative	*-s-éj̄	*-és-ej̄
Locative-directive	*-s-én	*-és-en
Locative-directive	*-s-éh ₂	*-és-eh ₂

Dat. *-s-éj̄: Ved. -śé (type *jīśé* ‘for winning/victory, to win’, *stuśé* ‘for praise, to praise’); Lat. -rī (type passive *amārī* ‘to be loved’, *habērī* ‘to be had’, *audīrī* ‘to be heard’).

Dat. *-és-ej̄: Ved. -áse (type *jīváse* ‘for life, to live’, *ṛcáse* ‘for/to praise’), *vr̥dháse* ‘for growth, to grow’), OAv. -aṅhai, -aṅhē (type *vaocaṅhē* ‘for recitation, to recite’).

Loc. *-s-í: Lat. -se (type *esse* ‘to be’, *uelle* ‘to wish’), -re (type *amāre* ‘to love’, *habēre* ‘to have’, *audīre* ‘to hear’).

Loc. *-és-i: Lat. -ere (type *legere* ‘to read’).

The evidence for Core IE *-s-én (and *-s-éni) and *-és-en is crucial for the reconstruction of *-s-éh₂ and *-és-eh₂ (whence PGk. *-saj̄ and [→] *-es-t^h-aj̄, §9).

*-s-én: PGk. *-^hen, in infinitives of athematic *verba vocalia*, namely Myc. *e-re-e /ere^hen/* ‘to row’ (**h₁erə₁-sen*, from **h₁erh₁-*),¹⁹ *te-re-ja-e /teleiā^hen/* ‘to fulfill a task’ (denominative from */*telesjā-* ‘task’;²⁰ cf. the MN *te-re-ja-wo /Teleiāwōn/* of the type *ma-ka-wo* : Μακάωv).

*-s-éni: Ved. -sáni, in full infinitives from roots or from marked verbal stems of *seṭ*-roots, e.g. *tariśáni* ‘to cross, overcome’ (**terh₂-séni*, aor. *tariś-*), *gr̥ṇīśáni* ‘to praise, greet’ (**gr̥ṇH-séni*, pres. *gr̥ṇā-* / *gr̥ṇī-*), *stṛṇīśáni* ‘to spread’ (: **stṛṇh₃-séni*, pres. *stṛṇā-* / *stṛṇī-*).

PGk. *-^hen and Ved. -sáni point to an infinitival *-sen(-i) traceable to Core IE.²¹

19 Plath 1990; García Ramón 1990a:166; 1997:62–4. Ved. *aritar-* ‘oarsman’: *ἐρετήρ (underlying Ἐρεπιῶ; renewed as Myc. *e-re-ta* : ἐρέτᾱς) point to **h₁érə₁-*, not to a thematic pres. **h₁érh₁-e-*, even less to **h₁ṛh₁-jólé-*, which may only be assumed for Lith. *iriū, irti* ‘row’ (*LIV*² s.v. **h₁reh₁-*, M. Kümmel).

20 The athematic inflection of denominatives in the Achaean dialects is an innovation as against inherited *-eh₂-jólé-.

21 García Ramón 1997:51; Stüber 2000:159–60.

*-és-en: PGk. *-e^hen in infinitives, e.g. Myc. *e-ke-e* /^(h)ek^he^hen/ ‘to have’: ἔχειν, ἔχην (*sēǵ^hes-en beside *sēǵ^h-es-: °εχίης, Ved. *sáhas-* ‘might’), ῥέειν ‘to flow’ (*sréues-en beside *sréues-: Ved. *srávas-*, ῥέος ‘flow, stream’ [A.]), of the same structure as the delocative appellatives in Germanic (*-ez-an-, e.g. OSax. *egiso(n)* ‘fear’ from *(e)s-neuters, e.g. Goth. *agis* ‘φόβος’).

The reanalysis of *-es-en as *-e-sen, i.e. as “thematic” PGk. *-e^hen, is a specific Greek innovation.²²

Given the strict parallelism between *-en and *-eh₂ (§4.1), the continuity of *-s-én and *-és-en in Greek justifies the assumption of a parallel development for *-s-éh₂ and *-és-eh₂, whence PGk. *-s-ai and *-es-ai (medialized as *-es-t^h-ai), with further details to be specified.

6 The origin of the infinitives in -σαι, -εσθαι (-σθαι was created secondarily; cf. §10) may be traced back to *-eh₂ forms of -s-stems, which are assured on the basis of comparative evidence (with some of the relevant forms actually attested in Greek), and may be considered the core from which both formations developed and spread. Their original structure may be clarified in the light of what is commonly assumed since Jochem Schindler’s paper (1975)²³ on the ablaut types of -s-stems, namely amphidynamic (*C(é)C-(o)s- / *CC-és-: *h₂éus-ōs / *h₂us-s-és ‘dawn’) and especially proterodynamic (*CéC-s- / *CC-és-, whence *CéC-os- / *CeC-és-: type *sēǵ^h-o/es-, §5), to which must be added the type with zero-grade root *CC-os- / *CC-és-, actually *Ci/úH-os / *Ci/uH-és- (*sriHgo/es- ‘frost’, *púH-o/es- ‘pus’, *d^húh₂-o/es- ‘burnt offering(s)'), which may be considered inherited, as persuasively argued by Vine (2022).²⁴

At first glance, the evidence for -σαι points to a weak stem with zero grade of the suffix, i.e. *CeC-s-’ (*CeC-s-éh₂i) or *CC-s-éh₂i, as against -εσθαι (remodeled from *-es-ai), which points ultimately to *CeC-és- (*CeC-és-eh₂i) or *CC-és- (*CC-és-eh₂i). The essentials about (a) -σαι and (b) -εσθαι are set forth in the table below, with some details about the evidence (correspondences and face-value reconstructions), for a necessarily arbitrary selection of neuter -s-stems (here and in the table, Greek material is Homeric except as indicated):

22 Nussbaum 1986:291; García Ramón 1997:64.

23 Cf. also Vine 2022:448–52 for a reappraisal of the Erlangen model.

24 Vine 2022:455–7 (also 453–5 on Ved. *dívas-* ‘gift, offering’). The anomalous double zero-grade (“abweichende Formen,” Schindler 1975:264–5) is not necessarily secondary (pace Stüber 2002:200–1).

- **d^héug^h-es-* (**d^heug^h-* ‘produce’): τεῦχος ‘tool, equipment’, pl. τεύχεα ‘weapons’ (Hom.+), Myc. /*teuk^hes-*/*,²⁵ Ved. *dóhas-* ‘(action of) milking’ : τεῦξαι (*hAp.*+) ‘to produce’.²⁶
- **d^húh₂-es-* (**d^hueh₂-* / **d^huh₂-* ‘(produce) smoke, breathe’): θύος ‘burnt offering’, pl. θύεα (Myc. *tu-wo* /*t^huwos/* ‘aromatic substance’, pl. *tu-we-a* /*t^huwe^ha/*); cf. Hitt. *antuhša-* ‘human being’ (**en-d^huh₂-s-ó-*)²⁷: θῦσαι ‘to make an offering’.
- **ség^hes-* (**seg^h-* ‘retain’, pres. **ség^h-o/e-*) : ἔχο/ε-, Ved. *sáha-^{te}* ‘overcome’: *ἔχος, °εχίς; cf. συν-εχίς ‘holding together’,²⁸ Ved. *sáhas-* ‘force’ : Av. *hazah-*, Goth. *sigis* “vīκος” : ἔχεσθαι ‘to have’.

Table. Basic evidence for -σαι and -εσθαι

	Proto-Greek	Transponat	-s-stem
(a)	* <i>CeC-s-</i> : τεῦξαι		
	* <i>t^heuk^h-sai</i>	: * <i>d^heug^h-s-éh₂</i>	* <i>d^héug^h-es-</i> (: τεῦχος)
	* <i>CC-s-</i> : θῦσαι		
	* <i>t^hū-sai</i>	: * <i>d^huh₂-s-éh₂</i>	* <i>d^húh₂-es-</i> (: θύος)
(b)	* <i>CeC-és-</i> : ἔχεσθαι		
	* <i>(^h)ek^h-est^hai</i>	: ← * <i>seg^h-és-eh₂</i>	* <i>seg^h-és-</i> (: °εχίς), like * <i>d^heug^h-és-eh₂</i> (τεύχεσθαι)
	Beside	: * <i>seg^h-és-en</i> (Att. ἔχειν), like * <i>d^heug^h-és-en</i> (Att. τεύχειν)	
	* <i>CC-és-</i> : θύεσθαι		
	* <i>t^huest^hai</i>	: ← * <i>d^huy^h-és-eh₂</i>	
	Beside	: * <i>d^huy^hés-en</i> (Att. θύειν)	

25 Singular τεῦχος (τὸ τεῦχος· τὸ σκεῦος Hsch.) is first attested in tragedy, but cf. Myc. *te-u-ke-pi* /*teuk^hes-p^hi/* ‘with equipment’, referring to a chariot (PY Ub 1315.1]*wo-ja a-ni-ja*, *te-u-ke-pi*).

26 Cf. τεῦξαι ποιῆσαι, κατασκευάσαι (Hsch.).

27 I.e. ‘the one who has smoke/breathing in(side)’, n.17 (cf. PGM. **d^heuz^a-* [**d^heū(h₂)-s-o-*]: OE *dēor* ‘animal, deer’, ON *dýr* ‘id.’). Cf. also Hitt. *tuhhae-^{mi}* ‘to sigh’, denominative of **tuhha-*: **d^huh₂-*.

28 Also προξ° (Hdt.), and Myc. /*°ek^hēs/* in the obscure *po-ro-e-ke* /*pro-^hek^hēs/* (of an ivory table: PY Ta 713.2 *io-pe-za*, *e-re-pa-te-jo*, *po-ro-e-ke* [also Ta 715.2]).

Crucial is the difference between (a) zero grade (*-s-) and (b) full grade (*-és-) of the suffix, whereas for the root both *CeC- and *CC- are attested, regardless of whether inherited or due to intraparadigmatic leveling. We may thus assume two possible starting-points for -σαι and -εσθαι, namely *C(e)C-s-éh₂(i) and *C(e)C-és-eh₂(i), which are actually parallel to C(e)C-s-én(i) and C(e)C-és-en (specialized as active infinitives, §5), and try to explain these patterns, before addressing their development within Greek.

A sure starting point for (b) -εσθαι is proterodynamic *CeC-és- and *CC-és-. Less clear is (a) -σαι: the zero grade of the suffix (*CeC-s- and *CC-s-) fits into the amphidynamic type *CC-s- (gen. *mn-s-és vs. nom. *mén-ōs ‘mind, strength’, gen. *h₂us-s-és beside *h₂us-s-ér(i)²⁹ vs. nom. *h₂éus-ōs ‘dawn’): *CC-s-éh₂(i) would thus reflect the original type and *CeC-s-éh₂(i) would be secondary. The infinitives of the structure *C(e)C-s- do not necessarily presuppose a complete amphidynamic paradigm for lexemes with underlying proterodynamic inflection,³⁰ but simply the extension of the weak stem, as for example with amphidynamic gen. *h₁nh₃-mn-és ‘of the name’ at the expense of proterodynamic *h₁nh₃-mén-s (Schindler 1975:263–4).³¹ In any case the existence of amphidynamic and proterodynamic paradigms for the same lexeme, e.g. *tép-ōs (Lat. *tepor*, -ōris ‘warmth’) and *tép-o/es- (Ved. *tápas*- ‘heat’),³² and the interrelation between the two types, lend support to the possibility of both -s- and -és- for one and the same -s-stem, and for the infinitives based on it. Moreover, the coexistence of (a) *CC-s- (cf. *C(e)C-s-én(i), §5) and (b) *CéC-es- may be observed in Vedic, e.g. *śūśāni* ‘when swollen’ (*kūh₁-s-én(i)) beside *śavas*- ‘force’ : Av. *sauuah*- (*kēu_h1-o/es-),³³ and, with full grade, *sakṣāni* ‘in the power’ or ‘overcome’ beside *sáhas*- ‘power, force’.

29 Cf. Ved. *uṣar-budh*- ‘awake at dawn’ (*uṣar*- < *h₂us-s-ér, or formed relatively late in Vedic, as per Lundquist 2014) and Hom. ἠρι (**auseri*) ‘early in the morning’ (Nussbaum 1986:291–2); additional forms in Stüber 2000:152–64, who tries to trace them all to the amphidynamic type. (On *mén-ōs, *mn-s-és: see next n.)

30 This may be the case for *mén-ōs (Av. n.pl. -manā) / *mn-s-és beside (or previous to) proterodynamic *mén-s-s (→ *mén-os) / *mn-és-s (→ *men-és-es); cf. Schindler 1975:265–6.

31 The *disiecta membra* of the daughter languages support the possibility of both *h₁nh₃-mōn / *h₁nh₃-mn-és (Av. *nāmaq* [pl.] / Ved. *nāmnas*) and *h₁nh₃-mōn / *h₁nh₃-mén-s (Ved. *nāma* / OIr. *ann(a)e*).

32 Cf. also *kréu_h2-ōs (: Lat. *cruur*, -ōris ‘gore’) and *kréu_h2-s- ‘blood’ (κρέας, Ved. *kraviṣ*- ‘raw meat’), *sūójd-ōs ‘sweat’ (Lat. *sūdor*, -ōris) :: *sūéjd-es- (ἵδοξ ‘sweat, warmth’); cf. Rieken 1999:172–3.

33 Stüber 2000:66 (*kēu_h1-o/es- back-formation from the zero grade, as in Ved. *śú-ra*- ‘strong’ [: Av. *sūra*-], replacing *kēu_h1-ōs).

7 PGk. **-saj* (and **-es-t^h-aj*) may thus be traced back to **-s-éh₂(i)* (and **-es-éh₂(i)*), independently of the existence of dat. **-sej*. It is true that PGk. **-saj* could a priori rely on a remodeling of dat. **-s-ej* by analogy with PGk. **-uen-aj*, **-men-aj* (and even **-en-aj*, **-n-aj*) or on a formal merger of **-s-éj* and **-s-éh₂*, producing **-saj*. This would imply that at least **-uenaj* and **-menaj* and possibly **-(e)naj* were older than **-saj*, **-es(t^h)aj* and that the restriction of **-uenaj* to Cypriot, **-menaj* to Lesbian, and **-(e)naj* to East Greek (as against WGk. **-men*) would be later than the putative remodeling of **-sej* to **-saj* and **-esej* to **-esaj*. Such a hypothesis, although complicated, is not impossible, but turns out to be unnecessary once a starting-point **-s-éh₂*, **-és-eh₂* is assumed.

8 The infinitive in -σαι, originally indifferent to aspect and to voice,³⁴ was secondarily assigned to the -s(a)-aorist and to the active, once **-est^haj* became assigned to the middle. Its original form, namely **CeC-s-aj* or **CC-s-aj* (probably the oldest), with zero grade of the -s-stem suffix (§6), is still recognizable in forms like those mentioned above (all Hom.+), i.e. τεῦξαι (aor. τεύξα-) beside pres. τεύχο/ε- and θῦ-σαι (aor. θῦ-σα-) beside pres. θύο/ε-.³⁵ (On med.pres. τεύχεσθαι, θύεσθαι cf. §9, on med.aor. τεύξασθαι [and perf. τετύχθαι], θύσασθαι cf. §10.)

These infinitives are surely based on neuter -s-stems, as also with νεῖμαι (**nem-saj*, aor. νεῖμα- [Thuc.+]) beside νέμος ‘glade (for reverence)’ (**ném-es-* ‘allotment’; cf. Lat. *nemus* ‘grove’, Ved. *námas-* : Av. *nəmah-* ‘respect’) and pres. νέμο/ε- ‘distribute’ (**ném-o/e-*: Ved. *nám-a-^{1e}* ‘bend’, Goth. *niman* ‘λαμβάνειν, λαβεῖν’, ‘δέξασθαι’). But these are exceptional. The vast majority of infinitives in **-saj*, Gk. -σαι are formed from verb roots from which no neuter **-s-stem* is attested (e.g. **dejk-* ‘show (forth)’, **leuH-* ‘loosen’, **men-* ‘stand, remain’): they reflect the spread of **-saj* to any -s(a)-aorist, by means of proportional analogy, namely

**teuk^h-sa-* (τεύξα-) : **teuk^h-saj* (τεύξαι) :: **dejk-sa-* : *X*,
whence *X* → *dejk-saj* (δεῖξαι) et al.

34 As expected for an infinitive, e.g. ἄξιος θαυμάσαι “worthy to be admired” (Thuc., X.) vs. πεφάσθαι / ἄξιος “worthy to be slain” (Il. 14.471–2), τίεσθαι δ’ ἄξιότατος “most worthy to be honored” (A. Ag. 531), or θαῦμα ἰδέσθαι # “a marvel to look upon” (Il. 5.725+) vs. # θαῦμα ἰδεῖν “id.” (hVen. 205).

35 Cf. also PToch. **twā-* ‘shine, burn’, causat. ‘kindle’ (Malzahn 2010:676–7; for the data cf. Hackstein 1995:348–3, under “Toch. B /twa-/ A twā- ‘anzünden’”). The appurtenance of θύο/ε-, θύίο/ε- (**d^huh₂s-jo/e-*) ‘rage’ to the same root is controversial but plausible (cf. Eichner 1985:16 n.7: “‘Mut, Zorn...’ ... kann direkt auf ... ‘Wallung’ oder auch ‘Hauch’ ... beruhen”; see also Tucker 1990:393, 521 n.79).

**t^hū-sa-* (θῦσα-) : **t^hū-saj* (θῦσαι) :: **lū-sa-* : *X*,
whence *X* → *lū-saj* (λῦσαι) et al.

**nem-sa-* (Att.νεῖμα-) : **nem-saj* (νεῖμαι) :: **men-sa-* : *X*,
whence *X* → **men-saj* (μεῖναι) et al.

i.e. [-*C-sa-* :: -*C-saj*], [-*Ǟ-sa-* :: -*Ǟ-saj*], [-*R-sa-* :: -*R-saj*]. Some additional instances (all Homeric, from Forssman 2019:290–2):

[-*C-saj*]: ζεῦξαι ‘join’, κλέψαι ‘steal’, ῥήξαι ‘break’, τριῦσαι ‘rub, tresh’ et al.

[-*Ǟ-saj*]: δῦσαι ‘(make) sink’, χριῖσαι ‘rub’, παῦσαι ‘stop’

[-*Ǟ-saj*]: ἐλά-σαι ‘drive, set in motion’, ἐρύ-σαι ‘tear’, καλέ-σαι ‘call’, ὀμό-σαι ‘swear’, also λοέ-σαι ‘wash’ (and λοῦ-σαι), στορέ-σαι ‘spread, strew’;³⁶ τιμῆ-σαι ‘respect’, φιληῖ-σαι ‘love’; κακῶ-σαι ‘maltreat, spoil’, ἐλευθερῶ-σαι ‘set free’ (Thuc.+ ; cf. Myc. *e-re-u-te-ro-se* /*eleuth^{er}ōse*)

[-*R-saj*]: ἀγγεῖλαι ‘announce’ (: **angel-sa-*), ἀεῖραι ‘lift’ (: **amer-sa-*), ἀμῦναι ‘keep off’ (: **amun-sa-*), κέλσαι ‘drive on, put to shore’, κέρσαι ‘cut, shear’

9 The infinitive in -εσθαι ultimately goes back to **-es-aj*, remodeled as **-es-t^h-aj* by embedding **-t^h-* by analogy with middle endings with -*st^h-* (and secondarily attached to the middle), and then reanalyzed as thematic **-e-st^haj* (like **-es-en* → active **-e-sen*) already in Proto-Greek, at a time when */s/ was probably still intact.³⁷

**-e-to(i)*, **-e-st^he*, **-e-st^hon*, **-e-st^hō(n)* ... : **-es-t^haj* → med. **-e-st^haj*

**-e-s*, **-e-∅*, **-e-te*, **-e-ton*, **-e-tō(n)* ... : **-es-en* → act. **-es-en*³⁸

36 λοέ-σαι actually from earlier **lewo-sa-* (still attested in Myc. *re-wo°* /*lewo°* / Hom. λοε°), with Ruy Pérez’s metathesis (1950[1989]:123–8), as in στορεσα- by metathesis from **stero-* (**sterh₃-*; cf. στρωτός ‘spread, laid’). The Homeric variants with -σα-, attested in the infinitive (καλέ-σαι, ἐλά-σαι, ὀμό-σαι, λοέ-σαι, στορέ-σαι), are metrically conditioned, but are sprachwirklich in the Aeolic dialects (§2 n.6).

37 The assumption of a stage of Proto-Greek at which intervocalic **-s-* was still intact is not crucial at this point. As Brent Vine kindly points out to me, “a development to ‘thematic’ **-e-hen* could have taken place perfectly well at the stage when PIE **-es-en* was already */-ehen/; and thematic **-e-hen* (beside **-e-te*, **-e-ton*, etc.) could well have contributed to the reanalysis of **-es-t^haj* as thematic **-e-st^haj* (beside **-e-to(i)*, **-e-st^he*, etc.), without a requirement that */s/ was still intact even intervocalically.”

38 Cf. García Ramón 1990a:161–2 n.37: “demgemäß sind ἔχεσθαι : ἔχειν auf **seg^h-est^h-aj* (→ **seg^hes+d^h+aj*; urgr. **sek^hest^haj* mit sekundärer Medialisierung) : **seg^hes-en* zurückzuführen.”

PGk. **-es-ai* is not actually attested, but a proterodynamic **C(e)C-és-eh₂* is assured in view of parallel **C(e)C-és-en*. The medialization of **-es-ai* as **-es-t^hai* is most probably previous to the reanalysis as thematic **-e-st^hai*. This is easily conceivable as “Formübertragung” from 2pl. -(ε)σθε (cf. **-d^hye*: Ved. **-dhva-* [-*dhvam*, -*dhve*], Hitt. *-duma(-)*; **-sd^he* in OHitt. *-šten(i)* in the *hi-* conjugation, du. -(ε)σθον, -(ε)σθᾶν, impv. -(ε)σθων). The process may have been favored (or perhaps even triggered) by the commutability of the infinitive in its directive function (*pro imperativo*) with the imperative(-injunctive) middle endings;³⁹ cf. *Il.* 1.20 παῖδα δ’ ἐμοὶ λύσαιτε φίλην, τὰ δ’ ἄποινα δέχεσθαι “may you set free my daughter and accept the ransom!” and *Il.* 7.400 μήτ’ ἄρ τις νῦν κτήματ’ Ἀλεξάνδροιο δεχέσθω “now let none accept the possessions of Alexandros!”

The original pattern **CeC-és-eh₂(i)*, **CC-és-eh₂(i)* (from proterodynamic *-s*-neuters), whence PGk. **CeC-es-ai*, **CC-es-ai*, and (secondarily) **CeC-e-st^hai*, **CC-e-st^hai* (see above), lives on in the middle infinitives of thematic present (or aorist) stems (**CeC-(i)o/e-* or **CC-ó/é-*), beside the outcome of **-e-sen* (← **-es-en*). The infinitives of verbal lexemes with corresponding *-s*-neuter may be considered the oldest core of infinitives in *-εσθαι*, from which they then spread to other verbs. This is the case for the aorist infinitives in *-σαι* dealt with above (§§6, 8), as well as some others, regardless of whether they have a *-s(a)*-aorist or not:

τεύχ-εσθαι (cf. τεῦχος) : pres. τεύχ-ο/ε- (act. τεύχειν)—aor. infin. τεῦξαι (: τευξα-)

θύ-εσθαι (cf. θύος) : pres. θύ-ο/ε- (act. θύειν)—aor. infin. θῦσαι (: θῦσα-)

νέμ-εσθαι (cf. νέμος) : pres. νέμ-ο/ε- (act. νέμειν)—aor. infin. νεῖμαι (**nem-sa-*)

ἔχ-εσθαι (cf. ἔχίς) : pres. ἔχ-ο/ε- (act. ἔχειν: Myc. /^(h)ek^he-^hen/)—no *-s(a)*-aorist: the aor.infin. σχέσθαι (: σχέτο Hom.+) may continue **sġ^h-és-eh₂(i)*, beside active σχεῖν (: ἔσχε Hom.+), which may continue **sġ^h-és-en*.

Cf. also κήδεσθαι ‘to take care’ (cf. κῆδος ‘care’, pl. -εα) beside pres. κήδο/ε-, act. κήδειν ‘trouble’ (all Hom.).

Middle infinitives in *-est^hai* beside *-s*-neuters are also attested in a series of verbs with thematic present or aorist stem that are *media tantum*.⁴⁰ As such, they may be assumed to belong to the basic core as the starting point of the spread of medial *-σθαι*. The pairing infin. *-est^hai* : *-es*-neuter is often attested in Homer. Some instances (Homeric except as indicated):

39 In *Il.* 21.128 φθείρεσθ’ εἰς ὃ κεν ... “die on, all!” both φθείρεσθ’(ε) and φθείρεσθ’(αι) (“unwrsch.” Forssman 2019:191) are possible.

40 García Ramón 1990a:161–2 n.37.

γενέσθαι ‘become’ (cf. γένος) : aor. γένετο

δέχεσθαι ‘receive, accept’ (cf. **dék-es-*: Lat. *decus*, Ved. *dásas-** ‘honor’) : pres. δέχο/ε- (δέχετο); on aor. δέχθαι (: δέκτο), δέξασθαι (: δέξατο) cf. §11

εὔχεσθαι ‘boast, pray’ (cf. εὔχος ‘object of prayer’, ‘boasting’, **h₁éugth-es-*: Ved. *óhas-* ‘vaunting’) : pres. εὔχο/ε- (εὔχετο); on aor. ἐπέυξα-σθαι (: εὔξατο) cf. §11

ἔχθεσθαι ‘hate’ (cf. ἔχθος ‘hate’) : pres. ἔχθο/ε- (ἔχθετο)⁴¹

θέρεσθαι ‘become warm, hot’ (cf. θέρος ‘summer, harvest’) : pres. θέρο/ε- (subj. θέρηται)⁴²

μήδεσθαι ‘plan, plot’ (cf. μῆδος,-εα ‘plan(s), counsel(s)’) : pres. μῆδο/ε- (μῆδεται); aor.infin. μήσασθαι gramm. only, despite μήσατο, -σαο (Hom.)

ψεύδεσθαι ‘lie’ (cf. ψεῦδος) : pres. ψεύδο/ε- (ψεύδοντ[αι]); on med. ψεύσασθαι (Thuc.+) cf. §10.

Other infinitives of the same type are first attested after Homer, but they may be considered old in view of the existence of an *-s*-neuter based on the same lexeme, e.g. ἄχθεσθαι ‘be loaded, grieved’ (Thuc.+) beside Hom. ἄχθος ‘load, grief’ : pres. ἀχθο/ε- (ἄχθετο), or ἡδεσθαι ‘to have pleasure’ (Hdt., Ar.+) beside Hom. ἡδος ‘delight, pleasure’ : impf. ἡδετο (Hdt.+).

Med.-pass *-εσθαι* spread to all thematic present or aorist stems, even when there is no corresponding *-s*-neuter, by analogy with forms of the core group and/or by proportional analogy with forms ending in *-ε-σθε*, *-εσθον*, *-έσθω(ν)* (here abbreviated as *-σθε ...*), as in ἔχε-ται (ἔχε-σθε ..., act. ἔχε-ι, ...) : ἔχε-σθαι (and act. infin. *ἔχε-^(h)εν) :: φέρε-σθαι (φέρε-σθε..., act. φέρε-ι) : *X*, whence *X* → φέρε-σθαι (and act. infin. *φέρε-^(h)εν). Other instances of this type (Homeric except as indicated): ἔλκεσθαι ‘draw, drag’ (: ἔλκεται, ἔλκεο);⁴³ ἐρύεσθαι ‘rescue, draw’ (: ἐρύοντο); ἴσχεσθαι ‘hold (fast)’ (: ἴσχεται, ἴσχεσθε); κέλεσθαι ‘exhort, call to’ (: κέλεται, κελέσθω); λούεσθαι ‘bathe’; παύεσθαι ‘cease’ (: παύομαι, ἐπαύετο); πέλεσθαι (X.+) vs. πέλειν ‘be’ (A.+) beside Hom. πέλεται vs. πέλει, ἔπλε.⁴⁴ Like aor. γενέ-σθαι, σχέ-σθαι (**CC-é-*, see above), cf. ἀμφιβαλέσθαι ‘throw about’ (on βλήσθαι cf. §10), ἐλέσθαι ‘take’, τραπέσθαι ‘turn away’.

41 Active ἔχθο/ε- (A.+), ἔχθειν (Call.) is secondary.

42 Active θέρο/ε- (A.R., Nic.) is secondary (no instance of infin. *θέρειν!).

43 No connection with neut. ἔλκος ‘wound’ (Hom.), with secondary aspiration (cf. Lat. *ulcus*, Skt. *ársas-* ‘hemorrhoid’).

44 The aor.ptc. °πλόμενος (περιπλομένων ἐνιαυτῶν “revolving years”, *Od.* 1.16+) is the only attested form of *περι-πέλεσθαι ‘to turn around’ (no instance of infinitive *°πέλεσθαι).

10 Med.-pass. -σθαι in athematic verbal stems was secondarily created by reanalysis of what appeared to be “thematic” PGk. **-e-st^hai* by analogy with the personal endings PGk. **-e-st^he*, **-e-st^hon*, **-e-st^hō(n)* ..., first in stems in non-apohonic *-e-* (from vocalized root-final **-h₁-*, hence susceptible to analogy based on thematic **-e-*): thematic **-e-st^he* ... : **-e-st^haī* (e.g. ἔχε-σθαι, τέρχε-σθαι, θύε-σθαι) :: athematic **-e-st^he* ... : *X*, *X* → */-e-st^haī/* (e.g. δῖε-σθαι ‘speed’ [**diīə₁-*]; ὀλέ-σθαι ‘be killed’ [**h₃elə₁-*]).

Starting from athematic */-e-st^haī/* (θέ-σθαι ‘put [for oneself]’, ταμέ-σθαι ‘be cut’, Hom.+), -σθαι spread successively to stems ending in other vowels (*/-ǃ-st^haī/*, */-ǃ̄-st^haī/*), in consonants (*/-C-st^haī/*), and in resonants (*/-R-st^haī/*). The essential components of the analogical proportions may be set forth as follows:

- *-ǃ̄-st^he* ... : *X*, *X* → */-ǃ̄-st^haī/* (e.g. ἴστα-σθαι ‘stand up’; κεί-σθαι ‘lay’)
- *-sa-st^he* ... : *X*, *X* → */*-sa-st^h-aī/* (e.g. aor. δέξα-σθαι ‘accept’; κείρα-σθαι ‘cut’ : **ker-sa-st^haī*)
- *-C-st^he* ... : *X*, *X* → */-C-st^haī/* (e.g. aor. δέχ-θαι ‘accept’; perf. λελεῖφ-θαι ‘be left’)
- *-R-st^he* ... : *X*, *X* → */-R-st^haī/* (e.g. aor. ὄρ-θαι ‘rise up’; perf. ἐγρεγόρ-θαι ‘be awake’)⁴⁵

Further instances (Homeric except as indicated):

/-ǃ̄-st^haī/: δάμνα-σθαι ‘be overpowered’, ρήγνου-σθαι ‘break’ (intr.) et al.

/-sa-st^haī/: δαμάσα-σθαι ‘overpower’, ἐπέυξα-σθαι ‘vow’, ἐρύσσα-σθαι ‘drag’, λούσα-σθαι ‘wash (one self)’, παύσα-σθαι ‘cease’, τεύξα-σθαι ‘be worked’ (*hAp.*), ὄσα-σθαι ‘thrust back’, ἀπαμύνα-σθαι ‘keep off from oneself’ (**^oamunsa-st^haī*) et al.;⁴⁶ also perf. πεφά-σθαι ‘be killed’; on δέξα-σθαι, λέξα-σθαι (beside δέχθαι, λέχθαι), see § 11

/-ǃ̄-st^haī/: ἦ-σθαι ‘sit’, βλή-σθαι ‘be hit’; perf. ἐκτῆ-σθαι ‘possess’, εἶρῶ-σθαι ‘be drowned’, κεχολῶ-σθαι ‘be angry’ et al.

45 Post-Homeric: δεδάρθαι ‘be skinned’ (Solon), ἐσπάρθαι ‘be sown’ (X.), ἐφάρθαι ‘be destroyed’ (Thuc.), κεκάρθαι ‘be cut off’ (Hdt.).

46 Other forms are first attested in Classical Greek, e.g. θύσα-σθαι (Hdt.+), °δειξα-σθαι, καλέσα-σθαι (Hdt.+), ψεύσα-σθαι (Thuc.+), but they may be old, as the *-s(a)*-aorists of these verbs are attested in Homer.

/-C-stʰaj/ > [-Cʰ-tʰaj] (cf. already Hom. αἰχμή ‘point of a spear’ vs. Myc. *as-ka-sa-ma /aiksmāns/*): δέχθαι, λέχθαι (§11); perf. δεδιδάχθαι ‘have taught’, ἀφ-ἴχθαι ‘have reached’, (προ)τετύχθαι ‘be past and done’

/*-R-stʰaj/ > [-R-tʰaj]: ἡραχ πέρθαι ‘be sacked’, with anomalous -e-grade vs. regular διεπράθετο ‘was sacked’ *Od.* 15.384) in ... πέρθαι Τρώων ἀγερώχων # ‘(the city) of lordly Trojans was sacked’ (*Il.* 16.708), a formulaic segment (cf. ... πέρρειν Τρώων ἀγερώχων # *Il.* 21.584), in which *πραθέσθαι would be impossible.⁴⁷

11 Unique is the coexistence of two infinitives, corresponding to a root-aorist and a -s(a)-aorist respectively from the momentative-telic lexemes (a) **dék-* ‘to accept’ (**dék-es-* ‘honor’: Ved. *dásas-**, Lat. *decus*, OIr. *dech* *‘ornament’; cf. §9), pres. δέχο/ε-, also athem. 3pl. δέχονται, infin. δέχεσθαι, and (b) **legʰ-* ‘to lie down’ (**légʰ-es-*: λέχος ‘couch, bed’;⁴⁸ no present *λέχο/ε- attested⁴⁹), both *media tantum* in Greek. The root aorist and -s(a)-aorist of both verbs are fully synonymous:

- (a) δέχθαι (PGk. **dék-stʰaj*): δέκτο beside δέξασθαι : (ἐ)δέξατο (**dék-s(a)-to*):⁵⁰ *Il.* 1.23 ἀγλαὰ δέχθαι ἄποινα “... to accept the shining ransom” and *Il.* 2.420 ἀλλ’ ὃ γε δέκτο μὲν ἱρά “he accepted the sacrifices”; *Il.* 1.112 ... ἀγλά’ ἄποινα/ οὐκ ἔθελον δέξασθαι “I did not wish to accept the shining ransom”, and *Od.* 18.285–7 κούρη Ἰκαρίοιο, ... / δῶρα μὲν ... / δέξασθ’(αι) “daughter of Ikarios, ... whatever gifts ... accept.”⁵¹

47 πέρθαι thus turns out to be an Augenblicksbildung created by proportional analogy, either ὄρσας : ὄρθαι :: πέρ(θ)σας : X, or ὤρετο : ὄρθαι :: πέρθετο : X, in both of which X → πέρθαι, as shown by Forssman (1997:39–41, against active πέρθεσθαι and with discussion of earlier interpretations; 41–2 on Hom. πέρθετο).

48 Also Ved. *rāhas-* in RV *rahasú-* (i.e. **rahas-sú* ‘giving birth [secretly]’), OIr. *foilage* ‘hiding places’ (neut.pl. **uo-leges-ā* to **uo-logom*, cf. Stüber 2002:122–3, with discussion).

49 The gloss λέχεται κοιμάται (Hsch.), like Goth. *ligan* ‘^(c)κεῖσθαι’, OIr. *laigid*, and Toch.B *lyás-*, goes back to **legʰ-o/e-*, which continues PIE **kéj-(t)oj* in some Core IE languages. Fal. *lecet* could also reflect **legʰ-o/e-* (so *LIV*² s.v. **legʰ-*), but might instead be a 2nd conj. stative (B. Vine, p.c.).

50 A similar situation may be assumed for Mycenaean (Knossos: hand 103): *de-ko-to /dektol/* (Le 642.1) is more than probable; *de-ka-sa-to /deksato/* (Le 641.1; also Fh 370.b [hand 141] and PY Pn 30.1 *o-de-ka-sa-to* [hand 2]) is sure.

51 The semantics of δέκτο rules out the appurtenance to 3pl. δέχονται ‘they lurk’ (lexicalization of durative *‘is about to receive’): *Il.* 12.146–7 τῶ τ’ ἐν ὄρεσσι/ ἀνδρῶν ἠδὲ κυνῶν δέχεται κολοσυρτὸν ἰόντα “(two wild boars) who in the mountains await/lurking a rabble of men and dogs advancing upon them.”

- (b) ὀλέχθαι (**lek^h-st^hai*) : λέκτο beside λέξασθαι : ἐλέξατο: *Od.* 15.393–4 οὐδέ τί σε γρή,/ πρὶν ὄρη, καταλέχθαι “no need that you lie down before it is time” and *Od.* 4.453 ἔπειτα δὲ λέκτο καὶ αὐτός “and then he too lay down”; *Il.* 8.517–9 ἀγγελόντων/ ... γέροντας/ λέξασθαι περὶ ἄστῳ “let (the heralds) give orders for the elders to lie around the city” and *Od.* 4.305 πᾶρ δ’ Ἑλένη τανύπεπλος ἐλέξατο, ... “and by him lay down Helen of the light robes”.⁵²

12 To sum up:

- (1) Infinitival -αι (PGk.*-ai) in aor. -σαι and med.-pass. -εσθαι, -σθαι may be traced back to PIE loc.-direct. *-eh₂, recharacterized as *-eh₂-i (like loc.-direct. *-en, *-en-i). PGk. *-s-ai̯ (-σαι) and *-es-ai̯ (→ *-es-t^h-ai̯; -σθαι) continue the weak stems (*C(e)C-s-’ and *C(e)C-és-, respectively) of the neuter -s-stems on which they are based. The grammaticalization of *-s-éh₂(i) and *-és-eh₂(i) (*-es-ai̯) as the infinitival morphs PGk.*-s-ai̯ and (secondarily) *-es-t^h-ai̯, originally indifferent to voice and to aspect, is a Greek innovation, not shared by any other language, and cannot be traced back to Core IE, much less to Proto-Indo-European.
- (2) -σαι (*-s-ai̯) continues *-s-éh₂i (parallel to *-s-én(i)), formed from the weak stems *CeC-s-’ (e.g. τεύξαι ‘to produce’ [~ aor. τεύξα-] from *d^heug^h-s-éh₂; cf. τεύχος) and *CC-s-’ (e.g. θῦσαι ‘to (produce) smoke’ [~ aor. θῦσα-] from *d^huh₂-s-éh₂; cf. θύος), and was secondarily assigned to the active -s(a)-aorist. Starting from a core of lexemes with corresponding *-s-neuters (some of them attested in Homer), *-sai̯ spread to all verbs with -s(a)-aorists.
- (3) -εσθαι (*-es-t^h-ai̯), a formal remodeling of *-és-ai̯ (by analogy with med.2pl. *-est^he ...), continues *-és-eh₂i (parallel to *-és-en) formed from the weak stem of proterodynamic *-s-neuters, i.e. *CeC-és-eh₂ (e.g. τεύχεσθαι ~ pres. τεύχο/ε-, ἔχεσθαι ~ pres. ἔχο/ε-) or *CeC-és-eh₂ (e.g. θύεσθαι ~ pres. θύο/ε-) and was secondarily assigned to the middle and reanalyzed as thematic *-e-st^hai̯ (as *-es-en was to *-e-sen). This proposal is supported by the existence of infinitives in -εσθαι beside neuters in *-es- and thematic stems (pres. *C(é)C-e/o-, aor. *C(e)C-é/ó-, *CC-ó/é-) of *medium tantum* verbs, e.g. γένεσθαι (: γένος, (ἐ)γένετο), εὔχεσθαι (: εὔχος, εὔχεται).
- (4) -σθαι (*-st^hai̯), limited to athematic verbal stems, was created by reanalysis of “thematic” -ε-σθαι, e.g. ἔχε-σθαι (: ἔχε-σθε), whence athematic [-e-st^hai̯] :

52 Ipv. 2sg. δέξαι ‘accept!’ (*Il.* 6.46) and κατάλεξαι ‘lie down!’ (*Od.* 19.44) reflect *dék-soj, *lég^h-soj, by haplology of subj. *dék-s-e-soj, *leg^h-s-e-soj (§3).

[*-estʰe*], e.g. δίε-σθαι (: δίε-σθε), θέ-σθαι (: θέ-σθε), and secondarily extended to stems in vowel (e.g. ἴστα-σθαι; κεί-σθαι), in consonant (e.g. δέχθαι: **dék-stʰai*), and in resonant (e.g. ὄρθαι: **ór-stʰai*).

- (5) PGk. aor. **-sai*, med.-pass. **-estʰai*, and secondarily **-stʰai*, from **-s-éhzi* and **-és-ehzi* (beside **-és-en*), were formed from the oblique stem of *-s*-neuters (which in some cases are attested), and then spread to all verbal lexemes, regardless of whether an *-s*-neuter formed from them existed or not. This is evident in the case of some lexemes for which there is no trace of an *-s*-neuter, e.g. ἐρύ(ο/ε-) ‘drag, draw, take away’ (aor. ἐξ-ἐρύσαι, med.-pass. ἐρύσ(σ)α-σθαι :: pres. ἐρύ-εσθαι vs. act. ἐρύ-ειν, also perf. κατ-εἰρύ-σθαι ‘be drawn’, Hom.+), *κείρο/ε- ‘cut, shear’ (aor. δια-κέρσαι, med.-pas. κείρασθαι :: pres. κείρεσθαι, Hdt.+ vs. act. κείρειν, Pl.+), παύ-ο/ε ‘stop (trans.)’, med. ‘cease’ (aor. παῦσαι ‘stop’, med. παύσα-σθαι :: pres. παύ-εσθαι vs. act. παύ-ειν, Hom.+), as well as λούο/ε- ‘wash’, med. ‘bathe’ (aor. λοῦ-σαι and λοέ-σαι ‘wash’, med. λού-σασθαι :: pres. λού-εσθαι, all Hom.+).

References

- Benveniste, Émile. 1935. *Origines de la formation des noms en indo-européen*. 2 vols. Paris: Maissonneuve.
- Berman, Howard. 1977. Greek -σαι : Hittite -*ašha-*. *Zeitschrift für vergleichende Sprachforschung* 91(2).231–9.
- Bile, Monique. 1988. *Le dialecte crétois ancien*. Paris: Maissonneuve.
- Blümel, Wolfgang. 1982. *Die aiolischen Dialekte*. Göttingen: Vandenhoeck & Ruprecht.
- Eichner, Heiner. 1985. *Malwa*, eine hieroglyphenluvisch-sidetische Wortgleichung. *Münchener Studien zur Sprachwissenschaft* 45 (Festgabe für Karl Hoffmann II).5–21.
- Forssman, Bernhard. 1997. Homerisch πέρθαι. Mit einem Anhang: πέρθετο (M 15). In Alexander Lubotsky (ed.), *Sound Law and Analogy: Papers in Honor of Robert S. P. Beekes on the Occasion of His 60th Birthday*, 37–42. Amsterdam: Rodopi.
- . 2019. *Die homerischen Verbalformen*. With Manfred Brust and Jürgen Habisreitinger (Münchener Studien zur Sprachwissenschaft, Beiheft 29). Munich: Röll.
- Fortson, Benjamin W., IV. 2013. Pre-Italic **-dhjē* (**-dhjeh₁*) versus Pre-Indo-Iranian **-dhjōj*: Bridging the Gap. In Adam I. Cooper, Jeremy Rau, and Michael Weiss (eds.), *Multi Nominis Grammaticus: Studies in Classical and Indo-European Linguistics in Honor of Alan J. Nussbaum on the Occasion of His Sixty-Fifth Birthday*, 50–60. Ann Arbor: Beech Stave.
- García Ramón, José L. 1990a. Proportionale Analogie und griechische Morphologie: Athematische Infinitive im Attischen und im Westionischen. In Heiner Eichner and Helmut Rix (eds.), *Jakob Wackernagel und die Indogermanistik heute: Kol-*

- loquium der Indogermanischen Gesellschaft. Basel, 13.–15. Oktober 1988*, 150–69. Wiesbaden: Reichert.
- . 1990b. Proportionale Analogie im Griechischen: Der Dativ Pluralis der 3. Deklination in den aiolischen und westgriechischen Dialekten. *Glotta* 68.133–56.
- . 1997. Infinitive im Indogermanischen? Zur Typologie der Infinitivbildungen und zu ihrer Entwicklung in den älteren indogermanischen Sprachen. *Incontri linguistici* 20.83–92.
- . 2002. Subjuntivo e imperativo en la reconstrucción indoeuropea: IE 2.Sg. „Ipv.“ *-si (y Med. *-soi) y griego Ipv. 2.Sg. -σον, -σαι. *Münchener Studien zur Sprachwissenschaft* 62 [2006].23–36.
- . 2007. Zur Problematik des thessalischen Dialekts. In Ivo Hajnal (ed.), *Die altgriechischen Dialekte: Wesen und Werden (Akten des Kolloquiums Freie Universität Berlin 19.–22. September 2001)*, 91–111. Innsbruck: Institut für Sprachen und Literaturen der Universität Innsbruck.
- . 2017. Heterogeneous Correspondences and Reconstruction: The ‘Gerundive’ in -mi-na in Hieroglyphic Luvian. In Claire Le Feuvre, Daniel Petit, and Georges-Jean Pinault (eds.), *Adjectifs verbaux et participes dans les langues indo-européennes: Proceedings of the Conference of the Society for Indo-European Studies (Paris, 24th to 26th September 2014)*, 85–103. Bremen: Hempen.
- . 2021. On Anatolian and Greek Infinitives: Continuity of Indo-European Morphosyntax vs. Areal Development. In Luka Repanšek, Harald Bichlmeier, and Velizar Sadovski (eds.), *Vácāṃsi miśrā kṛṇvāmahai: Proceedings of the Conference of the Society for Indo-European Studies and IWoba XII, Ljubljana, 4–7 June 2019*, 163–88. Hamburg: Baar.
- Garnier, Romain, and Georges-Jean Pinault. 2010. De quelques formes d’infinitif en indo-européen. *Bulletin de la Société de Linguistique de Paris* 105.321–90.
- Hackstein, Olav. 1995. *Untersuchungen zu den sigmatischen Verbalstambildungen des Tocharischen*. Göttingen: Vandenhoeck & Ruprecht.
- Hajnal, Ivo. 1992. Griechisch χαμαί – ein Problem der Rekonstruktion? In Robert S. P. Beekes, Alexander Lubotsky, and Jos Weitenberg (eds.), *Interne Rekonstruktion und relative Chronologie: Akten der VIII. Fachtagung der Indogermanischen Gesellschaft. Leiden, 31. August–4. September 1987*, 207–20. Innsbruck: Institut für Sprachen und Literaturen der Universität Innsbruck.
- Hardarson, Jón A. 2011. The 2nd Line of the Duenos Inscription. In Giovanna Rocca (ed.), *Atti del Convegno Le lingue dell’ Italia Antica: In memoriam Helmut Rix, Milano 7–8 marzo 2011* (= *Ἀλεξάνδρεια* 5), 153–62. Milan: Edizioni dell’Orso.
- Höfler, Stefan. 2017. Die anatolischen s-Stämme: Flexivischer Archaismus oder Kategorie im Zerfall? In Elisabeth Rieken (ed.), *100 Jahre Entzifferung des Hethitischen: Morphosyntaktische Kategorien in Sprachgeschichte und Forschung. Akten der Arbeitstagung der Indogermanischen Gesellschaft. Marburg 21.–23. September 2015*, 121–35. Wiesbaden: Reichert.

- Jamison, Stephanie W., and Joel P. Brereton (trans.). 2014. *The Rigveda: The Earliest Religious Poetry of India*. 3 vols. Oxford: Oxford University Press.
- Kim, Jeong-Soo. 2010. *Untersuchungen zu altindischen Abstrakta und Adjektiven im Rigveda und Atharvaveda: Die primären a-Stämme und die ana-Bildungen*. Bremen: Hempen.
- LIV² = Helmut Rix. 2001. *Lexikon der indogermanischen Verben: Die Wurzeln und ihre Primärstammbildungen*². Ed. Martin Kümmel. Wiesbaden: Reichert.
- Lundquist, Jesse. 2014. Rigvedic *uṣar* and the Indo-European Locative *-er. In Stephanie W. Jamison, H. Craig Melchert, and Brent Vine (eds.), *Proceedings of the 25th Annual UCLA Indo-European Conference*, 87–103. Bremen: Hempen.
- Malzahn, Melanie. 2010. *The Tocharian Verbal System*. Leiden: Brill.
- Melchert, H. Craig. 2017. An Allative Case in Proto-Indo-European? In Bjarne Simmelkjær Sandgaard Hansen, Adam Hyllested, Anders Richardt Jørgensen, Guus Kroonen, Jenny Helena Larsson, Benedicte Nielsen Whitehead, Thomas Olander, and Tobias Mosbæk Søborg (eds.), *Usque ad Radices: Indo-European Studies in Honour of Birgit Anette Olsen*, 527–40. Copenhagen: Museum Tusulanum.
- . 2010. The Word for ‘mouth’ in Hittite and in Proto-Indo-European. *International Journal of Diachronic Linguistics and Linguistic Reconstruction* 7.55–63.
- Neumann, Günter. 1994–5. Alphabet-griechische und mykenische Personennamen des typs Μενεσθεύς. *Minos* 30 [1997].209–12.
- Nikolaev, Alexander. 2010. Hittite *mēnaḥḥanda*. *Journal of the American Oriental Society* 130.63–71.
- Nussbaum, Alan J. 1986. *Head and Horn in Indo-European*. Berlin: De Gruyter.
- Plath, Robert. 1990. Mykenisch *e-re-e*. *Münchener Studien zur Sprachwissenschaft* 51.169–82.
- Rieken, Elisabeth. 1999. *Untersuchungen zur nominalen Stammbildung des Hethitischen*. Wiesbaden: Harrassowitz.
- Rix, Helmut. 1976a. *Historische Grammatik des Griechischen*. Darmstadt: Wissenschaftliche Buchgesellschaft.
- . 1976b. Die umbrischen Infinitive auf *-fi* und die urindogermanische Infinitivendung **-dʰiōj*. In Anna Morpurgo Davies and Wolfgang Meid (eds.), *Studies in Greek, Italic, and Indo-European Linguistics Offered to Leonard R. Palmer*, 319–31. Innsbruck: Institut für Sprachen und Literaturen der Universität Innsbruck.
- Ruipérez, Martín S. 1950[1989]. Problemas de morfología verbal relacionados con la representación de las raíces disilábicas *set*. In José L. García Ramón (ed.), *Opuscula Selecta*, 120–41. Innsbruck: Institut für Sprachwissenschaft der Universität Innsbruck, 1989. Originally published in *Emerita* 18.386–407.
- Schindler, Jochem. 1975. Zum Ablaut des neutralen *s*-Stämme des Indogermanischen. In Helmut Rix (ed.), *Flexion und Wortbildung: Akten der V. Fachtagung der Indogermanischen Gesellschaft, Regensburg, 9.–14. September 1973*, 245–67. Wiesbaden: Reichert.

- SEG = 1923–. *Supplementum Epigraphicum Graecum*. Leiden: Brill.
- Stüber, Karin. 2000. Zur Herkunft der altindischen Infinitive auf *-sáni*. *Münchener Studien zur Sprachwissenschaft* 60.135–67.
- . 2002. *Die primären s-Stämme des Indogermanischen*. Wiesbaden: Reichert.
- . 2015. *Die Verbalabstrakta des Altirischen*. Bremen: Hempen.
- . 2018. Der Infinitiv bei Homer. In Heinrich Hettrich and Karin Stüber (eds.), *Infinitivische Konstruktionen im Ṛgveda und bei Homer*, 52–114. Mainz: Akademie; Stuttgart: Steiner.
- Tucker, Elizabeth F. 1990. *The Creation of Morphological Regularity: Early Greek Verbs in -éō, -áo, -óō, -úō and -iō*. Göttingen: Vandenhoeck & Ruprecht.
- Vine, Brent. 2022. Myc. *tu-wo*, Hom. *θύος* and the Vocalism of *s*-stems in Proto-Indo-European. *Acta Linguistica Petropolitana* 18(1).444–62.
- Willi, Andreas. 2018. *Origins of the Greek Verb*. Cambridge: Cambridge University Press.
- Zhang, Chengzhi. 2022. The Non-*i*-mutated Luwian Substantive Suffix *-šha*. Paper presented at the 41st East Coast Indo-European Conference, Harvard University.

On Chariots and at Sea: Indo-European Gods of Mobility— Old Norse *Njǫrðr*, Vedic Sanskrit *Nāsatya-*, and Proto-Indo-European **nes-ét-/ét-* ‘returning (safely home), arriving (at the desired goal)’*

RICCARDO GINEVRA

*Università Cattolica del Sacro Cuore, Milan |
Center for Hellenic Studies, Harvard University*

The paper proposes a common etymology for Old Norse *Njǫrðr*, the name of a Norse god associated with travel and wealth, and Vedic Sanskrit *Nāsatya-*, a byname of the Indic “Divine Horse Twins,” the Aśvins. The current analysis of *Njǫrðr* as a cognate of the theonym *Nerthus* attested in Tacitus’s *Germania* is rejected as a pseudo-equation (*Scheingleichung*); *Njǫrðr* may rather be traced back to a Proto-Germanic formation **nezēþ-* (whose acc. sg. **nezēþ-un* would have regularly developed into the acc. sg. *Njǫrð*), the expected reflex of Proto-Indo-European **nes-ét-/ét-* ‘(entity or act of) returning (safely home), arriving (at the desired goal)’. PIE **nes-ét-/ét-* may ultimately underlie Vedic *Nāsatya-* as well, as the reflex of a substantivized lengthened-

* This study is part of the project “SunSHINE – The Sun-chariot’s Journey towards the Nordic Sky: On the (Pre-)History of Ideas on Sky, Sun, and Sunlight in Northern Europe,” which has received funding from the European Union’s Horizon 2020 research and innovation program under the Marie Skłodowska-Curie grant agreement no. 890522.

For comments, discussion, and criticism, I am grateful to Andrea Lorenzo Covini, José Luis García Ramón, Stefan Höfler, Daniel Kölligan, Olga Levaniouk, Angelo Mercado, Georges-Jean Pinault, Zachary Rothstein-Dowden, and Patrick Styles; a special thanks goes to Stephanie Jamison and Brent Vine for their careful editing and insightful comments. The usual disclaimers apply.

The translations of Greek and Latin passages are adapted from those of the Loeb Classical Library; other translations are adapted from Eggeling 1885 (*Śatapathabrāhmaṇa*), Faulkes 1987 (*Prose Edda*), Finlay and Faulkes 2011–5 (*Ynglingasaga*), Jamison and Brereton 2014 (*Rigveda*), Jonval 1929 (Latvian folksongs), and Larrington 2014 (*Poetic Edda*).

Standard abbreviations are used for Classical sources, as well as for *Atharvaveda Śaunakīya* (AVŚ), *Latvju dainas* (LD; Barons 1922), and *Ṛgveda* (RV). The following abbreviations are employed for languages: Goth. = Gothic; Hom. = Homeric Greek; IE = Indo-European; Lat. = Latin; ON = Old Norse; PGmc. = Proto-Germanic; PIE = Proto-Indo-European; PIr. = Proto-Indo-Iranian; Ved. = Vedic.

grade *-jó-* derivative **nēset-jó-* ‘pertaining to the (entity or act of) returning (safely home), arriving (at the desired goal)’. The etymological connection between *Njǫrðr* and *Nāsatya-* is supported by phraseological and mythological correspondences (some already noticed by Dumézil) between the characterizations of *Njǫrðr*, the *Aśvins*, and other related IE characters (the Greek *Dioskouroi* and the Latvian “Sons of Dievs”), allowing for the reconstruction of an inherited mythological figure associated with—among other things—the idea of ‘returning safely home’ and/or ‘arriving at the desired goal’.

1 Introduction

1.1 Old Norse (ON) *Njǫrðr* and Latin(ized Germanic) *Nerthus**

ON *Njǫrðr* is the name of a god who “rules over the motion of wind and calms sea and fire,” making him the Norse deity to whom “one must pray for voyages and fishing” (*Gylfaginning* 23). *Njǫrðr* is also called *vagna guð* “god of chariots” and said to live in *Nóatún* ‘Ships-Enclosure’ (*Skáldskaparmál* 6). He is the husband of the goddess *Skaði* (*Skáldskaparmál* G56; *Ynglingasaga* 8) and/or of his unnamed sister (ibid. 4), with whom he conceived his children (*Lokasenna* 36), the god *Freyr* and the goddess *Freyja* (*Gylfaginning* 24). *Njǫrðr* rules over the wealth of men both at sea and on land, sharing the latter sphere of influence with his son *Freyr* (*Gylfaginning* 23–4).

The ON nominative *Njǫrð-r* has long been analyzed (cf., e.g., de Vries 1962, s.v.) as the regular reflex of a Proto-Germanic (PGmc.) preform **nerþu-z* that may also underlie the (allegedly) Germanic feminine theonym *Nerthu-s** ‘Mother Earth’ that is supposedly attested by the Roman historian Tacitus (*Germania* 40). Apart from the impossibility of verifying the historical accuracy of Tacitus’s account (who almost never mentions Germanic deities by their indigenous names), this equation rests on a single textual variant, the acc. sg. *Nerthum* (*id est Terram Matrem*), and has a number of both formal and semantic issues.

On the formal side, two remarks are in order. First, several further variants are actually attested in the manuscripts: *necthum*, *neithum*, *herthum*, *Netherthum*, *Verthum*. As noted by Motz (1992:3), “the variant *nertum* was chosen by Grimm because it corresponds to *Njǫrðr*”; this means that “there is circular reasoning in the argument for *Nerthus* = *Njǫrðr*,” as stated by Simek (2014:57).¹ Other options

1 My translation of the original “womit also in der Beweisführung für *Nerthus** = *Njǫrðr* ein Zirkelschluss vorliegt.”

are possible as well: for instance, the variant *herthum* is actually preferred by Lund (1998:191 n.14), who emends it to “*Hertham = Ertham*,” matching PGmc. **erþō-* ‘earth’ and thus paralleling Tacitus’s gloss *id est Terram Matrem* “that is Earth, the Mother.”

Second, even if *Nerthus** reflects the same PGmc. formation **nerþ-u-* that supposedly underlies ON *Njǫrðr*, the unclear gender shift (on which cf., e.g., Kock 1896), together with the almost complete absence of correspondences between these two figures (see below), would rather point to two independent deities who share the same substantive or adjective as epithet (cf. Hultgård 2010). This rather likely possibility was, e.g., proposed by Janda and Kamp (2002–3:52), who advanced an etymology of *Njǫrðr* and *Nerthus** as two independent reflexes of the same PIE formation **nért-u-/nrt-éu-* ‘dancer’ that is also attested by the Vedic masculine *nrtú-* ‘id.’, mostly occurring (6× out of 8) as an epithet of the warrior-god Indra (e.g., RV 8.24.9), and by the feminine *nrtú-* ‘female dancer’, only attested 1× in a simile about the dawn-goddess Uṣas (RV 1.92.4); in Janda and Kamp’s view, Indra and Uṣas would thus serve as Indic counterparts to *Njǫrðr* and *Nerthus*, respectively. This mythological parallel, however, finds little support in the texts, and neither *Njǫrðr* nor *Nerthus** is ever characterized as a ‘dancer’ (see Janda and Kamp 2002–3 for attempts to explain this lack of association).²

On the semantic side, the formal equation between *Njǫrðr* and *Nerthus** finds no textual or cultural support in ON sources, if one excludes quite generic connections. This fact has long been noted in several standard works authored by specialists of early Germanic and Scandinavian religion—e.g., Motz (1992); Hultgård (2010); Simek (2014:56–7). For instance, while *Nerthum* is glossed by Tacitus as *Terram Matrem*, in the myth of *Njǫrðr*’s marriage with the mountain-dwelling goddess Skaði (*Gylfaginning* 23), the male god rather “wants to be near the sea” and is actually said to literally “hate mountains,” a sentiment that is unlikely to belong to an earth-god. As noted by Battaglia (2001:7), “all in all, forms and functions of

2 It may be noted that Vedic *nrtú-* ‘dancer’ is also used 1× (RV 6.63.5) to refer to the *Aśvins*, who in this contribution are argued to be the most likely Indic counterparts to *Njǫrðr*. It might thus be tempting to slightly revise Janda and Kamp’s (2002–3) etymological proposal by reconstructing **nért-u-/nrt-éu-* ‘dancer’ as a traditional epithet of the inherited mythological character that underlies both *Njǫrðr* and the *Aśvins*. Given that *Njǫrðr* is never associated with the act of dancing in Norse texts and that the *Aśvins* are only referred to as such once (Indra being the *nrtú-* ‘dancer’ par excellence in the RV), a different proposal is advanced here, which has the advantage of being supported by *Njǫrðr*’s and the *Aśvins*’s semantic associations in the Norse and Indic traditions, respectively.

Njǫrðr and *Nerþuz rest on different levels, which cannot be satisfactorily clarified only by means of the linguistic likeness.”

The connection between Njǫrðr and Nerthus* is thus a so-called “pseudo-equation” (German *Scheingleichung*): an equation between two linguistic elements that involves exclusively formal/superficial resemblance and does not find enough support in their grammatical functions or lexical meanings.

Once one rejects the circular reasoning behind the pseudo-equation Njǫrðr = Nerthus*, different analyses may be taken into consideration. A much more promising functional parallel (on whose details see below, §4) was first proposed by Dumézil, who claimed that the Norse god Njǫrðr and his son Freyr are functionally equivalent to the Indic Ásvins, also known as *Násatya*-.

1.2 Vedic Sanskrit *Násatya*-

Vedic Sanskrit *Násatya*- (RV +; almost always in the dual) is a byname of the Indic “Divine Horse Twins,” the Ásvins. It is of clear Indo-Iranian date: it has cognates in the Mitanni Aryan theonym ^{DINGIR.MEŠ}*Na-ša-at-ti-ya-an-na* and in the Avestan name of a demon *Nāŋhaišiiia*-. All these formations have been traced back to Proto-Indo-Iranian (PIIr.) **násatya*- ‘the one pertaining to the (safe) return (home)’, a *vṛddhi* derivative of **nas-atí*- ‘(safe) return (home)’ (*EWAia*, s.v. *násatya*-), a formation of the type of *vas-atí*- ‘dwelling’ (*vas*- ‘to dwell’). The reconstruction of this supposedly PIIr. formation **nas-atí*- has been accepted and further developed by, among others, Pinault (2014:272–3), who analyzed **nas-at-í*- as an *-i*- derivative based on a verbal adjective in *-(e/o)nt-*. This analysis is certainly possible,³ but has no etymological parallels in any other IE language (neither derivational basis nor derivative is attested elsewhere). Alternative accounts have been advanced as well (cf., e.g., Szemerényi 1987:4.1923–33; Frame 2009:89–93). Some of these etymological analyses are more plausible than others, but all of them lack any comparative support from linguistic material occurring within other IE traditions.

Whatever the details of its formal analysis, most scholars agree in tracing Vedic *Násatya*- and its cognates back to the PIE root **nes-* ‘return safely home’ (“unbeschadet heimkehren” in *LIV*²:454–5), whose primary meaning, as argued by García Ramón (2004:46), is likely to have originally been ‘arrive at one’s desired goal’ (“zum gewünschten Ziel hinkommen”); for different—but more or less similar—semantic analyses, cf., e.g., Malzahn 2007 and Pinault 2015.

3 Two possible parallels for this formation type are discussed in Pinault 2014.

The epithet **násatja-* has been interpreted by Gotō (2009) as referring to a reconstructed myth in which the Sun was rescued by the Ásvins as personifications of the Morning and Evening Stars, an identification that had been proposed by various scholars for a long time (cf. the literature in West 2007:234 n.130), but never gained wider acceptance because of a number of issues (cf. Zeller 1990:97–8; Oberlies 1993:172 n.6 and *passim*). Several scholars (e.g., Güntert 1923:258–9; Zeller 1990:5–6; Oberlies 1993:182–3; Malzahn 2007:238 n.4) prefer instead to link the epithet **násatja-*, interpreted as ‘the one pertaining to the (safe) return (home)’, to the well-known role of the Ásvins as generic “savior gods” who rescue a number of Rigvedic characters, making them “return safely home” from the dangers of—among other things—the sea and burning heat, often by literally carrying them away on their own chariot or ship: as shown below (§4), these and many other elements find clear correspondences in the mythological characterization of the Norse god Njǫrðr.

1.3 Aim and structure of the study

The aim of this paper is thus to argue for a new formal analysis and semantic interpretation of ON *Njǫrðr* (§2) and Vedic *Násatya-* (§3) as two (morphologically distinct) reflexes of the same PIE formation **nes-ét-/ét-* ‘returning (safely home), arriving (at the desired goal)’. In Section 4 this etymological equation will be shown to find support in a series of phraseological and mythological parallels between these characters and other related IE mythological figures. In Section 5 the semantic interpretation of ON *Njǫrðr* and Vedic *Násatya-* will be discussed in the light of this data. Lastly, the results of the study will be summarized in Section 6.

2 ON *Njǫrðr* as a reflex of PIE **nes-ét-/ét-* ‘(entity or act of) returning (safely home), arriving (at the desired goal)’

The starting point of our formal analysis is the ON acc. *Njǫrð*, which may be the regular reflex (with *u*-umlaut followed by loss of final *-u*) of **nerðu*, the expected syncopated outcome of a Proto-North-Germanic acc. **nerīðu*. The syncope of internal *-ī-* in an open syllable would have regularly taken place before the effect of *i*-umlaut (as per Stausland Johnsen 2012), leaving the first vowel of **ner-* unaffected. As for *r*-umlaut, ON *er* from **er* is never affected by it (Noreen 1923:66–7); i.e., **ner-* would have been the regular outcome of PGmc. **nez-*.

The PNGmc. acc. **ner-īð-u* may in turn be the regular reflex of the PGmc. acc. **nez-ēþ-un* and thus the expected outcome of **nes-ēt-ŋ*, the accusative singular of a PIE formation **nes-ēt-/-ét-* ‘(entity or act of) returning (safely home), arriving (at the desired goal)’. For the “lengthened grade” of the suffix,⁴ cf., e.g., Hom. acc. sg. ἀργ-ῆτ-α ‘bright’ (*Il.* 8.133) vs. ἀργ-έτ-α (*Il.* 21.127).⁵

PIE **nes-ēt-/-ét-* may be further analyzed as an *-ēt-* substantivization of (an unfortunately unattested) **nes-ó-* ‘that returns (safely home), that arrives (at the desired goal)’, a *CeC-ó-* agentive derivative (Nussbaum 2017:243–50 and passim) of the root **nes-*. An *-ēt-* substantivization of this type could have either endocentric semantics ‘entity that returns (safely home), arrives (at the desired goal)’ or abstract meaning ‘act of returning (safely home), arriving (at the desired goal)’. For the endocentric type (Nussbaum 2016:289), usually masculine, cf. Lat. m. *stīpes* ‘stick, stake’ (**steip-ēt-/-ét-* ‘entity that is stiff’) vs. PGmc. **steifa-* ‘stiff’ (**steip-o-* ‘id.’). For the abstract type (Nussbaum 2017:261), usually feminine, cf. Ved. f. *pravát-* ‘way forward’ (**prou-ét-* ‘act of going forth’) vs. ON *frár* ‘fast’ (**prouo-* ‘going forth’). Given that ON *Njǫrðr* is a masculine, it is probably best traced back to an endocentric type meaning ‘entity that returns (safely home), entity that arrives (at the desired goal)’.

At some point within the history of Germanic, the acc. **nezēþ-un* of the consonant stem **nezēþ-* was reanalyzed as **nezēþ-u-n*, i.e., as the accusative of a *-u-* stem **nezēþ-u-*, triggering a remodeling of the whole paradigm and explaining the *-u-* stem inflection of ON *Njǫrðr*. As is well known, this type of reanalysis is well attested in Germanic (see Thöny 2013:passim): cf., e.g., Goth. *fōt-u-s* ‘foot’ and *tunþ-u-s** ‘tooth’, which developed from PGmc **fōt-* (acc. sg. **fōt-un*) and PGmc. **tunþ-* (acc. sg. **tunþ-un*), respectively (Thöny 2013:128–32); ON *ǫrn* ‘eagle’ (**arn-u-*) and ON *bjǫrn* ‘bear’ (**bern-u-*) developing from PGmc **ar-n-* (acc. sg. **ar-n-un*) and **ber-n-* (acc. pl. **bern-unz*), respectively (Thöny 2013:197–206).

-
- 4 In Nussbaum’s (2017:260–1) analysis, which is followed here (see below), the (surface) **-ēt-* form of the suffix is not, strictly speaking, a “lengthened grade,” but rather the result of a contraction of the thematic vowel of the derivational base with the vowel of an originally ablauting **-Et-/-t-* (probably **-ot-/-t-*) suffix (thus **h₂erǵe-Et-* > ἀργ-ῆτ-, vs. **h₂erǵe-t-* > ἀργε-τ-).
- 5 This reconstruction makes it even more likely that *i*-umlaut would not have taken place, because unstressed *-ē-* syncopates relatively early in North Germanic (Patrick Stiles, p.c.), before the change of unstressed *-ē-* to *-ī-*. The form **nerðu* may thus have already existed in Proto-North-Germanic.

3 Vedic *Nāsatya-* as reflex of PIE **nes-ét-/ét-* ‘(entity or act of) returning (safely home), arriving (at the desired goal)’

The PIE noun **nes-ét-/ét-* ‘(entity or act of) returning (safely home), arriving (at the desired goal)’ reconstructed so far may also underlie the PIIr. formation **nāsat̥iā-* attested by the Vedic name of the Aśvins *Nāsatya-*.

More precisely, PIIr. **nāsat̥iā-* may ultimately reflect a substantivization of **nēset-ǵó-* ‘pertaining to the (entity or act of) returning (safely home), arriving (at the desired goal)’, a derivative of PIE **nes-ét-/ét-* displaying both vṛddhi lengthening and *-ǵó-* suffix. For the same cumulation of these two derivational processes cf., e.g., Ved. *pālit-ya-* ‘greyness (of age), hoariness’ (AVŚ) from Ved. *palitá-* ‘grey, hoary, old, aged’ (RV).⁶

A well-known IE parallel for this formation type is ON *Ægir* ‘personification of the sea’, the substantivized outcome of PGmc. **ēg-ija-* and PIE **h₂ék^m-ǵó-* ‘pertaining to water’, a derivative of **h₂ék^m-eh₂-* ‘water’ (PGmc. **ahw-ō-* ‘water, river’, Lat. *aqua* ‘water’; Darms 1978:25–33) displaying both vṛddhi lengthening and *-ǵó-* suffix. The origin of this type may lie in semantically redundant derivational chains, which, as is well known, are not an uncommon phenomenon: cf., e.g., the PIE vṛddhi formation **deǵu-ó-* ‘heavenly, divine (adjective); divine being (substantive)’ developing into Ved. *dev-á-* ‘id.’ (RV), the basis of a *-ǵó-* derivative **dev-yá-* ‘divine’, substantivized as Ved. *dev-yá-* ‘divine force, the divine’, from which a further Ved. vṛddhi formation *daivya-a-* also meaning ‘divine (adjective)’ was derived (EWAia:I.742) and later even substantivized with the meaning ‘divine force’ again (AVŚ 4.27.6).

4 Phraseological and mythological parallels

As anticipated above, the hypothesis of a common origin for ON *Njǫrðr* and Ved. *Nāsatya-* is strongly supported by a series of phraseological and mythological parallels between the Norse god *Njǫrðr* and the Indic Aśvins. Given that the latter are well-known reflexes of the IE mythological figure of the “Divine Horse Twins” (cf., e.g., West 2007:186–91), together with the Ancient Greek *Diós-kouroi* ‘Zeus’s Boys’ *Kastor* and *Polydeukes* and the Latvian (unnamed) “Sons of Dievs,” further parallels may also be noted between *Njǫrðr* and these Greek and Latvian characters.

Without delving further into the problematic (and, to this study, irrelevant) issue of “Indo-European tripartite ideology,” it must be stressed that functional correspondences between all these characters were already noted by Dumézil (e.g.,

6 I owe this Vedic parallel to a very useful discussion with Andrea Lorenzo Covini.

1941:155–69),⁷ who grouped them all together as gods of his so-called “third function,” i.e., “wealth and fertility.”

These and further correspondences discussed below (§§4.1–7) allow for the reconstruction of a shared linguistic and cultural heritage underlying the characterization of these IE mythological figures associated with, among other things: the number two (§4.1); wealth and nourishment (§4.2); travel with chariots and ships (§4.3); the rescue of characters struggling at sea or in burning heat (§4.4); a peculiar wedding of the *svayamvara* ‘self-choice’ type (§4.5); a late admission among the gods as sacrificial priests (§4.6); and an alternating residence to which they return at some point (§4.7).

4.1 *The number: from two to one (or more)*

As already noted by Dumézil (e.g., 1986:87–9; cf. also Ward 1968:36–7), Njǫrðr clearly forms a fixed traditional duo with his son Freyr, as shown in example (1) (see also below, §4.6). The god also has an unnamed sister-wife (*Ynglingasaga* 4), with whom he conceived his two children Freyr and Freyja (*Lokasenna* 36). Norse mythological texts thus seem to attest Njǫrðr’s association with a divine duo, which may have originally consisted of two siblings, rather than a father and a son.

If this were the case, the development from the dual figure of the Indo-European “Divine Twins” to the single Norse character Njǫrðr would actually be a trivial one. Parallels for this shift in number may be found not only in Vedic itself, where *Nāsatya-* occurs in the singular once (2), but also in Avestan, where *Nāŋhaiθiia-* is the name of a single *daēuua-* ‘demon’ (3), and in Latvian, where the Sons of Dievs can be two (4), but also one (5), and even four (6) or more (as noted, e.g., in West 2007:189).⁸

- (1) The Vanir put forward their noblest men, **Njǫrðr the Wealthy and his son Freyr** [...]. **Njǫrðr and Freyr** Óðinn appointed as sacrificial priests. (*Ynglingasaga* 4)
- (2) (What will you say, Agni,) **to the earth-circling Nāsatya** (dat. sg. *nāsatiyāya*)? (RV 4.3.6c)⁹

7 Cf. also Dumézil 1973a:17–8, 77–8; 1973b:33; 1986:87–9.

8 For reasons of space, it is necessary to operate primarily with translations in this article, though sometimes quoting single (particularly relevant) words and phrases in the original languages.

9 I follow here the standard interpretation of *nāsatiyāya* as the dat. sg. of the proper name *Nāsatya-* of the Divine Twins in Indic. Stephanie Jamison rather prefers to adopt “Henry’s old suggestion that the form is a *vṛddhi* adj. of appurtenance whose *vṛddhi* is invisible because the base already

- (3) I fight off Indra, I fight off Sauruuu, I fight off **the demon NāṅhaiṢiia** (acc. sg. *nāṅhaiṢīm daēum*). (*Vīdēvdāt* 10.9)
- (4) **Dievs has two Sons**, suitors of the daughter of Saule. (LD 33766.1–2)
- (5) They were the horses of **the Son of Dievs** (gen. sg. *Dieva dēla*), the suitor of the Daughter of the Sun. (LD 33769.3–4)
- (6) **Dievs has four Sons**. (LD 33734.2.1)

4.2 Wealth and nourishment

As first noticed by Dumézil, both Njǫrðr and the Aśvins are associated with wealth and nourishment (Dumézil’s “third function”). According to Old Norse texts (7), human beings who seek to acquire riches and food both at sea and on land must pray to Njǫrðr; correspondingly, the Aśvins grant wealth and nourishment both from the sea and from heaven to those who pray to them (8).

- (7) **It is to him (Njǫrðr) one must pray for voyages and fishing**. He is so **rich and wealthy that he can grant wealth of lands or possessions to those that pray to him for this**. (*Gylfaginning* 23)
- (8) Wondrous Aśvins, **convey nourishments** to the very generous one, **bringing goods** on your chariot. **Whether from the sea or from heaven, grant much-desired wealth to us**.¹⁰ (RV 1.47.6)

has initial-syllable vṛddhi” (Jamison 2021, ad loc.) and correspondingly translates *pārijmane nāsatiyāya* as “the earth-circling (chariot) of the Nāsatyas” (Jamison and Brereton 2014, ad loc.). As noted by Jamison herself, this analysis requires a (possibly only redactional) shift of the accent from its expected position in the final syllable (**nāsatyá-*) to the initial syllable, perhaps by influence of the initially accented proper name *Nāsatyā-*. If Jamison’s interpretation is correct, the development from two Divine Twins to a single character would then not be attested in Vedic, but it would still have parallels in Avestan and Latvian.

- 10 The “wealth from heaven” that the Aśvins are supposed to grant may not seem to be equivalent to Njǫrðr’s “wealth of lands”: if one assumes, however, that the poet of the hymn is referring here to the “implicit representation of the Aśvins as bringers of rain” (Jamison and Brereton 2014:334, ad RV 1.157; cf. also RV 8.5), the wealth that the Aśvins grant “from heaven”—i.e., rain—would ultimately be linked to wealth on land as well, as rain’s function is to be “fertilizing for all [land-based] beings, both animals and plants” (Jamison and Brereton 2014:ibid.).

4.3 *Travel with ^achariots and ^bships*

Njǫrðr is closely associated with both ^achariots and ^bships: one of his traditional epithets is ^a*vagna guð* “god of chariots” (9) and he is said to live in a place called ^b*Nóatún* ‘Ships-Enclosure’ (10).

The parallel between these traits of Njǫrðr and some well-known features of the other IE characters seems to have gone unnoticed. The Indic Ásvins are known to travel both ^aon a chariot (11) and ^bon a ship (12). The Greek Dioskouroi were believed to ^a“go on swift horses” over both earth and ^bsea (13)—thus not on ships (but they were both crew members on a famous ship, the *Argo*).¹¹ Lastly, the Latvian “Sons of Dievs” are believed to both ^apossess “brown horses” (14) and ^b“row a boat” (15).

- (9) **How shall Njǫrðr be referred to?** By calling him **god of chariots** (*vagna guð*) or descendant of Vanir or [...]. (*Skáldskaparmál* 6)
- (10) **He (Njǫrðr) lives in heaven in a place called Ships-Enclosure** (*Nóa-tún*). (*Gylfaginning* 23)
- (11) **You (Ásvins) carried him out with your chariot, swift as mind, with its good team, o bulls, to keep him well.** (RV 1.117.15cd)
- (12) When, Ásvins, **you carried Bhujyu home after he mounted your ship of a hundred oars.** (RV 1.116.5)
- (13) Kastor and Polydeukes, who **go on swift horses** over the broad earth and all the sea. (Alc. 34.3–6)
- (14) **Two brown horses** ate oat on a rock. **They were the horses of the Son of Dievs.** (LD 33769.1–3)
- (15) **Row your boat,** sons of Dievs. (LD 33969.3)

4.4 *Invoked with ^aprayers to ^bregulate the winds and grant safety ^cfrom the dangers of the sea and ^dfrom burning heat*

The Norse tradition (16) attests to the fact that ^aprayers to Njǫrðr were recited by seafarers ^bto regulate the winds and ^cmake the sea calm, but also that he was not just a god of the sea, but rather one associated with protection from various dangers both at sea and on land, including ^dfire/heat.

11 Possible further Greek parallels for the ships of the Vedic Divine Twins have been proposed by Jackson (2006:95–109).

This detail has remarkable correspondences in some securely reconstructed features of the IE Divine Twins. The Indic tradition attests many ^aprayers to the Ásvins in which they are said to have rescued various characters from the dangers of, among other things, ^cthe sea (17) and ^dunspecified burning heat (see, e.g., (18) and RV 1.112.7). The Greek Dioskouroi were famous for being ^ainvoked by seafarers precisely to make ^bwind-storms cease and ^ccalm the sea (see, e.g., (19) and Alc. 34.7–12). Lastly, a partial match also occurs in Latvian poetry, where the Sons of Dievs are ^ainvoked and asked to rescue the Daughter of the Sun from drowning ^cin the sea ((20), on which see also Nikolaev 2012:571–2 and *passim*).

Given that the IE language family probably spread from the Pontic Steppe, the northern Black Sea or the Sea of Azov was most likely the “sea the worshippers of these prehistoric divinities [the Divine Twins] went down to in **nāwes* and sailed on and foundered in” (West 2007:191). As to the Norse-Indic parallel ^dof the rescue from fire or burning heat, it may correspondingly reflect other dangerous situations experienced by the earliest speakers of IE, not while traveling at sea, but through the steppe (see §6).

- (16) **He (Njǫrðr) rules over the motion of wind and moderates sea and fire.** It is to him one must pray **for voyages and fishing.** (*Gylfaginning* 23)
- (17) **Tugra left Bhujyu behind in a cloud of water, Ásvins,** as one who has died (leaves behind) his wealth. **You carried him** with your breathing ships [= winged steeds] that bob in the midspace **far from water.** (RV 1.116.3)¹²
- (18) **With snow you two (Ásvins) kept away fire and scorching heat.** You placed the nourishment of solid food for him. **You brought Atri up to well-being, o Ásvins, who had been brought down into the earth cleft** together with his whole band. (RV 1.116.8)¹³
- (19) **[The Dioskouroi, whom Leda] bore to be saviors of mankind on earth and of swift faring ships,** when winter tempests race over the implacable sea, and the **men from their ships invoke the Sons of great Zeus in prayer,** with [sacrifice of] white lambs, going onto the stern deck, and the **strong wind and sea swell overwhelm the ship:** suddenly they appear, speeding through the air on tawny wings, **and at once they make the fierce squalls cease, and lay the waves amid the flats of a clear sea—fair portents, and release from travail;**

12 For a possible—and irrelevant here—cosmological interpretation of Bhujyu’s episode, see, e.g., Gotō 2009.

13 On the episode of Atri’s rescue by the Ásvins, see further Jamison 1991:228–42.

the sailors rejoice at the sight, and their misery and stress are ended.
(*h.Hom. 33 to the Dioskouroi*)

- (20) The **Daughter of the Sun** was wading in the sea, [and now] only her crown was visible; row your boat, **Sons of Dievs, rescue the soul of the Sun.** (LD 33969; tr. adapted from Nikolaev 2012:571–2)

4.5 Peculiar ^a*svayamvara* wedding (“choose her own husband”) involving ^b*a* blind selection, ^c*Divine Twins*, and ^d*a* specific suitor

As already noted by Dumézil (1973b:33), the Norse episode of Njǫrðr’s wedding with the goddess Skaði (see (21) below), which is preceded by a ceremony in which the goddess is asked to ^a*kjósa sér mann* “choose herself a husband,” clearly resembles the Indic tradition of the *svayamvara* ‘self-choice’ wedding. Within the Norse myth, however, this procedure appears to be a peculiarly ^bblind one: Skaði must select her man exclusively “by the feet,” and thus wrongly thinks that she has chosen not ^cNjǫrðr, with whom she ends up, but rather ^dthe god Baldr, who must correspondingly have been one of her suitors.

Both Dumézil (*ibid.*) and de Vries (1957:176) observed that this Norse episode has very close parallels in a passage of the Indic epic *Mahābhārata* (22), where the princess Sukanyā has to ^a*svakam patim vṛ-* “choose her own husband” among three characters who look exactly the same—making this ^ba “blind” selection too.¹⁴ The phraseology employed matches the Norse one and reflects the Vedic *svayamvara* formula *sváyam patim vṛ-* “choose as husband for herself,” whose traditional and ritual character has been convincingly demonstrated by Jamison (2001). It may thus be noted that the three suitors of this Indic *svayamvara* match the Norse ones: ^cthe two Aśvins function as Indic counterparts to the Norse god Njǫrðr, as proposed here; ^dthe seer Cyavana may be analyzed as an Indic counterpart to the Norse god Baldr, as I have argued elsewhere (Ginevra 2020). In contrast with the Norse narrative, where Skaði thinks she selects Baldr and actually ends up with Njǫrðr, the Indic princess successfully chooses Cyavana and does not end up with the Aśvins instead. In other variants of the same *svayamvara* mythological theme, however, the Aśvins may have been luckier: Jamison (*ibid.*) has argued for a mythological connection of the *svayamvara* formula to the Aśvins’s role as suitors of the Sun-Maiden Sūryā in Vedic poetry, where one can read that Sūryā actually *āvṛṇīta yuvām pātī* “chose you two (Aśvins) as husbands” (see (23)).

14 Already attested, with some differences, in *Jaiminīya Brāhmaṇa* 3.125.

Jamison (*ibid.*) also draws attention to thematic and phraseological parallels in the wedding of Helen, an ancient Greek Sun-Maiden (cf. West 2007:230–2). Helen’s wedding also resembles ^aa *svayamvara* procedure: her father allowed her to ἐλέσθαι μνηστήρων ἓνα “to choose one of the suitors” (see (24)). In some respects, however, Helen’s selection is ^ba blind one too, given that it is Agamemnon who woos Helen on behalf of his brother Menelaus, with whom she ends up being married (see (25)). The ^cDioskouroi are Helen’s brothers and may thus not be her suitors, but “they are replaced in that role by another pair of brothers, [...] Agamemnon and Menelaus” (West 2007:232).

Lastly, the Latvian Sons of Dievs are not explicitly involved in any ^a*svayamvara*, but they are repeatedly mentioned as suitors of a Sun-Maiden too, the Daughter of the Sun ((26); see also (5) above).

- (21) She (Skaði) was to **choose herself a husband** (*kjósa sér mann*) out of the Æsir and choose **by the feet** and see nothing else of them. Then she saw one person’s feet that were exceptionally beautiful and said: “**I choose that one** (*benna kýs ek*); there can be little that is ugly about **Baldr**.” But it was **Njörðr of Noatun**. (*Skáldskaparmál* G56)
- (22) A little while later **they (Cyavana and the Aśvins)** all climbed out of the lake, all young and divinely beautiful, with shining earrings, wearing the same outward appearance. And increasing the love of her heart, they all said to her, “Beautiful young woman, **choose** (*vr-*) one of us **for marriage** (*patitva-*), whomever you desire.” When she saw them all stand there looking the same, the princess decided with heart and mind, and **chose** (*vr-*) **her very own husband** (*pati-*). (*Mahābhārata* 3.123.17–9)
- (23) Having come **to marriage** (*patitvá-*) to you for a partnership with you, the noble young girl (Sūryā) **chose** (*vr-*) **you two (Aśvins) as her husbands** (*pāti-*). (RV 1.119.5cd)
- (24) He (Tyndareus) allowed his daughter (Helen) to **choose one of the suitors** (ἐλέσθαι μνηστήρων ἓνα), him to whom the sweet breezes of Aphrodite were carrying her. **She chose Menelaus** (ἦ δ’ εἴλεθ’ [...] Μενέλαον), and how I wish she had never chosen him! (E. *IA* 68–71)
- (25) **Agamemnon**, being her wedded kin, **wooed her (Helen) for his brother Menelaus**. (Hes. fr. 197)
- (26) **Dievs** has two sons, **suitors of the daughter of the Sun**. (LD 33766.1–2)

4.6 ^aLate admission among the gods as ^bdual “sacrificial priests,” together with
^ca peculiar head linked to ritual/magic

According to Norse mythology ((27); see also (9) above), Njǫrðr “is not of the race of the Æsir,” i.e., of the divine tribe to which most gods belong. Originally members of the so-called *Vanir*, Njǫrðr and his son Freyr ^awere admitted among the other gods only after a peace treaty between the two divine tribes. Within that same episode, they were also appointed as ^b*blót-goða* ‘sacrificial priests’ by the king of the gods, Óðinn, and the latter received ^cthe magic head of Mímir (28).

These elements have close matches in a passage of the Indic myth of Cyavana (29): the Aśvins were originally ^a“incomplete and imperfect” because they did not drink *sóma*- with the other gods, who regarded them as too close to human beings and would not admit the Aśvins among themselves. With Cyavana’s help, the Aśvins were later admitted as ^b*adhvaryú* ‘sacrificial priests’ among the gods, who asked in exchange that the Aśvins bring with them ^cthe “head of the sacrifice” (30).

Lastly, Frame (2009:81–4) argues that the late admission of the Aśvins among the gods has a parallel in Greek mythology too: the Dioskouroi were originally ^aborn mortal and only joined the gods after death ((31); see also Paus. 8.2.4).

- (27) **Njǫrðr is not of the race of the Æsir.** He was brought up in the land of the Vanir, but the Vanir gave him as hostage to the gods. (*Gylfaginning* 23)
- (28) They (Æsir and Vanir) arranged a meeting of reconciliation between them and made peace and gave each other hostages. **The Vanir put forward their noblest men, Njǫrðr the Wealthy and his son Freyr** [...]. Then they (i.e., the Vanir) took Mímir and beheaded him and **sent his head to the Æsir. Óðinn took the head** and smeared it with herbs that prevented it from decaying, and **recited spells over it and imbued it with magic power** so that it spoke to him and told him many secret things. **Njǫrðr and Freyr Óðinn appointed as sacrificial priests** (*blótgoða*). (*Ynglingasaga* 4)
- (29) The seer (Cyavana) himself answered to them (the Aśvins): “In Kurukṣetra yonder the gods perform a sacrifice and exclude you two from it: in that respect you are **incomplete**, in that respect **imperfect!**” And the Aśvins departed forthwith, and came to the gods, as they were performing a sacrifice, after the chanting of the *Bahiṣpavamāna*. They said: “Invite us thereto!” **The gods said: “We will not invite you: you have wandered and mixed much among men, performing cures.”** (*Śatapatha Brāhmaṇa* 4.1.5.13–4)
- (30) They (the Aśvins) said: “But surely you worship with a headless sacrifice!” “How with a headless (sacrifice)?” “Nay, invite us, and we will tell you!” “So be it!” So they (the gods) invited them (the Aśvins). They drew this Āśvina cup

for them; **and those two (Aśvins) became the priests of the sacrifice (adhvaryú), and restored the head of the sacrifice.** (*Śatapatha Brāhmaṇa* 4.1.5.15)

- (31) **Polydeuces he (Zeus) carried up to heaven.** Nevertheless, as **Polydeuces** refused to accept immortality while his brother Castor was dead, **Zeus permitted them both to be every other day among the gods and among mortals.** (Apol-lod. 3.11)

4.7 ^aAlternating residence between two places and ^breturning homes

Njǫrðr and his wife Skaði had an agreement that they were supposed to ^aalternate their residence between his home by the sea and her home in the mountains, but when Njǫrðr ^breturned home by the sea, he did not want to go back (see (32)). On a larger timespan, at the End of Time, Njǫrðr shall also ^b“return home among the wise Vanir,” his original tribe (see (33)).

These details have parallels in the Greek tradition, where, once divinized, the Dioskouroi ^ahave alternating residences as well: they spend one day under the Earth (in a shared tomb) and the next in heaven with the other gods, both residences being described as ^b“homes” in Pindar (see (34) and (35)).

- (32) (Njǫrðr and Skaði) **agreed on this, that they should stay nine nights in Brymheim and then alternate (aðrar) nines at Nóatún. But when Njǫrðr came back (kom aptr) to Nóatún from the mountain** he said this: “I hate mountains—not long was I there, just nine nights: wolves’ howling I thought ugly compared with the swans’ song.” (*Gylfaginning* 23)
- (33) At the doom of men **he will come back home (aptr koma heim) among the wise Vanir.** (*Vafþrúðnismál* 39.4–6)
- (34) [...] and mighty Castor, and you, lord Polydeuces, sons of the gods, **you who spend one day in your homes (ἔδραισι) at Therapna, and on the next dwell in Olympus.** (Pi. P. 11.61–4)
- (35) **Changing in succession (μεταμειβόμενοι δ’ ἐναλλάξ), they spend one day with their dear father Zeus, the other deep under the earth in the hollows of Therapna [...]** (Zeus told Polydeukes:) “that destiny (i.e., immortality) is yours. But if you strive on behalf of your brother, and intend to share everything equally with him, **then you may live half the time beneath the earth and half in the golden homes (δόμοισιν) of heaven.**” (Pi. N. 10.54–7 + 85–8)

5 The semantics of ON *Njǫrðr* and Ved. *Násatya-*

In Sections 2 and 3, respectively, ON *Njǫrðr* has been traced back to a PIE masculine noun **nes-ét-/ét-* meaning ‘entity that returns (safely home), arrives (at the desired goal)’ and Vedic *Násatya-* has been analyzed as the reflex of a substantivized derivative **nēset-ǰó-* ‘pertaining to the (entity or act of) returning (safely home), arriving (at the desired goal)’. These semantics find support in the linguistic and textual parallels between *Njǫrðr* and the *Aśvins* discussed in Section 4.

The meaning ‘entity that returns (safely home), that arrives (at the desired goal)’ of the PIE formation **nes-ét-* underlying ON *Njǫrðr* finds matches in the ON texts about this character. First, the generic ‘return, arrival’ semantics match the fact that this god is closely associated with mobility, safe travel, chariots, and ships (see above §4.3 and §4.4), as one would expect from a god whose name means ‘he who returns (safely home), arrives (at the desired goal)’. Second, a further parallel for this semantic interpretation lies in the fact that *Njǫrðr* was not born as one of the main gods, but actually “arrived” among them as a sacrificial priest coming from his original home among the *Vanir* (see above §4.6). Third, this meaning matches two mythological moments in which *Njǫrðr* “returns home” after having dwelled in another location (see above §4.7).

The meaning ‘pertaining to the (entity or act of) returning (safely home), arriving (at the desired goal)’ of the substantivized derivative **nēset-ǰó-* that underlies Vedic *Násatya-* finds support in Vedic texts as well. First, the generic ‘return, arrival’ semantics match the fact that the *Aśvins* are also closely associated with mobility, safe travel, chariots, and ships too (see above §4.3 and §4.4). Second, it matches the fact that the *Aśvins* were originally “incomplete and imperfect” beings who lived among the mortals as healers, and only later “arrived” among the gods as sacrificial priests (see above §4.6).

6 Conclusion: IE gods of safe and successful mobility

The results of the research presented in this contribution may be summarized as follows. The etymology of ON *Njǫrðr* as a reflex of the same PGmc. **Nerþuz* that is also thought to underlie the theonym *Nerthus* attested by Tacitus is a pseudo-equation (*Scheingleichung*) and must be rejected. ON *Njǫrðr* may rather be traced back to PGmc. **nezēþ-*, the expected reflex of the same PIE formation **nes-ét-/ét-* ‘(entity or act of) returning (safely home), arriving (at the desired goal)’ that may also ultimately underlie the Vedic name of the *Aśvins* *Násatya-*, the reflex of a substantivized derivative **nēset-ǰó-* ‘pertaining to the (entity or act of) returning (safely home), arriving (at the desired goal)’.

The etymological connection and semantic interpretations proposed here find support in the texts where these characters occur in their respective traditions. A series of remarkable correspondences between the phraseology and mythology associated with these Norse and Indic characters and with other reflexes of the IE “Divine Horse Twins” (the Greek Dioskouroi and the Latvian Sons of Dievs) allow for the reconstruction of inherited IE mythological figures linked to—among other things—travel with chariots and ships, the rescue of characters struggling at sea or in burning heat, and the idea of ‘returning safely home’ and/or ‘arriving at the desired goal’ evoked by PIE **nes-ēt-/-ét-*.

Reconstructing such **“Gods of Safe and Successful Mobility”* for early IE culture is in line with the “mobility turn” that has taken place in archaeology during the last decade: a series of impressive “archaeolinguistic” studies (combining Indo-European studies and Eurasian archaeology) have increasingly strengthened our reconstruction of the earliest speakers of PIE as prehistoric nomadic pastoralists who were able to—and probably needed to—travel long distances during their lifetimes (Anthony 2007; Kristiansen et al. 2017; Olsen, Olander, and Kristiansen 2019). ‘Returning home safely’ and ‘arriving at one’s desired goal’ must have been an essential part of the lifestyle of these early IE-speaking communities, for which they understandably sought the help of the mighty **nes-ēt-* gods.

References

- Anthony, David. 2007. *The Horse, the Wheel, and Language: How Bronze-Age Riders from the Eurasian Steppes Shaped the Modern World*. Princeton: Princeton University Press.
- Barons, Krišjānis. 1894–1915. *Latwju dainas*. 6 vols. Jelgava: Dravin-Dravnieks, 1894; St. Petersburg: Imperial Academy of Sciences, 1903–15.
- Battaglia, Marco. 2001. Nerthus as a Female Deity: The interpretatio romana and Tacitus’ Germania, XL Revisited. *Amsterdamer Beiträge zur älteren Germanistik* 55(1).1–14.
- Buitenen, Johannes A. B. van. 1975. *The Mahābhārata*. 2. *The Book of Assembly Hall*. 3. *The Book of the Forest*. Chicago: University of Chicago Press.
- Darms, Georges. 1978. *Schwäher und Schwäger, Hahn und Hühn: Die Vṛddhi-Ableitung im Germanischen*. Munich: Kitzinger.
- Dumézil, Georges. 1941. *Jupiter Mars Quirinus: Essai sur la conception indo-européenne de la société et sur les origines de Rome*. Paris: Gallimard.
- . 1973a. *The Gods of the Ancient Northmen*. Ed. and transl. Einar Haugen. Berkeley and Los Angeles: University of California Press.
- . 1973b. *From Myth to Fiction: The Saga of Hadingus*. Transl. Derek Coltman. Chicago: University of Chicago Press.
- . 1986. *Mythe et Épopée*⁵ I. Paris: Gallimard.

- Eggeling, Julius. 1885. *The Śatapathabrāhmaṇa: According to the Text of the Mādhyandina School II*. Oxford: Clarendon.
- EWAia = Manfred Mayrhofer. 1986–2001. *Etymologisches Wörterbuch des Altindoarischen*. Heidelberg: Winter.
- Faulkes, Anthony. 1987. *Edda. Snorri Sturluson. Translated from the Icelandic and Introduced*. London: Dent.
- Finlay, Alison, and Anthony Faulkes. 2011–5. *Snorri Sturluson. Heimskringla*. London: Viking Society for Northern Research.
- Frame, Douglas G. 2009. *Hippota Nestor*. Washington, DC: Center for Hellenic Studies.
- García Ramón, José Luis. 2004. Zum Paradigma von idg. *nes-: homerisch ἀνεύασατο, kausat. ἀπονάσσωσιν als Aoriste von (°)νέομαι und die Entstehung des Präs. ναίω. In Thomas Krisch, Thomas Lindner, and Ulrich Müller (eds.), *Analecta Homini Universali Dicata: Arbeiten zur Indogermanistik, Linguistik, Philologie, Politik, Musik und Dichtung. Festschrift für Oswald Panagl zum 65. Geburtstag I*, 33–47. Stuttgart: Heinz.
- Ginevra, Riccardo. 2020. Myths of Non-Functioning Fertility Deities in Hittite and Core Indo-European. In Matilde Serangeli and Thomas Olander (eds.), *Dispersals and Diversification: Linguistic and Archaeological Perspectives on the Early Stages of Indo-European*, 106–29. Leiden: Brill.
- Gotō, Toshifumi. 2009. *Ásvín- and Násatya- in the R̥gveda and Their Prehistoric Background*. In Toshiki Osada (ed.), *Linguistics, Archaeology and Human Past in South Asia*, 199–226. New Delhi: Manohar.
- Güntert, Hermann. 1923. *Der arische Weltkönig und Heiland: Bedeutungsgeschichtliche Untersuchungen zur indo-iranischen Religionsgeschichte und Altertumskunde*. Halle: Niemeyer.
- Hultgård, Anders. 2010. Njörðr. In Sebastian Brather, Wilhelm Heizmann, and Steffen Patzold (eds.), *Germanische Altertumskunde Online: Kulturgeschichte bis ins Frühmittelalter—Archäologie, Geschichte, Philologie*. Berlin: De Gruyter. https://www.degruyter.com/database/GAO/entry/RGA_3978/html (accessed 11 February 2021). Originally published 2002 in print.
- Jackson, Peter. 2006. *The Transformations of Helen: Indo-European Myth and the Roots of the Trojan Cycle*. Dettelbach: Röhl.
- Jamison, Stephanie W. 1991. *The Ravenous Hyenas and the Wounded Sun: Myth and Ritual in Ancient India*. Ithaca: Cornell University Press.
- . 2001. The Rigvedic Svayaṃvara? Formulaic Evidence. *Studia Orientalia* 94.303–16.
- . 2021. Commentary to Jamison-Brereton 2014. <http://rigvedacommentary.alc.ucla.edu/wp-content/uploads/2021/10/IV-10-4-21.pdf> (accessed 18 July 2022).
- Jamison, Stephanie W., and Joel P. Brereton. 2014. *The Rigveda: The Earliest Religious Poetry of India*. Oxford: Oxford University Press.
- Janda, Michael, and Andreas Kamp. 2002–3. Die germanischen Götter Nerthus und Njörðr im Rahmen der indogermanischen Religionsgeschichte. *Die Sprache* 43(1).33–54.

- Jonval, Michel. 1929. *Les chansons mythologiques lettonnes*. Paris: Picart.
- Kock, Axel. 1896. Die Göttin Nerthus und der Gott Niorþr. *Zeitschrift für deutsche Philologie* 28.289–94.
- Kristiansen, Kristian, and Thomas B. Larsson. 2005. *The Rise of Bronze Age Society: Travels, Transmissions and Transformations*. Cambridge: Cambridge University Press.
- Kristiansen, Kristian, Morten E. Allentoft, Karin M. Frei, Rune Iversen, Niels N. Johannsen, Guus Kroonen, Łukasz Pospieszny, T. Douglas Price, Simon Rasmussen, Karl-Göran Sjögren, Martin Sikora, and Eske Willerslev. 2017. Re-theorising Mobility and the Formation of Culture and Language among the Corded Ware Culture in Europe. *Antiquity* 91.356.334–47.
- Larrington, Carolyne. 2014. *The Poetic Edda*. Oxford: Oxford University Press.
- LIV² = Helmut Rix (ed.). 2001. *Lexikon der indogermanischen Verben*². Wiesbaden: Reichert.
- Lund, Allan A. 1998. Interpretatio Romana: Tacitus über die germanischen Kulte. *Témenos* 34.95–110.
- Malzahn, Melanie. 2007. Tocharian Desire. In Alan J. Nussbaum (ed.), *Verba Docenti: Studies in Historical and Indo-European Linguistics Presented to Jay H. Jasanoff*, 237–49. Ann Arbor: Beech Stave.
- Motz, Lotte. 1992. The Goddess Nerthus: A New Approach. *Amsterdamer Beiträge zur älteren Germanistik* 36.1–19.
- Nikolaev, Alexander. 2012. Avestan *Haēcat.aspa-*, *Rigveda* 4.43, and the Myth of the Divine Twins. *Journal of American Oriental Society* 132.567–75.
- Noreen, Adolf. 1923. *Altisländische und altnorwegische Grammatik*⁴. Halle: Niemeyer.
- Nussbaum, Alan J. 2016. Replacing *locus* ‘place’ in Latin *locuplēs*. In Dieter C. Gunkel, Joshua T. Katz, Brent Vine, and Michael Weiss (eds.), *Sahasram Ati Srajas: Indo-Iranian and Indo-European Studies in Honor of Stephanie W. Jamison*, 276–95. Ann Arbor: Beech Stave.
- . 2017. Agentive and Other Derivatives of “τόμος-type” Nouns.” In Claire Le Feuvre, Daniel Petit, and Georges-Jean Pinault (eds.), *Verbal Adjectives and Participles in Indo-European Languages*, 233–66. Bremen: Hempen.
- Oberlies, Thomas. 1993. Die Ásvin: Götter der Zwischenbereiche. *Studien zur Indologie und Iranistik* 18.169–89.
- Olsen, Birgit A., Thomas Olander, and Kristian Kristiansen. 2019. *Tracing the Indo-Europeans: New Evidence from Archaeology and Historical Linguistics*. Oxford: Oxbow.
- Pinault, Georges-Jean. 2014. Vedic Reflexes of the Hittite *tukkanzi*-type. In H. Craig Melchert, Elisabeth Rieken, and Thomas Steer (eds.), *Munus Amicitiae Norbert Oettinger a Collegis et Amicis Dicitum*, 262–75. Ann Arbor: Beech Stave.
- . 2015. “Tocharian Nostalgia.” *Tocharian and Indo-European Studies* 16.240–54.
- Simek, Rudolf. 2014. *Religion und Mythologie der Germanen*. Darmstadt: Theiss.

- Stausland Johnsen, S. 2012. Syncope of Long *ī in Old Norse Nouns. In John O. Askedal, Tom Schmidt, and Rolf Theil (eds.), *Germansk filologi og norske ord: Festskrift til Harald Bjorvand*, 33–51. Oslo: Novus.
- Szemerényi, Oswald. 1987. *Scripta Minora: Selected Essays in Indo-European, Greek, and Latin*. Innsbruck: Institut für Sprachwissenschaft der Universität Innsbruck.
- Thöny, Luzius. 2013. *Flexionsklassenübertritte: Zum morphologischen Wandel in der altgermanischen Substantivflexion*. Innsbruck: Institut für Sprachen und Literaturen der Universität Innsbruck.
- Vries, Jan de. 1957. *Altgermanische Religionsgeschichte II*. Berlin: De Gruyter.
- . 1962. *Altnordisches etymologisches Wörterbuch*. Leiden: Brill.
- Ward, Donald. 1968. *The Divine Twins: An Indo-European Myth in Germanic Tradition*. Berkeley and Los Angeles: University of California Press.
- West, Martin L. 2007. *Indo-European Poetry and Myth*. Oxford: Oxford University Press.
- Zeller, Gabriele. 1990. *Die vedischen Zwillingsgötter: Untersuchungen zur Genese ihres Kultes*. Wiesbaden: Harrassowitz.

Greek Adjectives in -ης (-ᾱς): An Overlooked Type?*

STEFAN HÖFLER

University of Vienna | Austrian Academy of Sciences

Greek adjectives in -ης (-ᾱς) such as ὕβριστής ‘violent, wanton’ are generally considered a secondary type, originating in an adjectivization of masculine substantives that became predominantly used in apposition. While this is certainly the preferred analysis for a former agent noun such as ὕβριστής (: ὕβριζω ‘wax wanton, run riot’), there is a second type of adjectives in -ης that behave (in meaning and function) just like the thematic adjectives they are seemingly derived from. Compare αἰχμητής ‘having a spear, spearlike, warlike’ (: *αἰχμητός ‘id.’), ἐτήσιαι ἄνεμοι ‘the Etesian winds’ (: ἐτήσιος ‘yearly, annual’), ἀργεστής ‘bright’ (: *ἀργεστός ‘id.’), all of which are traditionally interpreted as substantivizations of the underlying adjectives. After introducing nine features to help determine whether a given noun can indeed be considered adjectival, this paper discusses the second type of adjectives in -ης (-ᾱς) and proposes an analysis as former “weak adjectives.”

1 Introduction

Ancient Greek adjectives are usually either thematic or athematic. The former group can be further divided into adjectives of three endings, with separate agreement forms for all three genders (e.g., ἀγαθός m., ἀγαθή f., ἀγαθόν n. ‘good’), and adjectives of two endings that have a single agreement form serving for both masculine and feminine (e.g., βάρβαρος m. f., βάρβαρον n. ‘non-Greek’). Compared to the continuants of thematic adjectives in other Indo-European languages (which exclusively exhibit “three endings”), the Greek adjectives of two endings appear to be a relic of a time in which adjectival agreement forms for the feminine gender had not yet been fully grammaticalized.¹

Aside from these, Ancient Greek ostensibly also possessed masculine adjectives of the first declension in -ης (-ᾱς). They only rarely make it into modern

* This paper was written as part of an APART-GSK Fellowship of the Austrian Academy of Sciences. I am very grateful to Stephanie W. Jamison and Brent Vine for constructive criticism and helpful comments. The usual disclaimer applies.

1 Cf. Kastner 1967. For a discussion of the prehistory of adjectival agreement see Höfler (in press).

descriptions and grammars of the language,² perhaps under the impression that they are a secondary type altogether, originating in an adjectivization of masculine substantives.³ A case in point is ὕβριστής ‘violent, wanton’ (*Il.*+), as in Τυφάονα .../ δεινόν θ’ ὕβριστήν τ’ ἄνομόν τε “Typhon ... terrible, outrageous, lawless”⁴ (*Hes. Th.* 306–7).

The origin of ὕβριστής lies in a quasi-agent noun formation in -τής based on the verb ὑβρίζω ‘wax wanton, run riot’ (*Il.*+). This type is quite common: compare κλέπτης m. ‘thief’ (*Il.*+) from κλέπτω ‘steal’, σίντης m. ‘ravager’ (*Il.*+) from σίνομαι ‘damage, injure, destroy’, or κριτής m. ‘judge’ (*Att.-Ion.*) from κρίνω ‘decide, judge’, etc. The use of ὕβριστής as an adjective presumably started out in cases where it was used in apposition with ἀνὴρ, ἄνθρωπος, with which an appositional use of certain substantives is a well-attested phenomenon;⁵ compare αἰπόλοι ἄνδρες “goatherds” (*Il.* 2.474), ἄνθρωπος ὁδίτης “wayfaring man” (*Il.* 16.263), ὧ ἄνδρες δικασταί “O gentlemen of the jury” (*Lys., Dem., etc.*), etc. Such usage is also attested with ὕβριστής, as in ἄνδρεςσι ... ὕβριστήσι “violent men” (*Il.* 13.633), and it must have become prominent at an early stage, so that ὕβριστής could lose its substantival status by the time of the composition of the *Iliad*.

2 Adjectives vs. substantives

But this explanation begs the following unavoidable questions: is it even possible to draw a clear line between substantives and adjectives? What makes an adjective

2 One must consult nineteenth-century grammars to find them explicitly mentioned as a type. “Adjektive Einer Endung auf ης und ας” (Kühner and Blass 1890:387, 547–8, 563); “Manche Adjektiva sind auch bloß Maskulina; [...] nach der ersten Dekl. ἐθελοντής (freiwillig), γεννάδας (edel), und viele auf ίας, wie τροπίας, τραυματίας, μονίας” (Buttmann 1869:102).

3 Cf. Buck and Petersen 1945:3: “Words of this type [i.e., masc. ā-stems] are regularly masculine substantives, including the compounds, but some of them are also used adjectivally”; Schwyzer and Debrunner 1950:174: “einzelne Adjektiva auf -ης [...] sind auf halbem Wege [i.e., between substantival and adjectival nature; S.H.] stehen geblieben”; Leukart 1994:132: “alle Bildungen auf -ās [sind] grundsätzlich substantivisch [...], was quasi-adjektivischen Gebrauch, vorerst als Appositionen, nicht ausschließt.”

4 Translations of verses and sentences are—unless otherwise marked—taken from the respective volume of the Loeb Classical Library.

5 Cf. Schwyzer and Debrunner 1950:614: “Ein speziellerer Personenbegriff (bes. Standes- und Berufsbezeichnungen, Ethnikon), der zu einem Allgemeinbegriff (ἀνὴρ, γυνή) tritt, erscheint diesem untergeordnet und nähert sich adjektivischer Funktion, geht aber nur in besonderen Fällen in ein Adjektiv über [...], wenn er nicht von Haus aus adjektivisch war.” For a different account of the appositional use of ἀνὴρ see Hackstein 2010:15 and 47.

an adjective? And at what point does a substantive lose its substantival status and become an adjective?

These questions might seem redundant for some. The ancient grammarians, for instance, did not recognize adjectives as a distinct word class: the adjective (Gk. ἐπίθετον) was considered a mere subtype of the substantive (Gk. ὄνομα),⁶ so the question of whether ὑβριστής was an adjective or a substantive probably did not even arise for them in the first place. More recently, too, eminent authorities such as Karl Brugmann seem to have been of a similar opinion (cf. Brugmann 1900:416). Yet for most Indo-European languages, speaking of substantives on the one hand and adjectives on the other does indeed seem to be a valid distinction,⁷ at least when a prototypical exponent of each word class is taken as the point of reference. To illustrate this idea, let us inspect the Greek grammatical terms for ‘substantive’ (ὄνομα) and ‘adjective’ (ἐπίθετον), the latter of which (appropriately enough) goes back to an adjective.

The word ὄνομα ‘name’ cannot easily be suspected of having an adjectival nature: it is a neuter substantive, unable to change its gender and of no use for describing another head noun. This situation is quite different from that of the adjective ἐπίθετος ‘additional, added-on’, which can be used to qualify a substantive with which it agrees in case, number, and gender: compare τὰς μὲν ἐπιθέτους ἑορτάς ‘the additional festivals’ (Isoc. 7.29). It is only in a phrase ἐπίθετον ὄνομα ‘added noun’ with subsequent ellipsis of ὄνομα that the former adjective ἐπίθετος ‘additional’ becomes a substantive with a set meaning (‘adjective’) and a fixed gender (neuter). This process of substantivizing former adjectives can be seen as the mirror image of what has apparently happened to ὑβριστής, namely the adjectivization of a former substantive.⁸

Evidently, the distinction between substantives and adjectives can be blurry and the boundary may be permeable in both directions. Nonetheless it seems possible and sometimes even necessary to identify a given formation as more adjectival than substantival. For the purposes of this paper, I will use the following indicators for establishing the adjectival nature of the formations under consideration. The presence of one feature alone does not necessarily make a word an adjective, but the more indicators are checked off, the better one can ascertain its status as an ἐπίθετον.

6 Cf. Wackernagel 1920–4:II.52; Schwyzer and Debrunner 1950:173 n.3.

7 Cf. Wackernagel 1920–4:II.51.

8 More on the substantivization of adjectives in Höfler 2020. For general remarks on the adjectivization of substantives see Wackernagel 1920–4:II.53–8.

a. adnominal use: [+ADNOM]

Adnominal use as attributes of substantives (e.g., τὰς μὲν ἐπιθέτους ἐορτάς from above) is typical for adjectives. To be sure, such usage is also possible for many substantives (viz. as “appositions”), as shown by αἰπόλοι ἄνδρες “goatherds” from above, but this practice is only common for certain substantives and therefore more limited than for the average adjective. In addition, any given substantive typically occurs more often in non-appositional than in appositional use. If an appositional use becomes predominant, this might be a sign of adjectivization. For ὕβριστής compare παῖδας ὕβριστάς “violent boys” (Hdt. 3.32).

b. used in syntactic coordination with other adjectives: [+COORD]

When a word is used in coordination with other prototypical adjectives, it becomes attractive on syntactic grounds to interpret this word as an adjective, too. Compare ἦ ῥ’ οἱ γ’ ὕβρισταί τε καὶ ἄγριοι οὐδὲ δίκαιοι; “Are they cruel, and wild, and unjust?” (*Od.* 6.120 = 9.175 = 13.201).

c. used with collective or non-human head nouns: [+COLL]/[+NON-HUM]

Since masculine nouns in -ης almost exclusively refer to individual male persons, the use of such a formation in a syntagma with a collective or a non-human head noun is an argument in favor of seeing it as an adjective. Compare στρατὸν ὕβριστὴν Μῆδων “the aggressive Median army” (*Thgn.* 775), or ὕβριστῆς οἶνος διὰ νεότητα “wine so new that it’s an insult” (*Ael. Ep.* 8).

d. governs an *accusativus graecus*: [+ACC-GRAEC]

Only verbs, participles, and adjectives can govern an accusative of respect (*accusativus graecus*).⁹ Compare διαφέρει γυνὴ ἀνδρὸς τὴν φύσιν “a woman is by nature completely different from a man” (*Pl. R.* 453b), or πόδας ὠκύς Ἀχιλλεύς “swift-footed Achilles” = “swift with respect to his feet” (*Il.*). For ὕβριστής compare Πέρσαι φύσιν ἐόντες ὕβρισταί “The Persians are violent by nature” (Hdt. 1.89).

e. specified by adverbs: [+ADV]

While only substantives can govern genitives (e.g., τὸν πυρὸς κλέπτην “the fire-thief,” *A. Pr.* 946),¹⁰ it is a prerogative of adjectives to be specified by

9 Cf. Schwyzer and Debrunner 1950:84–5.

10 On the rare exceptions see Schwyzer and Debrunner 1950:96.

adverbs (e.g., ἄγαν βαρὺς “very heavy,” *A. Pers.* 515). For our word compare ἄλλ’ ὅτι λίαν ὑβριστῆς καὶ βίαιος; “That I am grossly insolent and savage?” (*Lys.* 24.35).

f. comparison: [+COMP]

The formation of a comparative and a superlative is usually seen as a typical feature of adjectives. Our ὑβριστῆς forms a well-attested comparative ὑβριστότερος (*Hdt.*, X., Pl.) and superlative ὑβριστότατος (*Ar.*, X., Pl.).¹¹ However, on the one hand, not every genuine adjective has gradation forms (mostly for semantic reasons¹²), while, on the other hand, gradation forms are sometimes also attested for substantives, as evidenced by βασιλεύτερος ‘more kingly’ (*Il.*, *Od.*, *Tyrt.*), βασιλεύτατος ‘most kingly’ (*Il.*) from βασιλεύς ‘king’, or κύντερος ‘more dog-like’ (*Il.*, *Od.*; only neut.), κύντατος ‘most dog-like’ (*Il.*, *h.Cer.*, *A.R.*, *E.*) from κύων ‘dog’.¹³ The creation of these forms certainly was made possible by the fact that βασιλεύς was used frequently as an apposition (e.g., Ἀλεξάνδρῳ βασιλῆϊ “for king Alexander,” *Il.* 4.96) and that κύντερος, κύντατος are not employed to compare actual canineness, but were derived from κύων in its derogatory and quasi-adjectival meaning ‘shameless, audacious person’.

g. gendered agreement forms: [+GEND]

Adjectives typically agree with their head noun in case, number, and gender, which implies that they can appear in all three genders. However, this is not true for all adjectives, as many are not used in the neuter (again, mostly for semantic reasons).¹⁴ Words in -της were inherently masculine and were therefore qualified to serve as masculine adjectival forms only. Accordingly, one had to come up with different strategies if one wanted to use them adjectivally in the neuter or feminine. In rare cases, writers used the masculine form also for a feminine noun (e.g., τῆς πατροφόντου μητρός “of the mother who has

11 Cf. Fraenkel 1910–2:I.209: “Da [ὑβριστής] völlig zum Adjektiv geworden ist, bildet man auch Steigerungsformen.”

12 Cf. Schwyzer and Debrunner 1950:184.

13 Cf. Schwyzer 1959:536; Schwyzer and Debrunner 1950:176. In Homer and some later authors, we also find comparative and superlative forms that are seemingly based on neuter *s*-stems: e.g., κέρδιον ‘more profitable’ (: κέρδος n. ‘profit’) or κήδιστος ‘most worthy of one’s care’ (: κήδος n. ‘care’), on which see Risch 1974:89 (with more examples, some of which are probably to be analyzed differently, however).

14 Cf. Schwyzer 1959:542–3.

killed your father,” *S. Tr.* 1125; σίνταιο ... φάλαγγοσ “of the dangerous spider,” *Nic. Th.* 715). Usually, however, the feminine was derived by adding -ις, -ιδος to the (η-less) base. Compare ὕβριστις f. (*EM* 595.39), κλέπτις f. ‘thievish’ ([+ADNOM], [+NON-HUM] in τὴν κλέπτιν ἀλώπεκα “the thieving fox,” *Alciph.* 3.22). Since nouns in -τις are (for the most part) agent nouns, it is understandable that their use for neuter head nouns was not too common. However, we do find a neuter form ὕβριστον quite early (ὕβριστον ἔργον ‘an outrageous deed’ [*Pherecr.* 162 = 173 *Storey*]; 5th c. BCE). A remaining option was to use a different derivative altogether, such as ὕβριστικός (*Att.*, *Arist.*, etc.), which is attested in all three genders.¹⁵

h. oxytonesis: [+OXY]

In many cases, adjectives and substantives whose origin lies in a nominalization of an adjective differ in the position of the accent. While adjectives tend to be oxytone (e.g., λευκός ‘white’, κυφός ‘curved’), many substantives and substantivizations exhibit a nominalizing accent retraction (e.g., λεῦκος m. ‘a [white] fish’, κύφωv m. ‘crooked piece of wood’). This is especially true for substantivizations in -ησ that are almost exclusively barytone (cf. *Leukart* 1994:132 and see further below). Oxytone accentuation could therefore be indicative of a potential adjectivization. However, agent nouns in -τήσ are evidently influenced by oxytone agent nouns in -τήρ (see *Fraenkel* 1910–2:I.1–5), so the accentuation of a single item should not be given too much importance.

i. semantic breadth: [+SEM]

The adjectivization of a substantive typically goes hand in hand with an extension of its original meaning. This is evident from ὕβριστήσ, which no longer only means ‘violent person’ but can refer to armies (στρατὸν ὕβριστήν from (c) above), animals (ταῦροι δ’ ὕβρισταί “rogue bulls,” *E. Ba.* 743), and even wine that is intense in taste (see (c) above). Conversely, a substantivization of an adjective often has a narrower meaning than the underlying adjective as it only retains one aspect of the original polysemy. Compare λευκός ‘white, light, clear, distinct, happy’ and λεῦκος ‘a fish’ (named after the color) or κυφός ‘bent forwards, stooping, hunchbacked, curved’ and κύφωv ‘crooked piece of wood’.

15 Cf. *Schwyzler* 1959:542 n.3.

Complete adjectivizations of former substantives are rare in Ancient Greek¹⁶ and ὕβριστής can be seen as one of the few cases in which such a process was accomplished in full. For the most part, the occasional appositional use of a substantive did not lead to its adjectivization, especially when this substantive was an abstract rather than a concrete noun; compare the odd instance of ὕβρις f. ‘wanton violence’ as an adjective in Hes. *Op.* 191–2 κακῶν ῥεκτῆρα καὶ ὕβριν/ ἀνέρα “the doer of evil and the outrage man,” a usage that was not copied by any subsequent author. More felicitous were cases in which the substantive denoted a person with a clear underlying semantic profile that could be used metaphorically, as for instance παρθένος f. ‘maiden, girl’ and ‘chaste’ (e.g., παρθένον ψυχὴν ἔχων “since I have a virgin soul,” E. *Hipp.* 1006; κλήρους τέ μοι φύλασσε παρθένω χερί “and guard with your maiden hand my lot tablets of divination,” E. *Ph.* 838),¹⁷ fulfilling the indicators [+ADNOM] and [+NON-HUM] from above, but παρθένος remains a substantive and such examples remain the exception.

3 Formations in -της (-τās)

On the other hand, masculine agent nouns in -της with their inherent agentive semantics show a tendency in this direction more frequently than other nouns, as can be seen not only from fully adjectivized ὕβριστής but also from the already mentioned κλέπτης ‘thief’, fulfilling at least the features [+COMP] κλεπτίστατος ‘most larcenous’ (Ar. *Pl.* 27, etc.) and [+GEND], [+NON-HUM] κλέπτεις f. ‘thievish’ (see §2.g above); from πότης ‘drinker, toper’, attested in this meaning only in the feminine πότις, which checks off [+GEND], [+ADNOM] in πότις γυνή “a drunken woman” (Phryn. *Com.* 71 = 77 Storey) and [+COORD] in αὐτὴ δὲ Λαῖς ἀργός ἐστι καὶ πότις “Lais herself’s a lazy drunk” (Epicr. 3), while the masculine πότης checks off [+NON-HUM] and [+SEM] in its occurrence οἴμοι. τί γάρ μοι τὸν πότην ἦπτες λύχρον; “Damn it, why did you light me the thirsty lamp?” (Ar. *Nu.* 57).¹⁸

This behavior is not limited to simplex agent nouns but also attested for the two other types of formations in -της (-τās), namely compounds (verbal governing compounds; e.g., συ-βώτης ‘swineherd’, περι-κτίται ‘neighbors’, κυν-ηγέτης ‘hunter’, etc.) and denominal simplex nouns (barytone πολίτης ‘citizen’, ἵππότης ‘horseman’, ναύτης ‘seaman’; oxytone μαχητής ‘warrior; warrior-like’,

16 Schwyzer and Debrunner (1950:176): “Sichere Beispiele der Adjektivierung von Substantiven [...] sind im Griechischen sehr selten.”

17 Cf. Schwyzer and Debrunner 1950:176.

18 Cf. Kühner and Blass 1890:548.

ἀσπιστής ‘shieldman; armed with a shield’, αἰχμητής ‘spearman; spearlike, warlike’).¹⁹

As far as the origin of the denominal type is concerned, recent scholarship has opened up a new possible analysis.²⁰ In the past decades, there has been a growing understanding that the suffix $*(e)h_2-$ had not always been the collective and feminine suffix par excellence that many scholars had deemed it to be, but that it²¹ was a denominal substantivizing suffix in origin that could derive common gender nouns from adjectives. This is suggested not only by the Anatolian evidence (e.g., Lycian **kumeze-* ‘sacred’ → *kumaza-* c. ‘priest’) but also by the first declension masculines of Greek (e.g., ταχινός ‘swift’ → ταχίνᾱς m. ‘hare’) and Latin (e.g., *scaevus* ‘left-handed’ → *scaeva* m. ‘lefty’). Accordingly, one could analyze the suffix -της (-τᾱς) as $*-te-h_2-$ and see it as a $*-h_2-$ -substantivization of a denominal $*-tó-$ -adjective. This view makes sense for examples such as $*\acute{\upsilon}\pi\eta\nu\eta-$ τὸς ‘having a ὑπήνη “mustache”’ → ὑπηνήτης ‘one who is just getting a beard’ (*Il.*, *Od.*), $*\kappa\omicron\rho\upsilon\nu\eta-$ τὸς ‘having a κορύνη “club, mace”’ → κορυνήτης ‘mace-bearer’ (*Il.*), $*\kappa\epsilon\rho\alpha\sigma-$ τὸς ‘having a κέρας “horn”’ → κεράστης m. ‘horned serpent’ (Nic., D.S., Ael.).

As in these examples, substantivizations in $*(e)h_2-$ typically show recessive accentuation vis-à-vis the underlying adjective. This is not only true for the masculines in -της, but also for those in plain -ης, as for example πελιός ‘black, blue’ → Πελίας ‘Pelias’,²² ταχινός ‘swift’ (poet. and late prose) → Lacon. ταχίνᾱς m. ‘hare’ (Ael.) and ταχίνης ‘deer’ (Hsch. τ 285 H.-C.) < $*\text{‘the swift one’}$. However, several of the denominal simplex stems in -της are oxytone, especially when they are used in adjectival function, implying the feature [+OXY]. While some of them can be used as substantives, adnominal use is attested for all of them. The relevant forms, mostly confined to early epic language, are:

- (a) ἀστεροπητής ‘lightener’ (*Il.*, Hes., S.; ἀστεροπή f. ‘lightning’), [+ADNOM] with Ὀλύμπιος (either adj. ‘Olympian’ or subst. ‘Zeus’; *Il.*, Hes. *Th.*) and/or Ζεός ‘Zeus’ (*Il.*).
- (b) μαχητής ‘warrior’ (Hom., Pi., *LXX*; μάχη f. ‘battle’), substantival in νέου ... μαχηταί “young warriors” (*Il.* 8.102), [+ADNOM] in μαχητάς ... ἄνδρας “warriors” (*Od.* 18.261), [+ACC-GRAEC] in Τυδεύς τοι μικρὸς μὲν ἔην δέμας, ἀλλὰ

19 Cf. Leukart 1994:125–7.

20 Earlier accounts include Fraenkel 1910–2:I.5–6; Risch 1974:34–5; Leukart 1994:157–60. There is no space here to discuss the deverbal type and the compound type in more detail.

21 Of course, there may have been several homophonous $*-h_2-$ -suffixes.

22 Cf. Leukart 1994:131.

μαχητής “Tydeus was small but warrior-like in stature”²³ (*Il.* 5.801), [+NON-HUM] in *μαχατὰν θυμόν* “warrior spirit” (*Pi. N.* 9.26).

- (c) θωρηκτής ‘covered with a cuirass’ (*Il.*; θώρηξ m. ‘mail, cuirass’), [+ADNOM], [+ADV] in *Λυκίων / Τρώων πύκα θωρηκτάων* “armed with stout cuirass (lit. solidly cuirassed)” (*Il.* 12.317, 15.689 = 15.739).
- (d) ἀσπιστής ‘armed with a shield’ (*Il.*, E.; ἀσπίς, -ίδος f. ‘shield’), substantival in *ἀρχὸν Παφλαγόνων μεγαθύμων ἀσπιστάων* “the leader of the great-hearted Paphlagonian shieldmen” (*Il.* 5.577), [+ADNOM] in *ἀνδρῶν ἀσπιστάων* “of shield-bearing men” (*Il.* 8.214), [+SEM] in a meaning ‘consisting of a shield’ in *μύχθους ἀσπιστάς* “[Hephaestus’s] shield-work” (*E. El.* 443–5).
- (e) κορυστής ‘helmed (man)’ (*Il.*; κόρυς, -υθος f. ‘helmet’), [+ADNOM] in *Τρώων ἔλεν ἄνδρα κορυστήν* “slew a warrior of the Trojans in full armor” (*Il.* 4.457, 8.256, 16.603).
- (f) and the Homeric enigma ἐπιτήης ‘courteous, gentle (?)’ (*Od.*)²⁴ with [+ADNOM] in *ἐπιτήῃ δ’ ἄνδρι ἔοικας* “you seem a man soft of speech” (*Od.* 18.128), [+COORD] in *οὔνεκ’ ἐπιτήης ἔσσι καὶ ἀγχίνοος καὶ ἐχέφρων* “for you are soft of speech, keen of wit, and prudent” (*Od.* 13.332), [+GEND] in the fem. pl. *ἐπιτίδες* (*A.R.* 2.987; conjecture by Lobeck for *ἐπιτέες*).

The form *αἰχμητής* ‘spearman; spearlike, warlike’ (Fraenkel 1910–2:I.26)²⁵ deserves a more detailed discussion. It is used as a substantive in *ἀμφοτέρων βασιλεύς τ’ ἀγαθὸς κρατερός τ’ αἰχμητής* “who is both a noble king and a mighty spearman” (*Il.* 3.179), as an apposition or attribute [+ADNOM] in *ἀνδρῶν αἰχμητάων* “of warriors who wield the spear” (*Il.* 3.49), as an adjective [+ACC-GRAEC], [+SEM] in *χειράς τ’ αἰχμητὴν ἔμειναι καὶ ἐπίφρονα βουλήν* “that you were warlike with your hands and wise in counsel”²⁶ (*Od.* 16.242), [+NON-HUM], [+SEM] in *θυμόν αἰχματὰν* “his martial spirit” (*Pi. N.* 9.37), *τὸν αἰχματὰν κεραινών* “the

23 Perhaps a better translation than “Tydeus was small in stature, but a warrior” (Murray and Wyatt).

24 Frisk 1960–72:I.535 s.v.: “Nicht sicher erklärt”; Chantraine 1968:357 s.v.: “Vieux terme obscur”; Fraenkel 1910–2:I.32 n.1: “Die Etymologie dieses Wortes verstehe ich nicht”; Risch 1974:36: “?” Teffeteller Dale 1982 proposes an etymological connection with *εἰπεῖν* ‘say’ but offers no morphological analysis. Compare the abstract *ἐπιτήός* f. ‘courtesy’ (*Od.* 21.306).

25 On the asigmatic nom. sg. (< voc.?) *αἰχμητά* in *Il.* 5.197 and similar forms see Schwyzler 1959:560.

26 Translated by Petropoulos (2011, chapter 3). Perhaps a better translation than “that you were a spearman indeed in strength of hand and in wise counsel” (Murray and Dimock) and “was die Hände betrifft, ein Speerkämpfer sein, was den Rat, klug” (Schwyzler and Debrunner 1950:85).

spearlike (or warring) thunderbolt” (Pi. *P.* 1.5),²⁷ αἰχμητᾶν ... ἀλέκτορα “a fighting cock” (*AP* 6.155 [Theodorid.]), [+GEND] in fem. αἰχμητῆς (only attested in *EM* 595.39). In the standard interpretation, the substantival meaning ‘spearman’ > ‘warrior’ is the original one and the adjectival usage developed from cases where it stood in apposition to ἀνὴρ ‘man’. However, this would not explain the meaning ‘spearlike’, which one would have to attribute to a poetic whim of the author. Another potential difficulty is the oxytone accentuation that it shares with ἀστεροπητῆς, μαχητῆς, θωρηκτῆς, etc., but which is different from the barytone substantivizations seen earlier. This was noticed as problematic already by ancient grammarians: εἰ γὰρ ἦν παρώνυμον ἀπὸ τοῦ αἰχμῆ, ὄφειλε βαρύνεσθαι ὡσπερ ὑπήνη ὑπηνήτης καὶ κορύνη κορυνήτης “If [αἰχμητῆς] was derived from αἰχμῆ, it should be barytone just like ὑπηνήτης (from ὑπήνη) and κορυνήτης (from κορύνη)” (*EM* 40.41–2 s.v. αἰχμητῆς).

Interestingly, this κορυνήτης is used substantivally in both of its Iliadic occurrences,²⁸ which might give the impression that the oxytonesis of the above-mentioned forms in -τής is indeed linked (if only secondarily) to their prevalent employment as adjectives.²⁹ On the other hand, however, there are also barytone examples of the denominal type that behave quite adjectivally, such as ὑπηνήτης ‘having a mustache’, with [+ADV] in its only Homeric occurrences (βῆ δ’ ἰέναι κούρω αἰσυμνητῆρι ἐοικώς,/ πρῶτον ὑπηνήτη, τοῦ περ χαριστάτη ἦβη “Then he set out to go in the likeness of a regal young man with the first down on his lip, in whom the charm of youth is fairest,” *Il.* 24.347–8; second verse identical to *Od.* 10.279), and [+ADNOM] in Ἑρμῆν ὑπηνήτην “Hermes with his first moustache” (*Luc. Sacr.* 11).

Returning to αἰχμητῆς, it is worth noting that the meanings ‘warlike, martial’ and ‘pointed, spearlike’ can be explained almost effortlessly in terms of the underlying meaning of a denominal adjective *αἰχμη-τός: for one thing, such adjectives often take on a meaning ‘being like X’ (X = derivational base), as for example in

27 For the adjectival meanings ‘warlike’ and ‘pointed’ see LSJ s.v. αἰχμητῆς (meanings II.1. and II.2.), but also Hesychius’s gloss αἰχμητῆς: μάχιμος, πολεμιστής “warlike, warrior” (Hsch. α 2203 L.).

28 [Ἀρηίθοος], τὸν ἐπὶ κλησὶν κορυνήτην/ ἄνδρες κίκλησκον ... οὐνεκ[α] ... σιδηρεῖη κορύνη ῥήγνυσκε φάλαγγας “Areithous whom men ... used to call the mace-man because with a mace of iron [he] shattered battalions” (*Il.* 7.138–9 + 140 + 141), and Μενέσθιον, ὃν κορυνήτης/ γείνατ’ Ἀρηίθοος καὶ Φυλομέδουσα βοῶπις “Menesthius, who was born of the mace-man Areithous and ox-eyed Phylomedusa” (*Il.* 7.9–10).

29 A secondary analogical origin of the oxytonesis is considered by Fraenkel (1910–2:I.138; II.207–8; followed by Leukart 1994:140).

ἴον n. ‘violet [the flower]’ → ἰόεις ‘like a violet, violet-colored’, or Lat. *lūna* f. ‘moon’ → *lūnātus* ‘like a moon, crescent-shaped’, which would account for αἰχμητής ‘spearlike, pointed’ (τὸν αἰχματὸν κεραινόν, Pi. P. 1.5). For another, the base αἰχμή also has a meaning ‘warlike spirit’ (e.g., αἰχμὰ τε νέων θάλλει “the war spirit of the youth thrives,” Terp. 6 Bergk = 7 Campbell), so that a possessive adjective derived from αἰχμή in precisely this meaning, viz. *αἰχμη-τός ‘having a warlike spirit, martial’, is easily understandable as the foundation of θυμὸν αἰχματῶν “martial spirit,” etc. This would make the interpretation of the adjectival αἰχμητής as a re-adjectivized αἰχμητής ‘spearman’ unnecessary. If anything, adjectival αἰχμητής just seems to be a variant of *αἰχμητός, bearing all possible semantic nuances of the latter (‘having a spear’; ‘being like a spear’, ‘having a warlike spirit’).

One last fascinating case that points in the same direction is ἀργεστής ‘bright, brightening’, evidently from **arges-tó-* ‘having, causing brightness’ (the *s*-stem *ἄργος, -εος ‘brightness’ being the basis of ἀργεννός ‘white’ < **arges-nó-* and ἐν-αργής, -ές ‘visible’). In Homer and Hesiod it is an attribute of both the south and the northwest winds.³⁰ Compare [+ADNOM] ἀργεστᾶο Νότουο “of the white South Wind” (*Il.* 11.306, 21.334) and ἀργεστὴν Ζέφυρον “clear Zephyrus” (Hes. *Th.* 379), ἀργεστέω Ζεφύροιο (Hes. *Th.* 870). In later prose it can stand alone as Ἀργέστης, as the name of a northwest wind.

Eustathius (ad *Il.* 11.306) draws attention to the accentual difference, noting that the word has the accent on the penultimate when it is the name of a wind (εἰ μὲν ἔστι κύριον ἀνέμου, προπαροξύνεται), but on the ultimate when it is an adjective (“ἐπίθετον”) of the wind (εἰ δὲ ἐπίθετον Νότου ἔστί, προπερισπᾶται).³¹ An oxytone accentuation of ἀργεστής is also stipulated by Herodian (ad *Il.* 11.306) and in other scholia (cf. Erbse 1969–88:III.181). The distribution that Eustathius indicates is exactly what we would expect of an adjective *ἀργεστός ‘bright(ening)’ and its substantivization Ἀργέστης ‘bright(ening) one’, only that the adjectival form ἀργεστής, too, has a suffix -ής.

30 For the underlying motivation compare the name λευκόνωτος (Arist.) “the south wind which cleared the weather (for the usual νότος brought rain)” (LSJ s.v. λευκόνωτος).

31 The verbs προπαροξύνεται “pronounced with an acute accent on the antepenultimate” and προπερισπᾶται “pronounced with a circumflex accent on the penultimate” refer to the gen. sg. ἀργεστᾶο, as this is the form in *Il.* 11.306. Compare also Eust. ad *Il.* 21.334: Ἀργέστης δὲ βαρυτόνωτος τὰ πολλὰ μὲν ἀνέμου ὄνομα καὶ αὐτός, ἐνταῦθα δὲ ὀξύνεται καὶ Νότου ἐπίθετόν ἐστι “Ἀργέστης is mostly barytone as the name of the wind and the wind himself, but here [i.e., in *Il.* 11.306] it is oxytone because it is an epithet of Νότος.”

4 Other formations in -ης (-ās)

For reasons of space, I cannot discuss in full detail the three other complex suffixes in °ης, °ās that are generally held to create substantives denoting male persons, but are mostly used as masculine adjectives, namely -όλης,³² -(ι)δης, and -ιάς. For -όλης cf. μαινόλης ‘raving, frenzied’, [+ADNOM], [+NON-HUM] in μαινόλα θύμω “in my maddened heart” (Sapph. 1.18), *ὄζόλης ‘smelly’, [+ADNOM] in Ὀζόλαι Λοκροί “the Ozolian Locrians” (Hdt. 8.32, if the explanation as “the smelly Locrians” is correct; cf. Str. 9.4.8); for -(ι)δης cf. γεννάδας ‘noble, generous’, [+ADNOM] in ὦ γεννάδα ἀλλαντοπῶλα “Worthy Sausage Seller” (Ar. Eq. 240–1), [+COORD] in χρηστός εἶ καὶ γεννάδας “you are good and noble” (Ar. Ra. 179). One exponent of -ιάς deserves some comment. The word νεανίās, ep. and Ion. νεηνίης, is traditionally glossed ‘young man’, but its earliest occurrences are as an adjective ‘young, youthful’: [+ADNOM] in ἄνδρες...νεηνίαί “young men” (Od. 14.524), νεηνίη ἀνδρὶ εἰκότως “looking like a young man” (Od. 10.278; *h.Bacch.* 3), τέκτονες...νεανίαί “young builders” (Pi. N. 3.4–5), νεανία γαμβρῶ “to the young son-in-law” (Pi. O. 7.4), παῖδες...νεηνίαί “young sons” (Hdt. 1.61). Indeed Homer and Pindar never use the word without a head noun. Other adjectival features are [+ACC-GRAEC] in ὄσφ μείζους εἰσὶ καὶ νεανίαί τὰς ὄψεις, τοσοῦτῳ μάλλον ὀργῆς ἄξιοί εἰσι “the taller and more gallant they are in looks, the more they are deserving of anger” (Lys. 10.29), [+NON-HUM] in νεανίαις ὄμοισι “on young shoulders” (E. Hel. 1562), [+SEM] in νεανίας λόγους “brash words” (E. Alc. 679), νεανίαν θώρακα καὶ βραχίονα “my vigorous chest and arms” (E. HF 1095), [+GEND] νεανίης, ep. and Ion. νεηνίης ‘young girl’, [+NON-HUM] in μυριάσι χειρῶν ἀγόμενοι νεανίδων “dragged by countless female hands” (E. Ba. 745), νεανίδες ἦβαι “the prime of youthfulness” (E. Ion. 477).

The situation behind νεανίās ‘young man; young’ is reminiscent of that of substantives/adjectives with a similar meaning, for which a clear status as one or the other is difficult to ascertain. Compare, for example, Ved. *yívan-* ‘young; young man’, Lat. *iuuenis* ‘young; young man’, both of which contain the so-called Hoffmann suffix that some scholars have analyzed as consisting of *-h₁- plus substantivizing *-n- (as in κυφός ‘curved’ → κύφωv m. ‘crooked piece of wood’), implying that the underlying formation *h₂j_{uh}1on- had a meaning ‘young man’ (< *‘the one having vital power’ [*h₂óju-]) initially, and only secondarily came to mean ‘young’, subsequent to an adnominal use of the substantive (cf. Steer 2015:

32 Cf. Fraenkel 1910–2:II.174–5 n.1; Schwyzer 1959:484 (with additional examples); Leukart 1994:129 (“Mitunter adjektivisch verwendete, ursprünglich aber bestimmt substantivische Deverbalia”).

179–95). While such a development does not a priori seem implausible, examples for it are not very easily found. Within Greek, for instance, the semantically comparable words κόρος, ep. and Ion. κοῦρος ‘boy, lad, son’ (*Il.*+), κόρη, ep. and Ion. κοῦρη ‘girl, maiden, daughter’ (*Il.*+), *Myc.* *ko-wo* and *ko-wa*, can be used adnominally in apposition, as in κούρων θηρητήρων “of hunting youths” (*Il.* 17.726), but nonetheless they never develop adjectival status or an adjectival meaning ‘young, youthful’. So the opposite direction (‘young’ > ‘young man’) appears more intuitive, and it is seemingly also suggested by the chronology of the attested meanings of νεᾱνιάς as ‘young’ (*Hom.*+), and ‘young man’ (*Att.*+), which would make νεᾱνιάς seem adjectival.

One remaining adjectival formation in -ης worth mentioning is the puzzling epic word χλούνης ‘male (?), wild (?)’ (*Il.*, *Hes. Sc.*, *Call.*), used [+ADNOM], [+COORD] in ὄρσεν ἔπι χλούνην σὺν ἄγριον ἀργιόδοντα “sent against him a fierce wild boar, white of tusk” (*Il.* 9.539), [+ADNOM] in συῶν ἀγέλαι χλούνων “herds of wild boars” (*Hes. Sc.* 168), χλοῦναί τε σύες χαροποί τε λέοντες “the wild boars and the fierce-eyed lions” (*Hes. Sc.* 177), χλούνην/ κάπρον “a wild boar” (*Call. Dian.* 150–1).³³

5 Implications

What all these formations have in common is that they are mostly used adnominally and have a meaning that is identical to that of the (attested or reconstructable) underlying adjective, making the form in -ης seem like a mere variant of the latter. In addition, many of them occur in syntagmata with a fixed set of head nouns: Ζεὺς ἀστεροπητῆς, ἀργεστῆς Νότος / Ζέφυρος, Τρώων θωρηκτῶν, Ὀζόλαι Λοκροί, χλούνης σῶς, etc. It almost seems as if -ης was used to mark the attributive usage of the adjective.

A group of formations in which this is particularly evident are words for winds. We have already encountered the ἀργεστῆς Νότος / Ζέφυρος above. Another early example is Βορέας, ep. and Ion. Βορέης, *Att.* Βορῶς ‘north wind’, probably originating in a syntagma of *βόρεος ‘of, from the mountains’ (cf. *Ved. giri-* ‘mountain’ < *g^hrh_x-í-) with ἄνεμος ‘wind’, so attested in Βορέης ἄνεμος (*Od.* 19.200), Βορέη ἄνεμος (*Il.* 15.26; *Od.* 14.253, 299), ἄνεμον Βορέην (*Od.* 9.67), ἴς ἀνέμου Βορέω “the force of the North Wind” (*Hes. Op.* 518), πρὸς βορέην ἄνεμον “towards the north wind” (*Hdt.* 2.101).

33 Compare χλοῦνις f. ‘virility’ (*Ar. Eu.* 188), and Frisk 1960–72:II.1106 for different etymological proposals. The barytone accent can be due to the underlying adjective (cf. *Ion.* μούνος ‘alone’, θούρος ‘impetuous’, etc.). For a very different account see Le Feuvre 2015:63–127.

More recent examples include the ἐτησία ἄνεμοι pl. “the Etesian winds” (Hdt. 2.20; Arr. *An.* 6.21.1), also with ellipsis of ἄνεμοι (Arist., etc.), from the adjective ἐτήσιος ‘yearly, annual’; ἀπαρκτίας ‘north wind’ (Arist., Thphr.), from ἀπάρκτιος ‘northerly’; μέσης ‘a wind between ἀπαρκτίας and καικίας’ (Arist.), from μέσος ‘in the middle’; Ἐλλησποντίας ‘wind blowing from the Hellespont’ (Hdt., Arist., Thphr.), from Ἐλλησπόντιος ‘from the Hellespont’, and many others.³⁴ While it is clear that the more recent formations were probably created in analogy to an established pattern by adding -ης, -ᾶς to a suitable base,³⁵ the origin of this “established pattern” for the naming of winds is not evident. The fact that the adnominally employed ἀργεστής with an adjectival meaning ‘bright, clear’ predates the wind name Ἀργέστης by centuries, and that a syntagma Βορέης ἄνεμος is well-attested in early epic language as well as in prose, might give the impression that an underlying adjective was not first substantivized by suffixation of -ης, -ᾶς and then readjectivized in appositional use with ἄνεμος, only to get substantivized again through ellipsis of this ἄνεμος. Instead, -ης, -ᾶς seems like a suffix added to an adjective in a noun phrase without changing the meaning or the word-class of the adjective. The only function one could perhaps ascribe to it would be that of a determiner.

An example that seemingly confirms this interpretation is the following, in which ἐτήσιος ‘annual, Etesian’ is used twice: once as the predicate of βορέαι in the shape ἐτήσιοι, and once as an attribute of βορέαι in the shape ἐτησία: Διὰ τί βορέαι μὲν ἐτήσιοι γίνονται, νότοι δὲ οὐ; ... ἔτι οἱ μὲν ἐτησία βορέαι καθεστηκότος τοῦ ἀέρος πνέουσι (θέρους ἢ γὰρ πνέουσιν) “Why are the Boreas winds Etesian, whereas the Notos winds are not? ... Furthermore, the Etesian Boreas winds blow when the air is still (for they blow in summer)” (Arist. *Pr.* 940a35).

The suffix -ης, -ᾶς is not the only substantivizing suffix for which a purely adjectival, non-substantivizing function is attested. Compare the substantivizing *-t- in γυμνός ‘naked’ → γυμνής, -ῆτος m. ‘light-clad soldier’ (Tyrnt., Hdt., E., X.), but purely adjectival in ἀργής, -ῆτος/-έτος ‘bright, white’ (in Hom. always adnominal with κεραυνός ‘thunderbolt’, δημός ‘fat’, ἐάνός ‘robe’), a synonym of ἀργός (in Hom. also always adnominal), or the substantivizing *-n- in κυφός ‘curved’ → κύφω m. ‘crooked piece of wood’ (see §2.h above), but purely adjectival in αἶθων ‘fiery, flashing; red-brown’ (in Hom. always adnominal with σίδηρος ‘iron’, λέων ‘lion’, λέβης ‘cauldron’, etc.), a synonym of the rare αἰθός, used as a predicate in

34 Cf. Chantraine 1933:95.

35 Cf. even ὀρνιθία ἄνεμοι “bird winds” (i.e., annual winds in spring that brought migrating birds [thus LSJ s.v.]; Arist.), χειμῶν ὀρνιθίας “tempest of birds” (Ar. *Ach.* 876–7).

αἰθὸς γεγένημαι “I’m blackened” (Ar. *Th.* 246; likewise Nic. *Th.* 288; adnominal in B. fr. 4.70 [Campbell]; Pi. *P.* 8.46; Call. *Dian.* 69), and τρήρων ‘timorous, shy’ (in Hom. always an epithet of doves: πέλειαι τρήρωνες “timorous doves,” *Od.* 12.63; τρήρωσι πελειάσιν, *Il.* 5.778; τρήρωνα πέλειαν, *Il.* 22.140, 23.853; cf. πολυτρήρων ‘abounding in doves’, *Il.*), perhaps the *n*-extended variant of an adjective τρηρός implied by the gloss τρη[ι]ρόν· ἐλαφρόν· δειλόν· ταχύ “nimble, cowardly, swift” (Hsch. τ 1317 H.-C.). The adjectival *n*-forms are highly reminiscent of the “weak adjectives” in Germanic that are determined/definite adjectives, usually employed in definite noun phrases: compare the “strong” (< *thematic) adjective in Goth. *ubils* (< *-os) *manna* “a bad man” versus the “weak” adjective in *sa ubila* (< *-ō(n)) *manna* “the bad man.”

This is also a possible interpretation for the adjectives in -ης (-ās). With Nussbaum (2014) they can be analyzed as weak adjectives, i.e., “‘weak adjective’-like ‘readjectivization[s]’ of adnominals overtly substantivized with **h*₂” (Nussbaum 2014:273; this quote, however, refers to the feminine agreement forms of thematic adjectives). The only modification would be that they would have to be seen as “weak adjectives” in the Germanic sense, i.e., as genuine adjectives in definite or determining function, without substantival meaning.

Support for the reconstruction of determined thematic adjectives ending in *-*e*-*h*₂- might come from an unusual place, namely from Anatolian. Cuneiform Luwian *-izza-* (HLuw. *-iza-*) is an adjectival suffix that does not show *i*-mutation and therefore probably continues *-*ikēh*₂- (or *-*iskēh*₂-; cf. Melchert 1987:194, 201). Just like the Greek forms in -ης, -ās, the adjectives appear predominantly in adnominal position: cf. nom. sg. c. ^{URU}*Taurišizzaš wašhazzaš* ^DLAMMA-*aš* “the patron tutelary deity of Taurisa” (KBo 35.107 (+) 108 iii 10). The suffix *-azza-* < *-*e/otjēh*₂- behaves similarly: cf. *wašhazzaš* (in the example above), *dūwazza-* ‘broad (?)’ (acc. sg. c. *dūwazzan tiyammin* “broad (?) earth”), *urazza-* ‘great, big’ (nom. sg. c. *urazzaš* ^DUTU-*az* “great sun god”), *ārazza-* ‘?’ (epithet of a sheep).³⁶ These examples, together with the Greek evidence, might indicate that when added to the stem of a thematic adjective, *-*h*₂- not only had substantivizing function (in which it generally caused accent shifts and/or new ablaut grades), but could also have determining function (without causing a change in the base of the adjective).

36 Several different accounts for these have been proposed (including the interpretation as substantivizations); cf. Sasseville 2014/2015:108 (subst.); Rieken 2013:281 (adj.); Melchert 2014:261–2 (subst. > adj.); Yakubovich 2013 (comparat./superlat.).

6 Conclusion

The core of Greek adjectives in -ης (-ᾶς) could go back to an inherited stock of thematic adjectives in *-e-h₂ that were used adnominally in definite noun phrases in which *-h₂ had determining function.³⁷ The presence of these adjectives might have encouraged the evident readjectivization of deverbal agent nouns in -τής (ὕβριστής, κλέπτῃς, σίντης, κριτής, etc.) and help explain why formations in -ης became so prolific as adnominal adjectives in certain semantic spheres.³⁸ The explanation given might also open up a perspective for the compounds in -ης (-ᾶς), most of which are used adnominally only.³⁹ It is clear, however, that on a synchronic level, adjectives in -ης (-ᾶς) do not have a determining function anymore and are used (almost) like “normal” adjectives, the only possible remnant being a tendency for adnominal use (for comparison: the non-determined former agent noun, now adjective, ὕβριστής is used as a predicate in three out of four Homeric occurrences). When they do appear as substantives (e.g., νεᾷνιάς ‘young man’, ἐτησίαι “the Etesian winds,” etc.), they can be seen as substantivized adjectives.

References

- Brugmann, Karl. 1900. *Griechische Grammatik: Lautlehre, Stammbildungs- und Flexionslehre und Syntax*³. Munich: Beck.
- Buck, Carl Darling, and Walter Petersen. 1945. *A Reverse Index of Greek Nouns and Adjectives: Arranged by Terminations with Brief Historical Introductions*. Chicago: University of Chicago Press.
- Buttmann, Alex (ed.). 1869. *Philipp Buttmann's Griechische Grammatik*²². Berlin: Dümmler.
- Chantraine, Pierre. 1933 [1979]. *La formation des noms en grec ancien*. Paris: Librairie ancienne Honoré Champion [Klincksieck].
- . 1968. *Dictionnaire étymologique de la langue grecque: Histoire des mots*. Paris: Klincksieck.
- Erbse, Hartmut (ed.). 1969–88. *Scholia Graeca in Homeri Iliadem (Scholia Vetera)*. 7 vols. Berlin: De Gruyter.
- Fellner, Hannes, and Laura Grestenberger. 2016. The Greek and Latin Verbal Governing Compounds in *-ā and Their Prehistory. In Bjarne Simmelkjær Sandgaard Hansen, Benedicte Nielsen Whitehead, Thomas Olander, and Birgit Anette Olsen (eds.), *Etymology and the European Lexicon: Proceedings of the 14th Fachtagung der*

37 In short, this might also be the origin of feminine agreement forms of thematic adjectives; see Höfler (in press).

38 For adjectives in -ης (-ᾶς) describing wines cf. Redard 1949:94–100; Chantraine 1933:94–5.

39 Cf. Fellner and Grestenberger 2016.

- Indogermanischen Gesellschaft, 17–22 September 2012, Copenhagen*, 135–49. Wiesbaden: Reichert.
- Fraenkel, Ernst. 1910–2. *Geschichte der griechischen Nomina agentis auf -τήρ, -τωρ, -της (-τ-)*. 2 vols. Strasbourg: Trübner.
- Frisk, Hjalmar. 1960–72. *Griechisches etymologisches Wörterbuch*. 3 vols. Heidelberg: Winter.
- Hackstein, Olav. 2010. *Apposition and Nominal Classification in Indo-European and Beyond*. Vienna: Österreichische Akademie der Wissenschaften.
- Höfler, Stefan. 2020. Substantivization of Adjectives. *Indo-European Linguistics* 8.181–204.
- . (In press). Kongruenz und Motion: Die femininen Formen des thematischen Adjektivs im Altgriechischen und Indogermanischen. In Florian Sommer, Paul Widmer, and Karin Stüber (eds.), *Jenseits der Formenlehre: Indogermanische Morphologie mit Grauzonen- und Schnittstellenphänomenen*. Innsbruck: Institut für Sprachwissenschaft der Universität Innsbruck.
- Kastner, Wolfgang. 1967. *Die griechischen Adjektive zweier Endungen auf -ος*. Heidelberg: Winter.
- Kühner, Raphael, and Friedrich Blass. 1890. *Ausführliche Grammatik der Griechischen Sprache I: Elementar- und Formenlehre*³. Hanover: Hahnsche Buchhandlung.
- Le Feuvre, Claire. 2015. *Ὀμηρος δύσγνωστος: Réinterprétations de termes homériques en grec archaïque et classique*. Geneva: Droz.
- Leukart, Alex. 1994. *Die frühgriechischen Nomina auf -tās und -ās: Untersuchungen zu ihrer Herkunft und Ausbreitung (unter Vergleich mit den Nomina auf -eús)*. Vienna: Verlag der Österreichischen Akademie der Wissenschaften.
- LSJ = Henry George Liddell, Robert Scott, and Henry Stuart Jones (eds.). 1996. *A Greek-English Lexicon with Revised Supplement*⁹. Oxford: Clarendon.
- Melchert, H. Craig. 1987. PIE Velars in Luvian. In Calvert Watkins (ed.), *Studies in Memory of Warren Cowgill (1929–1985): Papers from the Fourth East Coast Indo-European Conference (Cornell University, June 6–9, 1985)*, 182–204. Berlin: de Gruyter.
- . 2014. PIE *-eh₂ as an “Individualizing” Suffix and the Feminine Gender. In Neri and Schuhmann 2014, 257–71.
- Neri, Sergio, and Roland Schuhmann (eds.). 2014. *Collective and Feminine in Indo-European from a Diachronic and Typological Perspective*. Leiden: Brill.
- Nussbaum, Alan J. 2014. Feminine, Abstract, Collective, Neuter Plural: Some Remarks on Each (Expanded Handout). In Neri and Schuhmann 2014, 273–306.
- Petropoulos, J. C. B. 2011. *Kleos in a Minor Key: The Homeric Education of a Little Prince*. Washington, DC: Center for Hellenic Studies.
- Redard, Georges. 1949. *Les noms grecs en -της, -τις et principalement en -ίτης, -ίτις: Étude philologique et linguistique*. Paris: Klincksieck.

- Rieken, Elisabeth. 2013. Sekundäre denominale *u*-Stämme im Hethitischen. In Adam I. Cooper, Jeremy Rau, and Michael Weiss (eds.), *Multi Nominis Grammaticus: Studies in Classical and Indo-European Linguistics in Honor of Alan J. Nussbaum on the Occasion of His Sixty-Fifth Birthday*, 274–84. Ann Arbor: Beech Stave.
- Risch, Ernst. 1974. *Wortbildung der homerischen Sprache*². Berlin: de Gruyter.
- Sasseville, David. 2014/2015. Luwian and Lycian Agent Nouns in **-é-leh₂-*. *Die Sprache* 51(1).105–24.
- Schwyzler, Eduard. 1959. *Griechische Grammatik, auf der Grundlage von Karl Brugmanns Griechischer Grammatik I: Allgemeiner Teil: Lautlehre, Wortbildung, Flexion*³. Munich: Beck.
- Schwyzler, Eduard, and Albert Debrunner. 1950. *Griechische Grammatik, auf der Grundlage von Karl Brugmanns Griechischer Grammatik II: Syntax und syntaktische Stilistik*. Munich: Beck.
- Steer, Thomas. 2015. *Amphikinese und Amphigenese: Morphologische und phonologische Untersuchungen zur Genese amphikinetischer Sekundärbildungen und zur internen Derivation im Indogermanischen*. Wiesbaden: Reichert.
- Teffteller Dale, Annette. 1982. Homeric ἐπητής/ἐπητός: Meaning and Etymology. *Glotta* 60(3–4).205–14.
- Wackernagel, Jacob. 1920–4. *Vorlesungen über Syntax mit besonderer Berücksichtigung von Griechisch, Lateinisch und Deutsch*. 2 vols. Basel: Birkhäuser.
- Yakubovich, Ilya. 2013. The Degree of Comparison in Luwian. *Indogermanische Forschungen* 118.155–68.

On Aorist Stems Surviving in Epic Sanskrit*

ANAHITA HOOSE

University of California, Los Angeles

Despite the loss of semantic differentiation between the inherited imperfect, perfect, and aorist, the three do not occur equally often in Epic Sanskrit. The perfect is the default past tense, while aorists are rare. The durability of certain aorist stems amid the general collapse of the category requires an explanation on a stem-by-stem basis. I examine a sample of ninety aorist tokens from seven passages of the *Mahābhārata*, among which eighteen stems are represented, and discuss factors that may underlie their staying power. I argue that morphological transparency was significant, since all but one of the forms collected contain vowels either stem-finally or within, before or after the stem formants, which prevents confusing sound changes that might otherwise lead to opacity. I also discuss non-formal factors that may help to explain the continuing occurrence of aorists in general or these stems in particular: the non-existence of perfects built to certain roots, the use of aorist stems in prohibitions, the frequency of certain forms, the usefulness of a past tense not restricted to the third person (unlike the perfect), and perhaps a preference for the rhythmical shape $\cup - \cup -$.

Introduction

As is well known, Sanskrit rejoices in a rich array of aorist formations, both inherited and analogical. The goal of the present paper is to investigate how some of these categories fare in Epic Sanskrit, the language of the two great Sanskrit epics (the *Mahābhārata* and the *Rāmāyana*), a post-Vedic dialect significantly influenced by its interactions with Middle Indic. The Epic Sanskrit situation differs greatly from that of the earliest attested Indo-Aryan, the Early Vedic of the *Rigveda*, where functional differentiation between the inherited aorist, imperfect, and perfect is still visible, although beginning to crumble. The exact functions of the three tenses at this stage are not universally agreed on, but one interpretation is that the

* I am indebted to the faculty and students of the UCLA Program in Indo-European Studies (especially Ian Hollenbaugh, Stephanie Jamison, Alex Roy, and Brent Vine) for helpful comments and suggestions during the development of this project.

aorist expressed perfect aspect, while the imperfect was compatible with multiple aspectual readings (Hollenbaugh 2018). The perfect was occasionally used in Vedic in its apparent original function, as a stative present, but, even at this stage, only “a few [...] perfects maintain this function,” while “most already express simple past” (Jamison 2008a:21).

By the Epic Sanskrit stage, however, the *communis opinio* seems to be that little or no functional differentiation remains between the three finite past tenses. Thus, Oberlies (2003:216) states that “[i]n meaning [...] there is no distinction between imperfect, perfect and aorist.” This has recently been confirmed by my own research on aspectual semantics; in Hoose 2021 I surveyed the morphological expression of aspect in a corpus containing 301 verbal forms from five passages of the *Mahābhārata* (including 146 finite pasts) and found that all three tenses are compatible with both imperfective and perfective aspect. This is illustrated by (1)–(4). Examples (1)–(3) show that aorists, imperfects, and perfects are all compatible with imperfective readings, since each predicate encodes an ongoing state rather than a one-off event:¹

- (1) *nikumbho nāma daityendras tejasvī balavān abhūt*_{AOR}

There **was** a splendid and powerful lord of the Daityas, Nikumbha by name.

(MBh 1.201.2)

- (2) *śunyam āsī*_{IPF} *jagat sarvaṃ*

The whole world **was** empty ...

(MBh 1.202.18)

- (3) *tapahpradhānāḥ satataṃ carantaḥ*
*śṛṅgaṃ gireś cintayituṃ na śeku*_{PF}

Devoted to austerity, constantly wandering, they **were unable** to conceive of the peak of the mountain.

(MBh 3.161.7)

By contrast, (4) illustrates the compatibility of the same three categories with perfective aspect:

- (4) *vitatya pakṣau nabha utpapāta*_{PF}
*tato niṣādān balavān upāgamad*_{AOR}

1 I use these abbreviations in the examples that follow: AOR = aorist; IPF = imperfect; MBh = *Mahābhārata*; PF = perfect. All translations are mine.

*bubhukṣitaḥ kāla ivāntako mahān
 sa tān niṣādān upasaṃharaṃs tadā
 rajah samuddhūya nabhaḥsprṣaṃ mahat
 samudrakuṣau ca viśoṣayan payaḥ
 samīpagān bhūmidharān vicālayan
 tataḥ sa cakre^{PF} mahad ānanaṃ tadā
 niṣādamārgaṃ pratirudhya pakṣirāt
 tato niṣādās tvaritāḥ pravavrajur^{PF}
 yato mukhaṃ tasya bhujamgabhojinaḥ
 tadānanaṃ vivṛtam atipramāṇavat
 samabhyayur^{IPF} gaganam ivārditāḥ khagāḥ*

Having spread his wings, he **flew up** to the sky. Then the strong one **came upon** the Niṣādas. Then the king of birds, ravenous, like great end-making Time, destroying the Niṣādas, having raised a great sky-touching cloud of dust, drying up the water in the bay, shaking the neighbouring mountains, **interposed** [lit. **made**] his great face, blocking the Niṣādas' road. Then the Niṣādas **came forth**, hasty, to the snake-eater's mouth. They **went** to his immense open beak as afflicted birds go into the sky.

(MBh 1.24.10–13)

Example (4) describes how the eagle Garuḍa eats a large number of Niṣādas (a denigrated barbarian group) and features a sequence of finite past forms, all of which look perfective. The three perfects, *utpapāta* 'flew up', *cakre* 'made', and *pravavrajuh* 'came forth' are interspersed with an aorist, *upāgamat* 'came upon', and an imperfect, *samabhyayuh* 'went to', without any apparent functional distinction.²

Following Emeneau (1966:124), I believe that the semantic merger of the finite pasts is attributable to influence from early forms of Middle Indic (such as the Early Middle Indic of Aśoka's edicts, as well as Pāli), where there was only a single finite past, formally as well as functionally (Hoose 2021).

2 Despite the general interchangeability of the three tenses, there are a few dimensions in which functional differentiation persists. Notably, while the perfect "[s]ometimes [...] has reserved its function of denoting a fact which is the result of a past event" (Oberlies 2003:153–4), I am aware of no passages where an aorist or imperfect performs this function. Additionally, the perfect (but not the imperfect or aorist) was almost completely restricted to the third person at this phase of Old Indic (Speijer 1886:251). Pāṇini states that the perfect can only be used to encode events that occurred prior to the day of utterance and were not witnessed by the speaker (*Aṣṭādhyāyi* 3.2.115); the majority of clauses encoding such events will naturally have third-person subjects.

Although apparently synonymous, the three tenses are far from equally common. The 146 finite pasts discussed in Hoose 2021 are three aorists, thirty-four imperfects, and 109 perfects. Given that the perfect has clearly become the default, the durability of certain aorist stems requires an explanation on a stem-by-stem basis. The present paper takes a first step towards doing this based on a sample gleaned from seven passages of the *Mahābhārata* (1.70.1–115.24, 1.201.1–204.11, 1.24.10–14, 2.60.16–47, 3.135.2–139.21, 3.224.4–240.2, 3.248.7–283.16).³ I collected all the aorist indicative forms in these passages, as well as two that function as indicatives despite being formally aorist injunctives. The data are summarized in the next section; the remainder of the paper discusses factors that may underlie these particular stems’ staying power.

Data

The data set contains ninety tokens, among which seventeen roots are represented. These seventeen roots form eighteen aorist stems, since $\sqrt{kṛ}$ ‘do’ has two aorist stems attested in the sample. Six aorist formations are attested: the root aorist (represented by thirty-nine tokens), the *a*-aorist (represented by twenty-six tokens), the reduplicated aorist (represented by eight tokens), the *s*-aorist (represented by seven tokens), the *iṣ*-aorist (represented by nine tokens), and the *siṣ*-aorist (represented by one token).

The most common type is the root aorist, a formation inherited from Proto-Indo-European (cf. Greek ἔβη, Sanskrit *agāt* < **é-g^weh₂t* ‘went’ and Greek ἔφϋ ‘is by nature’, Sanskrit *abhūt* ‘was, became’ < **é-b^huH-t* ‘became’). In my data set the root aorist is represented by one of the two aorists of $\sqrt{kṛ}$ ‘do’ (*akṛthāḥ* ‘did’ 1×) and by the aorists of $\sqrt{gā}$ ‘go’ (*agāt* ‘went’ and compounds 12×; one token, *atigāt* ‘crossed’ at 1.111.9, is formally an injunctive), $\sqrt{dā}$ ‘give’ (*adāt* ‘gave’ and its compound *prādāt* ‘gave’ 8×) and $\sqrt{bhū}$ ‘be, become’ (*abhūt* ‘was, became’ 18×). *Abhūt* ‘was, became’ looms especially large, since almost half of the root aorist tokens attested are forms of this verb, all but one of which are 3sg.

The next most common formation, the *a*-aorist or thematic aorist, is also inherited (cf. Greek ἦλυθε ‘came’, Old Irish *luid* ‘went’, Tocharian B *lac* ‘went out’ < **é-h₁lud^h-e-t* ‘went’), although the small number of examples reconstructable for Proto-Indo-European indicates that it had limited productivity at that stage (Fortson 2010:102). Twenty-two of the twenty-six tokens are forms of *agamat*

3 As narrative passages, these present ample opportunities for the use of past tenses (including aorists), making them more appropriate for the current inquiry than passages dealing with ethical and philosophical issues.

‘went’ (the aorist of \sqrt{gam} ‘go’) and its compounds; the other three *a*-aorists are those of \sqrt{kram} ‘step’ (*apākramat* ‘went away’ 1×), \sqrt{vac} ‘say’ (*avocat* ‘said’ 1×), and \sqrt{sad} ‘sit’ (*samāsadat* ‘approached’ 2×). *Avocat* ‘said’ is in origin a reduplicated aorist (cf. Greek εἶπε ‘said’, also < **é-ye-uk^w-e-t* ‘said’), but was probably synchronically perceived as an irregular thematic aorist.

The other four formations attested (the reduplicated aorist, *s*-aorist, *iṣ*-aorist, and *siṣ*-aorist) occur less frequently in the data set, although each of them except the *siṣ*-aorist is represented by several stems, showing that these formations are not quite moribund. The reduplicated aorist, thematic like the *a*-aorist and also an inherited category, is represented by the aorists of \sqrt{jan} ‘engender’ (*ajījanat* ‘engendered’ and compound *samajījanat* ‘engendered’ 7×) and $\sqrt{dhṛ}$ ‘hold, preserve’ (*adīdharan* ‘transmitted’ 1×), which correspond to the causative presents *janayati* ‘engenders’ and *dhārayati* ‘holds’. Reduplicated aorists corresponding to causative presents are a productive category (Macdonell 1910:373).

The *s*-aorist, also inherited (cf. Vedic *āvākṣīt*, Latin *vēxit* << **é-ye-gh^h-s-t* ‘conveyed’), is represented by the *s*-aorist of \sqrt{kr} ‘do’ (*akārṣīt* ‘did’ 4×) and by the aorists of \sqrt{man} ‘think’ (*avamamsthāḥ* ‘disdained’, formally an injunctive, 1× in indicative function), $\sqrt{śru}$ ‘hear’ (*aśrauṣam* ‘heard’ 1×), and \sqrt{stu} ‘praise’ (*astauṣam* ‘praised’ 1×).

Closely akin to the *s*-aorist is the *iṣ*-aorist, built using an originally identical suffix, but added to *seṭ* roots. The *iṣ*-aorist is represented by the aorists of \sqrt{grah} ‘seize’ (*agrahīt* ‘seized’ 4×), \sqrt{vad} ‘say’ (*avādīḥ* ‘said’ 1×), and \sqrt{vadh} ‘strike, slay’ (*avadhīt* ‘struck, slew’ and compound *nyavadhīt* ‘slew’ 4×).⁴

Finally, the *siṣ*-aorist is an Indo-Aryan innovation, analogically created on the basis of the *s*-aorist and the *iṣ*-aorist. The innovation failed to achieve significant productivity even in Early Vedic, “formed by only six or seven roots in the Saṃhitās” (Macdonell 1910:384), and is represented in my data set by just one token (*ajñāsiṣam* ‘knew’, the aorist of $\sqrt{jñā}$ ‘know’).

Morphological transparency

Among the various factors that may have contributed to the survival of these particular stems, a major one is morphological transparency, often ensured by the presence of a vowel in the stem. Ten of the eighteen stems are vowel-final, either because they belong to thematic formations (*a*-aorists or reduplicated aorists) or because they are root aorists to vowel-final roots, as in the case of the ubiquitous

4 Both *agrahīt* and *avadhīt* are former root aorists to *seṭ* roots, remodeled to *iṣ*-aorists at an early stage.

abhū- ‘was, became’. The stem-final vowel prevents opacity due to confusing sound changes triggered by the juxtaposition of consonants belonging to roots, stems, and/or endings. Such changes yield forms like *abhār* < **abhār-s-t* ‘bore’, the 3sg. of the *s*-aorist of $\sqrt{bhṛ}$ ‘bear’, in which neither the stem formant *-s-* nor the person ending *-t* is visible. Forms like this are conspicuously absent from my data set.

In the three *iṣ*-aorist stems, similarly, the suffix-internal vowel promotes transparency by insulating root-final consonants. It is noteworthy that this formation’s Middle Indic offspring, the preterite ending *-i* (seen, e.g., in Pāli *pucchi* ‘asked’), enjoys vast productivity, for the same reason.

Among the other sigmatic forms, the aorists of $\sqrt{śru}$ ‘hear’, \sqrt{stu} ‘praise’, and $\sqrt{jñā}$ ‘know’ are all formed by adding either *-s-* or *-siṣ-* to the root. Notably, the roots are all vowel-final, so stem formants with an initial consonant can safely be added. *Akārṣīt* ‘did’ does not exactly conform to this model. Although the root in its zero grade does contain a vowel, *r*, the vṛddhi form in which it appears in the *s*-aorist ends in consonantal *r*, so we do see an *rs* cluster. However, the form has been subject to a common remodeling whereby the endings of root aorists built to *set* roots (*-īh*, *-īi*) were added to the 2sg. and 3sg. forms of *s*-aorists, with the result that the presence of a vowel between stem and ending prevents confusing changes. The creation of such forms is a post-Rigvedic development (Macdonell 1916:161 n.1).

The *s*-aorist *avamamsthāḥ* ‘disdained’ is the only exception to the trend towards inclusion of a vowel either stem-finally or within, before or after the stem formant. However, the internal sandhi triggered by the collision of the root final consonant, the stem formant *-s-*, and the ending-initial *th* does not obscure the form’s morphological composition, which may explain why this form was tolerated.

A preference for morphological transparency has visible traces in other areas of Epic Sanskrit grammar, such as the present, where the thematic present classes I, IV, and V grow enormously at the expense of present classes with less tractable shapes (Oberlies 2003:189). This is also a trend shared by Middle Indic, where consonant-final stems have virtually disappeared in both the verbal and nominal domains (Jamison 2008b:43). Although a preference for morphological transparency is sufficiently natural for an explanation in terms of influence to not be strictly necessary, it is nonetheless likely that this is another point in which Epic Sanskrit was affected by the ubiquitous vernacular that the epic bards probably spoke natively.

Absent perfects

While the perfect was clearly the default past tense in Epic Sanskrit, the aorist might be pressed into service when a poet wished to use a root that had no perfects. The use of several of the aorists in my data set can be thus explained. \sqrt{vadh} ‘strike, slay’ has no perfect (Whitney 1885:153) and is in a suppletive relationship with \sqrt{han} ‘hit, kill’, the latter’s present corresponding to the former’s aorist. Similarly, $\sqrt{gā}$ ‘go’ essentially survives only in the aorist in the classical language. Although Whitney (1885:35) mentions a perfect middle *jage* attested in Epic Sanskrit, Oberlies (2003:416) cites only three occurrences (of *(adhi)jage*) in the *Mahābhārata* and none in the *Rāmāyaṇa*, indicating that this form is marginal; non-active forms generally are uncommon in the language of epic.

The role of aorist injunctives

Aorist forms are used in prohibitions with the modal negative *mā* ‘do not, let not’. They are canonically unaugmented forms, otherwise known as injunctives, but one of the bizarrities of Epic Sanskrit is that augmented aorists are sometimes also used in this way. Twenty-seven aorist injunctive or indicative forms appear in prohibitions in these passages and some of the same aorists attested in indicative function are attested in this context too: *kārṣīḥ* ‘do’ and *vikārṣīḥ* ‘defile’ (*s*-aorist forms to $\sqrt{kṛ}$ ‘do’, attested four times and once respectively), *kṛthāḥ* ‘do’ (a root-aorist form to $\sqrt{kṛ}$ ‘do’ 5×), *gamah* ‘go’ and *apagamat* ‘go away’ (*a*-aorist forms to \sqrt{gam} ‘go’, attested once each), *atyagāt* ‘pass by’ (a root-aorist form to $\sqrt{gā}$ ‘go’, formally indicative 1× in injunctive function at 3.253.20), *bhūt* ‘be’ (a root-aorist form to $\sqrt{bhū}$ ‘be, become’ 1×), *avamamsthāḥ* ‘d disdain’ (an *s*-aorist form to \sqrt{man} ‘think’ 1× in injunctive function), *(a)vocaḥ* ‘say’ (a thematic aorist form to \sqrt{vac} ‘say’ 2×⁵) and *vadhīḥ* ‘slay’ (an *iṣ*-aorist form to \sqrt{vadh} ‘strike, slay’ 2×). Several of these roots, notably $\sqrt{kṛ}$ ‘do’, \sqrt{vadh} ‘strike, slay’, and \sqrt{vac} ‘say’, seem particularly liable to occur in prohibitions for pragmatic reasons, since there are many contexts in which a speaker might forbid their addressee to do, kill, or speak. Indeed, each of these roots is attested multiple times in prohibitions. This in turn might have helped to keep such aorist stems in currency and hence available for indicative use too. It is noteworthy that a single form, *avamamsthāḥ* ‘dissained’, is attested in indicative function, despite being formally an injunctive and attested in a prohibition elsewhere in the same part of the text. The relevant tokens appear in (5) and (6):

5 One token, at 3.253.21, is augmented and therefore formally indicative, despite functioning as an injunctive.

- (5) *parīpsamānān nāvamaṃsthā narendra*

Lord of men, you did not **disdain** desirous ones.

(MBh 1.88.7)

- (6) *māvamaṃsthāḥ śakuntalām*

Do not **disdain** Śakuntalā!

(MBh 1.90.31)

In (5) the form acts as an indicative and as such is negated by *na* ‘not’, while in (6) it is used in a prohibition with *mā* ‘do not’. The use of an aorist injunctive outside a prohibition may be evidence for the important role of the prohibitive construction in keeping aorist stems alive.

Frequency

As noted above, there is massive over-representation of the common forms *agamat* ‘went’ and *abhūt* ‘was, became’. The sheer frequency of these forms, even in earlier times when the aorist enjoyed greater productivity, led to their continued usage at the time of epic composition as a vestigial trace of those times.

Grammatical person

As noted in n.2 above, a functional peculiarity of the perfect is that it was almost completely restricted to the third person at this period, unlike the aorist and imperfect (Speijer 1886:251). This raises the possibility that some uses of non-perfect forms were motivated by the need for first- or second-person forms. On its own, this factor has limited explanatory power, since the majority of the aorist forms collected are in fact third-person, unsurprisingly in an epic that consists primarily of third-person narrative. However, there are four first-person forms (4% of the total) and seven second-person ones (8% of the total). It is also noteworthy that seventeen of the third-person forms (or 19% of the total) are tokens of *abhūt* ‘was, became’ and twenty-two (24% of the total) are *agamat/agaman* ‘went’ or compounds thereof. If these items are removed, on the ground that their lexical frequency makes them special cases, 22% of the remaining aorists are first- or second-person. For comparison, the 109 perfect forms discussed in Hoose 2021 were uniformly third-person. Since 22% is quite a high percentage, it does seem that the aorist was often pressed into service where a non-third-person, and therefore

non-perfect, form was required. The use of aorist stems in prohibitions, which are often second-person, no doubt also promoted this.

Rhythmical factors?

An interesting suggestion from Brent Vine (p.c.) is that the survival or use of some forms might have been encouraged by a preference for the rhythmical shape $\cup - \cup -$. I collected seventeen indicative forms of this shape, which are presented in (7) (alongside what would be the corresponding perfect forms, none of which have the putatively desired rhythmical shape):

(7)

Root	Attested form(s)	Token number	Corresponding perfect
$\sqrt{\text{jan}}$ 'engender'	<i>ajjānat</i> 'engendered'	6	<i>janayām āsa</i> 'engendered'
$\sqrt{\text{jñā}}$ 'know'	<i>ajñāsiṣam</i> 'knew'	1	<i>jajñau</i> 'knew'
$\sqrt{\text{dhṛ}}$ 'hold, preserve'	<i>adīdharan</i> 'transmitted'	1	<i>dhārayām āsuḥ</i> 'transmitted'
$\sqrt{\text{kram}}$ 'step'	<i>apākramat</i> 'went away'	1	<i>apacakrāma</i> 'went away'
$\sqrt{\text{gam}}$ 'go'	<i>upāgamat, upāgaman</i> 'went to'	6 (3sg., 3pl.)	<i>upajagāma, upajagmuḥ</i> 'went to'
$\sqrt{\text{sad}}$ 'sit'	<i>samāsadat</i> 'approached'	2	<i>samāsasāda</i> 'approached'

The sequence $\cup - \cup -$ also concludes the compound forms *abhyupāgamat* 'went to', *samajjānat* 'engendered', and *samupāgamat* 'approached', all attested once.

The data are somewhat skewed by the presence of the reduplicated aorists *ajjānat* 'engendered' and *adīdharan* 'transmitted', since "[t]he characteristic feature of this aorist is the almost invariable quantitative sequence of a long reduplicative and a short radical vowel" (Macdonell 1910:374). However, it seems conceivable that the preference enforcing this sequence among reduplicated aorists might have been more widely operative, promoting the use of other kinds of aorist with a similar rhythmical profile (rather than corresponding perfects with different

rhythmic shapes). In the language of epic there was a metrical motivation for the preference, since the śloka metre is the most common and śloka stanzas consist of two sixteen-syllable verses, each of whose last four syllables should have the rhythmic structure $\cup-\cup\times$. Fifteen of the twenty tokens in my data set that have the sequence $\cup-\cup-$ conclude the first or second verse of a śloka stanza.

Conclusion

Despite the aorist's very low productivity in Epic Sanskrit, a variety of forms representing multiple stem-types are still attested. This can plausibly be attributed to a range of different factors, largely lexeme-specific, whose operation is reflected by the makeup of my small data set (and their interaction). These include the non-existence of perfects built to certain roots, the use of aorist stems in prohibitions, the frequency of certain forms, the usefulness of a past tense not restricted to the third person, and possibly a preference for a specific rhythmic sequence, in addition to a comprehensible preference for morphological transparency, which is one of the many respects in which Epic Sanskrit and Middle Indic developed along parallel lines.

References

- Emeneau, Murray Barnson. 1966. The Dialects of Old Indo-Aryan. In Henrik Birnbaum and Jaan Puhvel (eds.), *Ancient Indo-European Dialects*, 123–38. Berkeley: University of California Press.
- Fortson, Benjamin W. IV. 2010. *Indo-European Language and Culture: An Introduction*. 2nd ed. Chichester: Wiley-Blackwell.
- Hollenbaugh, Ian. 2018. Aspects of the Indo-European Aorist and Imperfect. *Indo-European Linguistics* 6.1–68.
- Hoose, Anahita. 2021. Re-Examining the Tense System of Epic Sanskrit. Paper presented 14 March at the 231st Annual Meeting of the American Oriental Society, online.
- Jamison, Stephanie W. 2008a. Sanskrit. In Woodard 2008, 6–32.
- . 2008b. Middle Indic. In Woodard 2008, 33–49.
- Macdonell, Arthur Anthony. 1910. *Vedic Grammar*. Strassburg: Trübner.
- . 1916. *A Vedic Grammar for Students*. Oxford: Clarendon.
- Oberlies, Thomas. 2003. *A Grammar of Epic Sanskrit*. Berlin: de Gruyter.
- Speijer, Jakob Samuel. 1886 [1998]. *Sanskrit Syntax*. Leiden: Brill.
- Whitney, William Dwight. 1885. *The Roots, Verb-Forms and Primary Derivatives of the Sanskrit Language*. Leipzig: Breitkopf und Härtel.
- Woodard, Roger D. (ed.). 2008. *The Ancient Languages of Asia and the Americas*. Cambridge: Cambridge University Press.

The Prehistory of Ossetic Verbal Inflection (I): Present Indicative and Imperative *

RONALD I. KIM

Adam Mickiewicz University, Poznań

Ossetic famously preserves a wider array of inherited inflectional categories in the verb than any other modern Iranian language, but the origin of numerous person-number endings remains obscure. In the categories of present indicative and imperative, the focus of this paper, the two main dialects Digor and Iron generally correspond, but many endings diverge from the expected outcome of their Proto-Iranian preforms, particularly in vocalism. It is argued that many of these have been influenced by the corresponding forms of the habitual present of ‘be’ as well as the secondary endings of the Proto-Iranian imperfect, which survives in Sogdian and residually in Saka but has disappeared in Ossetic. Noteworthy features are pres. ind. 1pl. *-æm / -æn* < POss. **-æm* from PIr. **-mah*; the largely regular evolution of the habitual present and imperative of ‘be’ from PIr. **bawa-*; and the spread of PIr. **θ* from the pres. ind. 2pl. to the endings of the 3pl.

1 Introduction

Among the modern Iranian languages, Ossetic enjoys a deserved reputation for having preserved numerous archaisms on all levels of linguistic structure. Although it is only fragmentarily attested before the nineteenth century, Iranists have largely been successful in reconstructing the main outlines of its historical phonology and morphology. The reason for this positive record is well known: unlike some of the other modern East Iranian languages (e.g. Pashto or the Pamir

* I thank the organizers of the online 32nd UCLA Indo-European Conference for providing a much-needed venue for meeting and discussion in our difficult times. The research for this article has been supported by grant no. 2019/35/B/HS2/01273: “Ossetic historical grammar and the dialectology of early Iranian” from the Polish National Science Centre (NCN).

Where two Ossetic forms are separated by a slash, the first is in the Digor dialect, the second in Iron. Abbreviations: B, C, MSo. = Buddhist, Christian, Manichean Sogdian; D = Digor; I = Iron; Kh. = Khotanese; ModP = Modern Persian; O, YAv. = Older, Younger Avestan; (P)Oss. = (Proto-)Ossetic; PIE = Proto-Indo-European; PInIr. = Proto-Indo-Iranian; PIr. = Proto-Iranian; PSl. = Proto-Slavic; Tu. = Tumšugese; Ved. = Vedic.

languages), which have undergone all sorts of complex phonological changes, especially in vocalism, Ossetic “[g]enerally speaking [...] shows a striking conservatism” (Thordarson 1989:459).

Nevertheless, numerous features of Oss. morphology remain without a generally accepted explanation, such as the origin of the demonstrative pronouns or most of the case markers. To these may be added the person-number endings of the verb, many of which appear difficult or even impossible to derive from their PIr. pre-forms. These are given below in (1).¹

(1)

	Present		Future		Preterite		Future
	Ind.	Subj.	Subj.	Iptv.	Intransitive	Transitive	
1sg.	-un / -yn	-ijnæ / -in	-on		-dæn	-don	-zæncæn / -zynæcæn
2	-is / -ys	-ijsæ / -is	-aj	-æ / -∅	-dæ	-daj	-zæncæ / -zynæcæ
3	-uj / -y	-ijdæ / -id	-a	-æd	-æj / (-i(s))	-da	-zæncæj / -zæncæ(i(s))
1pl.	-æn / -æm	-ijanæ / -ikkam	-æn		-an / -ystæm	-dan / -dam	-zinan / -zystæm
2	-etæ / -ut	-ijajtæ / -ikkat	-ajtæ	-etæ / -ut	-ajtæ / -ystut	-dajtæ / -dat	-zinajtæ / -zystut
3	-uncæ / -ync	-ijoncæ / -ikkaj	-oncæ	-æntæ / -ænt	-æncæ / -ysty	-doncæ / -doj	-zæncæncæ / -zysty

The prehistory of the verbal endings was discussed by Miller (*Oss. St.* II:185–210, 1903:69–78) and a century later by Christol (1990:37–44) and Cheung (2002: 138–47), but numerous points remain to be clarified. Due to space constraints, I will restrict myself here to the endings of the present indicative and imperative.² In line with the standard methodology of historical-comparative linguistics, the goal in this and subsequent studies will be to explain as far as possible how the verbal

1 Data are drawn from the standard Ossetic grammatical descriptions, including Sjögren 1844a: 134–84 [1844b:217–90]; Abaev 1964:51–7; Bagaev 1965:323–37; Isaev 1966:74–8, 1987:616–24; Erschler 2019:873–5.

2 The oral version of this paper also examined the formation and endings of the transitive preterite as well as the nearly identical endings of the future subjunctive. See on these Kim forthcoming.

endings *as a system* have developed over time, from Proto-Iranian through Proto-Ossetic to the two principal modern dialects, Digor and Iron.

2 The present indicative

We begin with the present indicative, which continues the PIr. present active indicative. Given the diachronic trend from Old to Middle Iranian (as in most other IE languages) of generalizing thematic at the expense of athematic inflection, one would expect the Oss. endings to continue those of the PIr. thematic present. Yet not only are most of the endings obscure in some way, but for some of them it is not even clear what the POss. form was. The present indicative of *kænun* / *kænyn* ‘do, make’ is given in (2).

(2)	Digor	Iron	POss.	PIr.	cf. OAv.
1sg.	<i>kæn-un</i>	<i>kæn-yn</i>	* <i>kæn-un</i>	*- <i>ā(mi)</i>	- <i>ā</i> , - <i>āmī</i>
2	<i>kæn-is</i>	<i>kæn-ys</i>	* <i>kæn-is</i>	*- <i>ahi</i>	- <i>ahī</i>
3	<i>kæn-uj</i>	<i>kæn-y</i>	* <i>kæn-uj</i> (?)	*- <i>ati</i>	- <i>aitī</i>
1pl.	<i>kæn-ǣn</i>	<i>kæn-ǣm</i>	* <i>kæn-ǣm</i>	*- <i>āmahī</i>	- <i>āmahī</i>
2	<i>kæn-etæ</i>	<i>kæn-ut</i>	* <i>kæn-Vtæ</i> (?)	*- <i>aθa</i>	- <i>aθā</i>
3	<i>kæn-uncæ</i>	<i>kæn-ync</i>	* <i>kæn-uncæ</i>	*- <i>anti</i>	- <i>əntī</i>

Thordarson (1989:456) speculated that the discrepancies between Digor and Iron in the present endings (and also the copula; see §4) “may date from ancient times and reflect older dialectal differentiation.” However, given the close correspondence between the two dialects on most points, it is preferable to explain them as divergent developments of a common POss. paradigm by positing a plausible series of analogical remodelings.³

One cannot of course rule out the possibility that endings such as 1sg. *-un* / *-yn* or 3pl. *-uncæ* / *-ync* were generalized from suffixed presents in *-*nau-* ~ *-*nu-* corresponding to Sanskrit Class V (e.g. YAv. *surunaoiti*, pl. *surumuaiṅti* ‘hear’; cf. Ved. *śṛṇóti*, pl. *śṛṇvánti*).⁴ Yet it seems highly improbable that pre-Ossetic would have extended the endings—more precisely, combinations of suffix + ending, reanalyzed as person-number agreement markers—of relatively small and unproductive classes to all verbs. I know of no parallel from elsewhere in Middle and

3 The only comparably major divergence between the two dialects (also mentioned by Thordarson op. cit.) is in the demonstrative pronouns, e.g. D *ka* vs. I *či* ‘who’, D *je*, gen. *voj*, pl. *jetæ* vs. I *wyj*, pl. *wydon* ‘that, those’.

4 With the plausible assumption that the zero-grade suffix *-*nu-* originally proper to the weak stem was extended to the active singular in the prehistory of Ossetic.

Modern Iranian for generalization of the endings of any present formation other than thematic *-a-* and *-aya-* presents.

I propose rather that the present indicative endings largely continue those of Proto-Iranian, but have been influenced by closely related categories, of which the copula and habitual present of ‘be’ and the reflex of the Plr. imperfect are obvious candidates.⁵ To test this hypothesis, we will first reconstruct forwards from the Plr. preforms in (2) by applying the sound changes known to have taken place in Ossetic, identify points of divergence, then turn to the presents of ‘be’ and the imperfect and determine what role they may have played in shaping the present inflection of other verbs.

2.1 In the 1sg., both Digor and Iron end in *-n*, so the POss. ending must be reconstructed with **-n*, in contrast to the expected **-m* < Plr. **-mi*. This discrepancy may be explained in three possible ways. First, there may have been an early apocope of **-i* as in the primary verbal endings of numerous other IE languages (Latin, Old Irish, Tocharian). The now final **-m* then became **-n* and survived as such in POss. and down to the present day in D *-un*, I *-yn*. This change admittedly has no other examples, but neutralization of nasal place of articulation at word boundary is a frequent and phonetically natural change; within IE alone it is posited for the prehistories of Celtic, Germanic, Balto-Slavic, Greek, Armenian, Hittite, and Tocharian. The later (regular) apocope of **-i* (< Plr. **-ĩ*, **-ah*) and **-u* (< Plr. **-ũ*, **-am*) created newly final **-m*; these survived into POss. and then became *-n* in Digor by an independent development, as in e.g. Plr. **nāman* → POss. **nam* > *non* / *nom* ‘name’.⁶

A second possibility dispenses with early apocope in the 1sg. ending. Following the regular pre-POss. apocope of **-i*, all newly final **-m* > **-n*, but **-m* was restored in nominal paradigms after the inflected case forms (e.g. **nam* ‘name’, **fusum* ‘host’), leaving only the 1sg. verbal forms, pres. ind. **-un* as well as copula **dæen* (← **cæn* < Plr. **ahmi*). A parallel may be adduced from Slavic: in Russian and Polish all word-final labials were depalatalized, whence in Polish not only pres. 1sg. *-m* < PSl. **-mi* (*dam* ‘I will give’, *jem* ‘I eat’, *umiem* ‘I know how’, *kocham* ‘I love’, etc.) and inst. sg. *-em* < PSl. *u*-stem **-umi*, but also nominals such as *siedem*

5 Here and below the term “imperfect” refers to both Plr. categories of imperfect and injunctive, distinguished only by the respective presence vs. absence of the augment. Due to lack of data, it is impossible to know how long the augment survived in the dialects ancestral to Ossetic.

6 The inessive forms of the pronouns *a* / *a(j)* ‘this’, *je* / *wyj* ‘that’, *ka* / *či* ‘who’, i.e. *ami* / *am* ‘here’, *womi* / *wym* ‘there’, *kæmi* / *kæm* ‘where’, are thus of no relevance here (pace Weber 1980: 130), as the loss of POss. **-i* in Iron is clearly late.

‘seven’, *golq̄b* ‘dove’, *Wrocław* < PSl. **sedmi*, **galq̄bi*, **vartislavji* (contrast gen. sg. *siedmiu*, *golębia*, *Wroclawia*, where the underlying palatalized labial surfaces). In Russian, however, the depalatalization was undone in all nominals (*sem* ‘seven’, *gólub* ‘dove’), leaving as sole exemplars inst. sg. *-om* < PSl. *o*-stem **-omi* and the isolated pres. 1sg. *dam*, *em* < PSl. **dāmi*, **ēmi*.

Finally, the final **-n* may have been simply taken over from PIr. subjunctive 1sg. **-āni* (OAv. *-ānī*; cf. Ved. *-āni*), which survives in Ossetic as fut. subj. *-on* (Christol 1990:38, Cheung 2002:138; see already Korš apud Miller *Oss. St.* III:164). Weber (1983:89) envisioned diffusion from *-o-n* to opt. *-i-n*, ind. pres. *-y-n*, and finally copula *d-æn*; alternatively, he suggested influence of the copula on the pres. ind., “wobei u.U. die Personalendung der 1. Sg. Konj. *-o-n* eine gewisse Hilfestellung geleistet haben könnte” (p.89 n.26).

Judging by 1pl. *-æm* / *-æn* < **-amah(i)* (§2.4), it is likely that PIr. 1sg. **-āmi* was replaced by **-āmi*, whether by analogy to the second and third person (2sg. **-ahi*, 3sg. **-ati*, etc.) or shortening in unstressed position as in Kh. *-īmā* < **-āmi* (Emmerick 1968:190). Yet neither **-āmi* nor **-āmi* could have given POss. **-un*. Miller (*Oss. St.* II:186–7, 1903:70; cf. Isaev 1987:617) thought that **ā* > **u* under the influence of the following labial (and spread to the 3sg. and 3pl.), but it is then mysterious why the same did not occur in the 1pl., where **m* remained into POss., or for that matter in the ordinal suffix *-æjmag* / *-æm* < POss. **-æm* < PIr. **-ama*. Christol (1990:38) suggested **kænu-* ‘do’ ← PIr. **kṛ-naw-* ~ **kṛ-nu-* as a model, but there is otherwise no evidence in Oss. for a stem in **-u-*; furthermore, as pointed out by Cheung (2002:138, 139), one would then expect **-u-* in all person-number forms.

2.2 In the 2sg., PIr. **-ahi* should have become **-ai* and then probably POss. **-e* > D, I *-æ*, as in e.g. *ændæ* / *æddæ* ‘outside’ < POss. **ænde* < PIr. loc. **antai* ‘at the end’; *dælxæ* ‘below, beneath’ < POss. **dæle* < PIr. loc. **adarai*; or *duwæ* / *dyuuwæ* ‘two’ < POss. **duwe* < PIr. f./n. **duwai*.⁷ The vowel **i* of POss. **-is* therefore requires explanation, but the source of the **-s* is clear: it must have been extended from PIr. athematic presents in **-si*—although not the root present of ‘be’, where the inherited form PIE **h₁és-si* [**h₁ési*] > PIr. **ahi* (OAv. *ahī*, OP *ahiy*) survives in the copula *d-æ*—and (after *ruki* environments) **-ši*, including pres. subj.

7 See Cheung 2002:65, 2008:101; Kim 2007:53–4, 2020:261. A development of **-ahi* > **-ai* > **-i* (Miller *Oss. St.* II:187; tentatively Cheung 2002:138) is less likely in light of copula 2sg. **ahi* > **ai* → POss. **d-e* > *dæ*. Pace Salemann (1883:143), an origin in the **-aya-* conjugation is no better, as PIr. **-ayahi* would surely also have been contracted to **-ayai* > **-ai* > POss. **-e* (cf. the remarks of Miller *Oss. St.* III:165).

-ijsæ / *-is* < PIr. opt. mid. **-ša*.⁸ The contrast with fut. subj. 2sg. *-aj* < POss. **-aj* < PIr. subj. **-āhi* is instructive, as in that category there were no athematic forms from which **s* could be restored.

2.3 In the **3sg.**, D *-uj* could go back to a POss. ending **-udʷ* with palatalization as in other cases of PIr. **-Vti*, e.g.

- (3) *insæj* / *(y)ssæz* ‘twenty’ < POss. **insædʷ* < PIr. **winćati*
kuj / *kʷyʒ* ‘dog’ < POss. **kudʷ* < PIr. **kutī-* ‘bitch’
afæj / *afæz* ‘year’ < POss. **afædʷ* < PIr. **ā-fa-ti-* ‘movement (of time)’⁹

The corresponding Iron ending should then have been †-yʒ. The absence of the final consonant in I -y may be due to reduction in a high-frequency form, supported by the crosslinguistic tendency toward zero marking of the unmarked 3sg. (cf. fut. subj. 3sg. *-a-Ø*; Cheung 2002:138).¹⁰ However, the vowel **u* remains unexpected, as in the 1sg.; from POss. **-ati* one would expect POss. **-ædʷ* as in ‘twenty’ or ‘year’.

2.4 In the **1pl.**, D *-æn*, I *-æm* < POss. **-æm* may be straightforwardly projected back to **-amah* for **-āmah*, with **ā* leveled from the non-first-person forms or shortened in unstressed position.¹¹ The difficulty is that whereas endings with and without final *-i* are attested in Old Indo-Aryan, only the longer ending is attested in Old Iranian, and PIr. **-āmahi* → **-amahi* would have been contracted to **-amai* and undergone syncope as in the 2pl. (§2.5) to give something like POss. **-()me* > D, I †-*mæ*. Generalization of the PIr. secondary ending **-ma* from the imperfect and aorist (§5) is excluded, as this would have become POss. **-()mæ* with syncope and D †-*mæ*. Unless one wishes to assume an ad hoc early loss of **-i*,¹² the Oss. endings therefore seem to require a PIr. variant **-āmah* beside **-āmahi*.

8 See Cheung 2002:138 (Oss. *-s* < PIr. **-ši*); Miller 1903:70; Isaeu 1987:617; Christol 1990:38 (analogy to pres. subj. *-isæ* / *-is* < PIr. opt.).

9 See Benveniste 1959:75; Christol 1990:14; for further examples, see Cheung 2002:98–9; Kim 2007:60–4.

10 This is far preferable to the series of steps **-udʷ* > **-yj* > **-i* > *-y* postulated by Miller (1903:70), with exceptional treatment of POss. **dʷ* > *j* and unmotivated reduction of word-final **-i* to *-y*, or to setting up a variant **-u-Ø* with zero ending for POss. (Christol 1990:38).

11 Cf. Miller 1903:70; Christol 1990:38.

12 As posited by Emmerick (1968:195) for Kh. 1pl. *-āmā* < **-āmah*, but this can also be from secondary **-āma* with final *-ā* from 1sg. *-īmā* (Cheung 2002:139n.92). Sims-Williams (1998: 147–8, 2017:280) observes that Kh. *-āmā* “seems to correspond more closely with Classical Sanskrit *-mas* than with its Vedic variant *-masi*.”

2.5 In the **2pl.**, D *-etæ* and I *-ut* < POss. **-()tæ* ← PIr. **-aθa* show the regular treatment of PIr. **θ* > Oss. *t* as in *ærtæ* ‘three’, *fætæn* ‘broad’ < POss. **æрте*, **fætæn* < PIr. **θrayah*, **paθana-* (YAv. *θrāiiō* / *θraiias-ca*, *paθana-*) and of PIr. word-final **-a* > Oss. *-æ* as in the iptv. 2sg. (§3.1).¹³ From here *-t-* was generalized to all 2pl. endings, in contrast to Khotanese, where pres. 2pl. *-ta* has taken over the **t* of PIr. secondary **-ta* and iptv. **-ta*.¹⁴ However, the D and I vowels are incompatible, and it is not obvious what they would have replaced or why.

The replacement of the suffixal vowel in fact has a straightforward motivation: in forms of three syllables, i.e. to monosyllabic roots, the thematic vowel would have been lost by syncope (Cheung 2002:69–77). Cf.

- (4) *ærzæ* (*ærzæ*) ‘countless number, myriad’ < OIr. pl. **hazahrā* or **hazahrai* ‘thousands’ (Av. *hazaṅrəm*);¹⁵

ævγæd ‘childbirth and period of postnatal recovery’ < PIr. **apagata-*, ptcp. of **apa-gam-* ‘go out, leave’;

be(u)ræ (pl. *beretæ*) / *biræ* ‘much, many’ < POss. **bewræ* < pl. **baiwarai*, thematized from PIr. **baiwar/n-* ‘ten thousand’ (Av. *baēuuarə*, pl. *baēuuən*, *baēuuani*);

D *zældæ* ‘young grass’ < PIr. fem. **zaritā* ‘yellow(-green)’.

Cheung’s discussion demonstrates that this change was restricted to forms that contained at least three syllables following apocope of word-final pre-Oss. **-i* (< PIr. **-ī*, **-ah*) and **-u* (< PIr. **-ū*, **-am*). Among the forms of the present indicative, only the 2pl. would therefore have been affected.¹⁶

13 See Thordarson 1989:464; Cheung 2002:21 (PIr. **θ* > *t*); Kim 2020:258–9 (PIr. **-ā* > POss. **-æ*). The postposed emphatic element **tā* set up by Cheung (2002:146) to account for pres. ind. and iptv. 2pl. **-tæ* (< **-itā* < **-ta-tā*) and iptv. 3pl. **-æntæ* may therefore be dispensed with.

14 See Emmerick 1968:196; Sims-Williams 1998:147, 2017:280; and already Tedesco 1923:288. The situation in Sogdian is complex: whereas BSo. usually has *-δ’* ~ *-δ* [-θ(a)] and CSo. *-t’* [-ta], MSo. texts contrast *-t’* in the indicative with *-δ’*, *-δ* in the imperative and subjunctive, in seeming reversal of the inherited pattern (GMS:112–4 §722–54; Yoshida 2009:299); furthermore, some CSo. texts such as E26 also show *-θ’* beside *-t’* in both indicative and modal forms (Sims-Williams 2015:188–91). It appears that pre-So. inherited **-θa* and **-ta* but lost the functional distinction early on, and different groups of speakers retained both endings in free variation, generalized one ending, or redistributed them along new lines.

15 The exact preform is unclear; see Kim 2022:81–2.

16 In contrast to Sogdian and Khotanese, where the 3sg. was also syncopated, e.g. So. *βarti* / *βart*, 2pl. *βarθa* / *βarta*, Kh. *biḏä*, *baḏa*, mid. 3sg. *baḏe* < PIr. **barati*, **barata*, **baratai*. See GMS:25–6 §166; Emmerick 1968:192–5, 196; Sims-Williams 2017:280.

The resulting form with disfavored consonant cluster was unsurprisingly open to replacement. For D *-etæ*, Salemann (1883:143) thought of an origin in **-aya-* presents, which have played an important role in many Iranian languages, but this would be the only trace of **-aya-* in Ossetic. Miller (1903:70) suggested the influence of copula *ajtæ*, which is itself not unproblematic and does not explain the *-e-*. More recently, Christol (1990:39) posited an ad hoc remodeling of PIr. **-aθa* → **-aθyā*, and Gershevitch (1991:232 n.4) improbably took *-etæ* from a cliticized **ahiθa* ← PIr. 2sg. **ahi* + 2pl. **-θa*. The D ending may rather be derived straightforwardly from the thematic optative ending PIr. **-aita* (YAv. *-aēta*) with generalization of **θ* > Oss. *t*; this would be yet another example of an optative generalized to indicative contexts, much like So. 1pl. *wanēm* ‘we do’ for expected †*wanām*.¹⁷ As for I *-ut*, this can hardly continue an analogical **-θwā* or the like (Christol op. cit.); as seen already by Miller (*Oss. St.* II:187–8, 1903:70), it must have been taken over from the reflexes of **bawa-* ‘be, become’ (see below, §4).

2.6 In the **3pl.**, D *-uncæ* and I *-ync* look to be from POss. **-uncæ*, but even leaving aside the unexpected vowel **u*, this can hardly be the direct reflex of PIr. **-anti* (pace Miller 1903:70; Christol 1990:13, 38).¹⁸ The two problematic features are

- (5) a. the voiceless affricate *c*: an inherited sequence **-nt-* should have undergone voicing to **-nd-* (e.g. PIr. **brjant-* > POss. **bærzand* > *bærzond* ‘high’), and word-final **-nti* would probably have given POss. **-ndʸ* > D *-j*, I *-nʒ* as in *æfsoj* / *æfsonʒ* ‘yoke’, *ærcij* / *ærcynʒ* ‘big three-edged needle for sewing soles onto *čuvjaki* (soft leather slippers)’;¹⁹ and
- b. the D final *-æ*, which in all clear cases goes back to PIr. or secondarily arisen pre-POss. **-ā*.

Miller (1903:70; cf. Isaev 1987:617) thought that final **-æ* “protected” pre-POss. **c* from voicing, but this makes little phonetic sense and is in any case falsified by forms such as *angulʒæ* / *angʸylʒ* ‘finger’ < **anguričā* ← PIr. **anguri-* (Cheung

17 See Tedesco 1923:287; Weber 1983:85n.3; on So. *-ēm*, see Tedesco op. cit.; *GMS*:111 §716. Tedesco took these as examples of the “Optativ-Präteritum,” the use of the optative to express repeated past action (well known from Iranian languages, including Oss.), but other paths of language change may be imagined; cf. Ringe 2018 for examples of generalized optatives in West Germanic and elsewhere and their origin in first language acquisition.

18 Cheung (2002:139) states that Miller’s view was adopted by Weber (1983:85), but the latter rather refers to an “Umformung der 3. Pl. **-nti* zu D *-ncä*.”

19 Although the lack of secure etymologies makes these examples uncertain; see Kim 2007:63. I cannot follow the arguments of Gershevitch (1991:228–31), who in any case offers no conditioning factor for the various treatments of pre-POss. **-V(n)ti*.

2002:139). Since Ossetic is verb-final and has apparently remained so throughout its evolution, one might imagine devoicing in phrase-final position, but that is ruled out by iptv. 3sg. *-æd* (§3.2). We will return to this problem below in §3.4 after discussing the iptv. 3pl. ending, which similarly shows an unexpected voiceless obstruent.

2.7 To summarize, the endings of the Oss. present indicative can in large part be interpreted as regular reflexes of the PIr. category of thematic present stems. The points of difficulty are

- (6) a. the vocalism of 1sg. **-un*, 3sg. **-udʲ*, 3pl. **-uncæ*, and 2sg. **-is*;
- b. the source of *u* in 2pl. I *-utæ*;
- c. the voiceless affricate and final vowel of 3pl. **-uncæ* (> *-uncæ* / *-ync*).

3 The imperative

The imperative directly continues the PIr. active indicative of thematic present stems; as in other older IE languages, its endings are partly parallel to those of the indicative present, e.g. 3sg. pres. ind. **-a-t-i* (YAv. *baraiti*, OP *baratīy*) beside iptv. **-a-t-u* (YAv. *baratu*, OP *baratuv*). Ossetic is unique among modern Iranian languages in retaining distinct endings for the second and third persons. As is apparent from example (7), the imperative markers for the most part faithfully continue their PIr. sources, more so in fact than for the present indicative.

(7)	Digor	Iron	POss.	PIr.	cf. OAv.
2sg.	<i>kæn-æ</i>	<i>kæn</i>	<i>*kæn-æ</i>	<i>*-a</i>	<i>-a</i>
3	<i>kæn-æd</i>	<i>kæn-æd</i>	<i>*kæn-æd</i>	<i>*-atu</i>	<i>-atu</i>
2pl.	<i>kæn-etæ</i>	<i>kæn-ut</i>	<i>*kæn-()tæ</i>	<i>*-ata</i>	<i>-ata</i>
3	<i>kæn-æntæ</i>	<i>kæn-ænt</i>	<i>*kæn-ænt(æ)</i>	<i>*-antu</i>	<i>-əntu</i>

3.1 The **2sg.** ending *-æ* / \emptyset < POss. **-æ* is the regular continuation of PIr. **-a*, which fell together with **-ā* in pre-Oss. (Kim 2020:258–9). The same development was seen above in the pres. ind. 2pl., where *-Vtæ* / *-Vt* ← POss. **-()tæ* < PIr. **-aθa* (§2.5). There is thus no need to assume that D *-æ* is “später angetreten” (Miller 1903:70) or due to “paragoge” (Cheung 2002:145).

3.2 The **3sg.** ending is also entirely regular: PIr. **-atu* > POss. **-æd*, with intervocalic voicing of **t* > **d* followed by apocope of **-u*.

3.3 In the **2pl.**, imperative **-ata* (OAv. *jasatā* ‘come!’; cf. Ved. *gacchata*) was identical to pres. ind. **-aθa* in Old Iranian except for the consonant. Pre-Ossetic generalized **t* < PIr. **θ* from the pres. ind. to the imperative and all other categories (cf. the forms in (1)). As a result, the pres. ind. 2pl. and iptv. 2pl. fell together, and their subsequent development was identical: syncope, replacement by the reflex of the PIr. thematic optative in D *-etæ*, and introduction of an *u* of unidentified origin in I *-ut* (§2.5). As noted there, these endings have replaced the regular outcome with syncope of the thematic vowel, a trace of which may survive in the D variant *kæntæ* occurring beside regular *kænetæ*.²⁰

3.4 The **3pl.** is mostly parallel to the 3sg., except that PIr. **-antu* should have become POss. **-ænd* > *-ænd* with regular voicing after a nasal as in PIr. **br̥jant-* > POss. **bærzand* > *bærzond* ‘high’, PIr. **panča* → POss. **fanʒ* > *fonʒ* ‘five’.²¹ As seen by Benveniste (1959:76), the only conceivable source for the *t* is OIr. **θ*, extended from (ind. →) iptv. 2pl. **-aθa*: hence PIr. **-antu* → **-anθu* > POss. **-ænt(æ)*. That **θ* > **t* also after a nasal, and that Ossetic has contrasted voiceless and voiced dentals in this position ever since, is proven by (æ)z-*mæntun* / (y)z-*mænty*n ‘stir (up), disturb’ < PIr. **manθ-* < PIE **menth₂-* (Kh. *manθ-*, BSo. *mnδ-* ‘churn, stir’; cf. Ved. *manthⁱ* ‘stir or whirl around; produce fire by rapidly whirling one stick around another; stir, shake’) and I *kænt* ‘building’ < OIr. **kanθā-* (Kh. *kanthā-*, BSo. *knδh*, C *kn̄t*, *kt̄* ‘city’).²² The final *-æ* of D *-æntæ* was also taken over from the 2pl.; this probably happened already before the POss. stage, since otherwise **-ænt* would have been lengthened to POss. **-ant* > †*-ont* (Cheung 2002:146). POss. **-æntæ* > I *-ænt* shows regular apocope of **-æ*.²³

20 Whatever the status of the exceptional D *niuuaxtæ* ‘let go!’, *nissaxtæ* ‘shove (it) in!’ cited by Abaev (1949:418), these are hardly “precious survivals of ancient root-class conjugation” (Gershevitch 1991:232 n.7). All cognates point to thematic inflection; see Cheung 2007:199–200, 323–4 s.vv. **(H)uač*, **sač¹*.

21 Word-medial POss. **-nd-* is then subject to assimilation in Iron, as in e.g. PIr. loc. **antai* ‘at the end’ > POss. **ænde* > *ændæ* / *æddæ* ‘outside’ (see above, §2.2). Pace Miller (1903:71), there is no basis for the view that final *-æ* would have somehow blocked voicing, as he also assumed for pres. 3pl. *-unca* / *-ync* (§2.6).

22 On these forms see respectively Benveniste 1959:76, 87–8; Emmerick 1968:108; Bailey 1979:323; Abaev *Dict.* IV:281; *EWaia* II:311–2; Cheung 2007:264 s.v. **manθH-*; and Bailey 1945:22–3, 1979:51; Abaev *Dict.* I:57; Cheung 2002:197.

23 The ending *-ænt* used in the Iron dialects of South Ossetia for both 3sg. and 3pl. can hardly be a replacement for an archaic athematic 3pl. **-æd* < PIr. **-ntu*, nor can it originate in the 2pl., where the thematic vowel was regularly syncopeated (pace Gershevitch 1991:221–8, 1999). The subj. 3sg. *-it* for standard Oss. *-id* suggests that there has been a devoicing in phrase-final position,

The preceding account of iptv. 3pl. *-æntæ* / *-ænt* opens the door to explaining the consonantism of the corresponding pres. ind. ending *-uncæ* / *-ync* (§2.6). If PIr. **-anti* was altered at an early stage to **-anθi* after 2pl. **-aθa*, it should have given **-antʷ* > **-ænc* → **-unc-*.²⁴ The final *-æ* was taken over from the 2pl. and/or the imperative already in POss. or in the separate history of Digor; this change would have been favored by the extreme rarity of inherited POss. word forms ending in *-c* (D *-c*), as opposed to **-cæ* (D *-cæ*).

This explanation of the pres. ind. 3pl. ending removes point (6c) from the list of problematic features in §2.7. To understand the unexpected vocalism of 3pl. *-uncæ* / *-ync* and other pres. ind. endings, i.e. points (6a) and (6b), we turn now to related categories that are most likely to have exerted influence on the present indicative, namely the presents of ‘be’ and the PIr. imperfect.

4 The presents of ‘be’

The copula is highly irregular and diverges greatly in the two dialects, as seen in (8).

(8)	Digor	Iron	Digor	Iron
	1sg. <i>dæn</i>	<i>dæn</i>	1pl. <i>an</i>	<i>(y)stæm</i>
	2 <i>dæ</i>	<i>dæ</i>	2 <i>ajtæ</i>	<i>(y)stut</i>
	3 <i>æj, je(s)</i>	<i>u, i(s)</i>	3 <i>æncæ</i>	<i>(y)sty</i>

Space restrictions prevent a full discussion here, but it is widely held that 1sg. (*d-æ*n), 2 (*d-*)*æ* and 3 *je(s)* / *i(s)* go back to PIr. **ahmi*, **ahi*, **asti*; that other singular forms reflect grammaticalization of the pronouns **ta-* or **aita-* (> *d-æ*n, *d-æ*), **awa-* and/or **hau-* (> I *u*; cf. I *u*, D obl. *wo-* ‘that’), and **aya-* (> D *æj*; cf. D *je* ‘that’); and that the plural forms in Iron go back to PIr. **staH-* ‘stand’ (< PIE **steh₂-*).²⁵

which affected only these two endings. Iptv. 3sg. *-æt* < **-æd* then spread to the marked plural, replacing *-ænt*.

24 On the source of **u*, see §4.3 below. This development appears to be contradicted by *ælxij* / *ælxync* ‘knot’ < **glindʷ* < **grindʷ* < **grainti* < PIr. **granθi-* (Kim 2007:62–3 with n.39; cf. Ved. *granθi-* and see Bailey 1945:4–5 with references), but the unexpected *x* and final *-c* of the Iron form remain difficult. Bailey (op. cit.) derived the Oss. noun from **granθya-* and claimed that PIr. voiceless stops are usually continued by Oss. voiceless aspirates, but “if for any reason, such as final position or a preceding *s*, the aspiration was anticipated, the ejective consonant is found”; however, he gave no other examples of the second treatment.

25 See for the first point Miller *Oss. St.* II:191; for the second Weber 1983:86–7, 90; Korn 2011:56, 2020:477; and for the third Bielmeier 1977:162–3; Korn 2020:482. On the copula in general,

Alongside the copula, Digor has a reflex of PIr. **bawa-* (Av. *bauua-*, OP *bava-*) with the meanings ‘become, grow’ or ‘be/appear/happen sometimes, once in a while’, comparable to the iterative present of ‘be’ in Slavic languages, e.g. Rus. *byvát*, Pol. *bywać*. The forms given by Sjögren (1844a:127 [1844b:206–7]) are sg. *un* (*wun*), *wis*, *wi*, pl. *won*, *wotæ*, *woncæ*, but by the time of Miller’s grammar the plural forms had passed out of use except as prefixed *fæ-wæn*, *fæ-wetæ*, *fæ-wuncæ*, with regularized pres. ind. endings.²⁶ In other categories this verb supplies the forms of the copula, e.g. inf. *un / wyn*, fut. 1sg. *wo-ʒæncæn / u-ʒyncæn*, pret. ptcp. I *wyd* (but D *ad*); cf. also *fæ-wun / fæ-wyn* ‘become, turn out’.

As so often with high-frequency lexical items that have undergone irregular changes, the exact phonetic evolution is difficult to reconstruct. Miller (*Oss. St.* II: 193–4, 1903:77) suggested that initial **b-* became **v-* and then *w-*, but did not go into details. Benveniste (1959:73–4) assumed a starting point **buwa-* (cf. Av. aor. subj. *buua-*) and reduction to **vuwa-* > **uwa-* > *uo-* / *u-*, but as will shortly be seen, such a development cannot account for all forms.²⁷ Cheung (2002:244) proposes direct assimilation of **b...w* > **w...w*, but it is also possible that **b* was lenited to **[β]* in atonic position, for which cf. the 2sg. pronoun PIr. **tuwam*, acc. **tawa* > POss. **du*, **dæw* > *du / dy*, *dæu*. The resulting sequence **v...w* was then assimilated to **w...w*.

In the plural, the expected syncope of the thematic vowel in PIr. pres. ind. 2pl. **bawaθa* (§2.5) could have been generalized in the 1 and 3pl. from reduced forms in rapid speech. With the change of initial **b-* to **w-* just described, these forms would have regularly yielded POss. **wom*, **wotæ*, **woncæ*, whence nineteenth-century D *won*, *wotæ*, *woncæ*. In the singular, where D (*w*)*un*, *wis*, *wi* with their short vowels cannot possibly go back to an intermediate stage with the shape **waw-*, I suggest instead that the inherited forms lost their first syllable by haplology to become **wami*, **wai*, **wati*.

(9)	PIr.		POss.	D
1sg.	<i>*bawāmi</i>	→	<i>*wami</i>	> <i>*wun</i> (w) <i>un</i>
2	<i>*bawahi</i>	→	<i>*wai</i>	> <i>*wis</i> <i>wis</i>
3	<i>*bawati</i>	→	<i>*wati</i>	> <i>*wi</i> <i>wi</i>

see Benveniste 1959:73–6; Thordarson 1989:477, 2009:5–6; Cheung 2002:141–2; Korn 2011: 56 n.10.

26 See Miller 1903:76; Abaev 1949:409, 411; Cheung 2002:244 s.v. *wyn*. The relation of these forms to I iterative *væjjyn* is unclear; perhaps, with Miller (1903:78), from **baw-(a)ya-*?

27 It is also difficult to square with his comparison of I inf. *wævyn*, *ovyn* with MSO. *wβ-* ‘be(come)’ from metathesized **wab-* < **baw-* (Benveniste 1959:74; cf. *GMS*:63 §407).

1pl.	<i>*bawāmah(i)</i>	→	<i>*wawmi</i>	>	<i>*wom</i>	<i>won</i>
2	<i>*bawaθa</i>	>	<i>*wawθa</i>	>	<i>*wotæ</i>	<i>wotæ</i>
3	<i>*bawanti</i>	→	<i>*wawnθi</i>	→	<i>*woncæ</i>	<i>woncæ</i>

Supporting this interpretation are the imperative forms, which in both dialects go back to forms of **bawa-*. Here 2sg. **bawa* became **waw* with irregular apocope (vs. usual retention in iptv. 2sg. *-æ / -∅*; §3.1) and POss. **wo* > *wo / u* with monophthongization in clitic position;²⁸ while the 2pl. underwent syncope as in the indicative to **wawθa* > POss. **wotæ*.²⁹ In the 3sg., by contrast, haplology produced **wati* > POss. **wæd* > *wæd*, and similarly 3pl. **wanθu* > **wænt* > *wæntæ / wænt*.

(10)	PIr.		POss.	D	I		
2sg.	<i>*bawa</i>	→	<i>*waw</i>	>	<i>*wo</i>	<i>wo</i>	<i>u</i>
3	<i>*bawati</i>	→	<i>*wati</i>	>	<i>*wæd</i>	<i>wæd</i>	<i>wæd</i>
2pl.	<i>*bawata</i>	→	<i>*wawθa</i>	>	<i>*wotæ</i>	<i>wotæ</i>	<i>ut</i>
3	<i>*bawantu</i>	→	<i>*wanθu</i>	→	<i>*wæntæ</i>	<i>wæntæ</i>	<i>wænt</i>

This discussion suggests two sources for the vocalism of I 2pl. *-ut*: from iptv. *ut* ‘be!’, the vowel *u* spread to the iptv. of all verbs; or the habitual present **ut* (~ D *wotæ*) exerted its influence on the copula (*y*)*stut* and formations derived therefrom, namely the future and the intransitive preterite.³⁰ Eventually I *-ut* came to be the universal 2pl. marker for the present indicative as well as the imperative (§§2.5, 3.3). Less obviously, the **u* of pres. ind. 1sg. **-un*, 3sg. **-udʷ*, and 3pl. **-uncæ* may have been introduced from the habitual present in **w-* (9), though the details can no longer be recovered.

5 The PIr. imperfect

Also relevant to the evolution of the present indicative endings is a category that does not survive in modern Ossetic, the imperfect. This was characterized by secondary endings in PIE and PIr., which, as in Sogdian and other Middle Iranian languages, would have undergone special developments in word-final position.³¹

28 See Cheung 2002:146. Word-final diphthongs resulting from apocope remain in Oss. to judge from *jæw* ‘millet’ < PIr. **yawah* ‘grain, cereal’ (YAv. *yauua-*).

29 The development **bawaθa* > **wuwut* > **ūūt* > **ūt* posited by Gershsevitch (1999:143) is phonetically improbable and does not take into account the D form.

30 See Miller 1903:70 and Cheung 2002:146, who respectively give greater weight to the copula and imperative.

31 The evidence for PIr. **-am* > pre-POss. **-u* is slender: in cases such as PIr. **ham-bytam* ‘brought together’ > **æmbydu* > POss. **æmburd* > *æmburd / æmbyrd* ‘gathering’, PIr. **ʃ* apparently

(11)	PIr.		pre-POss.	cognates
1sg.	*-am	>	*-u	YAv. -əm, BSo. -u, OKh. -u, Tu. -u ³²
2	*-ah	>	*-i	OAv. -ō, So. -i
3	*-at	>	*-a	OAv. -at̥, So. -a/-Ø
1pl.	*-āma	→	*-ama	OAv. -āmā* ³³
2	*-ata	>	*-da	YAv. -ata, So. -ta (see n.14)
3	*-an	>	*-u	OAv. -ən ³⁴

The possibility immediately suggests itself that the imperfect remained long enough to affect the vocalism of the corresponding pres. ind. endings in the 1sg., 2sg., and 3pl., changing them from (PIr. *-āmi, *-ahi, *-anti →) *-an, *-es, *-anc to POss. *-un, *-is, *-unc(æ). This hypothesis operates with continuity of the present indicative as a category and is hence to be preferred to the view of Lubotsky apud Cheung (2002:140) that “most [...] Ossetic present endings derive from the PIr. secondary (ind., inj.) endings, to which the subjunctive endings have been added.”³⁵

The one ending in (6a) whose vocalism cannot be explained in this way is 3sg. *-ud^y (§2.3). Although influence of 1sg. *-un and/or 3pl. *-uncæ cannot be excluded, it appears that here we do have to reckon with the influence of the paradigm of PIr. *bawa- (Sims-Williams apud Cheung 2002:139).

developed to *ur with *u*-umlaut (Cheung 2002:127). The change PIr. *-ah > *-i is supported by masculine *a*-stems in which PIr. *-rah > *-ri > *-li > POss. *-l (e.g. PIr. *agrah ‘first, top’, *bārah ‘burden, load, bunch’, *čaxrah ‘wheel’ > aly ‘tip, extremity’, bal ‘group, party’, calx) and plurals of old *r*-stems (e.g. PIr. nom. pl. *pitarah → *fidari-tā > *fidalita > POss. *fidæltæ > fiddæltæ / fydæltæ ‘fathers’). See Cheung 2002:57–8; Kim 2003:57–9.

- 32 OKh. -u is attested in *parsu* ‘I may escape’ (Z 24.435), whether injunctive (Emmerick 1968:210, 1989:222) or an aberrant optative (Kumamoto 2019:215–7). All other OKh. injunctive forms are third-person middle, with 3sg. -ta and 3pl. -nda; see Kumamoto 2009:137–47 and now Kumamoto 2019:220–2, who calls into question the existence of the category and suggests that these are old imperfects that acquired optional modal value. On Tu. impf. 1sg. *acchu* ‘I have gone’ < PIr. *a-čyav-am (OP *ašiyavam*) see Emmerick 1985:13, Ogihara 2019:299, 302.
- 33 Cf. redupl. them. aor. *ā-uuaocāmā* ‘call upon’ (Y 38.5). So. has *-ēm*, like pres. -ēm taken over from opt. 1pl. -ēm < PIr. *-ai-ma (§2.4).
- 34 So. -and has been taken over from the present.
- 35 Thus Cheung (2002:139) concludes that the pres. ind. 3pl. ending goes back to impf./inj. *-an > *-u, to which -ncæ / -nc were “added secondarily, being imported from the subjunctive.”

6 Conclusions

The results of the preceding sections dramatically illustrate how, despite losing categories such as the dual number and middle voice, Ossetic displays much of the complex interplay among categories familiar from other IE languages with rich verbal morphology. The evolution of the present indicative, imperfect, and imperative endings is summarized in (12); underlined endings indicate those which have been influenced by **bawa-*.

(12)	PIr.		POss.	D	I		
1sg.	<i>*-āmi</i>	→ <i>*-ami</i>	> <i>*-am</i>	→ <i>*-um</i>	> <i>*-un</i>	-un	-yn
	<i>*-am</i>			> <i>*-u</i>			
2	<i>*-ahi</i>	> <i>*-ai</i>		→ <i>*-i</i>	→ <i>*-is</i>	-is	-ys
	<i>*-ah</i>			> <i>*-i</i>			
3	<i>*-ati</i>		> <i>*-ad^y</i>	→ <i>*-ud^y</i>	> <u><i>*-ud^y</i></u>	-uj	-y
1pl.	<i>*-āmah</i>	→ <i>*-amah</i>			> <i>*-æm</i>	-æm	-æen
2	<i>*-aθa</i>				> <i>*-tæ</i>	-etæ	<u>-ut</u>
3	<i>*-anti</i>	→ <i>*-anθi</i>	> <i>*-anc</i>	→ <i>*-unc</i>	→ <i>*-uncæ</i>	-uncæ	-ync
	<i>*-an</i>			> <i>*-u</i>			
2sg.	<i>*-a</i>				> <i>*-æ</i>	-æ	-∅
3	<i>*-atu</i>				> <i>*-æd</i>	-æd	-æd
2pl.	<i>*-ata</i>	→ <i>*-aθa</i>			> <i>*-tæ</i>	-etæ	<u>-ut</u>
3	<i>*-antu</i>	→ <i>*-anθu</i>	> <i>*-ant</i>		→ <i>*-æntæ</i>	-æntæ	-ænt

6.1 Consequences for reconstruction

Not surprisingly, the elucidation of Oss. verbal inflection is of limited significance for the reconstruction of Proto-Iranian. Nevertheless, we have seen (§2.4) that pres. ind. 1pl. *-æm* / *-æen* < POss. **-æm* is most compatible with PIr. **-mah*, since **-mahi* would have become **-mai* > POss. **-()me* > †*-mæ*, whereas generalized secondary **-ma* would have given POss. **-()mæ* > D †*-mæ*, in both cases with syncope as in the 2pl. The combined evidence of Oss. *-æm* / *-æen* and Kh. *-āmā* implies that both variants **-mahi* and **-mah* existed in PIr.,³⁶ and therefore that PIr. had **-mas* as well as **-masi* (cf. Ved. *-mas(i)*; Kümmel 2018:1913), rather than just the latter (Gotō 2013:87).

36 Cf. the quote by Sims-Williams in n.12 above, pace Skjærvø 2017:534–5.

On the other hand, the relatively straightforward derivation of the habitual present and imperative of ‘be’ from the paradigm of **bawa-* (§4.2), in full agreement with YAv. *bauua-*, OP *bava-*, and Ved. *bháva-*, nicely confirms the reconstruction of this present stem for PIr. and PInIr.³⁷

6.2 Consequences for dialectology

The above findings also have potential repercussions for the dialectology of Iranian and the position of pre-Ossetic among the Eastern Middle Iranian languages. In the 2pl., the generalization of PIr. **θ > *t* from the pres. ind. to all categories (§§2.5, 3.3) contrasts with Khotanese, where conversely PIr. **t* was introduced into pres. ind. 2pl. *-ta*, and with Sogdian, where both *-θ(a)* and *-t(a)* occur in indicative and modal forms. On the other hand, the evolution of secondary endings in Auslaut lines up particularly well with that of Sogdian, as was already surmised on other grounds for PIr. **-ah > *-i* and PIr. **-am > *-u* (§5). Finally, the spread of PIr. **θ* (or its reflex) from pres. ind. 2pl. **-θa* to pres. ind. 3pl. **-anti* → **-anθi* → POss. **-æncæ*, iptv. 3pl. **-antu* → **-anθu* → POss. **-æntæ* is to my knowledge unique within Iranian (§3.4). These limited results accord with the picture that emerges from recent scholarship, that the Iranian dialects ancestral to Ossetic remained in contact with varieties farther to the east well into the first millennium AD, but introduced numerous idiosyncratic innovations already in ancient times.

References

- Abaev, V. I. [Абаев, В. И.] 1949. *Осетинский язык и фольклор* [Ossetic Language and Folklore] I. Moscow: Izdatel'stvo Akademii Nauk SSSR.
- . 1964. *A Grammatical Sketch of Ossetic*. Ed. Herbert H. Paper. Trans. Steven P. Hill. Bloomington: Indiana University Press; The Hague: Mouton.
- Abaev *Dict.* = V. I. Abaev [В. И. Абаев]. 1958–95. *Историко-этимологический словарь осетинского языка* [Historical-Etymological Dictionary of the Ossetic Language]. 5 vols. Moscow: Izdatel'stvo Akademii Nauk SSSR, 1958; Leningrad: “Nauka” (Leningradskoe otdelenie), 1973–89; Moscow: Rossijskaja Akademija Nauk, Institut Jazykoznanija, 1995.
- Bagaev, N. K. [Бараев, Н. К.] 1965. *Современный осетинский язык* [The Contemporary Ossetic Language] I: *Фонетика и морфология* [I: Phonetics and Morphology]. Ordzhonikidze: Severo-Osetinskoe Knizhnoe Izdatel'stvo.
- Bailey, H.W. 1945. Asica. *Transactions of the Philological Society* 1945.1–38.

37 For other Iranian reflexes, see Cheung 2007:16–7 s.v. **bauH*. On the PIE background of this distinctively InIr. formation, see Jasanoff 1997.

- . 1979. *Dictionary of Khotan Saka*. Cambridge: Cambridge University Press.
- Benveniste, Émile. 1959. *Études sur la langue ossète*. Paris: Klincksieck.
- Bielmeier, Roland. 1977. *Historische Untersuchung zum Erb- und Lehnwortschatzanteil im ossetischen Grundwortschatz*. Frankfurt am Main: Peter Lang.
- Cheung, Johnny. 2002. *Studies in the Historical Development of the Ossetic Vocalism*. Wiesbaden: Reichert.
- . 2007. *Etymological Dictionary of the Iranian Verb*. Leiden: Brill.
- . 2008. The Ossetic Case System Revisited. In Alexander Lubotsky, Jos Schaecken, and Jeroen Wiedenhof (eds.), *Evidence and Counter-Evidence: Essays in Honour of Frederik Kortlandt I: Balto-Slavic and Indo-European Linguistics*, 87–105. Amsterdam: Rodopi.
- Christol, Alain. 1990. Introduction à l'ossète: Éléments de grammaire comparée. *LALIES: Actes des sessions de linguistique et de littérature* 8.7–50.
- Emmerick, Ronald E. 1968. *Saka Grammatical Studies*. London: Oxford University Press.
- . 1985. *The Tumshuqese Karmavācanā Text*. Wiesbaden: Steiner.
- . 1989. Khotanese and Tumshuqese. In Schmitt 1989, 204–29.
- Erschler, David. 2019. Ossetic. In Geoffrey Haig and Geoffrey Khan (eds.), *The Languages and Linguistics of Western Asia: An Areal Perspective*, 861–91. Berlin: de Gruyter Mouton.
- EWAia* = Manfred Mayrhofer. 1986–2001. *Etymologisches Wörterbuch des Altindoarischen*. 3 vols. Heidelberg: Winter.
- Gershevitch, Ilya. 1991. The Ossetic 3rd Plural Imperative. *Transactions of the Philological Society* 89(2).221–34.
- . 1999. Fossilized Imperative Morphemes in Ossetic. In *Studia Iranica et Alanica: Festschrift for Prof. Vasilij Ivanovich Abaev on the Occasion of His 95th Birthday*, 141–59. Rome: Istituto Italiano per l'Africa e l'Oriente.
- GMS* = Ilya Gershevitch. 1954. *A Grammar of Manichean Sogdian*. Oxford: Blackwell.
- Gotō, Toshifumi. 2013. *Old Indo-Aryan Morphology and Its Indo-Iranian Background*. In co-operation with Jared S. Klein and Velizar Sadovski. Vienna: Verlag der Österreichischen Akademie der Wissenschaften.
- Isaev, M. I. [Исаев, М. И.] 1966. *Дигорский диалект осетинского языка* [The Digor Dialect of Ossetic]. Moscow: Izdatel'stvo "Nauka."
- . 1987. Осетинский язык [Ossetic Language]. In V. S. Rastorgueva (ed.), *Основы иранского языкознания* [Fundamentals of Iranian Linguistics] II: *Новоиранские языки: Восточная группа* [New Iranian Languages: Eastern Group], 537–643. Moscow: "Nauka."
- Jasanoff, Jay H. 1997. Where Does Skt *bhāvati* Come From? In Dorothy Disterheft, Martin Huld, and John Greppin (eds.), *Studies in Honor of Jaan Puhvel I: Ancient Languages and Philology*, 173–86. Washington, DC: Institute for the Study of Man.
- Kim, Ronald I. 2003. On the Historical Phonology of Ossetic: The Origin of the Oblique Case Suffix. *Journal of the American Oriental Society* 123(1).43–71.

- . 2007. Two Problems of Ossetic Nominal Morphology. *Indogermanische Forschungen* 112.47–68.
- . 2020. The Numerals ‘One’ to ‘Ten’ in Ossetic. In Harald Bichlmeier, Ondřej Šefčík, and Roman Sukač (eds.), *Etymologus: Festschrift for Václav Blažek*, 257–65. Hamburg: Baar.
- . 2022. The Higher Numerals in Ossetic. *Studia Linguistica Universitatis Jagellonicae Cracoviensis* 139(2).71–89.
- . Forthcoming. The Ossetic Transitive Preterite: Typology, Evolution, Contact.
- Korn, Agnes. 2011. Pronouns as Verbs, Verbs as Pronouns: Demonstratives and the Copula in Iranian. In Agnes Korn, Geoffrey Haig, Simin Karimi, and Pollet Samvelian (eds.), *Topics in Iranian Linguistics*, 53–70. Wiesbaden: Reichert.
- . 2020. Grammaticalization and Reanalysis in Iranian. In Walter Bisang and Andrej Malchukov (eds.), *Grammaticalization Scenarios. Cross-linguistic Variation and Universal Tendencies I: Grammaticalization Scenarios from Europe and Asia*, 465–98. Berlin: de Gruyter Mouton.
- Kumamoto, Hiroshi. 2009. The Injunctive in Khotanese. In Kazuhiko Yoshida and Brent Vine (eds.), *East and West: Papers in Indo-European Studies*, 133–49. Bremen: Hempen.
- . 2019. More on the Injunctive in Khotanese. In Adam Alwah Catt, Ronald I. Kim, and Brent Vine (eds.), *QAZZU warrai: Anatolian and Indo-European Studies in Honor of Kazuhiko Yoshida*, 213–24. Ann Arbor: Beech Stave.
- Kümmel, Martin Joachim. 2018. The Morphology of Indo-Iranian. In Jared Klein, Brian Joseph, and Matthias Fritz (eds.), *Handbook of Comparative and Historical Indo-European Linguistics III*, 1888–924. Berlin: de Gruyter Mouton.
- Miller *Oss. St.* = V. F. Miller [В. Ф. Миллер]. 1881–87. *Осетинские этюды* [Ossetic Studies]. 3 vols. Moscow.
- Miller, Wsewolod. 1903. Die Sprache der Osseten. In Wilhelm Geiger and Ernst Kuhn (eds.), *Grundriß der iranischen Philologie, Anhang zum ersten Band*. Straßburg: Trübner.
- Ogihara, Hirotohi. 2019. Tumshuqese Imperfect and Its Related Forms. In Pavel B. Lurje (ed.), *Proceedings of the Eighth European Conference of Iranian Studies Held on 14–19 September 2015 at the State Hermitage Museum and Institute of Oriental Manuscripts, Russian Academy of Sciences, in St Petersburg I: Studies on Pre-Islamic Iran and on Historical Linguistics*, 297–310. St. Petersburg: The State Hermitage Publishers.
- Ringe, Don. 2018. Indicative-subjunctive Syncretism in West Germanic. In Dieter Gunkel, Stephanie W. Jamison, Angelo O. Mercado, and Kazuhiko Yoshida (eds.), *Vina Diem Celebrent: Studies in Linguistics and Philology in Honor of Brent Vine*, 390–6. Ann Arbor: Beech Stave.
- Salemann, Carl. 1883. Review of Miller *Oss. St.* I and II. *Literatur-Blatt für orientalische Philologie* 1.138–46.

- Schmitt, Rüdiger (ed.). 1989. *Compendium Linguarum Iranicarum*. Wiesbaden: Reichert.
- Sims-Williams, Nicholas. 1998. The Iranian Languages. In Anna Giacalone Ramat and Paolo Ramat (eds.), *The Indo-European Languages*, 125–53. London: Routledge.
- . 2015. *The Life of Serapion and Other Christian Sogdian Texts from the Manuscripts E25 and E26*. Turnhout: Brepols.
- . 2017. Iranian. In Mate Kapović (ed.), *The Indo-European Languages*². London: Routledge.
- Sjögren, A. J. 1844a. *Iron ævzagaxur, das ist Ossetische Sprachlehre, nebst kurzem ossetisch-deutschen und deutsch-ossetischen Wörterbuche*. St. Petersburg: Kaiserliche Akademie der Wissenschaften.
- . 1844b. *Осетинская грамматика съ краткимъ словаремъ осетинско-российскимъ и российско-осетинскимъ* [Ossetic Grammar with a Short Ossetic-Russian and Russian-Ossetic Dictionary]. St. Petersburg: Tipografija Imperatorskoj Akademii Nauk". (Russian edition of Sjögren 1844a.)
- Skjærvø, Prods Oktor. 2017. The Morphology of Iranian. In Jared Klein, Brian Joseph, and Matthias Fritz (eds.), *Handbook of Comparative and Historical Indo-European Linguistics* I, 503–49. Berlin: de Gruyter Mouton.
- Tedesco, Paul. 1923. *a*-Stämme und *aya*-Stämme im Iranischen. *Zeitschrift für Indologie und Iranistik* 2.281–315.
- Thordarson, Frederik. 1989. Ossetic. In Schmitt 1989, 456–79.
- . 2009. *Ossetic Grammatical Studies*. Vienna: Verlag der Österreichischen Akademie der Wissenschaften.
- Weber, Dieter. 1980. Beiträge zur historischen Grammatik des Ossetischen. *Indogermanische Forschungen* 85.126–37.
- . 1983. Beiträge zur historischen Grammatik des Ossetischen (II). *Indogermanische Forschungen* 88.84–91.
- Yoshida, Yutaka. 2009. Sogdian. In Gernot Windfuhr (ed.), *The Iranian Languages*, 279–335. London: Routledge.

On Double Determination in the Classical Armenian Noun Phrase

JARED S. KLEIN

University of Georgia

In the Classical Armenian text of the gospels, syntagms involving a noun plus a possessive pronominal adjective show definite article marking on the noun about 25% of the time (cf. Italian *il mio tesoro* as opposed to English **the my dog*). In this paper I attempt to characterize the factors that foster the occurrence of the article in this construction, basing my conclusions on a study of all such instances in the Gospel of Matthew.

1 The Classical Armenian noun phrase, as manifested in the text of the Gospels, allows the co-occurrence of two determiners in two sets of cases. In the first, a definite article may co-occur with a demonstrative adjective, ostensibly as if English were to allow **in the this house*. In the second, a definite article may occur with a possessive pronominal adjective (cf. Italian *il mio tesoro* as opposed to English **the my dog*). In the first instance, the determiner is found with such frequency that it can be said to be regular. But in the second, it occurs only about twenty-five percent of the time. Because general discussions of Classical Armenian syntax, such as Meillet 1913 and Jensen 1959, have little to say about these phenomena, I attempt in this paper to explain the regularity in the first instance and to characterize the factors that favor the usage of the article in the second.

The basic corpus for this discussion is the Gospel of Matthew, which comprises 28.7% of the Gospel text in the edition of Künzle (1984) (82 out of 286 pages). Künzle's groundbreaking work encompasses two of the oldest texts of the Armenian gospels, E and M, the first of which dates from 989 CE and has been very well preserved, and the second of which is just over a century older but has been copied with negligence and in general is not as well preserved. Künzle presents the text of E in its entirety and designates in footnotes those instances where the reading of M differs. Such differentiation naturally includes cases where only one of the two texts shows double determination. I have collected all instances in Matthew of the two construction types noted above, recording double determination where it is present in either one of the two texts. I will begin with the ostensible

type **in the this house*, because it is regular and admits of a straightforward explanation.

2 The triform demonstrative and anaphoric pronoun *ays/ayd/ayn* means ‘this/that’ with, respectively, first, second, and third person deixis, and may be used either pronominally or adjectivally. In the latter circumstance, it may precede or follow its head noun. When it precedes, the noun is not further determined (cf. Mt. 8:28 *and ayn čanaparh* ‘along that way,’ 22:23 *y-aynm awowr* ‘on that day,’ 26:31 *y-aysm gišeri* ‘in this night,’ 6:32 *pitoy ē jez ayd amenayn* ‘all that is necessary for you [= *jez*]’); but when it follows, the noun is determined 90% of the time in Matthew.

Before illustrating these passages, it will be useful to review the morphology of both the Classical Armenian definite article and the demonstrative. As is the case with all demonstrative items, the definite article comes with three deictic settings: *-s/-d/-n*, with, respectively, first, second, and third person deixis. This already suggests that these forms are more than just simple definite articles, which ought to show zero deixis. In fact, they are better characterized as demonstrative articles, and it is only the third person setting, *-n*, which is used as a normal definite article ‘the’. The others always entail some non-neutral deictic reading (‘the ... here’ [*-s*], ‘the ... [there] by you’ [*-d*]). In the case of the *ays/ayd/ayn* demonstrative, outside of the citation forms just given, which serve as both nominative and accusative singular, there are two forms for each case-number combination of the paradigm: a shorter form sg. gen. *aysr/aydr/aynr*, dat.-loc.-abl. *aysm/aydm/aynm*, instr. *aysow/aydow/aynow* ([aysəv], etc.), pl. nom. *ayskʻ*, etc., acc.-loc. *ayss*, etc., dat.-gen.-abl. *ayscʻ*, etc., and instr. *aysowkʻ* ([aysəvkʻ]), etc., and a longer form ending in *-ik* (sg. gen. *aysorik*, dat.-loc. *aysmik*, instr. *aysowik* [aysəvik], *aysokʻik*, *aysosik*, *aysocʻik*, etc.¹). In addition, the ablative (both singular and plural) has yet a further long form sg. *aysmanē*, etc. pl. *ayscʻanē*, etc.

The reason this brief discussion of morphology is relevant is that of the 61 instances in Matthew that show this pronoun following its head noun, 54 show a demonstrative article on the noun (five in M only), and every single instance of these shows the long form of the demonstrative outside the nominative and

1 The internal *-o-* of the genitive singular and of the longer plural endings is original and has been retained pretonically before the stressed ending *-ik*, whereas in the singular it has been lost posttonically following the initially stressed *áy-*. But in the dat.-loc. sg. the **-o-* has first become **-u-* before the nasal *m* and has subsequently been lost by normal Classical Armenian deletion of high vowels in unstressed syllables. The instrumental plural is a highly complex (and obviously secondary) *aysokʻiwkʻ*, etc.

accusative singular, where it does not exist. Examples of long demonstratives in *-ik* are provided in (1) (all passages are from Matthew unless otherwise indicated):

- (1) a. *oljōyn tan-s aysmik*
Peace unto this house-s!²
10:12 (T, D, Θ, etc.)
- b. *ew lini mardoy-n aynorik yetin-n č'ar k'an z-aṙajin-n*
And of that man-n the last (state) is worse than the first.
12:45
- c. *zi t'anjrac'aw sirt žolovrdean-s aysorik*
For the heart of this people-s has become hardened.
13:15
- d. *zinč' arasc'ē mšakac'-n aynoc'ik*
What will he do to those laborers-n?
21:40
- e. *sastakeac' z-spanols-n z-aynosik*
He destroyed those murderers-n.
22:7
- f. *bayc' vasn əntreloc'-n . karčesc'in awowrk'-n aynok'ik*
But on account of the chosen, those days-n will be shortened.
24:22
- g. *Erani ē caṙayi-n aynmik*
Blessed is that servant-n.
24:46
- h. *k'aweal em es y-arenē ardaray-d aydorik*

2 This reading is found only in a minority of manuscripts (T, D, Θ, etc.). It is not present in the Vulgate or in the OCS version.

I am guiltless of the blood of this just man-d.

27:24

Of the seven examples that do not show the demonstrative preceded by an article, four involve the immediate collocation *Xs z-aysosik*, where the preceding *-s* is not the demonstrative article but the accusative plural ending. This raises the question as to whether the absence of the article may be the result of an attempt to avoid the collocation *Xs-s z-aysosik*.³ All of these passages involve the identical opening *Ew elew ibrew katareac' YS* “And it happened, when Jesus completed” and are followed by either *z-aṙaks z-aysosik* “these parables” (1×) or (*z-amenayn z-bans z-aysosik* “(all) these words.” Examples are seen in (2):

- (2) a. *Ew elew ibrew katareac' YS z-amenayn z-bans z-aysosik*

And it happened, when Jesus completed all these words ...

7:28 (= 26:1; 19:1 [without *z-amenayn*])

- b. *Ew elew ibrew katareac' YS z-aṙaks z-aysosik*

And it happened, when Jesus completed these parables ...

13:53

In two additional passages one finds the presence of both structures that concern us in this paper: the accusative *z-bans* is followed by a possessive pronominal adjective, which is in turn followed by *z-aysosik*. Here again, there is no further determination on the noun:

- (3) *Amenayn or lsē z-bans [M: z-]im z-aysosik*⁴

Everybody who hears these words of mine (*lit. these my words*) ...

7:24 (26: “And everybody ...”)

Examples involving the sg. nom.-acc., which possesses only the short form, are the following:

- (4) a. *owm? nmanec'owc'ic' z-azg-s z-ays*

3 The collocation *-s-s* would have been pronounced [səs].

4 Classical Armenian allows the definite accusative object marker *z-* to attach itself to multiple members of the noun phrase.

To whom shall I compare this generation-s?

11:16

- b. *Ew eleal cařay-n ayn egit z-mi i cařayakc'ac' iwroc' or partēr nma hariwr darhekan*

And going out, that servant-n found one of his fellow-servants who owed him a hundred dinars.

18:28

- c. *Law ēr nma tē č ēr cneal mard-n ayn*

It were better for him if that man-n had not been born.

26:24

- d. *hayr im . et'e hnar ē anc'c'ē bažak-s ays y-inēn*

My father, if it is possible, let this cup-s pass from me.

26:39

Having presented the data, let us now attempt to explain the double determination of the noun in all these instances. The most illuminating cases are those in which the noun + determiner complex represents the object of a prepositional phrase; for in these instances, the preposition precedes both the noun and the determiner:

- (5) a. *Bazowmk' asic'en c'is y-awowr-n y-aynmik . TR TR.*

Many will say to me on that day-n, "Lord, Lord."

7:22 (cf. 24:19 *y-awowrs-n y-aynosik* "in those days-n")

- b. *Ew nok'a eleal hambawec'in z-na and amenayn erkir-n and ayn*

And they, going out, spread his fame throughout all that land-n.

9:31 (cf. 12:41 *and azgi-s and aysmik* "with this generation-s")

- c. *ew bžškec'aw manowk-n i žamē-n y-aynmanē*

And the child was healed from that time-n.

17:18

- d. *minc'ew c'-awr-n c'-ayn*
until that day-n

26:29

- e. *ibrew elanic'ēk' i k'alak'ē-n y-aynmanē*
when you leave that city-n ...

10:14

- f. *Ew or ok' gayt'aglec'owsc'ē z-mi i p'ok'rkanc-s y-aysc'anē y-is hawatac'eloc'*
And whoever shall obstruct one of these smallest ones-s believing in me ...

18:6 (cf. 10, 14; 25:45)

The repetition of the preposition in each of these forms makes it clear that the demonstrative is really appositional to the noun. Thus, (e) says literally “when you go out from the city, from that.” In (f), with even more extensive prepositional marking across the NP, one may understand “one of these⁵ smallest ones, of these, of the ones believing in me.” Understanding this, however, we may recognize that the *nota accusativi* *z-* is itself a preposition, albeit synchronically untranslatable; and therefore all the examples we have provided in (1)–(4) showing *z-* marking across the accusative noun phrase fit into this picture as well. But given that the *nota accusativi* has been grammaticalized and is without lexical value, it is reasonable to assume that non-prepositional syntagms involving a noun + postposed demonstrative of whatever case marking would have followed the clear cases and themselves allowed marking on the substantive, effectively treating the postposed demonstrative as appositional in virtually all circumstances. The only instance in Matthew where an article-less non-accusative plural (-s-s) head noun does not bear an article before a postposed demonstrative is 13:1 *Y-awowr y-aynmik eleal YS i tanē-n . nstaw ar̄ covezer-n* “On that day, Jesus, going out from the house, sat by the seashore.” (Contrast 7:22 (5a) above and 8:13[M] *y-awowr-n y-aynmik*.) I do not purport to understand the absence of an article on the head noun ‘day’ here, but the case is completely isolated and should not be taken to detract from the analysis of postposed demonstratives as appositional elements.

3 Having now analyzed the second of the two constructions that form the basis for this paper, let us now move on to the first. Of the 547 occurrences of a head noun followed by a possessive pronominal adjective, 139 (25.7%) show a demonstrative

5 So one must read the “proximal article” -s.

article following the noun. There can therefore be no question of a general rule here, but only a minority tendency, albeit a nontrivial one. In an attempt to understand the circumstances which may be at play in fostering this tendency, I have divided these 139 instances into eight categories, arranged from most to least frequent, followed by a ninth, catch-all category, “other,” which is fourth in frequency but, as far as I can tell, non-homogenous. In the category of infinitives, I found only four examples in Matthew, placing it second from last; but my general familiarity with the text told me that there ought to be a good many more. I therefore canvassed the Gospels of Mark and Luke for further examples, which confirmed my intuitions that this type was significantly underrepresented in Matthew.

I.	Kinship term:	36×
II.	Anaphora:	27×
III.	<i>ašakertk'</i> ‘disciples’:	22×
IV.	Noun of action/abstract noun:	13×
V.	Body-part term:	11×
VI.	Specificity/exclusivity/totality:	5×
VII.	Infinitive:	4×
VIII.	Objective genitive:	3×
IX.	Other:	18×

In the discussion which follows, we will not treat these categories in order of their frequency but rather will group together those types which seem to point to similar motivations for double determination.

Before we treat these individual groups, two important preliminary observations are in order. The first involves morphology. In Classical Armenian, what we are terming possessive pronominal adjectives are homophonous with paradigmatic pronominal genitives in the nominative and accusative singular. Thus, *im* ‘my’, *k’o* ‘your (sg.)’, *s/d/nora* ‘his/her/its’, *mer* ‘our’, *jer* ‘your (pl.)’, and *noc’a* ‘their’ are also inert genitives of their respective pronominal paradigms *es* ‘I’, *dow* ‘you (sg.)’, *s/d/na* ‘he/she/it’, *mek’* ‘we’, *dowk’* ‘you (pl.)’, and *nok’a* ‘they’. In cases other than the nominative and accusative singular, the possessive pronominal adjectives are inflected within their own paradigms, e.g. gen. sg. *imoy*, *k’oy(oy)*, *meroy*, *jeroy*, etc., and even (but rarely) *norayoy*, *noc’ayoy*, etc. This means that in the case of nominative and accusative singular forms, there is a potential ambiguity. The purely pronominal forms are used primarily following improper (i.e. nominally-based) prepositions, e.g. *arāji im* “in front of/before me” (lit. “at the right of me”) and in verb phrases involving participles, which often take genitive subjects, e.g. Mt. 12:3 *oč’? ic’ē ant’erc’eal jer z-or arar Dawit’ . yoržam k’alc’eal* “Have you not

read what David did, when he was hungry ... ?” (lit. “Has it not been read of you ... ?”). In other instances they are understood as adjectives, and we shall treat them as such here, except in those few cases where they appear to function as objective genitives.

The second preliminary observation emerges from an overall evaluation of the data. Double determination in noun + possessive pronominal adjective constructions is strongly associated with actuality, specifically with vivid discourse rooted in the here and now. It does not occur with merely illustrative material, including referents that are presented as types and in quotations from the Septuagint. Thus, in many of his prescriptions, Jesus refers to various exempla which are not meant to be actual. These instances almost never show double determination:

- (6) a. *Ler irawaxorh ənd awsoxi k'owm valgoyn*
 Become quickly reconciled with your adversary.
 5:25
- b. *sirec'ēk' z-t'šnamis jer* .
 Love your enemies.
 5:44
- c. *Zgoyš lerowk' olormowt'ean jerowm* . *mi aṛnel aṛāji mardkan*
 Be careful in your almsgiving, not to do (it) before men.
 6:1
- d. *han nax z-geran-d y-akanē k'owmmē* . *ew apa hayesc'es hanel z-šiwł-n y-akanē elbawr k'o*
 Remove first the beam from your eye, and then you will see to remove the splinter from the eye of your brother.
 7:5

In (a)–(c) Jesus is not asserting that his addressees actually have adversaries or enemies, or that they give alms, nor, in (d), that their eyes have a beam or splinter. And, of course, the brother referred to is not an actual brother. Rather, these terms represent types or, as is the case with the eye in (d), a metaphor.

Similarly, when the syntagm appears in questions, relative or conditional clauses, or under negation, there is rarely double determination. These are all instances of polarity contexts, which have been described as lacking veridicality

(Giannakidou 2002). This too means that there is no concrete real-world referent for the noun in question:

- (9) a. *amenayn or barkanay elbawr iwrown tarapartowc' . partawor lic'i datas-tani . Ew or asic'e c'-elbayr iwr yimar . partawor lic'i ateni*

Everyone who becomes angry at his brother for no reason will be guilty before the judge; and whoever will say to his brother, “fool!” will be guilty before the Sanhedrin.

5:22

- b. *O ic'e i jēn' mard . c'or xndric'e ordi iwr hac' . mit'e k'ar? tayc'e nma*

Who among you would be a man whom his son asks for bread? He wouldn't give him a stone, would he?⁶

7:9

- c. *ew dowk' asēk' . or asic'e c'-hayr iwr kam c'-mayr iwr t'e patarag ē z-or y-inēn-n awgtic'is . ew oč' patowic'e z-hayr iwr ew z-mayr iwr*

And you say, “Whoever will say to his father or his mother that it is a gift that you should benefit from me.” [And]⁷ he will not honor his father and his mother.

15:5.6

- d. *Et'e akn k'o aġ gayt'aglec'owc'anē z-k'ez . xlea z-na ew ankea i k'ēn*

And if your right eye scandalizes you, pluck it out and cast (it) from you.

5:29

In the case of quotations from the Hebrew Bible, these, too, are not rooted in the actuality of the moment. Hence, if they contain syntagms consisting of noun + possessive pronominal adjective, they also do not show double determination:

- (10) a. *Zi AC asac' . patowea z-hayr k'o ew z-mayr*

For God has said, “Honor your father and mother.”

15:4 (Ex. 20:12, Deut. 5:16)

- b. *y-Egyptosē k'oč'ec'ic' z-ordi im*

6 The most literal rendition I can give of a sentence with tortuous syntax.

7 Gk. καί ‘and’ is absent from most mss.

From Egypt I shall call my son.

2:15 (Hos. 11:1)

- c. *aha es ařak'ec'ic' z-hreřtak im ařaji eresac' k'oc' . or patrastesc'e z-čana-parh k'o ařaji k'o*

Behold, I will send my angel before your countenance, who will prepare your path before you.

11:10 (Ex. 23:20)

- d. *aha manowk im z-or antrec'i ew sireli im . and or hačec'aw anjn im . edic' z-ogi im i veray nora*

Behold my servant whom I have chosen and is my beloved, in whom my soul has found pleasure. I will place my spirit upon him.

12:18 (Is. 42:1–4)

- e. *bac'ic' ařakawk' z-beran im*

I will open my mouth with parables.

13:35 (Ps. 78:2)

- f. *bažanec'in z-handerj[M: -s] im y-iwreans. ew i veray patmowčani imoy vičaks arkanein*

They divided my garments among themselves, and cast lots over my cloak.

27:35 (Ps. 22:19)

4 Having set forth these basic conditions that are inimical to double determination, we now turn to a detailed study of those categories where it occurs. We begin with anaphora. This is the least surprising of all these categories, because as Jungmann has shown in great detail (1964–5; cf. also Klein 1996), the *-n* article is employed primarily in rhetorically anaphoric value (i.e. in cases of lexical repetition). Therefore, it is understandable that this category should be well represented. The anaphora usually involves an exact repetition of a term over a short distance of text (one or two stanzas, occasionally longer) within the same discourse segment, where its first occurrence is unmarked by the article, even if it is part of a noun + possessive pronominal adjective structure:

- (11) a. *Et'e matowc'anes z-patarag k'o i veray selanoy ... ew and yišic'ēs t'e elbayr k'o ownic'i inč' xēt' z-k'ēn . ²⁴ t'ol z-patarag-n k'o ařaji selanoy-n . ert' nax hašteac' and elbawr k'owm . ew apa ekeal matowsjir z-patarag-n k'o*

If you offer your gift upon the altar ... and there you remember that your brother has some cause of resentment against you, ²⁴ leave your gift-n before the altar. Go first (and) become reconciled with your brother, and then coming, offer your gift-n.

5:23–4

- b. *manowk im ankeal kay i tan andamaloyc ...⁸ ... asa baniw . ew bžškesč'i manowk-n im*

My servant lies fallen at home paralyzed ... ⁸ ... Speak a word, and my servant-n will be healed.

8:6, 8

- c. *Ew ibrew mtanic'ēk' i town-n . oljōyn tajik' nma ew asasjik' . oljōyn tan-s aysmik .¹³ et'e ic'ē town-n aržani . ekec'ē oljōyn jer i veray nora . apa t'e oč' ic'ē aržani . oljōyn-n jer ar' jez darjc'i*

And when you enter into the house, give (a greeting of) peace to it and say, “Peace unto this house!”.¹³ If the house be worthy, your (greeting of) peace will come over it; but if it be not worthy, your (greeting of) peace-n will return to you.

10:12–3

- d. *ziard? karē ok' mtanel i town hzawri . ew z-gorcis nora yap'štakel . et'e oč' nax kaptic'ē z-həzawr-n . apa z-town-n nora yap'štakic'ē*

How can somebody enter a house of a powerful man and despoil his property, if he does not first bind the powerful man. Then he will despoil his house-n.

12:29

Under the same conditions as above, double determination may be triggered by a morphological derivative of a preceding word:

- (12) a. *Yaynžam or i Hrēastani ic'en p'axic'en i lerins ...²⁰ Yalawt's kac'ēk' zi mi linic'i p'axowst-n jer jmerani*

Then whoever will be in Judaea will flee into the mountains ... ²⁰ Pray that your flight-n will not be in the winter.

24:16+20

- b. *et'e gitēr tanowtēr y-orowm pahow goł gay ... oč' tayr akan hatanel z-tan-n iwroy*

If the lord of the house knew the watch (= hour) in which the thief is coming ... he would not allow (him) to break into his house-n.

24:43

- c. *Yaynžam k'ahanayapetn ... asē . hayhoyeac' ... aha ard lowayk' z-hay-hoyowt' iwn-n nora*

Then the high priest ... said, "He has uttered blasphemy" ... Behold now you have heard his blasphemy-n.

26:65

- d. *ew taran z-na i xac' hanel.* ³² *Ew ... gtin ayr mi Kiwrenac'i anown Simovn. z-na kalan pahak zi barjc'ē z-xac'-n nora*

And they led him away to be crucified. ³² And ... they found a Cyrenean named Simon. And they compelled him that he should carry his cross-n.

27:31–2

In (a) and (c) the anaphoric terms consist of a verb followed by its derivative abstract, and in (b) a compound noun *tanowtēr* 'lord of the house' is followed by the genitive of the simplex noun *town* 'house'. Passage (d) appears at first not to be an example of this type, but *i xac' hanel* is an idiomatic construction meaning 'to crucify', whereas *z-xac'n nora* involves the noun *xac'* in its full lexical value 'cross'.

5 The most frequent subcategory of double determination in noun + possessive pronominal adjective constructions involves kinship terms. This group is much more difficult to explain than anaphoric sequences, because in nearly all instances one can point to numerous passages of the same sort that do not show double determination. It may therefore be helpful to ask the larger question of why double determination is found to a significant degree in this set. A working hypothesis that I developed early on in my research for this paper was that double marking might be linked in general to such features as specificity, uniqueness, exclusivity or totality. That is, the more distinctive or exhaustive the semantic status of a noun modified by a possessive pronominal adjective, the more likely it would be to be doubly determined. Let us note, first, that the very collocation of a noun with such an adjective itself denotes delimitation, in that one is not just speaking, for example, of a *hat*, or even a *red hat*, but rather *my/your/his/her (red) hat*. This is probably responsible for the appearance of double marking in general within this type of

syntagm; and as will be seen below, I have found independent evidence that these phenomena are implicated in double determination. It is also true that of the kinship terms showing double determination, *hayr* ‘father’, *mayr* ‘mother’, and most likely, for the period of Ancient Israel in question, *kin* in the sense ‘wife’, *ayr* in the sense ‘husband’, and *zok’anč’* ‘mother in law’, when combined with a possessive pronominal adjective, had unique referents. This need not be the case for *elbayr* ‘brother’ and *ordi* ‘son’; however, the number of possible referents of such terms was most often not large.

Double determination is found in most instances where there is further specification of the kinship term, either by means of an adjective or a proper name. Many such cases are found in the early chapters of Matthew:

- (13) a. *Ew Yovsēp’ ayr-n nora k’anzi ardar ēr . ew oč’ kamēr arāk’el z-na . xorhec’aw lřeleayn arjakel z-na*

And Joseph, her husband-n, because he was just and did not wish to expose her to public shame, planned to put her aside privately.

1:19

- b. *minč’ew cnaw z-ordi-n iwr zandranik*

Until she begat her first-born son-n.

1:25

- c. *zi nstč’in sok’a erkow ordik’s im. mi ənd ajmē ew mi ənd ahekē y-ark’owt’ean k’owm*

In order that these two sons-s of mine may sit one at the right and one at the left in thy kingdom.

20:21

- d. *tesin z-manowk-n handerj Mariamow marb-n iwrov*

They saw the child with Mary, his mother-n.

2:11

- e. *Ark’elaos t’agaworeac’ Hrēastani p’oxanak Hērovdi hawr-n iwrov*

Archelaus ruled as king in Judaea in place of Herod, his father-n.

2:22

It should not be forgotten that double determination is a decision on the part of the translator. One place where there seems to have been reluctance to apply double marking is in those instances where reference is to the son of the Deity:

(14) *da ē ordi im sireli*

That one (among you) is my beloved son.

3:17 (= 17:5)

The absence of determination on *ordi* here is surprising from the point of view of Christian theology. These words have been spoken by a *bat qol*, a heavenly voice which can only be referring to Jesus in his role as Christ. The only reason I can think of for the translator's not marking *ordi* here is that at this point in the narrative, this status of Jesus has not yet been revealed.⁸

In the case of the relationship between man and the deity, the situation is less clear. Jesus' references to God as "my/your father" are more often than not doubly marked, as in the following instances:

(15) a. *elerowk' dowk' katarealk' . orpēs ew hayr-n jer erkawor katareal ē*

Be ye perfect, just as also your heavenly father-n is perfect.

5:48

b. *orpēs zi elic'i olormowt'iwn-n k'o i cacowk . ew hayr-n k'o or tesanē i cacowk hatowsc'ē k'ez yaytnapēs*

... in order that your mercy should be hidden; and your father-n who sees in hiding will recompense you openly.

6:4

A distinction may be observed between manuscripts E and M in the marking of double determination in the cases where "father" refers to "heavenly father." Of 19 such doubly marked instances in Matthew, nine show double marking only in M, the older of the two mss. (887 vs. 989 CE) but the one which is more negligently written and poorly preserved. Double marking in M generally occurs around 60% more frequently than in E, and this may represent a tendency to reduce this

8 But in Jh. 3:16 there is double marking of *ordi*: *Zi aynpēs sireac' AC z-ašxarh . minč'ew z-ordi-n iwr miacin et* "For God so loved the world that he gave his single-born son." Note that here we might in any case expect marking on *ordi* because of the highly distinctive adjective *miacin* 'single born'. However, unlike the situation in Matthew, the status of Jesus as the revealed Christ is clear from the very beginning in John.

phenomenon over time, at least in the ms. tradition of Classical Armenian, which, in the case of these Gospel manuscripts, is some 450–550 years later than the period of the actual translation. Beside cases like (11a)–(b), there are nine passages where references to the heavenly father show double marking in neither manuscript.⁹

6 Semantically close to instances of kinship terms are those involving head nouns designating parts of the body. Most of these are either unique or occur in pairs. Consequently, they provide the kinds of contexts that, *ex hypothesi*, ought to favor double determination. There are eleven instances of this type, and of these, seven are doubly marked only in ms. M. The examples that might be most expected, based on the conditional restrictions that we have observed with kinship terms, are those seen in purely narrative contexts. Examples of this sort are the following:

- (16) a. *Ew bac'eal z-beran[M: -n] iwr owsowc'anēr z-nosa*

And opening his mouth-n, he taught them.

5:2

- b. *ew beraw glowx[M: -n] nora sktelb*

And his head-n was brought with a plate.

14:11

- c. *bac' z-beran-n nora . ew gtanic'es sater*

Open its mouth-n, and you will find a coin.

17:27

- d. *mateaw ar' na kin mi or ownēr šiš iwloy canragni . ew t'ap'eac' i glowx[M: -n] nora*

A woman who had a vial of expensive oil approached him and poured (it) on his head-n.

26:7

- e. *ar'nowin z-elegn-n ew cecein z-glowx[M: -n] nora*

9 Excluding two instances of vocatives. Note, however, that this means that ms. E fails to show double marking in 18 of 28 cases, M in 9 of 28 cases.

They took the reed and beat his head-n.

27:30

The remaining passages of this sort are in exempla or aphorisms of Jesus, which should render double determination less likely. However, some of these passages are instructive in other ways:

- (17) a. *zi law ē k'ez et'e mi y-andamoc' k'oc' koric'ē . ew mi amenayn marmin-d k'o ankanic'i i Gehen*

For it is better for you that one of your limbs should be destroyed, and your whole body-d not be thrown into Gehenna.

5:29

- b. *Zi? tesanes z-šiwł y-akan elbawr k'o . ew i k'owm akan[M: -d] z-geran-d oč' tesanes*

Why do you see the mote in the eye of your brother, and the beam in your eye-d you don't see?

7:3

- c. *kam ziard ases c'-elbayr k'o . t'ol hanic' z-šiwł-d y-akanē k'owmmē . ew ahawadik i k'owm akan[M: -d] geran-d kay*

Or how do you say to your brother, “Allow me to take out the mote from your eye,” and see there, the beam in your eye-d remains?

7:4

In (a), despite the fact that the (second person) demonstrative article *-d* on *marmin* ‘body’ occurs in an exemplum of Jesus, it is useful to observe that the more general *mi y-andamoc' k'oc'* “one of your limbs” does not show double determination. This supports the idea that double determination may be related to specificity. It may be significant as well that *marmin-d k'o* is preceded by the universal quantifier *amenayn* (see further below). Examples (b) and (c) differ from every passage we have seen so far in that the possessive pronominal adjective precedes its head noun, showing that its position is irrelevant for double determination. Although both violate the general conditions that double determination is atypical of exempla and questions, note that the demonstrative article in both is found in M only, which, as we have stated, has a stronger tendency to show this phenomenon than E; and given that fact, it may be significant that the double marking is only on the body part that is a real constituent of the addressee and not on the ‘brother’-word, which is here

not a literal kinship term but represents a type. Finally, in (c) the presence of the deictic visualizer *ahawadik* ‘see there’ may also play a role in removing this context from its non-actual setting and therefore fostering the presence of double determination on *k’owm akan*[M: -d].

The final instructive passage involving body parts is the following:

- (18) *Bayc’ jer erani ē ač’ac’-d zi tesanen*

But of you, blessed are the eyes, for they see.

13:16

In this instance, we do not have a noun + possessive pronominal adjective syntagm but rather a focalized possessive *jer* ‘of you’. This is clear from the Greek text, which fronts ὑμῶν δέ.¹⁰ Consequently, this passage does not belong here.

7 Sections 4 and 5 have offered a hint that double determination may be fostered by specificity, exclusivity, uniqueness, and possibly totality. Thus, terms such as ‘mother’ and ‘father’ possess unique referents, and body parts in general have at most two. Outside of these particular categories, however, I have found other instances that may be understood in this way:

- (19) a. *tesak’ z-astl-n nora y-arewels*

We have seen his star-n in the east.

2:2

- b. *elic’i jer ban*[M: -n] *ayo-n . ayo ew oč’-n . oč’*

Let your speech-n be “yes, yes” and “no, no.”

5:37

- c. *vardapet-n jer oč’? tay z-erkdrameann*

10 The Greek and Vulgate texts make it clear that the pronoun is not to be understood as an adjective: Gk. ὑμῶν δὲ μακάριοι οἱ ὀφθαλμοὶ ὅτι βλέπουσιν, Lat. *vestri autem beati oculi quia vident*. In Old Church Slavic, too, the structure of the clause *vaši že blaženěi oči ěko vidite* demands that *vaši*, despite its more frequent employment as an adjective, must here be taken as a pronoun. The only first-millennium CE version that treats the second person plural form as an adjective is Old English *sōþlice eadige synt eowre eagan forðam ðe hig geseoþ*. Unfortunately, the Gothic text is missing.

Does your teacher-*n* not give the double drachma?

17:24

- d. *Asē c'na . zi nstc'in sok'a erku ordik's im . mi ənd əjmē k'owmmē ew mi ənd ahekē y-ark'owt'ean k'owm*

She said to him, “That these two sons-*d* of mine should sit one at thy right and one at (thy) left in thy kingdom.”

20:21

- e. *ew oč' Solomovn y-amenayn p'ařs-n iwrowm zgec'aw ibrew z-mi i noc'anē*

Not even Solomon in all his glory-*n* was clothed like one of them.

6:29

In (a) the star that has guided the Magi to Bethlehem is Jesus' specific star. Example (b) is perhaps the most interesting of these passages, because it shows a poorly understood employment of the *n*-article in quotative value (cf. Klein 1996:36 n.21). The double determination of *jer ban-n* “your speech” in M may be related to the marked specificity of the quote, which is the precise predicative referent of *jer ban*. In (c), those who collect the double drachma are addressing Peter and know that it is specifically Jesus who is “your teacher.” In (d), the mother of John and Jacob has asked a favor of Jesus for precisely her only two sons. The passage is remarkable for the fullness of its expressed deixis, “these two sons of mine.” The only one of these instances in which I do not have full confidence is (e), a negative clause, where double determination is disfavored. It is unclear to me whether the double marking is related to the presence of the universal quantifier *amenayn* (‘all’) (cf. also (17a) above).

8 The double determination on *vardapet-n jer* “your teacher” in (19c) leads us to the third most frequent category of this phenomenon, double marking associated with the term *ařakert* ‘disciple’, which illustrates the inverse relationship of student to teacher. It is a simple fact that syntagms involving this term together with a possessive pronominal adjective overwhelmingly show double marking. It also cannot be chance that all such instances involve the plural and, with only three exceptions in Matthew, refer specifically to the disciples of Jesus, who constitute a defined group of twelve. In two passages in our data, this fact is overtly mentioned:

- (20) a. *Ew koč'ec'eal ar' ink'n z-erkotasanesin ařakerts-n iwr ...*

And calling unto himself his twelve disciples-n ...

10:1

- b. *Ew ew ew ibrew katareac' YS z-patowēr erkotasanic' ašakertac'-n iwroc' ...*

And it came to pass, when Jesus finished (his) instruction to his twelve disciples-n ...

11:1

In one instance, Jesus is said to send forth two of his disciples, and in another, one of his disciples is said to speak to him, but double determination is still present in both cases:

- (21) a. *YS arjak'eac' erkows y-ašakertac'-n iwroc'*

Jesus sent forth two of his disciples-n.

21:1

- b. *Ew mi omn y-ašakertac'-n nora asē c'-na ...*

And one of his disciples-n said to him ...

8:21

The three cases that do not refer to Jesus' disciples must have received their double marking on account of a general understanding that disciples presuppose a particular teacher or class of teachers:

- (22) a. *Yovhannēs ibrew lowaw ... z-gorcs-n K'I . arāk'eac' i jeṙn ašakertac'-n iwroc' ew asē c'-nosa ...*

John, when he heard ... the works of Christ, sent by means of his disciples-n and said to them ...

11:2–3

- b. *Ew matowc'eal ašakertk'-n nora . barjin z-marmin-n ew t'alec'in*

And approaching, his (viz. John's) disciples-n carried away the (viz. his) body and buried (it).

14:12

- c. *Ew arāk'en ar na z-ašakerts-n iwreanc'*

And they send to him their (viz. the Pharisees') disciples-n.

22:16

9 We now turn to a category which is poorly represented in Matthew: constructions involving an infinitive followed by a possessive pronominal adjective. With only a small number of exceptions, such instances in not only Matthew, but also Mark and Luke show double determination. This syntagm appears only 4× in Matthew and 5× in Mark; but in Luke there are twenty such instances, which, if this number had occurred in Matthew, would make it fourth in frequency, behind kinship terms, anaphora, and *ašakertk*¹. To call the head element of these structures an infinitive does not do justice to its function. In all cases these are nouns of action which follow a preposition, with overwhelming predominance *i* 'in, at', less commonly *ənd* 'with, at', and in single instances *vasn* 'on account of' and *yet* 'after'. The noun is actually inflected in all these cases, usually with the zero-marked locative. The construction typically signals a temporally backgrounded clause appearing before a clause that occurs along the timeline of the narrative and carries forward the action. Examples from the three gospels I have canvassed, including all four examples from Matthew, include the following:

- (23) a. *el sermanahan sermanel . ew i sermanel-n iwrowm . ēr or ankaw ar̄ čana-parhaw*

A sower went out to sow. And as he sowed (*lit. in his sowing-n*), there was (a seed) that fell beside the road.

13:4

- b. *Ew i mtanel-n nora y-ĒM. dlrdec'aw k'alak'-n amenayn ew asē . ov? ic'ē sa*
And when he entered (*lit. in his entering-n*) Jerusalem, the whole city was in turmoil and said, "Who might this one be?"

21:10

- c. *Ew yet yaṛneloy-n imoy . yaṛaḡec'ic' k'an jez i Galilea*

And after my resurrection-n (*lit. my arising-n*), I will go before you into Galilee.

26:32

- d. *Ew i č'araxawsel-n nora i k'ahanayapetic'-n ew i ceroc' . oč' inc' et patasxani*

And upon his being accused-*n* by the high priests and elders, he gave no reply.

27:12

- e. *ew zarmanayin and yamel-n nora i tačari-n*

And they were surprised at his tarrying-*n* in the temple.

Lk. 1:21

- f. *ew ēr y-anapats [M: yanapati] minč'ew y-awowr ereweloy-n nora İİI*

And he was in deserts [M: a desert] until the day of his appearing-*n* to Israel.

Lk. 1:80

- g. *Ew minč'der nok'a z-ays lsein . yawel aṙak mi ew asē . vasn merjanaloy-n nora y-ĒM*

And while they were listening to this, he added a parable and said, because of his approaching-*n* unto Jerusalem ...

19:11

It is hard to explain this category of employment of double determination other than by simply recognizing it as a nearly constant feature of such constructions. But it does raise the question, because the “infinitives” in these instances are really verbal nouns, as to whether other verbal noun constructions may be treated in the same way.

10 In fact, if we leave aside the catch-all category of “other,” nouns of action (which include morphologically-marked abstract nouns) represent the fourth-most frequent category of double marking in Matthew, with thirteen occurrences. The members of this group comprising process nouns are very close in function to the infinitives and may occur following most of the same prepositions, *and*, *yet*, and *vasn*, that we have observed in the case of infinitives and have the same value ‘in/at/after/on account of his, etc. X-ing’.¹¹ The only difference from the infinitive

11 The most frequent preposition with doubly marked infinitive constructions, *i*, occurs also with other sorts of verbal nouns; but the only cases of this sort I have found involve accusative governance of the preposition (‘into/unto’), which separates this construction from the occurrence of *i* with infinitives, where the preposition must be understood as static ‘in’ with the infinitive in the zero-marked locative case. An example of *i* in dynamic value with a verbal noun is 3:7 *Ew tesimal z-bazowms i Sadowkec'woc'-n ew i P'arisec'woc' ekeals i mkrtowt' iwn-n nora . asē c'-*

constructions is that they do not serve as subordinate background clauses. Some examples are the following:

- (24) a. *zarmanayin žolovowrdk'-n and vardapetowt'iw-n nora*

The crowds were amazed at his teaching-n.

7:28 (cf. 22:33)

- b. *ew eleal i gerezmanac'[M: -n] yet yarowt'ean-n nora. mtin i k'alak'-n sowrb*

And going out from the tombs after his arising-n, they entered the holy city.

27:53

- c. *vasn t'erahawatowt'ean[M: -d] jeroy*

On account of your lack of faith-*d* (*lit.* imperfection of believing)

17:20

Occasionally, this construction occurs without a preposition:

- (25) *zinč' nšan ic'ē k'oyoy galstean-n*

What sign will there be of your coming-n?

24:3

In developing the categories of doubly determined noun phrases, our classification of all nouns showing abstract-noun or noun-of-action morphology into one group was initially based on the fact that infinitives stood out as a category and was prompted by our desire to investigate the extent to which the behavior of these non-infinitive types matched that of infinitives. We have given some examples in which such matching behavior does in fact occur. However, in other instances the noun in question cannot easily be treated as a noun of action, either because it is not deverbative or because it has undergone relexicalization. Such instances are really best treated, *ex post facto*, as belonging to the category of “other.” Examples of this sort include the following:

- (26) a. *et'e oč' ařawelowc'ow ardarowt'iw-n[M: -d] jer aweli k'an z-dprac'-n ew z-P'arisec'woc'. oč' mtanic'ēk' y-ark'ayowt'iw-n[M: -n] erknic'*

nosa “And seeing many of the Sadducees and Pharisees coming unto his baptizing-n, he said to them”

If your justice-*d* does not exceed that of the scribes and Pharisees, you will not enter the kingdom of heaven.

5:20

- b. *owsowc'anēr z-nosa i žolovrdean-n noc'a*

He taught them in their synagogue-*n*.

13:54

- c. *andēr anc'anēk' z-patowiranawn AY . vasn jeroy awandowt'ean-n*

Why do you transgress the commandment of God on account of your tradition-*n*?

15:3

- d. *Ew ēr tesil[M: -n] nora ibrew z-p'aylakn*

And his appearance-*n* was like lightning.

28:3

In (a), *ardarowt'iwn* 'justice' is built to the adjective *ardar* 'just' and cannot be viewed as a noun of action. In (b), *žolovowrd*, which literally means 'gathering', has been relexicalized in the sense of 'place of gathering, synagogue'. *awandowt'iwn* 'tradition' in (c) may preserve something of its original value 'passing down', but lacks an immediate noun of action component. Similar is *tesil* 'vision, appearance' of (d), whose derivation from *tesanem* 'see' is immediately apparent, but whose meaning is somewhat removed from that of a pure noun of action.

11 In a very small group of three or four passages, double determination is associated with what is best considered to be a syntagm consisting of a noun + objective pronominal genitive:

- (27) a. *or z-is andowni ... andowni z-aṙak'ič'-n im*

Who accepts me ... accepts the one who sends-*n* me (*lit.* the sender of me).

10:40

- b. *Ew or erdowaw i tačar-n . erdnaw i na i bnakič'-n nora*

And who has taken an oath by the temple, he takes an oath also by its inhabitant-n (*lit.* the inhabitant of it).

23:21

- c. *Ew edin i veray glxoy nora greal z-vnas[M: -n] nora.*

And they placed written above his head his accusation-n.

27:37

In (a) and (b), the head noun is a deverbative agentive in *-ičʿ*. Such forms lend themselves to interpretations as underlying transitives, with a following genitive functioning as object. In (c), the accusation is against Jesus, whose role is therefore that of an object. This analysis is rendered even more likely in Classical Armenian by the fact that, as noted in §3, the forms *im* and *nora* are ambiguous between readings as strictly pronouns and pronominal adjectives. As a result, these passages occupy a different status from all the other passages we have seen.

A final possible instance of this sort is rendered ambiguous by the range of lexical values of its head noun:

- (28) *el lowr-n nora and amenayn erkir-n Asorwocʿ*

His fame-n/the report-n of him went out throughout all of Syria.

4:24

Here, the head noun *lowr* may mean either ‘fame’ or ‘report’. In the former instance, *lowr-n nora* is a by-now familiar noun + possessive pronominal adjective with double marking; but under the latter reading of *lowr*, ‘his report’ would have to be understood as ‘report of/about him’, and this passage would belong together with the instances of objective genitives seen in (27).

12 Having presented the categories of double marking in noun + possessive pronominal adjective constructions, it is time for us to summarize our results. The first point to be made is that such double marking occurs only about 25% of the time. We have found that double marking is strongly associated with the actuality or veridicality of a referent. It is rarely to be found in polarity-sensitive contexts, including questions, negation, conditions, or relative clauses; and it is normally absent from exempla of Jesus, which are not meant to be actual, and from quotations from the Septuagint, which are similarly not rooted in the actuality of the moment. It is favored in cases of anaphora, with kinship terms, body parts, and in reference to the disciples of Jesus (*ašakertkʿ*), the latter three types being most likely based

on uniqueness or near-uniqueness of reference; for this, together with specificity, exclusivity, and possibly totality appear to play a role in fostering double marking. The most difficult category to explain is that involving infinitives and other verbal nouns. Conceivably, these are based on original constructions where the verb was transitive and the pronominal element an object of the sort seen in (27); but there are no instances in the data we have studied that are to be interpreted in this way. I therefore leave the explanation of this type to future research.

References

- Giannakidou, Anastasia. 1998. Licensing and Sensitivity in Polarity Items: From Downward Entailment to (Non)veridicality. In Maria Andronis, Anne Pycha, and Keiki Yoshimura (eds.), *Proceedings from the Panels of the Thirty-eighth Meeting of the Chicago Linguistic Society*, 29–53. Chicago: The Chicago Linguistic Society.
- Jensen, Hans. 1959. *Altarmenische Grammatik*. Heidelberg: Winter.
- Jungmann, Paul. 1964–5. L'emploi de l'article défini avec le substantif en arménien classique. *Revue des Études Arméniennes* 1.47–99; 2.43–116.
- Klein, Jared S. 1996. *On Personal Deixis in Classical Armenian. A Study of the Syntax and Semantics of the n- s-, and d-Demonstratives in Manuscripts E and M of the Old Armenian Gospels*. Dettelbach: Röhl.
- Künzle, Beda. 1984. *Das altarmenische Evangelium*. 2 vols. Bern: Peter Lang.
- Meillet, Antoine. 1913. *Altarmenisches Elementarbuch*. Heidelberg: Winter.

φ-feature Hierarchy and Old Irish Object Pronoun Distribution*

VALENTINA LUNARDI

University of California, Los Angeles

This paper explains the distribution of the “infix” and suffixed object pronouns in Old Irish as presented by Cowgill (1987) in terms of agreement and the hierarchy among φ-features. Building on recent developments in syntactic theory—especially Preminger’s (2014) rethinking of Chomsky’s Agree operation and Deal’s (2015) model of interaction and satisfaction—it argues that the distribution is regulated by a person hierarchy with the 2nd person at its top, and a gender hierarchy with the feminine at its top. Under this view, the selection of “infix” pronoun would only be available when the subject is at the top of the person hierarchy, or when the object is either at the top of the gender hierarchy or is not susceptible to it (not all object pronouns have a value for gender). Conversely, the selection of suffixed pronoun would only be available when both arguments are lower on the hierarchy scale. While this account still leaves some questions unanswered, further research may provide evidence that the posited hierarchies reach areas of the grammar beyond the distribution of the different forms of object pronouns.

1 Introduction

There are two different strategies in Old Irish to express a pronominal object: they can either be “infix”¹ or suffixed to the verb. Infix pronouns are placed after a preverbal particle and before the verb. Preverbal particles can be either preverbs,

* I would like to thank Brent Vine, David Goldstein, and the other members of the Program in Indo-European Studies at UCLA for their invaluable comments, corrections, and support for this project.

1 The traditional nomenclature for these particles in Old Irish grammar does not conform to current linguistic practices, where an infix is defined as an affix inserted inside a root. The so-called “infix” pronouns are actually prefixed to verbal roots. However, they never appear as the first prefixed particle in a verbal complex, but rather always appear as the second one (i.e. they are, or at least historically were [see Griffith 2011:27], in second position), independently of how many particles are prefixed to the verbal root. This type of pronoun is thus always placed between two morphemes, which must have been what prompted scholars to define it as “infix.”

or particles with other kinds of functions (known in traditional grammar as “conjunct particles”), e.g. negation and complementizers, or the so-called “dummy particle” *no-*, a semantically empty particle whose usage details can be found in the following section. An example of an object infix pronoun is as follows (in bold): *fo-s-ceird* “he throws **it**” (Meid 2015:45, *Táin bó Froích* 16.173). Suffixed pronouns are placed at the end of the verb, e.g. (in bold) *cartha-i* “she loves **him**” (Meid 2015:41, *Táin bó Froích* 2.7). It should be mentioned that suffixed pronouns can also be used in conjunction with prepositions for the formation of the “conjugated prepositions.” Descriptively, we could say that prepositions in Old Irish inflect for person, and that an inflected prepositional form consists of the preposition with an object pronoun suffixed to it. For example, *dūn* ‘to us’ (Thurneysen 1935:5, *Scéla mucce Meic Dathó*, 4.2) is a combination of the preposition *do* ‘to’ and the 1st person plural suffixed pronoun (see Table 2 below). The use of suffixed pronouns with prepositions is not relevant to this paper, however, as there are no distributional issues related to it.

Table 1. Infix pronouns

	Class A		Class B		Class C	
	sg.	pl.	sg.	pl.	sg.	pl.
1st	<i>m^L</i>	<i>n</i>	<i>tam^L</i>	<i>tan</i>	<i>dam^L</i>	<i>dan</i>
2nd	<i>t^L</i>	<i>b</i>	<i>tat^L</i>	<i>tab</i>	<i>dat^L</i>	<i>dab</i>
3rd M	<i>a^N</i>	} <i>s^(N)</i>	<i>t^N</i>	} <i>ta^(H)</i>	<i>(d)id^N, (d)^N</i>	} <i>ta^(H)</i>
3rd F	<i>s^(N)</i>		<i>ta^H</i>		<i>da^H</i>	
3rd N	<i>(a)^L</i>		<i>t^L</i>		<i>(d)id^{L}, (d)^L}</i>	

Table 2. Suffixed pronouns

	Singular	Plural
1st	<i>-um</i>	<i>-unn</i>
2nd	<i>-ut</i>	<i>-uib</i>
3rd M	<i>-i(t)</i>	} <i>-(i)us</i>
3rd F	<i>-(i)us</i>	
3rd N	<i>-(i)t</i>	

Three separate classes of infix pronouns, named respectively Class A, Class B, and Class C, exist. The distribution of Class A and Class B pronouns depends on the phonological shape of the preverbal particle that precedes them. Specifically, Class A pronouns are used after preverbal particles that historically ended in a vowel, while Class B pronouns are used after preverbal particles that historically ended in a consonant (Thurneysen 1946:257–8). The use of Class C pronouns is

limited to certain syntactic contexts. Specifically, they are used in relative clauses, including those introduced by *(s)a^N* (a relativizing particle) in combination with a preposition and those introduced by *i^N* ‘in which’; after the conjunct particles *día^N* ‘if, when’, *ara^N* ‘in order that’, and *co^N* ‘so that’; and after the interrogative particle *in* (Thurneysen 1946:258).² For the sake of clarity, examples are limited to Class A pronouns wherever possible. Table 1 above lists the different forms of infixes object pronouns for reference, and Table 2 provides the paradigm for suffixed object pronouns, of which there is only one class.

The distribution of the two types of object pronouns (infixes vs. suffixed) when used in conjunction with a verb was described by Cowgill (1987). The conditioning contexts he identifies are extremely varied, to the point that the distribution seems unnatural from a morphosyntactic perspective. Cowgill (1987) recognized that some morphosyntactic contexts (e.g. the presence of a preverb or conjunct particle; certain tense-aspect-mood categories; relative clauses) only allow infixes pronouns, while, in other contexts (e.g. the absence of a preverb or conjunct particle; certain tense-aspect-mood categories), infixes and suffixed pronouns vary. He also found that, when they vary, they do so depending on the person and number of the verb form, and on the person, number, and gender of the object pronoun, again with patterns that seem to make little sense from a morphosyntactic perspective. In this paper, I account specifically for the cases in which the distribution depends on person, number, and gender, henceforth φ-features, and I do so by framing it in terms of agreement and phenomena of hierarchy among φ-features.

The structure of the paper is as follows. In Section 2, I survey the distribution of the two types of object pronouns as outlined by Cowgill (1987). Section 3 introduces the theoretical framework and analyzes the Old Irish data. In Section 4, I discuss some remaining problems. Conclusions and potential further steps are outlined in Section 5.

2 The distribution

Before the publication of Cowgill’s 1987 article, it was usually assumed that infixes and suffixed pronouns in Old Irish were in free variation when they co-occurred with simplex (i.e. preverb-less) verbs with no conjunct particle. For example, *beirth-i* (with a suffixed pronoun) and *n-a-beir* (with dummy *no-* and an infixes pronoun) would both mean ‘(s)he takes it’ with no functional difference

2 As is standard in the literature, I use superscript *N* to indicate that a morpheme triggers nasalization of the first phonological segment of the following morpheme. Similarly, superscript *L* indicates lenition, and superscript *H* aspiration.

between them (Quin 1975:43–4, Sims-Williams 1984:149, among others). Cowgill (1987), prompted by a footnote in Watkins 1963 calling for “an examination of the attestations of [the] two types” (Watkins 1963:7 n.2), surveyed their distribution and discovered that the infixed and suffixed pronouns were in complementary distribution: **n-a-beir* is in fact not attested, presumably because it was ungrammatical. In Sections 2.1 and 2.2, I report Cowgill’s findings, including the examples he uses for each case. I add some further explanation of basic facts of Old Irish grammar, along with grammatical glosses to Cowgill’s examples.

2.1 Verbal categories requiring infixation

In certain morphosyntactic contexts, there is no alternation between infixed and suffixed pronouns, as the infixation pattern is the only possible one. For two of these cases, infixation is easy to account for. If a preverb, as in (1), or a conjunct particle, as in (2), is present, then the second-position slot in the clause is located between it and the verb. The presence of either one of these elements then presumably forces the choice of infixed pronoun.

- (1) *d a gní*
 PRV. 3SG.OBJ.NEUT. (LEN.)do.3SG.PRES.

He does it. (Stokes and Strachan 1901:665, Wb³ 26a12)

- (2) *ní mboí*
 NEG. 3SG.OBJ.MASC. NAS.be.3SG.PRET.

He did not have; *lit.* there was not to him. (Stokes and Strachan 1901:266, MI 78a4)

In a similar fashion, the second-position slot falls before the verb when it is imperfect, past subjunctive, or secondary future. These tense-aspect-mood categories indeed require, in the absence of another preverbal particle, the dummy particle *no-* even when there are no object pronouns involved. In other words, these categories never appear without a preverbal particle. The following is an example of an imperfect verb with *no-* and an infixed pronoun:

- (3) *n a mberad*
 PRT. 3SG.OBJ.MASC. NAS.carry.3SG.IMPF.

3 Wb is the standard abbreviation for the Würzburg glosses on the Pauline Epistles, while MI is the standard abbreviation for the Milan glosses on a commentary on the Psalms. The Old Irish glosses are interlinear and marginal notes to and translations of certain Latin texts.

He used to carry him. (Bergin 1905:222)

Slightly different is the situation with imperative verbs, relative verbs, and passive verbs—despite the seeming availability, in some cases, of a second-position slot directly after the verb, one only ever finds infixes. Specifically, the imperative does not make a distinction between “absolute” and “conjunct” forms.⁴ Imperative forms are always stressed on the first syllable whether the verb has a preverb or not (such as present indicative *as-beir* “(s)he speaks” with stress after the preverb vs. imperative *epred* “let him/her speak!” with stress on the preverb). One of the few exceptions to initial stress in imperatives is caused by the presence of an infix object pronoun, which makes the stress shift to the second syllable. If a verb has at least one preverb, the pronoun is inserted after the first preverb. If the verb is simplex, then the pronoun is inserted between dummy *no-* and the verb.⁵

- (4) *n a nglanad*
 PRT. 3SG.OBJ.MASC. NAS.purify.3SG.IPV.

Let him purify himself. (Stokes and Strachan 1901:570, Wb 11d8)

Old Irish has different strategies to express relative clauses. For 3rd person singular, 1st person plural, and 3rd person plural forms of verbs with no prefixed particles, the strategy consists of a synthetic absolute form, such as *beires* “((s)he who takes” / “whom (s)he takes.”⁶ Yet, in the presence of an object pronoun, once again infixation with dummy *no-* is selected over suffixation despite the availability of these absolute forms. An example of this is in (5)—note the use of a Class C infix pronoun. To express relativity for other person/number combinations and to form prepositional relative clauses, a preverbal particle of some kind is always needed, which means that there would be no ambiguity as to the position of the object pronoun.

- (5) *no d nail*
 PRT. 3SG.OBJ.MASC. NAS.nourish.3SG.PRES.

(He) who nourishes him. (Stokes and Strachan 1901:528, Wb 5b28)

4 Old Irish has two sets of verbal inflections—the absolute set is used when there are no preverbal particles and the conjunct set when these are present. Absolute forms are normally stress-initial. For conjunct forms, the stress normally falls on the syllable following the first preverbal particle.
 5 As Cowgill (1987:3) reports, there are some apparent cases of suffixation of object pronouns to imperative forms, all of which have, however, been dealt with in Breatnach 1977.
 6 There is no distinction between relative forms signaling a subject vs. an object antecedent.

Finally, for passive verbs, the addition of a (strictly infix) object pronoun clearly serves a different purpose. There are only 3rd person synthetic absolute forms of the passive in Old Irish, but the other persons can be expressed with the insertion of infix object pronouns, as in (6). Suffixed pronouns are not attested with passive verbs.

- (6) *no n línar*
 PRT. 1PL.OBJ. fill.3PL.PRES.PASS.

We are filled. (Stokes and Strachan 1901:23, MI 18c3)

While the obligatoriness of infixation for some of these categories might raise questions, these are outside the scope of this paper, which will instead focus on the alternation between infix and suffixed pronouns outlined in Section 2.2.

2.2 Verbal categories in which the distribution depends on φ -features

Having listed the morphosyntactic contexts in which the use of infix pronouns is obligatory, I now move on to the contexts in which infix and suffixed pronouns vary. Variation can only ever be found if the verb is simplex and not preceded by a conjunct particle. Moreover, the verb needs to have present, present subjunctive, future, or preterite inflection and also be in the active voice. Finally, the verb cannot be relative. As I anticipated, the variation in these cases is dependent on φ -features. Specifically, suffixed pronouns are selected in very restricted contexts, which I list below. There are also contexts, which are listed below as well, where we find both suffixation and infixation, the latter being otherwise the prevailing pattern.

A suffixed pronoun is selected when the subject is 3rd singular and the object pronoun 3rd singular masculine/neuter, as in (7):

- (7) *bērth i*
 carry.3SG.FUT. 3SG.OBJ.MASC./NEUT.

He will bear it. (Stokes and Strachan 1901:643, Wb 23a19)

A suffixed pronoun is again used when the subject is 1st plural and the object pronoun 3rd singular masculine/neuter, as in (8):

- (8) *guidm it*
 beg.1PL.PRES. 3SG.OBJ.MASC./NEUT.

We ask it. (Stokes and Strachan 1901:604, Wb 15d18)

We also find a suffixed pronoun when the subject is 3rd plural and the object pronoun 3rd singular masculine/neuter, as in (9):

- (9) *gebt it*
take.3PL.FUT. 3SG.OBJ.MASC./NEUT.

They will take him. (Stokes and Strachan 1901:665, Wb 26a8)

Finally, we find one when the subject is 1st singular future and the object pronoun 3rd singular masculine/neuter, as in (10):

- (10) *géba it*
take.1SG.FUT. 3SG.OBJ.MASC./NEUT.

I will take it. (Knott 1936: 20, *Togail bruidne Da Derga* 73.664)

When the subject is 3rd singular and the object pronoun 3rd singular feminine or 3rd plural, both infixation with dummy *no-*, as in (11), and suffixation, as in (12), are attested:

- (11) *no s nesrassaigedar*
PRT. 3SG.FEM./3PL.OBJ. NAS.invalidate.3SG.PRES.

He makes it void. (Stokes and Strachan 1901:160, MI 51b27)

- (12) *it ius*
eat.3SG.PRES. 3SG.FEM./3PL.OBJ.

He eats it. (Stokes and Strachan 1901:345, MI 102a15)

Infixation with dummy *no-* is selected in all other cases. An example can be found in (13):

- (13) *n a gníu*
PRT. 3SG.OBJ.NEUT. (LEN.)do.1SG.PRES.

I do it. (Stokes and Strachan 1901:514, Wb 3c30)

The above patterns are summarized in Table 3 below. I signals that an infixed pronoun is required; S signals that a suffixed pronoun is required; S* signals that the suffixation requirement seems to be restricted to the future tense. In the next section, I advance an analysis for the distribution encoded in Table 3.

Table 3. Distribution

		OBJ.								
		sg.					pl.			
		1st	2nd	3rd			1st	2nd	3rd	
				M	N	F				
SUBJ.	sg.	1st	I	I	S*	S*	I	I	I	I
		2nd	I	I	I	I	I	I	I	I
		3rd	I	I	S	S	I S	I	I	I S
	pl.	1st	I	I	S	S	I	I	I	I
		2nd	I	I	I	I	I	I	I	I
		3rd	I	I	S	S	I	I	I	I

3 Hierarchy effects: A possible explanation

3.1 Theoretical assumptions

The distribution outlined in Section 2.2 can be framed under a theory of syntax that models the so-called “hierarchy effects”: it has been shown that the participants of an event (i.e. the arguments), which bear certain grammatical properties, are ranked according to those properties. Cross-linguistically, this ranking often has morpho-syntactic consequences in terms of, for example, agreement, or constraints on the grammatical case of the arguments when more than one is present. The ranking is different depending on the language, although there are some typological tendencies—in languages with person hierarchy, for instance, it is common for the 1st person or the 2nd person to be at the top of the hierarchy, but it is uncommon for the 3rd person to be in that position. Structurally speaking, hierarchy effects are characterized by a configuration containing two DPs whose behavior depends on whether the structurally higher DP is ranked higher on the hierarchy scale than the structurally lower DP, or vice versa.

The modeling of these phenomena relies on concepts related to the theory of agreement. More specifically, for this problem I will rely on the syntactic operation $\text{FIND}(f)$ as stated in Preminger 2014:120:

- (14) $\text{FIND}(f)$: given an unvalued feature f on a head H° , look for an XP bearing a valued instance of f and assign that value to H°

In this context, unvalued features are features satisfied by triggering $\text{FIND}(f)$, probes are heads bearing these unvalued features, and goals are elements bearing valued features. While similar to Chomsky’s (2000, 2001) Agree operation, Preminger’s

formulation allows for the operation to fail without the whole derivation crashing. In other words, if the operation fails (when, for example, there is no goal available for a probe to interact with), the failure would not result in ungrammaticality.

In my analysis, I will also adopt Deal's concepts of interaction and satisfaction (2015). Building upon Preminger 2011, Deal (2015:1–3) argues that there is also a distinction between which features are necessary to trigger the interaction (INT) of a probe with a goal and which are necessary for the satisfaction (SAT) of such probe. This allows for the probe to access different goals until its unvalued SAT features have been met, or until there are no more goals to interact with. In the author's formulation:

- (15) A probe may interact with a feature set F even if it may only be satisfied by feature set G , where $F, G \subseteq \Phi$ (the set of ϕ -features) and $F \neq G$ (Deal 2015:2)

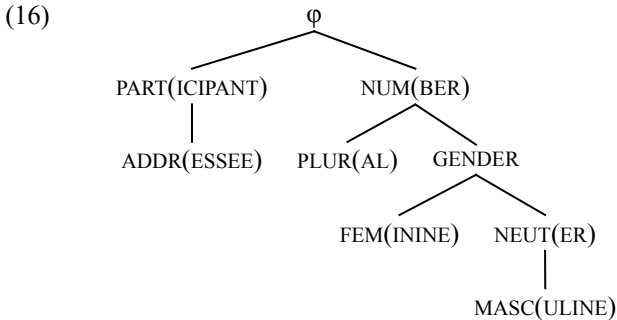
It is important to note that, in such framework, if a probe remains unsatisfied after interacting with all the goals that are accessible to it, this does not result in ungrammaticality.

Finally, I will assume a feature geometry (based on Harley and Ritter 2002) such that the features at the top are entailed by those at the bottom. While the feature geometry related to person is normally agreed upon, the number, and especially the gender geometry and its relation to the number geometry, are not understood as well. Based on the Old Irish pronominal system, for the gender hierarchy I advance a proposal involving the traditional three-way gender distinction of the Nuclear Indo-European languages. In the proposed hierarchy, the FEMININE exists separately from the MASCULINE and NEUTER,⁷ and on the other side of the hierarchy MASCULINE entails NEUTER.⁸ While in feature geometries we normally find the animacy distinction above the traditional gender distinction, with FEMININE and MASCULINE entailing animacy, and NEUTER entailing inanimacy, such a hierarchy is not a possibility for Old Irish object pronouns. This is because the hierarchy in Old Irish is dependent on a three-way grammatical gender distinction, which does not align with animacy (Kramer 2015:139). As for the relation between number and gender in the ϕ -hierarchy, based on data from other languages scholars either support the idea that these two are separate, or believe that gender entails

7 This is an attested opposition in NIE languages. It can be seen, for instance, in some pronominal paradigms (e.g. the **so-* / **to-* pronoun) and in the paradigms of thematic adjectives, where MASCULINE and NEUTER are syncretic in the oblique cases.

8 Either order would work for this problem. However, given the typological tendency of the NEUTER to exhibit syncretism with either MASCULINE or FEMININE paradigms, I placed the MASCULINE in the hierarchy so that it is more highly specified than the NEUTER.

number.⁹ This relationship does not seem to be relevant to the Old Irish pronominal system, as number does not play a role in the selection of pronouns. For completeness, I nevertheless decided to include number in the geometrical representation of features, but its position is somewhat arbitrary. The feature geometry for Old Irish object pronouns then might look something like this:



Φ is the label for the set of ϕ -features. The left daughter of the ϕ -node contains the features related to person. PARTICIPANT is a feature of both 1st and 2nd person, while ADDRESSEE is specific to 2nd person, and is more highly ranked.¹⁰ The right daughter of ϕ presents the NUMBER and (most importantly for our purposes) the GENDER features, whose internal hierarchy I have already discussed. With these theoretical premises, I now show how the framework operates with the data from Old Irish.

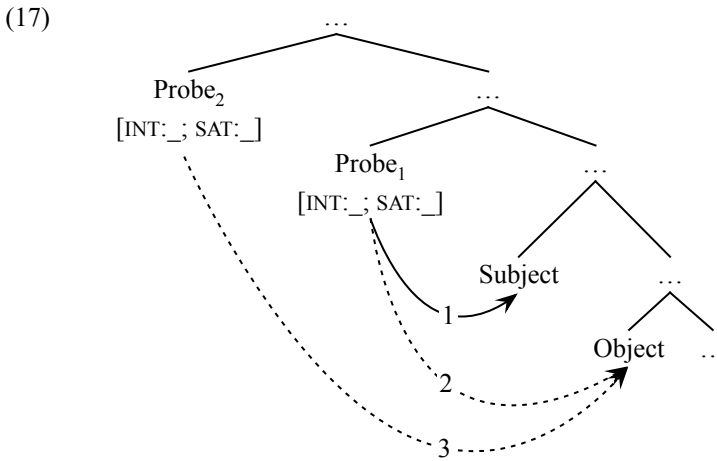
3.2 Analysis of Old Irish data

3.2.1 Probes and ϕ -features

For the Old Irish data, I posit the existence of two probes, both above both the subject (external argument) and the object (internal argument). Probe₁ will first interact with the subject, which is the first accessible goal. If it is satisfied, Probe₂ will interact with the object, i.e. the second accessible goal. If it is not satisfied, Probe₁ will also interact with the object, something which will make the latter inaccessible to Probe₂:

9 See Fuchs, Polinsky, and Scontras 2015 for a recent attempt at formalizing the number and gender geometry through Spanish data.

10 A feature SPEAKER specific to 1st person also exists, but since Old Irish, as I will argue, displays a person hierarchy with the 2nd person at its top, this feature is irrelevant in this context.



I furthermore posit that Probe₁ and Probe₂ should be in T and in C respectively. It has been argued that the first preverbal particle in the verbal complex, when present, is in or moves to C (Carnie, Harley, and Pyatt 2000:46–51). Having a second probe in C makes it possible to explain not only why the infix pronouns surface, by adjoining to C (Carnie, Harley, and Pyatt 2000:52), between the preverbs or conjunct particles and the verb, but also why they surface between semantically empty *no-* and the verb when the distribution is governed by φ-features.¹¹ Thus, the cases in which Probe₁ interacts with both subject and object should correspond to the cases in which the suffixed pronoun is selected. The cases in which Probe₁ interacts with the subject and Probe₂ with the object should instead correspond to the cases where the infix pronoun is selected.

11 It is not easy to explain the existence of *no-*. Carnie, Harley, and Pyatt 2000 argue, based on previous work on Modern Irish syntax, that Old Irish has a “filled-C” requirement, by which C must be realized phonologically. While this might seem to explain why we have a dummy particle to attach to the object pronoun (where *no-* fills the C position and the pronoun adjoins to it after movement), this is actually not the case. According to their analysis, it should be the verb that fills the C position by moving to it, meaning that their framework does not account for what is effectively the more common pattern in Old Irish, namely infixation. Perhaps my own analysis will provide a way to resolve the issue. If it is true that, in the cases of suffixation, the features of the object pronoun are copied to Probe₁ (T), and that, in the cases of infixation, the features of the object pronoun are copied to Probe₂ (C), then it is not inconceivable to come up with a system whereby the verb only ultimately moves to C if the φ-features of the pronoun have already been copied onto it in T, whereas if the φ-features are copied directly to C without coming in contact with the verb, the raising of the verb to C is somehow blocked.

The arguments, depending on what persons they are, will have the following valued features:

Table 4. Person features

1st person	2nd person	3rd person
[φ]	[φ]	[φ]
[PART]	[PART]	
	[ADDR]	

Third person singular objects can also be specified for gender:

Table 5. Gender features

3rd neuter	3rd masculine	3rd feminine
[GENDER]	[GENDER]	[GENDER]
[NEUT]	[NEUT]	[FEM]
	[MASC]	

For Old Irish then, I argue that the choice of object pronoun is governed by a 2nd >> 1st/3rd person hierarchy and a FEMININE >> MASCULINE/NEUTER gender hierarchy. Hierarchy effects are going to show as a consequence of the results of the interactions of the probes with the arguments. Specifically, if Probe₁ interacts with a subject that ranks high on the person hierarchy scale (i.e. it interacts with a 2nd person [ADDR] feature), an infixed pronoun appears.¹² If, on the contrary, Probe₁ interacts with a subject that ranks low on the person hierarchy scale, then the gender features of the object will determine the variation. If the object ranks high on the gender hierarchy scale or does not have gender features, then Probe₂ will interact with it and we will again get an infixed pronoun; if the object ranks low on the gender hierarchy scale, then Probe₁ will interact with it and we will get a suffixed pronoun.

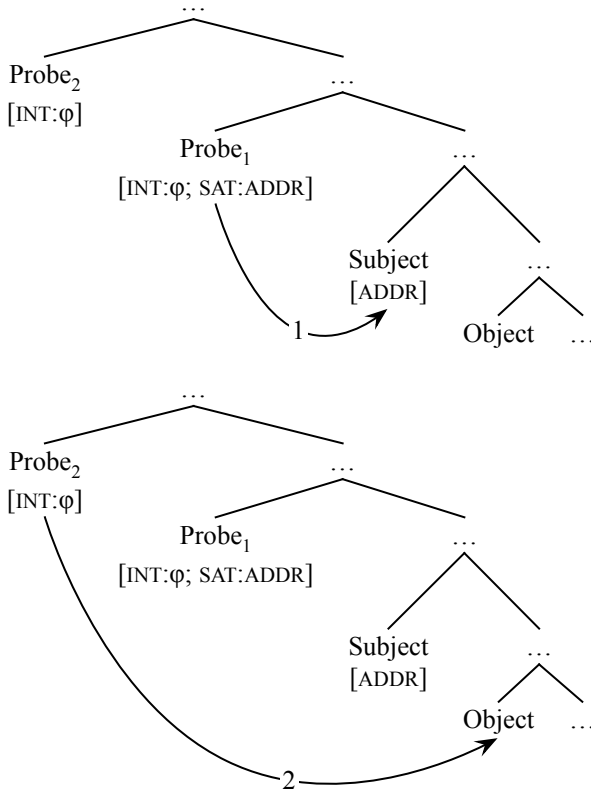
12 It is not entirely clear whether these “pronouns” are meaningful clitics or simply agreement markers. Traditionally, these were considered to be meaningful clitics, but more recent scholarship seems to be oriented to proving that these are in fact agreement markers (see, e.g., Eska 2009 and Griffith 2011). Nothing in my analysis depends on whether the pronouns are identified as clitics or agreement markers.

3.2.2 Analysis

Probe₁ starts with the following unvalued features: [φ] as INT condition and [ADDR] as SAT condition. Probe₂ only has [φ] as INT condition, but no SAT condition.¹³

If, when Probe₁ interacts with the subject, the [ADDR] feature is satisfied, then Probe₂ interacts with the object. The φ-features of the subject are copied to Probe₁, and the φ-features of the object to Probe₂:

(18) 2nd person subject plus any person object, e.g. *no-n-caraid* “you all love us”:



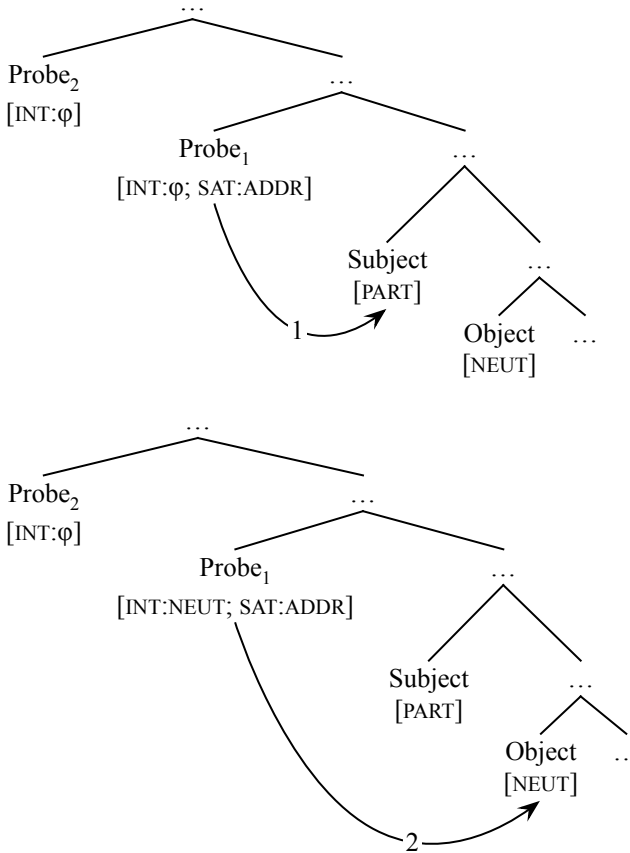
As predicted, cases like the one in (18) yield infixation of the object pronoun.

13 As discussed above in connection with (15), the feature(s) necessary to trigger the interaction of a probe with a goal (i.e. the INT condition) can be treated separately from the feature(s) necessary to satisfy such goal (i.e. the SAT condition). In other words, a probe only stops interacting with possible goals (i.e. goals containing at least the feature of the INT condition) when it either meets a goal containing a feature that satisfies it or when there are no more goals available to interact with.

If, when Probe₁ interacts with the subject, the [ADDR] feature is not satisfied, then a new INT condition involving gender features, namely [NEUT], is “unlocked.”¹⁴ It follows that Probe₁ can only interact with the object when it is either MASCULINE or NEUTER.

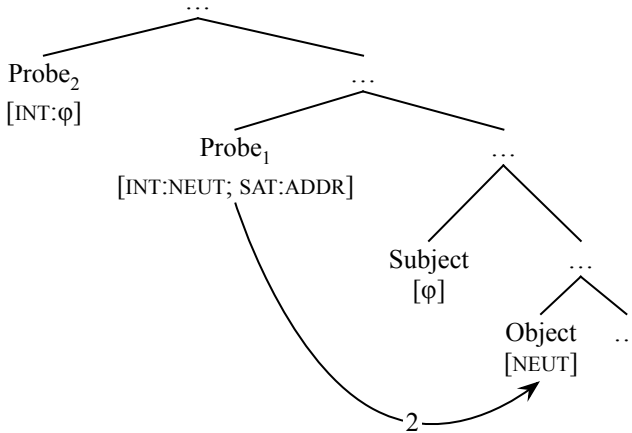
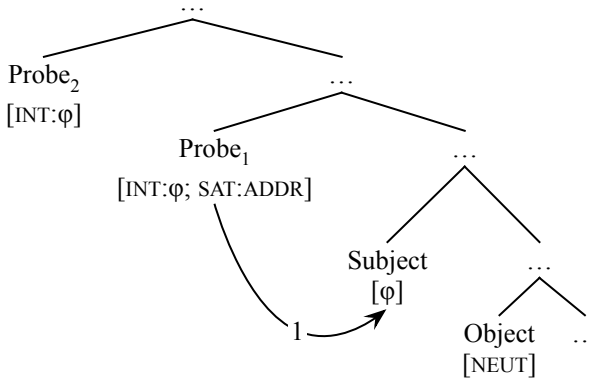
If the object contains a [NEUT] feature, both the subject and the object ϕ -features are copied to Probe₁:

- (19) 1st person subject plus 3rd person MASCULINE or NEUTER object, e.g. *gēba-it* “I will take it”:



14 While changes of the INT condition along the probing process have been posited before (see the model of dynamic interaction in Deal forthcoming), these are normally dependent on the ϕ -features found in the first goal—in other words, some ϕ feature found in the first goal might become a new INT condition. My model is therefore different. Some features get “unlocked” as a consequence of the probe not meeting the feature that satisfies it.

- (20) 3rd person subject plus 3rd person MASCULINE or NEUTER object, e.g. *bēirth-i* “he will bear it”:

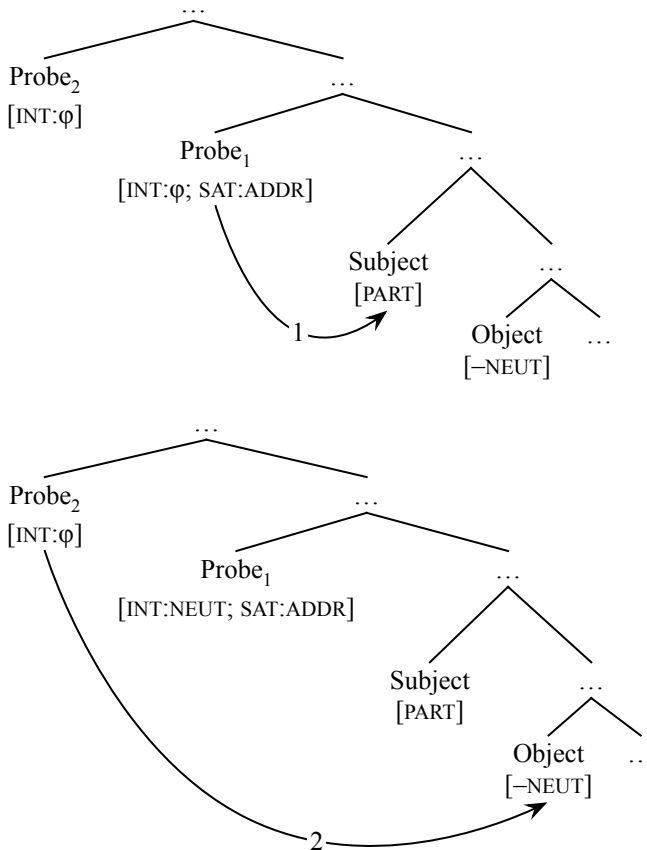


In cases such as (19) and (20), the object suffix is again suffixed, as predicted. Note that, while it is the case that Probe₁'s SAT condition ([ADDR]) remains unsatisfied in instances such as those in (19) and (20), this does not result in ungrammaticality. Similarly, thanks to the adoption of Preminger's FIND(*f*) operation rather than Chomsky's Agree operation, the fact that Probe₂ is left without a goal to interact with does not make the derivation crash.

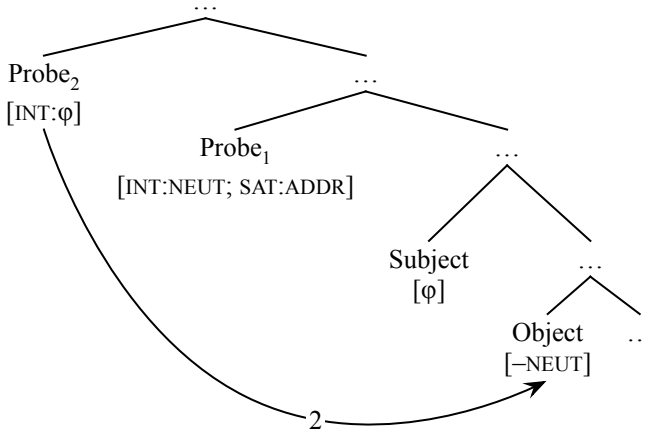
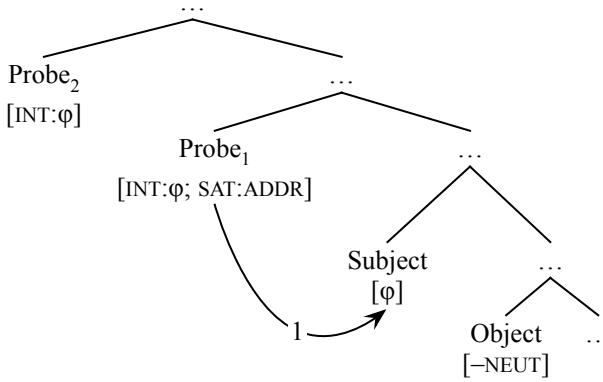
If the object has a [FEM] feature or does not contain any gender feature, then it is impossible for Probe₁ to interact with the object, and it is therefore Probe₂'s turn to probe. The φ-features of the subject are copied to Probe₁ (21), and the φ-features of the object to Probe₂ (22), just as in (18). Once again, the predictions are matched: in cases such as (21) and (22) the object pronoun is infixed.

An alternative analysis could be that, given that the 3rd singular feminine and the 3rd plural object pronouns are morphologically equivalent, the effects of the syncretism could have spread to the syntax: perhaps originally we simply had [GENDER] as the new INT condition, but the feminine pronouns ended up conforming to the 3rd plural pronouns. This is corroborated by the alternation between suffixation and “infixation” for both the pronouns in question in the third row of Table 3, indicating perhaps that the syntactic effects of the syncretism had not yet fully grammaticalized.

- (21) 1st person subject plus any person object except 3rd person MASCULINE or NEUTER, e.g. *no-t-charaimm* “I love you”:



- (22) 3rd person subject plus any person object except 3rd person MASCULINE or NEUTER, e.g. *no-m-chara* ‘he loves me’:



3.2.3 Diachrony

While the analysis above efficiently accounts for the data presented in Section 2.2, the picture becomes more opaque when we consider a number of fossilized and archaic forms. The 3rd singular form of the substantive verb is in fact attested with suffixed pronouns in all persons and numbers to express possession, e.g. *tath-ut*, ‘there is to **you**’, ‘**you** have’ (Thurneysen 1935:4, *Scéla mucce Meic Dathó*, 3.20); moreover, we can, though rarely, find 3rd singular verb forms with non-third person suffixed pronouns in persons in archaic texts, e.g. *ainsi-um*, ‘may he protect **me**’ (Stokes and Strachan 1903:352, *Sanctán’s Hymn* 14). Finally, again in archaic

texts, the suffixation pattern seems to be obligatory for 3rd singular feminine and 3rd plural pronouns.

In this context, it is necessary to mention the analysis proposed by Eska (2003) for the distribution of the Old Irish object pronouns. In Eska 2003, a diachronic phonological account of this distribution that clearly pays more attention to these archaic and fossilized forms is advanced. One interesting hypothesis that the author makes is that the 3rd plural verb form plus suffixed pronoun complex, just like the 3rd singular verb form plus suffixed pronoun complex, historically should not result in a phonologically opaque form. Consequently, suffixation of object pronouns following a 3rd plural verb form should also have been preserved in Old Irish. Nevertheless, the overwhelming predominance of morphological categories that require dummy *no-* (see §2) pushes most of the 3rd plural verb form plus suffixed pronoun complexes to analogically succumb to the infixing pattern. Conversely, the other verbal forms (when the subject is 1st or 2nd person) behave according to phonologically regular predictions, privileging the infixation pattern because the phonological changes in the history of the language make the complex with suffixed pronouns indistinguishable from the forms without a pronoun. Note, however, that in Eska's analysis the 1st person verb form plus 3rd singular object complex should also be opaque, and yet is attested.

According to Eska's findings, then, the earlier (partially reconstructed) distribution would have looked as follows:

Table 6. Potential earlier istribution

		OBJ.								
		sg.					pl.			
		1st	2nd	3rd			1st	2nd	3rd	
				M	N	F				
SUBJ.	sg.	1st	I	I	S*	S*	I	I	I	I
		2nd	I	I	I	I	I	I	I	I
		3rd	S	S	S	S	S	S	S	S
	pl.	1st	I	I	S	S	I	I	I	I
		2nd	I	I	I	I	I	I	I	I
		3rd	S	S	S	S	S	S	S	S

Eska's explanation has the clear advantage of accounting both for the forms found in archaic texts, and for the fact that 3rd singular forms of the substantive verb can be found with suffixed pronouns of all persons and numbers. The explanation also clearly involves attempts to reconstruct earlier stages of the distribution, so that

some of the cells in Table 6 do not reflect attested data (most of the last row), while some others reflect attested but unexplained data (the 1st person verb form plus 3rd singular object complexes). My own analysis is, by contrast, synchronic, and the distributional pattern of object pronouns taken into account is the one attested in Old (rather than Early) Irish, which means that neither the forms found in archaic texts nor the fossilized substantive verb forms are considered.

4 Remaining problems

Something that still needs clarification is the fact that a verb with 1st singular subject agreement and a 3rd singular MASCULINE or NEUTER object clitic/agreement only requires suffixation in the future, but not in the present, present subjunctive, and preterite. This might simply be due to the fact that suffixed pronouns are in the process of disappearing. If correct, ESKA's conclusion (2003) that 3rd plural verbs originally selected suffixed pronouns, but no longer do in the attested language, would obviously also be a symptom of this. Why the future specifically would be the last tense to hold on to suffixation though is less clear.

Even if, as anticipated, this is not the aim of this paper, it also remains to be explained why some tense-aspect-mood categories require infixation a priori. Similarly, the fact that the variation between infixated and suffixed pronouns is restricted to certain tense-aspect-mood categories also requires further investigation. One could ask, for example, why the semantically empty particle *no-* is required to form the imperfect, past subjunctive, and secondary future of simplex verbs, but it is not used to form the present, present subjunctive, future, and preterite of simplex verbs—the reason for its presence or absence is clearly tied to the possibility of suffixed pronouns to appear, but the nature of that reason is far from clear.

What seems to be controversial arises when we compare the analysis in Section 3 to that advanced in Griffith 2008. Griffith (2008) surveys the distribution of the *notae augentes*¹⁵ in Old Irish and finds that it is regulated by a person and an animacy hierarchy. The suggested person hierarchy is 1st >> 2nd >> 3rd, which is clearly in contrast with the findings of this paper. In addition, the data analyzed here does not seem to be subject to an animacy hierarchy. However, while it is unusual for two different person hierarchies to be operating within a single language at the same time, occurrences of this kind have been recorded (Haude and Witzlack-Makarevich 2016:434; see, for instance, Zúñiga 2006:170). Because the

15 A pronominal category that is traditionally thought to emphasize other pronominal elements with which they are associated, e.g. *not-charaimm-se* ‘I love you’ vs. *not-charaimm-siu* ‘I love **you**’ (where the boldfaced pronoun is emphasized).

two papers investigate the distribution of different particles, it is not unconceivable that two different hierarchies might be regulating them, and that therefore two different hierarchies are at play within Old Irish grammar.

5 Conclusion and potential further steps

In this paper we have looked at the peculiar distribution of the two different forms of object pronouns in Old Irish and argued that the alternation is conditioned by the person and gender hierarchy. The analysis reveals that Old Irish, at least in relation to the choice of object pronouns, seems to have a 2nd >> 1st/3rd person hierarchy, and a FEMININE >> MASCULINE/NEUTER gender hierarchy. The analysis calls for a new tool involving the “unlocking” of a new INT condition when the SAT condition is not met at the first instance of probing.

It is worth noting that this strange person distribution is found elsewhere in Old Irish grammar. As mentioned in Section 2.1, the language has relative forms of simplex verbs, but only in the 3rd singular, 1st plural, and 3rd plural. For other persons (or in the presence of a preverb or conjunct particle) other strategies are used to express a relative clause, namely lenition or nasalization (after either *no-* or a preverb), as in the following examples:

(23) *caras*
love.3SG.PRES.REL.
(he) who loves / whom he loves.

(24) *no charaimm*
PRV. (REL.LEN.)love.1SG.PRES.
(I) who love / whom I love.

In the same way, the fact that morphological forms of the passive only exist for the 3rd person might also be related to the hierarchy. Although I won't go into either of these issues here, analyses of these phenomena may well reveal that the person hierarchy reaches more areas of the grammar than just the choice of object pronouns.

References

- Bergin, Osborn J. 1905. A Fragment of Old Irish. *Ériu* 2.221–6.
Breatnach, Liam. 1977. The Suffixed Pronouns in Early Irish. *Celtica* 12.75–107.

- Carnie, Andrew, Heidi Harley, and Elizabeth Pyatt. 2000. VSO Order as Raising Out of IP? Some Evidence from Old Irish. In Andrew Carnie and Eithne Guilfoyle (eds.), *The Syntax of Verb Initial Languages*, 39–59. Oxford: Oxford University Press.
- Chomsky, Noam. 2000. Minimalist Inquiries: The Framework. In Roger Martin, David Michaels, and Juan Uriagereka (eds.), *Step by Step: Essays on Minimalist Syntax in Honor of Howard Lasnik*, 89–155. Cambridge, MA: MIT Press.
- . 2001. Derivation by Phase. In Michael Kenstowicz (ed.), *Ken Hale: A Life in Language*, 1–52. Cambridge, MA: MIT Press.
- Cowgill, Warren. 1987. The Distribution of Infixes and Suffixes in Old Irish. *Cambridge Medieval Celtic Studies* 13.1–5.
- Deal, Amy Rose. 2015. Interaction and Satisfaction in ϕ -Agreement. In Deniz Bui Thy Özyıldız (ed.), *NELS 45: Proceedings of the Forty-Fifth Annual Meeting of the North East Linguistic Society*, 179–92. Amherst, MA: Graduate Linguistics Student Association.
- . Forthcoming. Interaction, satisfaction, and the PCC. *Linguistic Inquiry*. (Available on line at <https://ling.auf.net/lingbuzz/005114>, accessed 28 October 2021.)
- Eska, Joseph F. 2003. The Distribution of the Old Irish Personal Object Affixes and Forward Reconstruction. In Karlene Jones-Bley, Martin E. Huld, Angela della Volpe, and Miriam Robbins Dexter (eds.), *Proceedings of the Fourteenth Annual UCLA Indo-European Conference*, 25–36. Washington, DC: Institute for the Study of Man.
- . 2009. Where Have All the Object Pronouns Gone? The Growth of Object Agreement in Earlier Celtic. *Zeitschrift für celtische Philologie* 57.25–47.
- Fuchs, Zuzanna, Maria Polinsky, and Gregory Scontras. 2015. The Differential Representation of Number and Gender in Spanish. *The Linguistic Review* 32.703–37.
- Griffith, Aaron. 2008. The Animacy Hierarchy and the Distribution of the *Notae Augentes* in Old Irish. *Ériu* 58.55–75.
- . 2011. Old Irish Pronouns: Agreement Affixes vs. Clitic Arguments. In Andrew Carnie (ed.), *Formal Approaches to Celtic Linguistics*, 65–93. Newcastle upon Tyne: Cambridge Scholars Publishing.
- Harley, Heidi, and Elizabeth Ritter. 2002. Person and Number in Pronouns: A Feature Geometric Analysis. *Language* 28.482–526.
- Haude, Katharina, and Alena Witzlack-Makarevich. 2016. Referential Hierarchies and Alignment: An Overview. *Linguistics* 54.433–41.
- Knott, Eleanor. 1936. *Togail bruidne Da Derga*. Dublin: Dublin Institute for Advanced Studies.
- Kramer, Ruth. 2015. *The Morphosyntax of Gender*. Oxford: Oxford University Press.
- Meid, Wolfgang. 2015. *The Romance of Froech and Findabair, or, The Driving of Froech's Cattle: Táin Bó Froich*. Innsbruck: Institut für Sprachen und Literaturen der Universität Innsbruck.
- Preminger, Omer. 2011. Agreement as a Fallible Operation. Ph.D. diss., Massachusetts Institute of Technology.

- . 2014. *Agreement and Its Failures*. Cambridge, MA: MIT Press.
- Quin, E. G. 1975. *Old Irish Workbook*. Dublin: Royal Irish Academy.
- Sims-Williams, Patrick. 1984. The Double System of Verbal Inflexion in Old Irish. *Transactions of the Philological Society* 82.138–201.
- Stokes, Whitley, and John Strachan. 1901. *Thesaurus Palaeohibernicus: A Collection of Old-Irish Glosses, Scholia, Prose, and Verse I: Biblical Glosses and Scholia*. Cambridge: Cambridge University Press.
- . 1903. *Thesaurus Palaeohibernicus: A Collection of Old-Irish Glosses, Scholia, Prose, and Verse II: Non-Biblical Glosses and Scholia; Old-Irish Prose; Names of Persons and Places; Inscriptions; Verse; Indexes*. Cambridge: Cambridge University Press.
- Thurneysen, Rudolf. 1935. *Scéla Mucce Meic Dathó*. Dublin: Dublin Institute for Advanced Studies.
- . 1946. *A Grammar of Old Irish*. Dublin: Dublin Institute for Advanced Studies.
- Watkins, Calvert. 1963. Preliminaries to a Historical and Comparative Analysis of the Syntax of the Old Irish Verb. *Celtica* 6.1–49.
- Zúñiga, Fernando. 2006. *Deixis and Alignment: Inverse Systems in Indigenous Languages of the Americas*. Amsterdam: John Benjamins.

Clitic Doubling in Tocharian B*

TEIGO ONISHI

University of California, Los Angeles

This paper shows that doubling of a nominal expression by a pronominal clitic in Tocharian B indicates the doubled expression is topical. The doubled expression is a secondary topic when it represents a theme of a transitive verb or a possessor semantically associated with a theme. In contrast, the doubled expression is a primary topic when it represents a possessor of an intransitive subject. Doubled associates need not be discourse-old, but discourse participants presuppose the referent's existence at the time of utterance.

1 Introduction

Pronominal clitics (PCs) of Tocharian A (1SG *-ñi*, 2SG *-ci*, 3SG *-(ä)ṃ*, PL *-(ä)m*) and Tocharian B (1SG *-ñ*, 2SG *-c*, 3SG *-ne*, PL *-me*) replace overt nominal expressions. In (1), for example, the plural PC *-me*, representing the direct object of the transitive verb *aištär-* ‘knows X’, replaces the nominal expression *sässuwa piśaka wī wakicceṃ* ‘fifty-two distinguished children.’¹ However, PCs sometimes co-occur with an antecedent, and in such cases, they appear to be redundant. In (2), the third-person singular PC *-ne* appears to represent the direct object of the transitive verb *tsopam-* ‘(the brahmin Durmukha) pokes X’, although the direct object itself is represented by the full nominal expression *uttareṃ śamaśkeṃ* ‘the boy Uttara.’ We use the term ASSOCIATE to refer to the nominal expression doubled by a PC.

(1) Non-doubling

<i>k_sse</i>	<i>tänmästrä</i>	<i>sässuwa piśaka wī</i>
REL.M.NOM.SG	be.born.NPST.MID.3SG	son.PL 50 2
<i>wakicceṃ</i>	(:)	
distinguished.ACC.PL		

* I would like to thank all the participants of WeCIEC 32, especially Tony Yates, John Clayton, Abel Warries, Brent Vine, and David Goldstein for their useful comments and suggestions. All errors are my own.

1 Translations are my own except as specified.

mā aištār-me *mā lkān-me*
 NEG know.NPST.MID.3SG-PL NEG see.SUBJ.ACT.3SG-PL

Whoever begets fifty-two distinguished children does not know **them** (if) he does not see them.²

(B255b5; trans. based on CEToM; verse; [7|7]×4)

- (2) Doubling of a nominal expression by a PC

tumeṃ durmukhe brāhmaṇe uttare-«ṃ» śamaśke-ṃ
 thereupon Durmukha brahmin Uttara-ACC boy-ACC
kārwā-ṣṣai witsakai-sa rāskare tsopaṃ-ne
 reed-ADJZ.F.ACC.SG root-PERL sharply sting.NPST.ACT.3SG-3SG

Thereupon the Brahmin Durmukha harshly jabs **the boy Uttara** with a reed root.

(B88a1; trans. based on CEToM; prose)

Scholars have recognized this phenomenon at least since the middle of the 20th century (e.g., Krause 1952:207; Krause and Thomas 1960:163 n.1; Adams 2015:149, among others). For example, Meunier (2015:139–41) noted that doubling clitics function as an anaphor which has a focalizing effect (“anaphore focalisante”). According to Pinault (2008:537), doubling a nominal expression by a pronominal clitic has a pragmatic function, that is, to refer to the theme of an utterance, and doubling is partly motivated morphologically because of the frequent lack of a distinction between nominative and accusative in nouns. In contrast, Peyrot (2017:634; 2019:97–9) and Adams (2015:149) treated doubling clitics as object agreement, that is, as markers of agreement with a (direct) object.

However, despite these analyses, it is fair to say that many questions remain unanswered. This paper focuses on the following two: (1) What does clitic doubling do in TB? and (2) Does clitic doubling in TB have any grammatical or semantic restriction(s)? This paper reveals that doubling of a nominal expression by a PC indicates the nominal expression is topical. We will observe that a doubled associate represents a primary or secondary topic depending on whether or not the associate is in subject position. In all cases of doubling, discourse participants presuppose the existence of the associate’s referent.

2 I follow the Leipzig glossing rules with the following non-standard abbreviations: ADJZ = adjectivizer, ALL = allative, NPST = non-past, and PERL = perlativ.

2 Topic

2.1 *What is a topic?*

Before we examine the data, a few words are in order regarding the term *topic* since it is used in different ways in the literature. We follow Reinhart (1981) and others in taking a topic to be pragmatic aboutness (Reinhart 1981; Krifka 2008; Roberts 2011, among others). A topic is a part of an utterance about which the utterance is meant to give information. The utterance in (3) concerns Mary, and the sentence's topic is Mary. In (4), however, an addressee is interested in knowing about Harry regarding what Mary gave to him. The sentence topic of (4) is therefore not Mary but Harry.

- (3) *What about Mary? What did she give to Harry?*

[_{TOPIC} *Mary*] *gave a shirt to Harry.*

- (4) *What about Harry? What did Mary give to him?*

[_{TOPIC} *To him*] *Mary gave a shirt.*

(Examples based on Roberts 2011:1911, ex. 2; Vallduví 1993:7, ex. 9)

We also follow Strawson (1964) in the assumption that a topic constituent must have a referent. As summarized by Erteschik-Shir (2007:13–5), if a topic is what a statement is about, and if one evaluates the truth value of a statement as true or false with respect to the topic, then a topic constituent must have a referent. Otherwise, a statement which “is *about* something is really about nothing” (Strawson 1964:116, but see von Stechow 2004 for a different view). Both speaker and addressee must presuppose the existence of a topic referent at the time of the utterance.

Although topics are generally discourse-old, discourse-new referents may serve as a topic. In (5), there are two topic constituents: *Mary* and *the door*. In this short discourse, a sentence topic shifts from Mary to the door, the latter of which has not been introduced to the discourse before.

- (5) [_{TOPIC} *Mary*] *bought a car. But* [_{TOPIC} *the door*] *was broken.*

In this example, an addressee may presuppose the existence of a particular door from the relevant nominal expression *a car*. This process is called BRIDGING (Clark

1975), which enables an addressee to identify a unique referent by making inferences from something that s/he already knows.³

This paper will show that clitic doubling in TB always co-occurs with a topical associate. However, doubling a nominal expression by a PC does not make the expression topical. We assume that topicality is defined not on expressions but referents (Lambrecht 1994; Nikolaeva 2001). It is determined in semanticpragmatics and optionally realized morphologically. In other words, doubling is a sufficient condition for topicality: a nominal expression might represent a topic even if it lacks doubling.

2.2 *The Question Under Discussion model of discourse*

This paper follows the Question Under Discussion (QUD) discourse model (Roberts 2012). This model takes the goal of discourse to be to share information about our world regarding what it is like, that is, to answer the Big Question *What is the way things are?* (Stalnaker 1978; Roberts 2012). To achieve this goal, discourse participants develop several subinquiries that help to answer the Big Question. Under the QUD model, discourse is structured around such questions. It takes each utterance as an answer to the subinquiry stated either explicitly or implicitly. For example, consider utterance (6):

(6) *John knows* [FOCUS MARY].

The QUD of (6): *Whom does John know?*

The utterance (6) has a focal intonation on *Mary*, which helps an addressee identify the implicit QUD, namely *Whom does John know?*. Roughly speaking, a focus constituent corresponds to the wh-constituent of the QUD, and in this example, *Mary* is the focus of this utterance.⁴ The complement of a focus is called BACKGROUND, and a topic constituent is a proper subpart of the QUD and the background of an utterance. For example, *John knows* is the background of (6), and the topic constituent *John* is a proper subpart of the QUD and this background, as illustrated in example (7).

3 See Zhao 2014 for an overview of previous approaches to bridging. Bridging is not limited to part-whole relationships, as illustrated by the following example:

(a) *John was murdered yesterday.* [TOPIC *The knife*] *lay nearby.* (Clark 1975:172)

4 We follow the view of Alternative Semantics (Rooth 1985) and assume that a focus induces a set of alternatives.

(7) QUD: *Whom does John know?*

[BACKGROUND [TOPIC *John*] *knows*] [FOCUS *MARY*].

2.3 *Secondary topic*

A single sentence may have more than one topic. In (8b) and (8c), John is the topic of the sentences as they update information about what happened to John.

(8) a. *What happened to John?*

b. **He** *married Rosa.*

c. *But he didn't really love her.*

(8b and 8c from Dalrymple and Nikolaeva 2011:54)

At the same time, however, (8c) “also increases the addressee’s knowledge about Rosa, namely, the fact that she was not loved by her husband John” (Dalrymple and Nikolaeva 2011:54). In this case, the utterance (8c) provides information regarding the relationship between the primary topic (John) and the referent (Rosa) introduced to the discourse in (8b). Both interlocutors pragmatically presuppose her existence at the time of (8c). In this case, we follow Nikolaeva (2001:2) and analyze Rosa to be the secondary topic of (8c). We define a secondary topic as “an entity such that the utterance is construed to be about the relation that holds between it and the primary topic” (Dalrymple and Nikolaeva 2011:54–7).

Table 1. Summary of (8b) and (8c)

	(8b)	(8c)
QUD	<i>What happened to John?</i>	<i>In what relation did John stand to Rosa?</i>
Focus	<i>married Rosa</i>	<i>didn't really love</i>
Topic expression/referent		
(primary)	<i>he/John</i>	<i>he/John</i>
(secondary)	—	<i>her/Rosa</i>

Table 1 summarizes the information structures of (8b) and (8c). By producing (8c), the speaker updates the addressee’s knowledge regarding the relation between John and Rosa by asserting that the former did not love the latter.

A secondary topic constituent may be an overt object nominal expression or a referential null element (*pro*).⁵ As with primary topics, secondary topics are proper subparts of the current QUD and the background. A sentence with secondary topics always has a primary topic, but a sentence with a primary topic may not have a secondary topic (e.g., 8b). Primary topics differ from secondary topics in pragmatic saliency: the former is more salient than the latter. The former is the most salient topic of the utterance, and it is equivalent to a sentence topic. In many cases, however, it is difficult to determine whether a given nominal expression is the primary or the secondary topic of an utterance. In such cases, we follow Givón (1983:22) and interpret a nominal expression in subject position as the primary topic.

In this subsection, we outlined our assumptions regarding the term topic. A topic is a part of an utterance about which an utterance gives information, and it is a proper subpart of the background and the current QUD. A topic constituent must be referential, with the interlocutors presupposing its existence. A sentence may have more than one topic constituent, and the one which denotes the most salient referent is the sentence topic.

3 Data

Using the CEToM database, we collected 609 TB examples which contained a PC. We examined whether a PC doubles an overtly expressed associate or is used just as a pronoun that replaces a nominal expression. It turned out that twenty examples (3.3%) of the TB verbs with a PC showed clitic doubling.⁶ There are two types of doubling that we distinguish (9). The first type has a doubled associate that undergoes dislocation. This type contains two subtypes: one whose associate precedes a subject and the other in which a dislocated associate follows a finite verbal complex, possibly separated by an intonational break. We label the former as CLITIC LEFT DISLOCATION and the latter CLITIC RIGHT DISLOCATION. The second type

5 A secondary topic roughly corresponds to Vallduví's (1993:8) TAIL, although the former may be a shifted topic while the latter cannot.

6 *kaštār-me* (B3a3 [13]); *klawāte-ne* (B5b5 [15]); *melyan-ne* (B12b7); *(šā)rpsentār-ne* (B15a7); *šārpsentār-ne* (B17b1); *šwām-ne* (B33b1); *maiwāte-ne* (B85b5 [30]); *tsopam-ne* (B88a1 [10]); *(yā)rt(t)en-ne* (B88a6); *pkārsa-ñ* (B99b3 [16]); *kārstāte-ne* (B107a6 [28]); *šeycer-me* (B108a6); *sātk(e)ntār-ne* (B139a3 [32]); *yāmšiyēñ-c* (B231a4); *wināskau-c* (B244a2 [18]); *lkoym-c* (B246a1); *wi(nā)šša-ne* (PKAS6Aa6 [13]); *pakštār-ne* (PKAS7Bb3); *waršā(m)-ne* (PKAS7Na2); and *peññan-me* (PKAS17Ka2).

has a non-dislocated associate in argument position, following a subject. We call this type CLITIC DOUBLING PROPER (CDP).⁷

- (9) Different types of doubling
- a. Dislocated associate
 - i. Associate preceding a (non-topical) subject (Clitic Left Dislocation)
 - ii. Associate following a verbal complex (Clitic Right Dislocation)
 - b. Non-dislocated associate

Associate following a subject (Clitic Doubling Proper)

In this paper we will focus on CDP. In the following subsections, we will show that CDP co-occurs with an associate that denotes a primary or secondary topic. First, we will examine the attestations in which a pronominal clitic doubles a direct object (§3.1). Second, we will turn to the examples whose direct object contains a possessor (§3.2). Finally, we will proceed to the cases in which a subject contains a possessor doubled by a PC (§3.3).⁸

3.1 Doubling of a theme of a transitive verb

Pronominal clitics may double a theme of a transitive verb in Tocharian B. In example (2), repeated here as (10), *uttareṃ śamaśkeṃ* “the boy Uttara” is the direct object (theme) of *tsopam-* ‘(he) pokes X’ and doubled by the pronominal clitic *-ne* [3SG].⁹

7 For the first- and second-person singular PCs, doubling is separable from apposition. The former accompanies an associate that contains an independent form of a personal pronoun, while the latter does not.

8 Due to space limitations, we will not discuss examples in which a PC doubles an indirect object or a possessor of an indirect object. When a PC doubles an indirect object, the doubled associate seems to represent the secondary topic of the sentence.

9 Since the instrument *kār-wāṣṣai witsakaisa* “with a reed root” is also third-person singular, one might wonder whether the clitic *-ne* [3SG] does not double the theme but the instrument. Alternatively, one might wonder whether the clitic does not double anything but represents a possessor of the instrument (i.e., “with his reed root”). We cannot exclude these alternative interpretations in this example. However, in the following example (13), in which the plural PC *-me* appears next to the theme (*(śa)ñ k(e)wān* “own cows”) and the instrument (*śakātaisa* ‘with a stick’), the clitic is unambiguously doubling the theme because the instrument and the possessor of the stick (a herdsman) are both third-person singular, while the theme is third-person plural. In view of this example, therefore, we take the PC *-ne* in (10) to double the theme.

- (10) = (2) CONTEXT: Prince Uttara is tormented by the brahmin Durmukha. His tongue is hanging out of his mouth.

tumeṃ durmukhe brāhmaṇe uttare-«ṃ» śamaśke-ṃ
thereupon Durmukha brahmin Uttara-ACC boy-ACC

kārwā-ṣṣai witsakai-sa rāskare tsopam-ne
reed-ADJZ.F.ACC.SG root-PERL sharply sting.NPST.ACT.3SG-3SG

Thereupon the Brahmin Durmukha harshly jabs **the boy Uttara** with a reed root.

(B88a1; trans. based on CEToM; prose)

This sentence concerns Durmukha and describes what he did to Uttara, so we take the brahmin Durmukha to be the primary topic of this sentence. Nevertheless, Uttara is also discourse-old and pragmatically salient when (10) was produced. Since this sentence updates the relationship between Durmukha and Uttara, we take Uttara to be the secondary topic of this sentence.

- (11) Summary of (10)

- a. QUD: *What does the brahmin Durmukha do to Uttara?*
- b. Focus: *kārwāṣṣai witsakaisa rāskare tsopam-*
“harshly jabs with a reed root”
- c. Topic expression/referent (primary): *durmukhe brāhmaṇe*/Durmukha
- d. Topic expression/referent (secondary): *uttare«ṃ» śamaśkeṃ*/Uttara

CDP may refer to both discourse-new and discourse-old associates in TB. In the first example, the associate (Uttara) is discourse-old. Consider, however, the parallel Sanskrit and Tocharian passages in (12)–(13). The Tocharian version in (13) contains a PC that doubles a discourse-new associate.

- (12) Udānavarga 1.17 (Bernhard 1965:101)

yathā daṇḍena gopālo gāḥ prāpayati gocaram |
evam rogair jarāmṛtyuḥ āyuh prāpayate nr̥ṇām | 17¹⁰

Just as a herdsman **leads cows** to a pasture with a stick, in this way, old age (and) death lead the life of the human beings with sickness.

10 As observed by Thomas (1983:142), the TB passage seems to contain translation from a text which had a variant reading *evam jarā (ca mṛtyuś ca)* “in this way old age and death ...” (Bernhard 1965:101).

- (13) CONTEXT: Maudgalyāyana is explaining to Jātiśrona regarding how one’s life ends.

----- (ša)ñ k(e)wän śakātai-sa kalštär-me
 own cow.PL stick-PERL goad.NPST.MID.3SG-PL

šñār wepeṃ-ś aśan-me :
 respective corral.PL-ALL lead.NPST.ACT.3SG-PL

tu-yknesa ktsaitsñe srūka|(lñe) śaul kältsenträ
 thus old.age death life goad.NPST.MID.3PL

wnołmentso šañ kalymi-ś aken-ne :
 being.GEN.PL own direction-ALL lead.NPST.ACT.3PL-3SG

(Just as a herdsman) **goads (his) own cows** with a stick, and leads them to their corrals, in this way old age and death goad the life of the beings, and lead it to its destination.

(B3a3; trans. based on CEToM; verse; [8|7|6]×2 + [9|9] + [7|6])

This example shows us that doubling of (ša)ñ k(e)wän “(his) own cows” by *-me* in (13) is not imitating the corresponding Sanskrit passage since the direct object *gāḥ* does not show doubling of any independent or bound pronoun in (12). Thus, the CDP found here is motivated by some properties of Tocharian grammar.

Even though the nominal expression (ša)ñ k(e)wän “(his) own cows” is discourse-new, we think the interlocutors presuppose the existence of the referents thanks to the subject “a herdsman” (cf. Skt. *gopālo*). This is an example of bridging, by which a listener may presuppose the existence of a referent from a relevant linguistic expression (§2.1). The primary topic of the subordinate clause is “a herdsman,” which offers a generic interpretation in this case (i.e., “Just as a herdsman, in general, goads his cows ...”). The cows represent the secondary topic of the subordinate clause. This example shows that a discourse-new associate may exhibit doubling when its existence is presupposed by bridging inference.

- (14) Summary of (13)

- a. QUD: *What does a herdsman do to his livestock?*
- b. Focus: *śakātaisa kalštär-* “goads with a stick”
- c. Topic expression/referent (primary): NA/a herdsman (in general; cf. Skt. *gopālo*)
- d. Topic expression/referent (secondary): (ša)ñ k(e)wän/*his cows*

Table 2 summarizes the examples discussed. When PCs double a theme in TB, the doubled theme argument represents a secondary topic. We have shown that an associate does not have to be discourse-old: a PC may double a discourse-new associate whose existence the interlocutors presuppose via bridging.

Table 2. Clitic Doubling of a Theme of a Transitive Verb in TB

	(10)	(13)
Genre	Prose	Verse
Associate	<i>uttare«m» śamaśkem</i>	<i>(śa)ñ k(e)wān</i>
Gloss	the boy Uttara	own cows
Animacy	[+animate] [+human]	[+animate]
Person	————— 3rd —————	—————
Grammatical Function	————— DO —————	—————
Semantic Role	————— Theme —————	—————
Is the associate		
... pronominal?	————— No —————	—————
... discourse-new?	No	Yes
... a primary topic?	————— No —————	—————
... a secondary topic?	————— Yes —————	—————

3.2 Doubling of a possessor of a direct object

In the examples discussed in the previous section, theme arguments did not have any possessor. When the theme argument accompanies a possessor, a PC may, in principle, refer to the theme (possessum) or the possessor of the theme. However, if a possessor and a possessum are of the same person and number, one cannot decide if a PC doubles a possessor or a possessum. For example, *klawāte-ne* ‘he touched X’ in (15) accompanies the third-person singular clitic (*-ne*), which may refer to the theme argument *kektseño* ‘(the Buddha’s) body’, or the possessor *pudñāktentse* ‘of the Buddha’ since both of them are third-person singular.

- (15) CONTEXT: The Buddha sat on the seat, took off his upper garment, and held his back against the sun.

lyamə ānande keni-sa (a)|lyine-sa antapi :
 sit.PST.ACT.3SG Ānanda knee.DU-PERL palm.DU-PERL both

pudñäkte-ntse *kektseño* *klawāte-ne* *lyawā-ne* :
 Buddha-GEN body touch.PST.MID.3SG-3SG rub.PST.ACT.3SG-3SG

Ānanda sat on (his) knees. With both palms he **massaged** the body of the Buddha and rubbed it.

(B5b5; trans. based on CEToM; verse; [7!7]×4)¹¹

Therefore, we need to focus on the examples whose possessor and possessum differ in person or number. In what follows, we show that when a possessor and a possessum differ in person or number, a PC consistently doubles the possessor. The possessors in the following examples are all discourse-old, and the existence of the referents is pragmatically presupposed, while the possessa are all discourse-new.

In (16), the first-person singular PC *-ñ* [1SG] refers to the speaker, King Subhāṣitagaveṣin. It does not double the direct object *yakt-āñm ñi* “my feeble (state),” which is third-person singular. Here the possessor is discourse-old and pragmatically salient at the time of Subhāṣitagaveṣin’s utterance while the possessum *yakt-āñm* is discourse-new.

- (16) CONTEXT: Indra, who changed his appearance to a yakṣa, asks King Subhāṣitagaveṣin why he is so sad. King Subhāṣitagaveṣin answers him:

pūdñäktä-ññe *pelai*(*kne* — — — — — :)
 buddha-ADJZ law

ce_i-sa *ñiś* *ñke* *menki-tse* *te-sa*
 DEM.M.SG-PERL 1SG now lack-ADJZ.M.NOM.SG DEM.N.SG-PERL

pkārsa-ñ *yakt-āñm* *ñi* : 1
 know.IMP.ACT.2SG-1SG feebleness 1SG.GEN

The law of the Buddha ... I lack it now. Because of this, **understand my** feeble state!

(B99b3; trans. based on CEToM; verse; [7!7]×4)

- (17) Summary of (16)

a. QUD: *What do you want me to do?*

11 One might wonder whether the PC in this example is referring to *ānande* ‘Ānanda’, representing the possessor of the instrument (*a*)*lyinesa antapi* (i.e., “using both of his palms”). We cannot exclude this interpretation (but cf. n.8 above).

- (20) CONTEXT:¹² The Buddha_j saw Vajraka_k (i.e. one adorned with a jewel) from afar on the earth. He_k spoke to him_j from afar. The Buddha, in turn, spoke to him_k: “I have seen you from afar.”:

dharmaruci | *weñā-ne-ś* *poysēñcai*
 Dharmaruci speak.PST.ACT.3SG-3SG-ALL omniscient.VOC

lauk(a)r olypotstse :
 far very

kārpa *kent-sa* *poysī-ntse*
 descend.PST.ACT.3SG earth-PERL omniscient-GEN

wi(nā)ṣṣa-ne *pai-(n)e* *l(a)lamṣ(k)i* 10-1
 praise.PST.ACT.3SG-3SG foot-DU tender.DU

Dharmaruci spoke to him_j: “O Omniscient one, a very long time (ago), (he_k) descended on the earth and **praised** the two tender feet **of the omniscient one.**”

(PKAS6Aa6; trans. based on CEToM; verse; [7;8]×4)

In (20), the third-person singular PC *-ne* doubles *poysīntse* ‘of the omniscient one’ who is the possessor of *paine* ‘two feet’ [DU]. This clitic does not seem to double the direct object (*poysīntse paine*) because a dual noun usually triggers plural agreement. In (21), a finite verb in the third-person plural carries a predicative adjective in the dual (Adams 2015:68–9). In (22) from TA, a dual subject (*aśām* ‘two eyes’ and *klośām* ‘two ears’) takes a verb in the third-person plural (*lkeñc* ‘[they] see’ and *klyosneñc* ‘[they] hear’, respectively).

- (21) --- *sonopälle* • *prakaryane mäskeñtär* •
 annoint.NPST.GDV firm.DU become.NPST.MID.3PL
 ... is to be massaged, [and] (they) **become**_{3PL} **firm**_{DU}.

(W26b3; trans. by Broomhead 1962:26)

- (22) [TA] Dual noun triggering plural agreement

(lke)ñc *pe aśām* *krant* *wramām*
 see.NPST.ACT.3PL also eye.DU good.PL thing.PL

swārām *rake* *klyosneñc* *pe klośām* *nāñi* :
 sweet.ACC.SG word.SG hear.NPST.ACT.3PL also ear.DU GEN.1SG.F

12 Example (20) is from a commentary which follows the translation of the Udānavarga 31.6 and 31.7.

[My] **eyes**_{DU} also (se)**e**_{3PL} the good things, my **ears**_{DU} also **hear**_{3PL} the sweet word.

(A58b3; trans. based on CEToM; verse; [7|7|4]×4)

In example (20), the primary topic is Vajraka, who is the non-overt pronominal subject of the finite verbs *kārpa* ‘(he) descended’ and *wi(nā)ṣṣa-me* ‘(he) praised X.’ The Buddha is the addressee of Dharmaruci’s utterance, which updates the relationship between Vajraka and the Buddha. Therefore, we analyze the Buddha as the secondary topic of the utterance. The PC’s associate (*poyśintse* ‘of the omniscient one’) is discourse-old and his existence is pragmatically presupposed by the interlocutors when Dharmaruci spoke to him. At the same time, the possessum *paine* ‘two feet’ has not been introduced to the discourse before.

(23) Summary of (20)

- a. QUD: *What did Vajraka do to the omniscient one?*
- b. Focus: *wi(nā)ṣṣa-pai(n)e l(a)lamṣ(k)i* ‘praised (his) two tender feet’
- c. Topic expression/referent (primary): *pro/Vajraka*
- d. Topic expression/referent (secondary): *poyśintse/the omniscient one*

So far, the examples discussed all have the following structure:

(24) ... [INTERNAL ARGUMENT POSSESSOR_j POSSESSUM] VERB-PC_j.

All possessors were discourse-old, and their referents were pragmatically presupposed, whereas the possessa were all discourse-new. In these examples, PCs doubled the possessor. The examples all expanded the discourse by updating the relationship between the primary topic and the discourse-old possessor by introducing a discourse-new possessum. CDP in TB always co-occurs with an associate representing a topic.

Returning to the ambiguous example (15), repeated here as (25), the possessor (*puḍṇāktentse* ‘of the Buddha’) is discourse-old, and his existence is pragmatically presupposed. At the same time, the possessum (*kektseño* ‘the body’) is discourse-new. Therefore, our analysis suggests that the third-person singular PC *-ne* in (25) does not double the direct object but the possessor *puḍṇāktentse* ‘of the Buddha’.

(25) = (15) CONTEXT: The Buddha sat on the seat, took off his upper garment, and held his back against the sun.

lyamṣ *ānande* *keni-sa* *(a)|lyine-sa* *antapi* :
 sit.PST.ACT.3SG *Ānanda* knee.DU-PERL palm.DU-PERL both

puḍṅākte-ntse *kektseño* *klawāte-ne* *lyawā-ne* :
 Buddha-GEN body touch.PST.MID.3SG-3SG rub.PST.ACT.3SG-3SG

Ānanda_{PRIMARY TOPIC} sat on (his) knees. With both palms he **massaged** the body **of the Buddha**_{SECONDARY TOPIC} and rubbed it.

(B5b5; trans. based on CEToM; verse; [7!7]×4)

In this example, Ānanda is the primary topic of the sentence as it concerns what he did to the Buddha. At the same time, it expands the discourse by introducing a discourse-new possessum *kektseño* and updating the relationship between him and the Buddha. Therefore, the Buddha is the secondary topic of the sentence.

(26) Summary of (25)

- a. QUD: *What did Ānanda do to the Buddha?*
- b. Focus: (a)*lyinesa antapi kektseño klawāte- lyawā-*
 “massaged (his) body with both palms and rubbed it”
- c. Topic expression/referent (primary): *ānande/Ānanda*
- d. Topic expression/referent (secondary): *puḍṅāktentse/the Buddha*

Table 3 summarizes the examples discussed.

Table 3. Clitic Doubling of a Possessor of a Direct Object in TB

	(16)	(18)	(20)	(15)
Genre	----- Verse -----			
Associate	<i>ñi</i>	<i>tañ</i>	<i>poyśintse</i>	<i>puḍṅāktentse</i>
Gloss	my	your _{SG}	of the omniscient one	of the Buddha-lord
Animacy	----- [+animate] ----- ----- [+human] -----			
Person	1st	2nd	----- 3rd -----	
Grammatical function	----- A part of DO -----			
Semantic role	----- (inalienable) possessor -----			

Table 3 continued

	(16)	(18)	(20)	(15)
Possessum	<i>yakt-āñm</i> “febleness”	<i>pelaikneşşai</i> <i>kektseñ</i> “body of the law”	<i>pai(n)e</i> <i>l(a)lamş(k)i</i> “two tender feet”	<i>kektseño</i> “body”
Is the associate				
... pronominal?	————— Yes —————		————— No —————	
... discourse-new?	————— No —————		————— No —————	
... a primary topic?	————— No —————		————— No —————	
... a secondary topic?	————— Yes —————		————— Yes —————	

3.3 Doubling of a possessor of an intransitive subject

In the previous subsection, we demonstrated that when an internal argument (possessum) accompanies a possessor it is always the possessor that is doubled by a pronominal clitic. In such cases, possessors are always discourse-old and topical, possessing discourse-new non-topical possessa. All possessa in the examples discussed are the direct objects of transitive verbs. However, a PC may also double a possessor of an intransitive (unaccusative) subject. In such cases, the associate of a PC is unambiguous—a PC refers to the possessor. If the proposed analysis is on the right track, we expect to find a topical possessor, typically discourse-old, possessing a non-topical discourse-new possessum. We also expect discourse participants to presuppose the existence of the topical possessor.

According to Krifka (2008:267), “[t]here is a well-documented tendency to keep the topic constant over longer stretches of discourse (so-called topic chains, cf. Givón 1983).” If a possessor represents a topical constituent and a non-overt pronominal expression (*pro*) represents a continued topic, we expect to find two consecutive sentences that retain the same topic but have different subjects. In other words, if an intransitive subject carries a topical possessor and if the subject of an immediately following sentence is a *pro*, we predict that the *pro* does not refer to the possessum but the possessor. In contrast, if a possessum is the topic of a sentence and if the subject of an immediately following sentence is a *pro*, the possessum should be the antecedent of the *pro*.

(27) Prediction

- a. Primary topic = possessor

[s1 [SUBJECT POSSESSOR_j POSSESSUM]_k ... VERB]. [s2 [SUBJECT *pro_j*] ... VERB].

- b. Primary topic = possessum

[s1 [SUBJECT POSSESSOR_j POSSESSUM]_k ... VERB]. [s2 [SUBJECT *pro_k*] ... VERB].

This prediction is borne out. A discourse-old possessor represents the primary topic in examples (28) and (30). In (28), the third-person singular PC *-ne* doubles *upagentse* ‘of Upaga’, the possessor of *mañu* ‘desire’, which is the subject of an intransitive verb. This sentence describes how an Ājīvika ascetic Upaga felt after Nānda and Nandābala rejected his request. Therefore, we construe this associate as the primary topic of the sentence. The subject of a sentence shifts from *upagentse mañu* ‘Upaga’s desire’ to *pro*, which refers to Upaga. This non-overt subject shift supports the analysis that Upaga is the primary topic of the first sentence.

- (28) CONTEXT: Nānda and Nandābala were preparing rice porridge. An Ājīvika ascetic Upaga came by and saw it. He requested it from them, but they rejected his request. They said they would give it to the most brilliant among the sages.

upage-ntse mañu kārstāte-ne *ṣaṅ ytāri* |
 Upaga-GEN desire destroy.PST.MID.3SG-3SG own way.ACC

masa ||
 go.PST.ACT.3SG

The desire of **Upaga_j** was destroyed, (and **he_j**) set out on his way.

(B107a6; trans. based on CETOm; prose)

(29) Summary of (28)

- a. QUD: *What happened to Upaga?*
 b. Focus: *mañu kārstāte-* “(his) desire was destroyed”
 c. Topic expression/referent (primary): *upagentse/Upaga*
 d. Topic expression/referent (secondary): —

In example (30), the clitic *-ne* [3SG] doubles *araṇemiñ lānte* “of King Araṇemi” who is the possessor of the discourse-new referent (*pit* ‘gall’). This sentence describes what happened to King Araṇemi after hearing his son Uttara. The king is

therefore the primary topic, which is continued into the following sentence as the non-overt pronominal subject of *klāya* ‘(he) fell’.

- (30) CONTEXT: Prince Uttara is seeking help and speaking to his father, King Araṇemi: “My father, o lord, take me away from these Rākṣasas! You are still alive, but they will now devour me.”

te keklyau«šo»rmeṃ araṇemi-ñ lānte pit
 DEM.N hear.ABS Araṇemi-GEN king.GEN gall

maiwāte-ne k(eṃ)t-sa klāya •
 tremble.PST.MID.3SG-3SG earth-PERL fall.PST.ACT.3SG

Having heard this, **King Araṇemi’s** gall **trembled** (i.e., King Araṇemi_i fainted) (and **he**) fell to the ground.

(B85b5; trans. based on CEToM; prose)

- (31) Summary of (30)
- a. QUD: *What happened to King Araṇemi?*
 - b. Focus: *pit maiwāte-* “(his) gall trembled”
 - c. Topic expression/referent (primary): *araṇemiñ lānte*/King Araṇemi
 - d. Topic expression/referent (secondary): —

The following example likewise exhibits the doubling of a possessor of an intransitive subject. However, due to the lack of context, it is unclear whether the possessor is topical or not. In (32), the third-person singular PC *-ne* doubles *cpī* ‘his’, which is the possessor of *auloñ ... lyitkwänmā* “blood vessels and tubes.”

- (32) CONTEXT: N/A

/// auloñ cpī sūtk(e)ntür-ne lyitkwä-nmā
 blood.vessel.PL DEM.GEN.SG spread.NPST.MID.3PL-3SG tube-PL

... **his** blood vessels (of the body and) tubes **spread out**.

(B139a3; verse; [7¹7]×4?)

Table 4 summarizes the examples discussed. We have shown that when a PC doubles a possessor of an intransitive subject, if there is sufficient context available, the possessor consistently represents the primary topic of the utterance. We have observed that a sentence that immediately follows may switch its subject to a *pro* without introducing an overt nominal expression. This suggests that the non-overt

pronominal subject represents the continued topic of the sentence and that the topic of the preceding sentence is not the possessum but the possessor doubled by a PC.

Table 4. Clitic Doubling of a Possessor of an Intransitive Subject in TB

	(28)	(30)	(32)
Genre	Prose		Verse
Associate	<i>upagentse</i>	<i>araṇemiñ lānte</i>	<i>cpi</i>
Gloss	Upaga's	King Araṇemi's	his
Animacy	[+animate] [+human]		
Person	3rd		
Grammatical function	A part of subject		
Semantic role	(inalienable) possessor		
Possessum	<i>mañu</i> “desire”	<i>pit</i> “gall”	<i>auloñ lyitkwänmā</i> “blood vessels (and) tubes”
Is the associate			
... pronominal?	No		
... discourse-new?	No		
... a primary topic?	Yes		?
... a secondary topic?	No		?

4 Conclusion

The two research questions that we tackled in this paper are as follows: (i) What does clitic doubling do in TB? and (ii) Does it have any grammatical or semantic restriction(s)? For (i), we have shown that CDP may represent a primary or secondary topic, depending on whether or not an associate is in subject position. For (ii), we have seen that doubled associates are topical. In order to have this status, the referent's existence at the time of the utterance must be presupposed.

In all of the examples whose pronominal clitic doubles a theme of a transitive verb, the theme represents the secondary topic of a sentence. Its existence is pragmatically presupposed at the time of the utterance, and the sentence updates the relationship between the primary and the secondary topic. When a theme of a transitive verb accompanies a possessor, a PC constantly doubles the possessor. We have shown that the possessors in the examples were all discourse-old and

(inalienably) possess discourse-new possessa. The possessors are thus topical—they are primary or secondary topics depending on whether or not possessa occupy subject position. When a possessum is in the subject position of an intransitive verb, its possessor represents the primary topic, which may continue as the *pro* in the following sentence (§3.3). In contrast, when there is a separate external argument, the external argument is the primary topic, and the doubled associate represents the secondary topic (§§3.1 and 3.2).

References

- Adams, Douglas Q. 2015. *Tocharian B: A Grammar of Syntax and Word-Formation*. Innsbruck: Institut für Sprachen und Literaturen der Universität Innsbruck.
- Bernhard, Franz. 1965. *Udānavarga I: Einleitung, Beschreibung der Handschriften, Textausgabe, Bibliographie*. Göttingen: Vandenhoeck & Ruprecht.
- Broomhead, J. W. 1962. A Textual Edition of the British Hoernle Stein and Weber Kuchean Manuscripts: With Transliteration, Translation, Grammatical Commentary, and Vocabulary. Ph.D. diss., University of Cambridge.
- CEToM = Melanie Malzahn et al. 2011–. A Comprehensive Edition of Tocharian Manuscripts. <https://cetom.univie.ac.at> (accessed September 12, 2022).
- Clark, Herbert H. 1975. Bridging. In Roger C. Schank and Bonnie L. Nash-Webber (eds.), *Theoretical Issues in Natural Language Processing*, 169–74. New York: Association for Computing Machinery.
- Dalrymple, Mary, and Irina Nikolaeva. 2011. *Objects and Information Structure*. Cambridge: Cambridge University Press.
- Erteschik-Shir, Nomi. 2007. *Information Structure*. Oxford: Oxford University Press.
- von Fintel, Kai. 2004. Would You Believe It? The King of France is Back! Presuppositions and Truth-value Intuitions. In Anne Bezuidenhout and Marga Reimer (eds.), *Descriptions and Beyond: An Interdisciplinary Collection of Essays on Definite and Indefinite Descriptions and Other Related Phenomena*, 315–41. Oxford: Oxford University Press.
- Givón, Talmy. 1983. *Topic Continuity in Discourse: A Quantitative Cross-language Study*. Amsterdam: John Benjamins.
- Krause, Wolfgang. 1952. *Westtocharische Grammatik I: Das Verbum*. Heidelberg: Winter.
- Krause, Wolfgang, and Werner Thomas. 1960. *Tocharisches Elementarbuch I: Grammatik*. Heidelberg: Winter.
- Krifka, Manfred. 2008. Basic Notions of Information Structure. *Acta Linguistica Hungarica* 55.243–76.
- Lambrecht, Knud. 1994. *Information Structure and Sentence Form*. Cambridge: Cambridge University Press.
- Meunier, Fanny. 2015. Recherches sur le génitif en tokharien. Ph.D. diss., École Pratique de Hautes Études.

- Nikolaeva, Irina. 2001. Secondary Topic as a Relation in Information Structure. *Linguistics* 39.1–49.
- Peyrot, Michaël. 2017. Slavic *omъ*, Lithuanian *anàs* and Tocharian A *anac*, *anäs*. In Bjarne Simmelkjær Sandgaard Hansen, Adam Hyllested, Anders Richardt Jørgensen, Guus Kroonen, Jenny Helena Larsson, Benedicte Nielsen Whitehead, Thomas Olander, and Tobias Mosbæk Søborg (eds.), *Usque ad radices: Indo-European Studies in Honour of Birgit Anette Olsen*, 633–42. Copenhagen: Museum Tusulanum.
- . 2019. The Deviant Typological Profile of the Tocharian Branch of Indo-European May Be Due to Uralic Substrate Influence. *Indo-European Linguistics* 7.72–121.
- Pinault, Georges-Jean. 2008. *Chrestomathie tokharienne: textes et grammaire*. Leuven: Peeters.
- Reinhart, Tanya. 1981. Pragmatics and Linguistics: An Analysis of Sentence Topics. *Philosophica* 27.53–94.
- Roberts, Craige. 2011. Topics. In Klaus von Heusinger, Claudia Maienborn, and Paul Portner (eds.), *Semantics: An International Handbook of Natural Language Meaning*, 1908–34. Berlin: de Gruyter.
- . 2012. Information Structure in Discourse: Towards an Integrated Formal Theory of Pragmatics. *Semantics and Pragmatics* 5.1–69.
- Rooth, Mats E. 1985. Association with Focus. Ph.D. diss., University of Massachusetts, Amherst.
- Stalnaker, Robert C. 1978. Assertion. In Peter Cole (ed.), *Syntax and Semantics IX: Pragmatics*, 315–32. New York: Academic Press.
- Strawson, Peter F. 1964. Identifying Reference and Truth-values. *Theoria* 30.96–118.
- Thomas, Werner. 1983. *Tocharische Sprachreste: Sprache B I/1: Fragmente Nr. 1–116 der Berliner Sammlung*. Göttingen: Vandenhoeck & Ruprecht.
- Vallduví, Enric. 1993. *Information Packaging: A Survey*. Technical Report HCRC/RP-44, University of Edinburgh.
- Zhao, Wei. 2014. A Survey of Studies of Bridging Anaphora. *Canadian Social Science* 10.130–9.

Against the Supposed Law of Geminate Sibilant Occlusion in Indic*

ZACHARY ROTHSTEIN-DOWDEN

Harvard University

I argue against the commonly held view that a sibilant cluster **SS* gave an affricate cluster (**)TS* in early Indo-Aryan. The few forms that seem to instantiate this sound change are, in the case of the sequence *ts*, the result of morphological innovations and, in the case of the sequence *cch*, the result of a proposed development **^or-^os^o > ^oc-*ch*^o* that is both phonotactically more plausible and better accounts for the data than the standard theory.

It is generally held¹ that early Indo-Aryan had a sound law whereby geminate sibilants were remade to clusters of stop (*T*) plus sibilant (*S*). In other words, **ss > ts*, **śś > cch* and **ṣṣ > *tṣ > -kṣ-/-t*. This sound law is seemingly instantiated, for example, in the *s*-aorist *avātsīt* ‘spent the night’ to the root *vas*, which according to most scholars is either the phonologically regular outcome of historic **avās-s-īt* or the realization of underlying /ava:s-s-i:t/ by the synchronic rules of Sanskrit phonology.

Before surveying the individual Vedic forms, it will be instructive to trace the history of the posited sound change in the scholarly tradition. The idea that geminate sibilant occlusion was a regular process in Sanskrit can be traced back to

* My thanks to Jay Jasanoff, Jeremy Rau, and Benjamin Fortson IV, with whom I discussed the contents of this paper and to others whose comments at the virtual conference shaped the final outcome.

The following abbreviations are used for ancient Indic and Iranian works: AB = Aitareyabrāhmaṇa; Apr. = Atharvavedaprātiśākhya; AV = Atharvavedasamhitā, Śaunaka recension; AVP = Atharvavedasamhitā, Paippalāda recension; GB = Gopathabrāhmaṇa; H = Hāḍōxt nask; HV = Harivaṃśa; JB = Jaiminiyabrāhmaṇa; Kāś. = Kāśikā Vṛtti; KB = Kauṣītakibrāhmaṇa; KpS = Kapiṣṭhalakāṭhasamhitā; KS = Kāṭhasamhitā; MS = Maitrāyaṇīyasamhitā; Pān. = Aṣṭādhyāyī of Pāṇini; RV = R̥gvedasamhitā; RVKh = R̥gvedakhila; ŚB = Śatapathabrāhmaṇa, Mādhyandina recension; ŚBK = Śatapathabrāhmaṇa, Kāṇva recension; Sū. = sūtra texts; TB = Taittirīyabrāhmaṇa; TS = Taittirīyasamhitā; V = Videvdad; VS = Vājasaneyīsamhitā, Mādhyandina recension; VSK = Vājasaneyīsamhitā, Kāṇva recension; Vyt = Viśtāsp Yašt; Y = Yasna; Yt = Yašt.

1 For discussion of previous views, see below.

Pāṇini. The ancient grammarian formulates a rule VII 4.49 *saḥ sy ārdhadhātuke* “*t* is substituted for *s* before suffixal *s*,” to which the Kāśikā Vṛtti supplies the examples *vatsyati*, *avatsyat*, *vivatsati*, *jighatsati*.

Pāṇini’s rule produces the descriptively correct outcomes within the indigenous system of generative grammar that now bears his name. For this reason, it was adopted—somewhat over-readily—by nineteenth-century historical linguists as a rule of Indic historical phonology. Schmidt (1883:347–51; 1885; 1889:158–9; 1892), representing an extreme view, argued repeatedly that a phonological rule of geminate fortition should be reconstructed for the protolanguage itself.² In addition to Vedic, Schmidt draws evidence from Germanic, arguing that the stem-final dental in Goth.+ *menōps* ‘month’ (= Lith. *mėnuo* ‘id.’), *bajōps* ‘both’, and *weitwods* ‘witness’ (= Gk. εἰδότη- ‘id.’) originated in a sequence $*^{\circ}s-su^3 > *^{\circ}t-su$ in the locative plural, whence it spread to the rest of the paradigm.⁴ While few scholars go as far as Schmidt, most have been ready to accept the rule of geminate sibilant occlusion in some form for Vedic. Brugmann (1897:734–5) tentatively posits a development $*ss > *sts > ts$ and $*šš > *škš > kš$ with stop epenthesis followed by dissimilatory loss of the first sibilant (similar Kuiper 1967:118). Wackernagel (1896:137, 178–9) accepts the occlusion hypothesis with little comment in his grammar. More recently, Kobayashi (2004:57) has argued that geminate sibilant affrication was regular only after long vowels. In such hyper-heavy environments, morpheme-final /s/ is “crowded out of the syllable when the vowel is in the lengthened grade. Since the next syllable cannot begin with /ss-/ with non-rising sonority, the first of the two /s/’s becomes occluded.”⁵

In fact, the theory of historical geminate sibilant occlusion has relatively little to recommend it. For a start, historical sound changes involving unconditioned stop insertion before sibilants are exceedingly rare and dubious in their instantiations

2 Against Schmidt’s proposal see Hübschmann 1885 and Bartholomae 1888:522.

3 “ \circ ” indicates a non-morpheme boundary.

4 The likely explanation of the Germanic forms is rather that the cluster $*ts$ was simplified to $*s$ already in Proto-Indo-European (whence Nsg. $*-ōn$ [Gk. $-ων$, Skt. $-vān$] < $**ons$ < $**onts$ to stems in $*-o-nt-$). Germanic subsequently reintroduced the stem-final dental to the nominative singular of dental stems from the other case forms (e.g. $*fōs : fōtu^n \Rightarrow *fōts : *fōtu^n$ [“ \Rightarrow ” indicates a non-phonological transformation]). The restoration of the nominative forms of genuine t -stems (like inherited $*weitwob-$ [= Gk. εἰδότη-]) swept along with it the nominative singular of the inherited s -stem $*mānōs \Rightarrow *mānōps$ (a hyper-correct form) and perhaps also the inflected dual form $*bajōs$ (= ²YAv. Gdu. $uuaiiās^{\circ}-ciṭ$) \Rightarrow Nsg. $*bajōps$ (beside $*bai$, with the ending of the pronominal plural).

5 See further Bloch 1934:88; Leumann 1941:12–3; Berger 1955:81; Narten 1964:239; Hoffmann 1974; Jamison 1991:80; Lipp 2009:1.213.

(Kümmel 2007:155). The reason for this, we might speculate, is that there is very little cause either for learners to mistake the sound of a geminate sibilant for an affricate, the two being auditorily quite distinct, or for speakers to spontaneously introduce a stop before a sibilants cluster, thereby adding articulatory complexity. The rarity of this type of sound change is, of course, not enough to dismiss out of hand the possibility of the posited phonological development in Indic, but it should put us on our guard.

It is when we turn to what is generally taken to be direct evidence for the Vedic sound law and interpret this against the deeper context of the historical morpho-phonology of Indo-Iranian that the weakness of the received theory becomes apparent. Proto-Indo-Iranian did not inherit any geminate sibilants from the protolanguage. As is well-known, the sequence **ss*, which could only appear at a morpheme boundary, was regularly simplified to **s* by a sound law already within the protolanguage. The cause of this was likely a general constraint against geminates of any kind (Mayrhofer 1986:120).⁶ The clearest instance of this simplification can be seen in 2sg. ***h₁és-si* ‘you are’ > **h₁ési* ‘id.’, the morphologically anomalous simple sibilant of which is continued in Ved. *ási*, OAv. *ahī*, Gk. *εῖ* (< **éhi*), and Lith. *es[ī]*, none of which is synchronically derivable.

The same constraint against geminate sibilants evidently persisted into the Indo-Iranian period. The compounds RV+ *barhiṣád-* ‘seated on the sacrificial grass’ (for *barhiṣ-ṣád-**)⁷ and RV *rahasú-* ‘giving birth in secret’ (for *rahas-sú-**) can more easily be taken as archaisms than as innovations (cf. Wackernagel 1896:342 with further possible examples). More telling still, early Vedic preserves two locative plurals in simple *s*: RV VIII 4,14 *apásu* (*apás-* ‘diligent’) and line-final AV VI 35.2 *ámhasu* (*ámhas-* ‘distress’). The authenticity of these forms cannot seriously be called into question. For one thing, they constitute a clear *lectio difficilior* vis-à-vis restored (**)apáhsu* and (**)ámhaḥsu*. The latter form (*ámhasu*) was known to the author of the *Caturādhyāyī-bhāṣya* (ad APr. IV 32) and more importantly finds a direct cognate in YAv. Lpl. *qzahu* (Y 10.17; Yt 13.146; Vyt 51; to *qzah-* ‘constriction’), to which can further be compared YAv. Lpl. *uśahuu-a* (V 21.3

6 The phonological constraint against all types of geminates persisted as a synchronic rule into Proto-Indo-Iranian to judge from the testimony of Avestan, where geminates at morpheme boundaries are routinely simplified; cf. Hoffmann and Forssman 2004:108–9.

7 Oldenberg 1909:191 questions whether we should emend *barhiṣád-* to **barhiṣṣád-* (“vielleicht *bariṣṣádam*”), but *barhiṣád-* is clearly the *lectio difficilior*. There is no reason why the redactors of the text should have taken morphologically transparent and metrically viable *barhiṣṣád-** and recast this as attested *barhiṣád-*, while *barhiṣád-* itself can easily be explained as an archaism. (When trailing, the asterisk marks a hypothetical form that likely never existed.)

uśah- ‘dawn’) [\approx Ved. *uśaḥsu* ŚB+], *raocahuua*⁸ (Vyt 61 *raocah-* ‘light’), *rauuhu* (Yt 3.4; V 18.10 *rauuh-* ‘freedom’), *uzīrō.huua* (V 21.3 *uzīrah-* ‘afternoon’), and *tāmō.huua* (V 2.33 *tāmah-* ‘darkness’). The exact word equation Ved. *ámhasu* = YAv. *qzahu* allows us to reconstruct with some confidence PIIr. Lpl. **HáNj^hasu* (< PIE **h₂émĝ^hesu* < pre-PIE ***h₂émĝ^hes-su*) and to posit with great confidence that in the not-so-distant history of Vedic, the locative plural of *s*-stem nouns did not contain a geminate.

Despite the persistence of some obviously old forms in simple *s*, the norm in Vedic is for such sequences to be analogically restored across a morpheme boundary. In addition to ten instances of the locative plural in ^o*s-su*, we find also the verb *śās-si* ‘you instruct’ and thirteen instances of the prefix *niṣ-* before sibilant in nouns in the Ṛgvedasamhitā.⁹ By contrast, there is no direct evidence for geminate sibilant fortition (**SS > TS*) prior to the Atharvavedasamhitā (Debrunner 1957:96). A close examination of the individual attested *ts*-forms is revealing. The root *vas* ‘spend the night’ formed a well-attested sigmatic aorist AV XV 11.2–3 2sg. *avātsīh* ‘you spent the night’ (ŚB V 3.1.13 \approx ŚBK VII 1.4.14 *mā ... vātsīt* ‘let her not spend the night’; ŚB XI 5.1.5; AB I 28 *āvātsam* ‘I spent the night’; AB VIII 24, TB III 11.8.2 *avātsīh* ‘you spent the night’), a future KS VII 11 \approx KpS VI 1 *pravatsyan* ‘intending to set forth’ (ŚB XIV 9.1.6 *vatsyāvaḥ* ‘we two will spend the night’; JB II 424 *vatsyāmaḥ* ‘we will spend the night’), and later also a desiderative ŚB XIII 6.2.20 *vivatset* ‘should he wish to spend the night’. The homophonous root *vas* ‘shine’ similarly formed a future MS III 4.9 *vivatsyati* ‘will shine’ (ŚB IV 3.1.10 \approx ŚBK V 3.2.9 *vyāvatsyat* ‘would become light’) but no aorist. The third root *vas* ‘wear’ formed a future in epic (HV CXVII 33 *nivatsyanti*) that clearly follows the other two roots *vas*. Starting in the Atharvavedasamhitā we also begin to find *ts*-forms of the root *ghas* ‘eat’. These are restricted to the desiderative verbal stem: AV V 19.6 *jīghatsati* ‘desires to eat’ (AV VI 140.1 \approx AVP XIX 49.9 *jīghatsataḥ* ‘they two desire to eat’; AVP XVII 14.5 *jīghatsanti* ‘they desire to eat’; AV V 18.1 \approx AVP IX 17.1 *mā ... jīghatsaḥ* ‘do not desire to eat’; KS X 3 *jīghatset* ‘should desire to eat’; ŚB I 9.2.12 *jīghatsanti*¹⁰ ‘they desire to eat’), and the desiderative adjective *jīghatsú-* ‘hungry’ (AV VIII 2.20 \approx AVP XVI 4.10 *jīghatsúbhyaḥ*; AV II

8 Later also *raocō.huua* (H 2.15).

9 *pra ... śāssi* I 31.14 ‘you instruct’, *vākṣassu* I 64.4, 166.10; V 54.11; VII 56.13 ‘on [their] chests’, *śrāvassu* III 37.7 ‘in fame’, *rājassu* VII 34.16; VIII 77.5; X 43.8 ‘in darkness’, *sādassu* VII 85.3 ‘on seats’, (*puru-niṣṣīdh-* I 10.5, 169.2; III 51.5, 55.8, 55.22; IV 24.1, 38.2; VI 44.11; VIII 59.2 ‘offering’, *niṣṣapī* I 104.5 ‘lustful’, *niṣṣāt* I 181.6; X 48.7 ‘powerful’, *haviṣṣu* IX 7.2 ‘among the oblations’.

10 Nonsensical *jīghatmanti* in Weber’s edition (p.90) is a printing error.

14.1 \approx AVP II 4.1 *jighatsvàm*; AVP II 91.2 *jighatsavaḥ*; GB I 2.21 *jighatsutamaḥ* etc.).¹¹

It is suspicious that only verbal forms of the three homophonous roots *vas*¹⁻³ and the root *ghas* together with their closely associated nominal derivatives are represented in this list. Nowhere do we find the locative plurals in $^{\circ}t-s^{\circ}$ or $^{\circ}k-s^{\circ}$ that are predicted by the theory, a fact underscored by Brugmann (1897:734). As I have argued elsewhere (Rothstein-Dowden 2021:389–90), this distribution suggests that we have to do here not with a phonological rule but with a morphological innovation, the source of which is easily identified. The root *vas* ‘spend the night’ formed a sigmatic aorist $**h_2\mu\check{e}s-s- > *h_2\mu\check{e}s-$ in Proto-Indo-European, reflected in Gk. $\acute{\alpha}\epsilon\sigma\alpha$ ‘spent the night’ and indirectly in Ved. *avātsīt* ‘id.’. The Vedic third person singular of this aorist should have been *vās** ($< *Hvās[-s]-t$). But 3sg. $*vās$ was remade to $*vāt$,¹² which in turn was renewed as *avātsīt* on the formal model of pairs like AV *araut* : ŚB *arautsīt* ‘obstructed’, RV *asrāk* : JB *asrākṣīt* ‘released’ (cf. Bartholomae 1896:711). The innovative forms in *ts* spread from the aorist *vāts-* to the future *vats-* and from the future of *vas* ‘spend the night’ to the future of *vas* ‘shine’ and later also to that of *vas* ‘wear’. The desiderative *jīghatsati* (for *jīghasati**) likely arose through a combination of factors, taking its start in 3sg. aor. *ághat* (RVKh V 7.4p \approx VS XXVIII 23; 46) but bolstered by analogy with the morphophonological treatment of *vas*¹⁻³ and influenced by other desideratives in $^{\circ}ts-$ to roots in final dental¹³ like *cikits-* and *bibhits-*.¹⁴

11 The isolated verbal form RVKh V 7.21 *aghattām* ‘those two ate’ must be mentioned in this context. In theory, *aghattām* could perhaps be the sole representative of a sigmatic aorist with stem $*aghāts-$. Apart from the fact that the length of the root vowel is incorrect and that the stem allomorphs in $^{\circ}ts-$ otherwise only appear before vowels, the form is textually suspect. In the parallel passage MS IV 13.9, expected *ághastām* is found, and the same “correct” form occurs in RVKh V 7.2f *ghastām* (\approx VS XXI 43; VSK XXIII 5.3; MS IV 13.7; KS XVIII 21) immediately preceding the surprising form *aghattām*. Attested *ághattām* is likely simply a copying error or perhaps a typesetting error in Scheftelowitz’s edition. If it is genuine, it may have been influenced by nearly synonymous and closely occurring RVKh V 7.21 *āttām* ‘those two ate’ (*ad*) or else by 3sg. *ághat* (RVKh V 7.4p), which appears in the parallel passage VS XXVIII 23; 46 *ághat tām* (misparsed as *ághattam* and corrected to *ághattām*?). The interpretation of this form need not concern us further in the present discussion.

12 Cf. Pāṇ. VIII 2.73 and see Wackernagel 1896:179.

13 It is an interesting fact that no desiderative to *ad* ‘eat’ is attested (cf. Pāṇ. II 4.36–7). It is a possibility worthy of consideration that $*Hí-Ht-s-a-tí$ ‘desires to eat’ (*ad*) once existed and lent its $^{\circ}ts-$ to *jīghats-a-ti* via contamination. It is easy to see why expected $^{\circ}ts-$ might have been difficult to parse and hence fallen out of use in favor of morphologically transparent $*jīgha[t]s-$.

14 See Rothstein-Dowden 2021 for a fuller treatment of this issue. Here I also discuss the relationship between *s*-stem nouns and those in final palato-velar as well as the origins of the

With these verbal forms out of the way, there remain only a small and chronologically heterogeneous group of nominal forms that proponents of the geminate occlusion theory standardly call to witness. Curiously, whereas the supposed verbal instantiations of the sound law contain only the affricate cluster *ts*, the nominal forms restrict themselves to the sequence *cch*. This distribution by part of speech would be surprising if the phenomenon were truly phonological in nature.

The four words in question are the substantive RV+ *ducchúnā-* ‘misfortune’, the proper name TS, KB, Sū.+ *Páruc-chepa-*, and the Middle Indic familial terms Pāli (abbrev. Pā.) *mātucchā-* (= [Māhārāṣṭrī] Prakṛt [abbrev. Pkt.] *māucc(h)ā-*) ‘mother’s sister’ (<² Kāś. *mātuḥ-ṣvasar-*) and Pā. *pitucchā-* (= Pkt. *piucc(h)ā-*) ‘father’s sister’ (<² Kāś. *pituh-ṣvasar-*). Of these, it is the name *Párucchepa-* that points most clearly towards a solution. This name, which can be contrasted with non-occluded RV+ *Śúnaḥśépa-*,¹⁵ is normally understood to be a compound consisting of first member RV+ *páruṣ-* ‘joint, knot’ and second member *śépa-* ‘membrum virile’. But Ved. *páruṣ-* is revealed by the comparative evidence to continue a *ur/uen-* stem *pár-ur-* : *p(á)r-van-* that is found also in Gk. *πεῖραρ* (Attic *πέρας*) : *πείρα[τ]-ος* ‘end, limit’. In Sanskrit a paradigm split gave rise to two separate but largely synonymous lexemes, *páruṣ-* (reinterpreted as *páruṣ-*) and *párvan-*. Because internal evidence suggests that the *s-* stem *páruṣ-* arose only at a relatively late date, Hoffmann (1974:20 n.10 [= 1975:332]) argues that a preform **Páruṣ-śépa-* in *ś* would be anachronistic. Although he does accept that such a preform would, hypothetically, have given *Párucchepa-* by regular sound change, he argues instead for a preform **Páruṣ-śépa-* on chronological grounds. The first member of this name would then, according to Hoffmann, have been the adverb *par-út* ‘last year’ [= Gk. *πέρυσ-ι* ‘id.']. Hoffmann improbably interprets the name as meaning “einen vorjähri gen (d.h. vertrockneten, eingeschrumpften) Penis habend.”

But there is another, more attractive possibility that Hoffmann does not consider, namely the traditional etymology but with the chronologically “correct” *r-* stem compound first member: **Páruṣ-śépa-* ‘having a knotted/knobbly member’. This is both semantically more plausible than Hoffmann’s far-fetched proposal and morphologically unproblematic. The only question is, could the rare sequence **^or-ś^o* have given the attested outcome *^oc-ch^o*? I would argue that it did just this. In other words, a tapped rhotic became a stop before a sibilant (in this case [r.] >

intrusive *^od-* that appears in the “*bh*-cases” in both declensional types, which I argue originated in the palato-velar declension.

15 Once with tmesis (RV V 2.7 *śúnaś cid śépaṃ*), but otherwise treated as a compound.

[t.]), ultimately producing the cluster *cch* ([tʃ^(h).]) in the same way that °*t-s*° gives °*c-ch*° in sandhi.

This proposal turns out to have further explanatory power if we turn now to the other supposed instances of “**śś*” giving *cch*. It suggests that the “unechte Komposita” Pā. *mātucchā*- ‘mother’s sister’ and Pā. *pitucchā*- ‘father’s sister’ contain as their first member the historical genitives (**mātur* and (**pitúr* of the *r*-stem substantives *mātar*- and *pitár*-. The ending *-ur* would have been the regular outcome of PIIr. **-r̥ś* (OAv. *-ər̥ś*) in **mātr̥ś* > *mātur* and **pitrás* ⇒ **pitṛś* > *pitúr*, showing the same phonological development as the perfect third-person plural ending **-r̥ś* > Ved. *-ur* (OAv. *-ər̥ś*). In early Vedic, word-final *-r* still partially retains its distinct identity, though it ultimately falls together with word-final *-s* in sentence sandhi because both share the allophone *-h*.

Hale (1990:89–92; 1995:71–3) makes a compelling case that while *-r* and *-s* remain, in general, distinct in early Vedic, the historical ending (**-ur* of the genitive singular and perfect third-person plural endings is consistently treated as underlying /-us/ in the Ṛgvedasaṃhitā. He draws evidence from the sandhi outcomes of the following groups:¹⁶

/-us#t-/	>	-uṣ#t-	OR	-us#t-
/-ur#t-/	>	-us#t-	NOT	-uṣ#t-*
/-us#p-/	>	-uṣ#p-	OR	-uḥ#p-
/-ur#p-/	>	-uḥ#p-	NOT	-uṣ#p-*
/-us#ná/	>	-ur#ná	NOT	-ur#ná*
/-ur#ná/	>	-ur#ná	NOT	-ur#ná*

According to Hale, the treatment of the genitive singular and perfect third-person plural endings is consistent with /-us/ everywhere in this text.¹⁷

If Hale’s synchronic analysis is correct, the reinterpretation of historic (**-ur*/ as /-us/ likely has a morphological explanation; because the singular of the genitive and ablative case was in all other declensional types characterized by a sibilant ending, learners would have been primed to see a sibilant in the ending *-uḥ* as well and to extrapolate the innovative ending /-us/ from ambiguous sandhi contexts. From the nominal ending it may then have spread to the perfect ending /-ur/ ⇒ /-us/ on account of the formal identity of these two terminations.

This analysis need not, however, constitute a counterargument to the proposal that Pā. *mātucchā*- ‘mother’s sister’ and Pā. *pitucchā*- ‘father’s sister’ continue

16 The reader is referred to the cited articles for examples of the various sandhi treatments.

17 It would, of course, be desirable to examine the treatment of these sequences in other early Vedic texts, but this is well beyond the scope of the current paper.

forms in $^{\circ}ur\text{-}\acute{s}vas\bar{a}$ - with final rhotic in the first member. Quite apart from the fact that we may be dealing with dialectal variation in the underlying form of the *tar*-stem genitive-ablatives in the versions of Sanskrit that gave rise to the Middle Indic forms, it is precisely in compounds (as opposed to at word boundaries) that the older sandhi variants in $^{\circ}r$ - are routinely preserved in the older language, e.g. RV *pūr-pāti*-, *vār-kāryá*-, *svār-canas*-, etc. (Wackernagel 1896:335–6.). I would therefore propose that the Middle Indic forms provide a second instance of the development $^{\circ}r\text{-}\acute{s}^{\circ} > ^{\circ}c\text{-}ch^{\circ}$ posited above to account for *Páruच्चेपा*-.¹⁸

The word RV+ *ducchúnā*- ‘misfortune’ (adj. JB I 93 *ducchuna*-) remains to be addressed. This is clearly a compound consisting of first member *duṣ*-(/*dur*-) ‘bad’ and second member *śuná*- ‘prosperity’. For those who subscribe to the theory of geminate sibilant occlusion, this word can of course be seen as the regular outcome of earlier $^{\circ}duṣ\text{-}\acute{s}un\bar{a}$ -. But this would be the only word that exhibits this outcome after the common prefix *duṣ*-, as compared to RV *duḥ-śámśa*-, *duḥ-śásu*-, *duḥ-śíma*-, *duḥ-śéva*-, *duṣvápnya*-, and *duḥ-śáha*-, requiring that the rule of sibilant occlusion be either selectively applied or be older than the oldest *saṃhitā* text, neither of which scenarios fits the data particularly well. Another possibility is that the prefix has been reinterpreted as underlying /*dur*-/ and that *ducchúnā*- reflects $^{\circ}dur\text{-}\acute{s}un\bar{a}$ -, showing the sandhi outcome that this paper has advocated. But on balance, a third possibility is more likely for reasons of economy and chronology; this word’s immediate preform PIIr. $^{\circ}duṣ\text{-}\acute{c}un\bar{a}$ - would in any case have given Ved. *ducchúnā*- by regular sound change; the result of the cluster PIIr. $^{\circ}śc$ [[$\acute{s}t$]] was Vedic *cch* [$\acute{t}^{(h)}$:] through dissimilatory loss of the first sibilant, as suggested by the outcomes of $^{\circ}s\acute{ś}e/o$ -presents like *prcchāti* ‘asks’, *icchāti* ‘desires’, *ucchāti* ‘shines’ and *gáčchati* ‘goes’. Speakers evidently ceased to perceive the vocabulary item *ducchúnā*- as a segmentable compound and hence this word was not recast as *duḥ-śúnā*-* at the crucial stage in pre-Vedic as other compounds were (e.g. *duḥ-śámśa*- for *ducchámśa*-*). The rarity of *śuná*- (usually adverbial *śunám* ‘auspiciously’) may have contributed to speakers’ failure to treat this word as an analyzable compound.

In conclusion, this paper has argued that a synchronic analysis from the indigenous system of Sanskrit grammar (Pāṇ. VII 4.49) has led astray many decades of historical linguistic research. The generally accepted historical phonological rule $^{\circ}SS > TS$ in Indo-Aryan does a rather poor job of explaining the attested forms and their odd lexical and semantic distribution. The small group of homophonous verbs

18 *mātuḥ-ṣvasar*- and *pituh-ṣvasar*- of the Kāśikā Vṛtti can easily have been back-formed from the Middle Indic forms, exhibiting as they do productive Sanskrit morphophonology.

*vas*¹⁻³ and *ghas*, which are usually taken to provide the best direct evidence for the sound change, are better understood as reflecting morphological innovations: **vās-t* > **vās* ⇒ **vāt* ⇒ AV+ *avātsīt*. The outcome *cch* in the name *Párucchepa-* and the familial terms Pā. *mātucchā-* ‘mother’s sister’ and Pā. *pitucchā-* ‘father’s sister’ did not result from a historical sibilant cluster but rather from the heretofore unrecognized sandhi outcome of ^o*r-ś*^o as ^o*c-ch*^o.

References

- Bartholomae, Christian. 1888. Die arische Flexion der Adjektiva und Partizipia auf *nt-*. *Zeitschrift für vergleichende Sprachforschung auf dem Gebiete der Indogermanischen Sprachen* 29.487–588.
- . 1889. Arisches. *Beiträge zur Kunde der indogermanischen Sprachen* 15.1–43, 185–247.
- . 1896. Beiträge zur altindischen Grammatik. *Zeitschrift der Deutschen Morgenländischen Gesellschaft* 50.674–735.
- Berger, Hermann. 1955. *Zwei Probleme der mittelindischen Lautlehre*. München: Kitzinger.
- Bloch, Jules. 1934. *L'indo-aryen du Veda aux temps modernes*. Paris: Adrien-Maisonneuve.
- Brugmann, Karl. 1897. *Grundriss der vergleichenden Grammatik der indogermanischen Sprachen I: Einleitung und Lautlehre*². Strassburg: Trübner.
- Debrunner, Albert. 1957. *Altindische Grammatik: Nachträge zu Band I*. Göttingen: Vandenhoeck & Ruprecht.
- Hale, Mark. 1990. Preliminaries to the Study of the Relationship between Sandhi and Syntax in the Language of the Rigveda. *Münchener Studien zur Sprachwissenschaft* 51.77–96.
- . 1995. Wackernagel’s Law in the Language of the Rigveda. Manuscript, Concordia University.
- Hoffmann, Karl. 1974. Ved. *dhānuṣ-* und *páruṣ-*. *Die Sprache* 20.15–25.
- . 1975. *Aufsätze zur Indoiranistik I*. Ed. Johanna Narten. Wiesbaden: Reichert.
- Hoffmann, Karl, and Bernhard Forssman. 2004. *Avestische Laut- und Flexionslehre*². Innsbruck: Institut für Sprachwissenschaft der Universität Innsbruck.
- Hübschmann, H. 1885. Idg. ss. *Zeitschrift für vergleichende Sprachforschung auf dem Gebiete der indogermanischen Sprachen* 27.329–30.
- Jamison, Stephanie W. 1991. A Cart, an Ox, and the Perfect Participle in Vedic. *Münchener Studien zur Sprachwissenschaft* 52.77–100.
- Kobayashi, Masato. 2004. *Historical Phonology of Old Indo-Aryan Consonants*. Tokyo: Research Institute for Languages and Cultures of Asia and Africa.
- Kuiper, F. B. J. 1967. The Sanskrit Nom. Sing. *viṭ*. *Indo-Iranian Journal* 10.103–25.

- Kümmel, Martin. 2007. *Konsonantenwandel: Bausteine zu einer Typologie des Lautwandels und ihre Konsequenzen für die vergleichende Rekonstruktion*. Wiesbaden: Reichert.
- Leumann, Manu. 1941. Idg. *s* im Altindischen und im Litauischen. *Indogermanische Forschungen* 58.1–26.
- Lipp, Reiner. 2009. *Die indogermanischen und einzelsprachlichen Palatale im Indo-iranischen*. 2 vols. Heidelberg: Winter.
- Mayrhofer, Manfred. 1986. *Indogermanische Grammatik I.2: Lautlehre*. Heidelberg: Winter.
- Narten, Johanna. 1964. *Die sigmatischen Aoriste im Veda*. Wiesbaden: Harrassowitz.
- Oldenberg, Hermann. 1909. *Ṛgveda: Textkritische und exegetische Noten I*. Berlin: Weidmann.
- Rothstein-Dowden, Zachary. 2021. On the Inflection of Palatal Stems in Vedic. *Indogermanische Forschungen* 126.387–404.
- Schmidt, Johannes. 1883. Das Suffix des participium perfecti activi. *Zeitschrift für vergleichende Sprachforschung auf dem Gebiete der Indogermanischen Sprachen* 26.329–400.
- . 1885. Entgegnung. *Zeitschrift für vergleichende Sprachforschung auf dem Gebiete der indogermanischen Sprachen* 27.330–4.
- . 1889. *Die Pluralbildungen der indogermanischen Neutra*. Weimar: Böhlau.
- . 1892. Review of Christian Bartholomae, *Studien zur indogermanischen Sprachgeschichte*. *Deutsche Literaturzeitung für Kritik der internationalen Wissenschaft* 13.1553–6.
- Wackernagel, Jacob. 1896. *Altindische Grammatik I: Lautlehre*. Göttingen: Vandenhoeck & Ruprecht.

Finer-Grained Hittite Syntax: Hittite Philology and Theory-Dependent Construals— The Case of Vocatives and the Left Periphery*

ANDREI SIDELTSEV

Institute of Linguistics, Russian Academy of Sciences

The paper deals with the formal construal of vocatives in Hittite within the Minimalist Program. It is argued that Hittite attests a system where vocatives can be located in two structural positions: in Spec, AddrP within CP (Slocum 2016) and in Spec, SpeechActP dominating CP (Hill 2014). In other words, both extra-CP and intra-CP positions of vocatives are available in Hittite. Hittite does not attest the third cross-linguistically available option, sentence-initial vocatives in Spec, AddrP of a fully formed independent CP with the vocative as the only lexical material in this CP, as per Slocum 2016. It is argued at length that there is irrefutable Hittite evidence that vocatives to the left of proper clauses do not constitute a separate clause (CP) of reduced structure, but an extra-CP projection, a layer on top of CP.

1 Introduction

The topic of the paper is the syntax of vocatives in Hittite. As is well known, Hittite marks addresses to gods and men in several ways morphologically and syntactically. Third-person addressees can appear in the vocative case or in appositive construction with an unmarked (i.e., normative) case (see further Hoffner and Melchert 2008:244; Eichner 2016; Zeilfelder 2016; and Sideltssev 2021, the last of which revises the standard description of Hoffner and Melchert). I build upon the philological and taxonomic treatment of Sideltssev 2021 and provide a formal interpretation of the data within the Minimalism program. My investigation results in some modifications of Sideltssev's 2021 generalizations, most notably interpretation of lack of clause connectives with vocatives.

* I wish to sincerely thank the organizers and the audience at the 32nd Annual UCLA Indo-European Conference for a very helpful and stimulating discussion that helped to significantly improve the paper. The research presented in this paper was supported financially by the Russian Science Foundation (grant number 18-18-00503).

Hittite attests vocatives (both morphologically marked and unmarked) in two positions: sentence initially and sentence internally (see in detail Sideltsev 2021 with previous literature):

(1) NS (CTH 395.1.A) KBo 11.14 obv. ii 4

a. ^dUTU-*ue* EN-*mit*
Sun.God.VOC.SG lord₃my.VOC.SG

b. EGIR-*pa-ma-a[n pāi]*
back-but₃it give.2SG.IMP

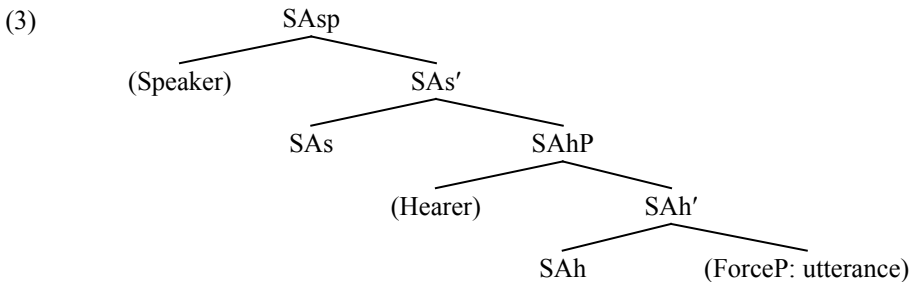
(a) Sun god, my lord, (b) give him back! (after Chrzanowska 2017)¹

(2) NS (CTH 343.1.A) KUB 33.114+ rev. iii 44'–45'

a. *kinun-ma[ε.]mu* ^dNāra ŠEŠ-*mi* [*i*]štamaš
now-but₃?me Nara brother₃my.VOC.SG hear.2SG.IMP

b. *nu taknaš huwitar* [*h*]ūman nin[*ik*]
CONN earth.GEN.SG wild.life.ACC.SG all.ACC.SG satiate.2SG.IMP

(a) Now, Nara, my brother, hear me! (b) Mobilize all the animals of the earth. (after Hoffner 1998b:47)



Concerning the formal construal of these two linear positions, there is currently no consensus in the general literature. Sentence-internal vocatives are construed in the literature as merged in the specifier of the dedicated AddrP projection, sandwiched between the topic and focus projections in the split CP (Slocum 2016). Hill (2014) and Slocum (2016) offer competing analyses of sentence-initial vocatives. Hill

¹ Cf. Ünal 1996:19 n.29, but Ünal's emendation of *mit* to *mi* is unnecessary. See Hoffner and Melchert 2008:74–5 on the morphology of possessive pronouns quoted above.

(2007:2099, 2014:171, and *passim*)² locates them in the specifier of a Speech Act projection dominating CP (3).

The upper Speech Act shell encodes the speaker while the lower Speech Act shell encodes the hearer, or possibly more precisely, the addressee. According to Hill 2007:2087–90 and 2014:3, 10, and *passim*, RoleP, or as Hill 2014 calls it, VocP, merges in the specifier of SAhP. Slocum (2016) argues against this construal, instead locating sentence-initial vocatives in the same position as mid-sentential vocatives: in Spec,AddrP in the topic field within CP. The difference between sentence-initial and sentence-internal vocatives on her account lies in the fact that sentence-initial vocatives are fully formed independent CPs with the vocative being the only lexical material in this CP (Slocum 2016:128–9). Her main reason for this view is that sentence-initial and sentence-internal vocatives are both marked by vocative case and as such it would be uneconomical to treat them so differently.

Hill's proposal is thus only applicable to sentence-initial vocatives, whereas Slocum's proposal accounts for both sentence-initial and sentence-internal vocatives. It is in principle possible to combine Hill's account of sentence-initial vocatives and Slocum's account of sentence-internal vocatives, although Slocum argues against this as uneconomical. In what follows I use Hittite data to test these two proposals concerning the structure of sentence-initial vocatives.

2 Hittite

As already observed, Hittite attests vocatives in two positions: sentence initially and sentence internally, illustrated by (1)–(2) above. It is inevitable to construe sentence-internal vocatives in the specifier of AddrP, as per Slocum 2016. The question is how to construe sentence-initial vocatives. Can it be demonstrated that sentence-initial vocatives are structurally located in Spec,AddrP of a fully formed independent CP with the vocative as the only lexical material in this CP (Slocum 2016) or the specifier of a Speech Act projection dominating CP (Hill 2014, followed for Hittite by Zeilfelder 2016)?

I argue that Hittite provides decisive evidence in favor of sentence-initial vocatives in the specifier of a Speech Act projection dominating CP and not in Spec,AddrP of a fully formed independent CP with the vocative as the only lexical material in this CP. Thus, Hittite vocatives can be located both in Spec,AddrP and in the specifier of a Speech Act projection dominating CP. The Hittite data thus

2 See also Moro 2003:251–61; Haegeman 2014:126–36; and Haegeman and Hill 2013:381–90, 2014:211–30.

allow us to decide between the two competing proposals and are therefore of cross-linguistic and theoretical importance.

2.1 Distribution of the direct speech particle *-wa(r)*

The most important piece of evidence comes from the direct speech particle *-wa(r)*, which is a Wackernagel clitic in Hittite. It has several patterns of use (see Sideltsev 2020 for details), in one of which the particle occurs in every clause of a multi-clause stretch of direct speech:

- (4) OH/NS (CTH 321.B) KUB 17.5 obv. i 23'–25' (restored from KUB 17.6 obv. i 18'–22')
- a. [(*m*)]*ā(n)wa gimra pāi*[(*mi*)]
when=QUOT field.ALL.SG go.1SG.PRS
- b. [(*zigg=a=war=ašta* ^{GIŠ}*l*)]*uttanza arḥ*[(*a lē autti*)]
you=and=QUOT=PTCL window.ABL.SG away PROH look.2SG.PRS
- c. [(*mā(n)wa*)]*r=ašta* [(*arḥa=ma autti*)]
if=QUOT=PTCL away=but see.2SG.PRS
- d. [(*nu=wa=za* DAM=KA DUMU^{MEŠ}=KA *autti*)]
CONN=QUOT=REFL wife=your children=your see.2SG.PRS

(a) When I go out to the open country, (b) don't look out the window. (c) If you look out, (d) you will see your wife and children. (after Hoffner 1998b:12)

However, there is precisely one type of context that runs counter to this pattern, namely sentence-initial vocatives:

- (5) NS (CTH 450.1.1.2.A) KUB 39.35+ obv. i 17"–19"
- a. i. ^d**UTU-i**
Sun.God.VOC.SG
- ii. *kāša=wa=ta=kan kē* [*šuppala*]²
PRF=QUOT=you=PTCL this.ACC.PL animal.ACC.PL
- ḥaddaw*]en
slaughter.1PL.PST
- b. *nu=war=at=ši=ššan šarr*[*izzi lē kuiški*]
CONN=QUOT=PTCL separate.3SG.PRS PROH anyone.NOM.SG.C

- c. [ḫa]nnari=ia=wa=šši=ššan l[ē kuiški]
 sue.2SG.PRS=and=QUOT=him=PTCL PROH anyone.NOM.SG.C

(a.i) O Sun-goddess, (a.ii) look, we have slaughtered these animals for you. (b) May no one take them away from him, (c) and may no one sue him! (after Kassian, Korolëv, and Sidel'tsev 2002:378–9)

Here, as well as elsewhere in Hittite, if one of the clauses within this direct speech sequence is the vocative “clause,” *-wa(r)* is used in every clause except the vocative “clause.” This example is interpreted by Hoffner (1998a:41) and Hoffner and Melchert (2008:244) as containing vocatives that stand outside of the main clause in their own clause. This is undoubtedly true, but the interpretation can be further refined. Vocatives do not just occupy their own clause, but the distribution of the direct-speech particle sets the sentence-initial vocatives apart from every other clause in Hittite. The most straightforward analysis is that the direct speech particle *-wa(r)* is merged in the Disc(ourse)P dominating CP, which is lower than the SpeechActP that hosts vocatives in its specifier (see along these lines Fortson 1998 and Sidel'tsev 2020). The actual position of *-wa(r)* is derived by local dislocation to the linearly adjacent element to its left. Such an account explains the fact that vocatives are the only element in Hittite that *-wa(r)* does not cliticize to and implies that vocatives do not constitute an independent clause (CP), but are rather located in a speech-act layer dominating the CP, which is typically tantamount to a basic clause in Hittite.

2.2 Wackernagel clitics

The second piece of evidence is from Wackernagel clitics. Wackernagel clitics are CP bound in the sense that they cannot cliticize to any material to the left of the edge of CP (see for Hittite Lyutikova and Sidel'tsev 2021:835, Sidel'tsev forthcoming). Structurally, they are inserted at the post-syntactic stage after the first word of the clause (CP), which explains why Wackernagel clitics do not cliticize to vocatives. They are higher than CP and do not constitute an independent CP, as illustrated by following example (6). Both these pieces of evidence support the analysis of Hill that vocatives are in the speech-act layer of the clause that dominates the CP and argue against the construal of Slocum that sentence-initial vocatives are the only material in their independent CP.

(6) MH/MS (CTH 373.A) KUB 30.10 obv. 6'–7' (tr. after Singer 2002:32³)

- a. i. *ammel* DINGIR₂YA
my god₂my
- ii. *kuit₂mu₂za* AMA₂YA *ḥāšta*
what.NOM.SG.N₂me₂REFL mother₂my bear.3SG.PST
- b. *nu₂mu* *ammel* DINGIR₂YA *šallanuš*
CONN₂me my god₂my raise.2SG.PST
- c. *nu₂mu₂šša[n ...]* *išḫiešša₂mitt₂a* *zik₂pat*
CONN₂me₂PTCL binding.ACC.SG.N₂my.ACC.SG.N₂and you₂FOC
- DINGIR₂YA
god₂my
- d. *nu₂mu₂kan* *āššawaš* *antuḥšaš* *anda* *zik₂pat* [...]
CONN₂me₂PTCL good.LOC.PL man.LOC.PL in you₂FOC
- ḥarapta*
join.2SG.PST

(a.i) My god, (a.ii) ever since my mother gave birth to me, (b) you, my god, have raised me. (c) Only you, my god, are [my name] and my reputation. (d) You, my god, have joined me up with good people.

2.3 Clause connectives as relevant evidence?

Sideltsev (2021) claims that vocatives are never followed (or preceded) by *nu* or any other clause connectives. This generalization follows from the distributional fact that no unambiguous cases are attested that show both the vocative and the clause connective particle. But even more convincingly, it follows from the fact that there are contexts that attest complementary distribution between the use of vocative and the use of *nu* within the same context: the “clause” with the vocative and the clause that immediately follows it do not use *nu*, whereas all the rest of the clauses in the same context do (7). It is important that the absence of clause connectives before or after vocatives is not a property of a few isolated examples, but is rather a recurrent feature. However, this concerns only systematic lack of clause connectives between the vocative and the clause that follows it.

3 This passage has been interpreted in various ways. See for a useful summary Rieken, Lorenz, and Daus 2017. The different interpretations do not affect the vocative or the number of clauses.

(7) NS (CTH 345.I.1.B) KUB 33.98+ obv. ii 3–5

- a. i. ^d*Impaluri*
Impaluri.VOC.SG
- ii. *kē=mu* *uddār* *išta[(maš)]*
this.ACC.PL.N=me word.ACC.PL.N hear.2SG.IMP
- b. *n=at* *īt* *ANA* ^d*Kumarbi* *peran* *<d>ašša[(nut)]*
CONN=it go.2SG.IMP to Kumarbi before make.strong.2SG.IMP
- c. *nu* *īt* *ANA* ^d*Kumarbi* *memi*
CONN=it go.2SG.IMP to Kumarbi say.2SG.IMP

(a.i) Impaluri, (a.ii) hear my words. (b) Go make them strong before Kumarbi
(c) Go speak to Kumarbi. (after Rieken et al. 2009)

(8) NS (CTH 341.III.3.A) KUB 8.48+ obv. i 3–5

- a. i. [ŠE]Š-ni=mi
brother.VOC.SG=my.VOC.SG
- ii. *kēdani=wa=za=kan* *GE₆-anti* *kuin*
this.LOC.SG=QUOTE=REFL=PTCL night.LOC.SG which.ACC.SG
- Û-[*an* *ū-hūhun*]
dream.ACC.SG see-1SG.PST
- b. *nu=wa* ^d*Anuš* ^dEN.LÍL-*aš* ^dEA-*aš* ^dUTU
CONN=QUOTE Anu.NOM.SG.C Enlil.NOM.SG.C Ea.NOM.SG.C Sun.God
- AN^E=ya* *a[rantat]*
sky=and stand.3PL.PST.MED
- c. *nu=wa* ^d*Anuš* *ANA* ^dEN.LÍL *IGI-anda* *memišt[a]*
CONN=QUOTE Anu.NOM.SG.C to Enlil against say.3SG.PST

(a.i) O my brother— (a.ii) the dream that [I saw] last night! (b) Anu, Enlil, Ea,
and the Sun-god of Heaven [were seated (in council)]. (c) And Anu spoke before
Enlil. (after Beckman 2019:46, 50)

(9) NS (CTH 390.A) KUB 7.1+ obv. i 6–7

- a. i. *inanaš* ^dUTU-*i*
illness.GEN.SG Sun.God.VOC.SG
- ii. *kāša=tta* *SÍSKUR* *pihūhun*
PRF=you ritual give.1SG.PST

- b. *nu* DUMU-*an* *kuin* *hukkiškimi*
 CONN son.ACC.SG which.ACC.SG conjure.IPF.1SG.PRS
- c. *n=an* ŠUM=ŠU *tēmi*
 CONN=him name=his tell.1SG.PRS

(a.i) O Sun God of Illness, (a.ii) I have hereby given to you a sacrifice. (b) The child that I am exorcising, (c) I say his name (with the following words). (after Hoffner and Melchert 2008:244)

As for the lack of clause connectives in front of vocatives, taking into consideration the broader picture, it has to be observed, pace Sideltsev 2021, that it is simply incidental. Rather than being determined by some specific property of vocatives, it follows independently from two parameters. The absolute majority of relevant contexts are at the beginning of direct speech. This independently explains the lack of *nu* (and other clause connectives) in front of the vocative, as *nu* is not attested at the beginning of direct speech (CHD L–N:466; Hoffner 2007:387; Widmer 2016). At first sight it appears there are some contexts that are not at the beginning of direct speech, such as the following:

- (10) MH/NS (CTH 372.A) KUB 31.127+ obv. i 17–9
- a. ^dUTU-*i* *šarku* LUGAL-*ue*
 sungod-VOC.SG exalted.VOC.SG king.VOC.SG
- b. DINGIR^{MEŠ}-*naš=kan* *iš(tar)na* *zik=pat* **ašnu*anza*
 gods.DAT.PL>PTCL inside you>FOC set.PTCP.NOM.SG.C

(a) O Sun-god, mighty king! (b) Among the gods you are favored. (after Singer 2002:36)

However, these contexts invariably occur in broader contexts that do not exhibit an entirely consistent use of clause connectives. Given their rare occurrence, the lack of clause connectives may be incidental and due to the fact that clause connectives are inconsistently used in these texts and do not mark every single clause. Thus the lack of clause connectives in front of vocatives cannot be considered to be a feature of sentences with vocatives. In any case, even if the lack of *nu* in front of vocatives were systematic and significant (which it is not), it would be hard to use it as a criterion to distinguish the syntactic unit that vocatives are in from the proper CPs. It is well known that some full clauses (= CPs) in Hittite are systematically not introduced by clause connectives; for example, clauses with the irrealis marker *man/mān* are introduced asyndetically (for a systematic treatment and other cases, see CHD L–N:466–8; Hoffner 2007:387–8).

Summing up this section, it is remarkable that we do not find clause connectives precisely in the place where they would be expected: between the vocative and the main clause.⁴ This absence is systematic and has been demonstrated not to be an incidental byproduct of other (discourse) phenomena. Its absence is all the more surprising in view of the fact that clause connectives are attested even after left-dislocated phrases (see section 5 below). It was argued above that the evidence of Wackernagel clitics in general and the direct speech Wackernagel particle in particular shows that the edge of CP is to the right of vocatives. Commonly, elsewhere this edge is marked by *nu* and other clause connectives. However, it is demonstrably not so marked in sentences with vocatives. Still, as I observed above, this lack of marking of the CP edge is not extraordinary; there are other clauses where the CP edge is not marked by clause connectives, most conspicuously in irrealis clauses.

3 Nominal clauses versus vocatives

It is important that the above analysis (vocatives in their separate syntactic unit do not form a separate CP) only holds if one can demonstrate that separate syntactic units with vocatives as the only material behave differently from nominal clauses and fragmentary clauses. This is indeed the case. It is particularly important that vocative “clauses” are different from nominal clauses that pattern with regular clauses by all the points set out above and thus are different from vocative clauses. The following example shows that nominal clauses can host the direct speech particle *-wa(r)*:

- (11) OH/NS (CTH 8.A) KBo 3.34 obv. ii 20–1
- a. *maršanza=wa* *zik*
 stupid.NOM.SG.C=QUOT you
- b. LUGAL-*un=wa=az* *mekki halihlatti*
 king.ACC.SG.C=QUOT=REFL much genuflect.2SG.PRS

4 For the cases that appear to be exceptions to this generalization, see section 7 of Sideltsev 2021. I follow the argument in Sideltsev 2021 that they should be accounted for not as vocatives followed by *nu*. In case they are still judged to be vocatives followed by *nu*, vocatives would simply be identical to left dislocations as in the case of clause connectives optionally marking the left edge of CP. But even in this case the rest of the argument in this paper would still hold. It would even be more straightforward, as currently lack of clause connectives after vocatives is a stipulation. If the counterexamples in Sideltsev 2021 are considered to be true vocatives, the (optional) presence of clause connectives would be predicted by the analysis suggested in this paper.

(a) You are a hypocrite, (b) you forever make obeisance to the king. (after *HED* 3:31)

The following example establishes that the left edge of nominal clauses may be marked by *nu*:

- (12) MH/NS (CTH 481.A) KUB 29.4+ obv. i 28–30
- a. 2 ^{GIŠ}GAN.KAL 2 ^{GIŠ}BANSUR 2 ^{GIŠ}KANNUM ^{GIŠ} 1-NUTIM
 2 offering.table 2 table 2 stand wood 1
- ^{GIŠ}*kišḫita pargašti* 6 *šekan*
 throne height.LOC.SG 6 *sekan*
- b. *n=at* 2-ŠU *pazzanān*
 CONN=they twice *p.NOM.PL.N*
- a'. 1-NUTIM ^{GIŠ}*kišḫita ašannaš* 1 ^{GIŠ}GĪR.GUB 1-NUTIM
 1 throne sitting-GEN.SG 1 footstool 1
- ^{GIŠ}*tarmalla*
tarmalla

(a) 2 offering-tables, 2 tables, 2 stands of wood, 1 throne 6 *sekan* in height—(b) **they are double-*pazzanant***; (a') 1 throne for sitting, 1 footstool, and 1 set of *tarmalla*. (after Miller 2004:275–6)

A further difference between nominal clauses and vocative clauses concerns the use of the reflexive particle *-za*. Whereas it is nearly obligatory in NH nominal clauses with first or second person subjects (and optional in OH and MH; see Hoffner and Melchert 2008:362–4), it is never attested in unambiguous cases of vocative clauses, as in the following example:

- (13) NH/NS (CTH 376.1.A) KUB 24.3 obv. i 29'
- zik=za* ^dUTU ^{URU}*Arinna* *nakkiš* DINGIR-LIM-iš
 you=REFL Sun.Goddess Arinna weighty-NOM.SG.C god.NOM.SG.C

You, O Sun goddess of Arinna, are an honored goddess. (after Singer 2002:51)

Thus vocative phrases that are separate syntactic units are demonstrably different from nominal clauses, which are regular CPs in Hittite.

4 Fragmented clauses versus vocatives

The fact that vocatives are not separate CPs with vocatives as the only lexical material follows even more clearly from the following examples of fragmented clauses with vocatives. This is seen in fragmented clauses like (a) and (a') from the following example, which are interrupted by parenthetical clauses ((b) and (c)), yet each fragment of the fragmented clause is marked by *nu*:

- (14) NS (CTH 400.1.A) KUB 30.35+ obv. i 8–11
- a. *n=an=za*
CONN=him=REFL
 - b. *kuwat uwanun*
why come.1SG.PST
 - c. *kuit dariyahhun*
why exert.1SG.PST
 - a'. *nu uwandu*
CONN see.3PL.IMP
 - d. [*k*]arūiliēš [DINGI]R^{MEŠ} kuiē[š e]šhar NIŠ
ancient.NOM.PL.C gods who.NOM.PL.C blood.ACC.SG.N oath
DINGIR-L[Ī]? [*p*]angau[waš EM]E? parkunu[škanzi]
god multitude.GEN.SG tongue purify.IPF.3PL.PRS

(b) Why did I come? (c) Why did I exert myself? (a) May (d) the ancient gods who purify the blood, the perjury (and) the tongue of the multitude (a') see (a) him. (after Melzer and Görke 2017)

The same is seen in the following example:

- (15) preNH/NS (CTH 398.A) KBo 4.2+ obv. ii 9–10
- a. *nu kāš UR.TUR*
CONN this.NOM.SG.C puppy
 - b. ^{UZU}UR-za šalliš
limb.ABL big.NOM.SG.C
 - c. ŠÀ=ŠU=wa šalli
heart=its=QUOT big.NOM.SG.N
 - a'. *namma=war=aš ANŠE-aš karpiyattallaš*
then=QUOT=it ass.NOM.SG.C carrier.NOM.SG.C

(a) This little puppy—(b) **big as to (its) limb**, (c) **big as to its heart**—(a') then it is the carrier (of evil) (like) an ass. (after Bawanypeck 2016)

This case clearly attests a fragmented clause: its two separate parts are (15a) and (a') separated by two parenthetical clauses (b) and (c). The enclitics of the clause are within the second fragment of the clause (a'), after the parenthetical clauses. This example belongs to what Sideltsev (forthcoming) calls mismatch sentences (see also Lyutikova and Sideltsev 2021). But it differs from mismatch sentences in that the noun phrase *kāš* UR.TUR “this puppy” in the main clause to the left of the parenthetical clause (in (a)) is resumed by a coreferential enclitic pronoun (*-aš* ‘it’) in the main clause (a')—a resumption that is not attested with mismatch sentences. The resumption can occur with left dislocations, but the semantics of (a) here is not that of a typical left dislocation. Furthermore, left-dislocated phrases are never preceded by a marked clause boundary, as is the case here. Thus, this case is more likely to be a real false start, although it attests *nu* in front of the fragmented clause. The quotative enclitic of the second parenthetical clause (c) is within the clause, not in the first part of the main clause (a), but this is not different from mismatch sentences, as only the enclitics of the first subordinate clause turn up on the first part of the main clause. In sum, fragmented clauses are also demonstrably different from the syntactic units that vocatives are in.

5 Left dislocations versus vocatives

Now, after confronting vocatives with nominative clauses and fragmented clauses, both of which show the use of clause connectives before the nominative and fragmented clause, we can return to the issue of the absence of clause connectives either immediately before or immediately after vocatives. As mentioned above, this absence is not by itself indicative of the non-CP status of the syntactic unit with the vocative. However, if seen in the context of other distributional properties of vocatives and particularly against the background of nominative and fragmented clauses, the absence of clause connectives with vocatives is significant. It is particularly indicative if seen in the context of left dislocations, which pattern together with vocatives in that they never employ clause connectives before the left dislocation, but which differ from vocatives in that they employ clause connectives after the left dislocation:

- (16) MH/MS (CTH 324.1.A) KUB 17.10 rev. iii 1
 a. *karpīš*
 anger.NOM.SG.C

- b. *n=an arāet*
CONN≠it stop.3SG.PST

(b) She stopped it, (a) namely, anger. (after Hoffner 1998b:16)

(17) MH/MS (CTH 244?) HKM 113 rev. 14–5

- a. ^m*Huidudduwalliš*
Huidudduwalli.NOM.SG.C

- b. *n=an* ^{URU}*Sallašna ašašer*
CONN≠him Sallasna settle.3PL.PST

(a) (As for) Huidudduwalli, (b) they settled him in Sallasna.

(18) OH/NS (CTH 19.II.A) KBo 3.1+ obv. ii 13

- a. **5** *ŠEŠ*^{MEŠ} *ŠU*
5 brothers≠his

- b. *nu=šmaš* *É*^{MEŠ} *taggašta*
CONN≠them houses allot.3SG.PST

(a) (As for) his five brothers, (b) he allotted them houses.

As left dislocations are also likely to be extra-CP, the absence of clause connectives before them is particularly telling in the light of quite frequent use of clause connectives after them. It confirms the evidence set out above that both vocatives and left dislocations are a special layer dominating the CP and not a separate CP. As they do not constitute a CP, they cannot be preceded by clause connectives that mark the left edge of CP.

Can the evidence of left dislocations be explained away as discourse conditioned, along the same lines above for vocatives? In (16), the left dislocation starts a new paragraph, but not a new discourse unit. The same holds for (18): the left dislocation similarly starts a new paragraph, but the discourse unit narrating the deeds of Telipinu is very explicitly continued, which is signaled by the use of enclitic pronoun (*ŠU* ‘his’) and null subject pronoun referring back to the topic of the previous paragraph, Huzziya (see explicitly van den Hout 2003:196 n.36). The systematic absence of clause connectives is observed only for beginnings of compositions (see the references above as well as Hoffner and Melchert 2008:402–3). It is observed that clause connectives are not employed at the beginning of texts or large textual divisions (CHD L–N:466), but it is simultaneously stressed “that discourse-initial *nu* does occur, when there is a conscious allusion to something said by the previous speaker (‘then’, ‘so’)” (Hoffner and Melchert 2008:403). The

beginning of a new paragraph is not a context one systematically associates with a lack of clause connectives, since a new paragraph is very commonly linked to the previous one. Thus the lack of clause connectives cannot be independently due to the discourse factor in at least some of the relevant contexts like (16) and (18).

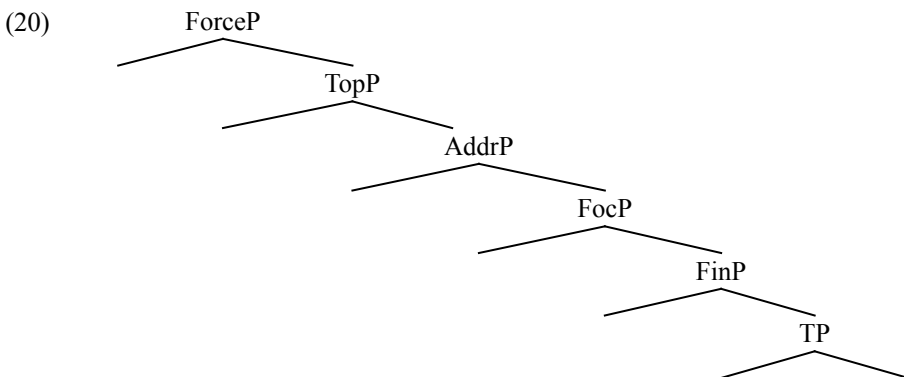
Simultaneously, the evidence of left-dislocated phrases shows that the CP that they dominate to their right is marked by clause connectives, which is the pattern that one expects. This evidence is highly relevant, as it shows that the non-use of clause connectives after vocatives (at the left edge of CP) has to be discourse conditioned, just as it is in case of some other types of clauses in Hittite (as demonstrated above), whereas the absence of clause connectives before both left dislocations and vocatives is a grammatical feature, due to the lack of a CP boundary to their left.

6 Sentence-internal vocatives

As mentioned above, Hittite attests sentence-internal vocatives in addition to sentence-initial vocatives:

- (19) NS (CTH 343.1.A) KUB 33.114+ rev. iii 44'-45'
- a. *kinun=ma[=]mu* ^d*Nāra* *ŠEŠ=mi* [*i*]*štamaš*
 now=but=?me Nara brother=my.VOC.SG hear.2SG.IMP
- b. *nu* *taknaš* *ḫuwitar* [*ḫ*]*ūman* *nin[ik]*
 CONN earth.GEN.SG wild.life.ACC.SG all-ACC.SG satiate.2SG.IMP

(a) Now, Nara, my brother, hear me! (b) Mobilize all the animals of the earth.
 (after Hoffner 1998b:47)



These vocatives can only be construed along the lines suggested by Slocum 2016: 97–109: sentence-internal vocatives are in the specifier of a functional projection AddrP, which is located in the topic domain of CP, as is shown in (20).

7 Conclusion

Hittite attests a system where vocatives can be located in two structural positions: in Spec,AddrP within CP, as per Slocum 2016, and in Spec,SpeechActP dominating CP, as per Hill 2014. In other words, both extra-CP and intra-CP positions of vocatives are available in Hittite. Hittite can be shown not to attest the third possible option, sentence-initial vocatives in Spec,AddrP of a fully-formed independent CP with the vocative as the only lexical material in this CP, as per Slocum 2016. Thus, the Hittite system is uneconomical. Still, it is attested.

I have demonstrated that vocatives to the left of a proper clause are not a separate clause (CP) of reduced structure, but an extra-CP projection. This is not based on cross-linguistic parallels, as per Zeilfelder 2016, but rather required by a careful and a fine-grained study of the Hittite evidence.

References

- Bawanyeck, Daliah. 2016. Das Ritual des Auguren Ȝuwarlu (CTH 398). *hethiter.net*: CTH 398 (INTR 2016-03-31). https://www.hethport.uni-wuerzburg.de/txhet_besrit/intro.php?xst=CTH%20398&prgr=&lg=DE&ed=D.%20Bawanyeck (accessed 15 July 2022).
- Beckman, Gary. 2019. *The Hittite Gilgamesh*. Atlanta: Lockwood Press.
- CHD = Hans G. Güterbock, Harry A. Hoffner, Theo P. J. van den Hout, and Petra M. Goedegebuure (eds.). 1980–. *The Hittite Dictionary of the Oriental Institute of the University of Chicago*. Chicago: The Oriental Institute.
- Chrzanowska, A., ed. 2017. Ritual der Ȝantitaššu von Ȝurma: “Wenn die Jahre eines Menschen gestört sind.” *hethiter.net*: CTH 395.1 (TX 16.06.2015, TRde 09.01.2017). https://www.hethport.uni-wuerzburg.de/txhet_besrit/intro.php?xst=CTH%20395.1&prgr=%201&lg=DE&ed=A.%20Chrzanowska (accessed 15 July 2022).
- Eichner, Heiner. 2016. Zur Syntax des vedischen und hethitischen Vokativs im Vergleich. In Šárka Velhartická (ed.), *Audias Fabulas Veteres: Anatolian Studies in Honor of Jana Součková-Siegelová*, 119–40. Leiden: Brill.
- Fortson, Benjamin. 1998. A New Study of Hittite *-wa(r)*. *Journal of Cuneiform Studies* 50.21–34.
- Haegeman, Liliane. 2014. West Flemish Verb-based Discourse Markers and the Articulation of the Speech Act Layer. *Studia linguistica* 68.116–39.

- Haegeman, Liliane, and Virginia Hill. 2013. The Syntacticization of Discourse. In Raffaella Folli, Christina Sevdali, and Robert Truswell (eds.), *Syntax and Its Limits*, 370–90. Oxford: Oxford University Press.
- . 2014. Vocatives and Speech Act Projections: A Case Study in West Flemish. In Anna Cardinaletti, Guglielmo Cinque, and Yoshio Endo (eds.), *On Peripheries*, 209–36. Tokyo: Hituzi Syobo.
- HED = Jan Puhvel. 1984–. *Hittite Etymological Dictionary*. Berlin: de Gruyter.
- Hill, Virginia. 2007. Vocatives and the Pragmatics-Syntax Interface. *Lingua* 117.2077–105.
- . 2014. *Vocatives: How Syntax Meets with Pragmatics*. Leiden: Brill.
- Hoffner, Harry A., Jr. 1998a. From the Disciplines of a Dictionary Editor. *Journal of Cuneiform Studies* 50.35–44.
- . 1998b. *Hittite Myths²*. Atlanta: Society of Biblical Literature.
- . 2007. Asyndeton in Hittite. In Detlev Groddek and Marina Zorman (eds.), *Tabularia Hethaeorum: Hethitologische Beiträge Silvin Košak zum 65. Geburtstag*, 385–99. Wiesbaden: Harrassowitz.
- Hoffner, Harry A. Jr., and H. Craig Melchert. 2008. *A Grammar of the Hittite Language I: Reference Grammar*. Winona Lake, Indiana: Eisenbrauns.
- Kassian Alexei, Andrei Korolëv, and Andrei Sidel'tsev. 2002. *Hittite Funerary Rituals, šalliš waštaiš*. Münster: Ugarit-Verlag.
- Lyutikova, Ekaterina, and Andrei Sideltsev. 2021. Bracketing Paradoxes at Clausal Boundaries in Hittite. *Indo-European Linguistics and Classical Philology* 25.809–46.
- Melzer, Sabine, and Susann Görke. 2017. Ritual des Irija für die Reinigung einer Stadt. *hethiter.net* /: CTH 400.1 (TX 20.04.2017, TRde 20.04.2017). https://www.hethport.uni-wuerzburg.de/txhet_besrit/intro.php?xst=CTH%20400.1&prgr=§%201&lg=DE&ed=S.%20Melzer%20-%20S.%20Görke (accessed 15 July 2022).
- Miller, Jared L. 2004. *Studies in the Origins, Development and Interpretation of the Kuzzuwatna Rituals*. Wiesbaden: Harrassowitz.
- Moro, Andrea. 2003. Notes on Vocative Case: A Case Study in Clause Structure. In Josep Quer, Jan Schrotten, Mauro Scorretti, Petra Sleeman, and Els Verheugd (eds.), *Romance Languages and Linguistic Theory 2001: Selected Papers from Going Romance*, 247–61. Amsterdam: John Benjamins.
- Rieken, Elisabeth, Jürgen Lorenz, Anna Bauer, and Susanne Görke. 2009. Das Lied von Ullikummi: Hethitische Version – Erste Tafel. *hethiter.net* /: CTH 345.I.1 (TX 2009-08-31, TRde 2009-08-29). https://www.hethport.uni-wuerzburg.de/txhet_myth/intro.php?xst=CTH%20345.I.1&prgr=§%201&lg=DE&ed=E.%20Rieken%20et%20al (accessed 15 July 2022).
- Rieken, Elisabeth, Jürgen Lorenz, and Alexandra Daus. 2017. Kantuzzilis Gebet an den Sonnengott. *hethiter.net* /: CTH 373 (TX 2017-12-11, TRde 2017-09-13). https://www.hethport.uni-wuerzburg.de/txhet_gebet/intro.php?xst=CTH%20373&prgr=§%201&lg=DE&ed=E.%20Rieken%20et%20al (accessed 15 July 2022).

- Sideltsev, Andrei. 2020. Syntax of Direct Speech Particle *-wa(r)* in Hittite. *Acta Orientalia* 73.155–85.
- . 2021. Vocatives and Direct Addresses in Hittite. *Archiv Orientalni* 88.531–87.
- . Forthcoming. Mismatch between Syntax and Prosody and Complex Sentence Structure in Hittite. To appear in *Indo-European Linguistics* 10.
- Singer, Itamar. 2002. *Hittite Prayers*. Atlanta: Society of Biblical Literature.
- Slocum, Poppy. 2016. The Syntax of Address. Ph.D. diss., Stony Brook University.
- Ünal, Ahmet. 1996. *The Hittite Ritual of Ḫantitaššu from the City of Hurma against Troublesome Years*. Ankara: Türk Tarih Kurumu.
- van den Hout, Theo. 2003. The Proclamation of Telipinu. In William W. Hallo (ed.), *The Context of Scripture I: Canonical Compositions from the Biblical World*, 194–8. Leiden: Brill.
- Widmer, Paul. 2016. Hethitisch *nu* in den Masat-Briefen. Ms., Universität Zürich. https://www.academia.edu/34814159/Hethitisch_nu_in_den_Maşat_Briefen (accessed 15 July 2022).
- Zeilfelder, Susanne. 2016. *Allmacht na!* – Zum Vokativ im Hethitischen. In Sergio Neri, Roland Schumann, and Susanne Zeilfelder (eds.), “*dat ih dir it nu bi huldi gibu.*” *Linguistische, germanistische und indogermanische Studien Rosemarie Lühr gewidmet*, 527–34. Wiesbaden: Reichert.

Emergent Mobility in Indo-European **-r/n-*stems and Its Implications for the Reconstruction of the Neuter Plural*

ANTHONY D. YATES

Ludwig-Maximilians-Universität München

This paper proposes a new account of the oblique singular case-forms of Proto-Indo-European “simple” neuter **-r/n-*stems that exhibit stressed inflectional endings in the Indo-European languages. Unexpected on the “acrostatic” reconstruction of this category, such forms were previously held to reflect the singular-marked oblique case-forms of a suppletive “amphikinetic” collective. I argue that these forms are instead the result of a recurring pattern of morphophonological change (EMERGENT MOBILITY) whereby erstwhile “acrostatic” formations develop intraparadigmatic stress mobility. In view of this alternative analysis, I contend that in (pre-)PIE neuter **-r/n-*stems and athematic neuter nominals generally built oblique plural case-forms in the same way as animate nouns—i.e., by adding plural inflectional endings to the same stem (with the same prosodic properties) as in their corresponding oblique singular case-forms.

1 Introduction

This paper is concerned with the reconstructible word-prosodic properties (i.e., stress, ablaut) of Proto-Indo-European (PIE) neuter **-r/n-*stems, their diachronic development, and their implications for IE nominal inflection. More specifically, it focuses on “simple” primary **-r/n-*stems of the type in (1). This type is defined by two properties: (i) the neuter noun-forming derivational suffix appears to attach directly to a root (thus primary); (ii) this suffix contains just a single consonant (thus “simple”), **r* in nominative and accusative case-forms (NOM/ACC), and **n* in oblique (OBL) case-forms. According to the widely accepted Erlangen Model (EM),

* I am grateful to the audience of the 32nd UCLA Indo-European Conference; to the members of the Indo-European and Modern Linguistic Theory research group (especially Jesse Lundquist and Ryan Sandell); to the editors of this volume; and to Craig Melchert, John Clayton, Olav Hackstein, Giulio Imberciadori, Ron Kim, and Sergio Neri. Their comments and critiques did much to shape and improve the ideas in this paper. I also want to thank the Alexander von Humboldt Foundation for supporting this research.

PIE **-r/n*-stems of this type should be reconstructed with “acrostatic” (AS) inflection in their singular case-forms, hence fixed root stress, invariant zero-grade of the suffix, and intraparadigmatic alternations in the root vowel: **é* in NOM/ACC.SG, **é* in OBL.SG (AS I), as in (1a)–(b); or **ó* in NOM/ACC.SG, **é* in OBL.SG (AS II), as in (1c) (Schindler 1975a:4–6; cf. Weiss 2020:227, i.a.):¹

(1)		NOM/ACC.SG	OBL.SG	
a.	PIE	<i>*h₁ésh₂-r</i>	<i>*h₁ésh₂-n-</i>	‘blood’
b.	PIE	<i>*h₁yék^w-r</i>	<i>*h₁yék^w-n-</i>	‘liver’
c.	PIE	<i>*wód-r</i>	<i>*wéd-n-</i>	‘water’

As recognized already by Schindler (1975a), however, the attested IE reflexes of (1) and other simple **-r/n*-stems often show prosodic properties that are unexpected on the AS reconstruction. For instance, some reflexes of (1) in Vedic Sanskrit are given beside their corresponding AS pre-forms in (2), where it can be observed that all three forms show stressed inflectional endings rather than root stress; in addition, (2c) reflects zero-grade rather than full-grade of the root.

(2)		Vedic			PIE	
a.	INS.SG	<i>as-n-á</i>	‘with blood’	✠	INS.SG	<i>*h₁ésh₂-n-eh₁</i>
b.	ABL.SG	<i>yak-n-ás</i>	‘from the liver’	✠	ABL.SG	<i>*h₁yék^w-ŋ-s</i>
c.	GEN.SG	<i>ud-n-ás</i>	‘of water’	✠	GEN.SG	<i>*wéd-ŋ-s</i>

Likewise, the Hittite reflexes of “simple” **-r/n*-stems predominantly show stressed inflectional endings, as in (3), and in some cases also zero-grade of the root, e.g., in (3b).²

(3)		Hittite			PIE	
a.	DAT/LOC.SG	<i>išhanī</i> [iʃχ:-n-í:]	‘for/in blood’	✠	DAT.SG	<i>*h₁ésh₂-n-ei</i>
b.	GEN.SG	<i>uttanāš</i> [ut:-n-á:s]	‘of the word’	✠	GEN.SG	<i>*wéth₂-ŋ-s</i>
c.	DAT/LOC.SG	<i>ħaršanī</i> [ħars:-n-í:]	‘on the head’	✠	DAT.SG	<i>*h₃érs-n-ei</i>

1 The Leiden Model’s “proterodynamic” reconstruction of simple **-r/n*-stems (see, e.g., Kloekhorst 2014 with references) faces the same challenges as EM’s AS reconstruction—viz., the lack of a direct source for ending-stressed oblique case-forms (discussed just below)—but additionally fails to account for reconstructible root **ē*- and **o*-grades in this category, among other issues (see further §4 below).

2 On the phonological interpretation of oblique case-forms of Hittite *-r/n*-stems like (3) see Yates 2021d.

In this paper, I propose a new diachronic account of simple *-r/n-stem OBL.SG forms with stressed inflectional endings of the type in (2)–(3). While my account aligns with Schindler’s (1975a) traditional account (discussed in §2 below) in taking the AS reconstruction of this category in (1) as essentially correct, I diverge in deriving these OBL.SG IE case-forms directly from the corresponding cells of their AS paradigm rather than from those of a derivationally related “collective” paradigm. I argue that the innovation of inflectional stress in (2)–(3) is part of a broader phenomenon, first observed by Schindler (1972) in root nouns and termed here EMERGENT MOBILITY, whereby erstwhile AS categories tend to develop intraparamigmatic stress mobility over time.

The remainder of this paper is organized as follows. I begin in §2 by briefly reviewing Schindler’s (1975a) account of OBL.SG forms like (2)–(3), then discuss some problems for this account. In view of these issues, I develop a new account in §§3–4: the mechanism proposed to drive prosodic change in these forms is introduced and empirically motivated in §3; it is then applied in §4 to outline an alternative prehistory for the diverse reflexes of simple *-r/n-stems in the IE languages. Finally, I conclude in §5 with an assessment of the broader implications of this proposal—in particular, for the inflection of neuter nominals in PIE and the grammatical status of the “collective.” I also briefly discuss the nature and causes of emergent mobility, raising questions that must be addressed in future research.

2 On the “collective” as the source of ending-stress in *-r/n-stems in IE

According to Schindler’s (1975a:3–4) influential hypothesis (building on Schmidt 1889), in PIE, neuter nouns lacked inflectional plural forms; these were therefore supplied by internally-derived “collectives,” which were grammatically singular (thus employing singular endings in their oblique cases) and—if athematic—exhibited “amphikinetic” (AK) inflection (thus characterized by stressed full-grade of the root and *o-grade of the suffix in the NOM/ACC, and in the oblique cases by zero-grade of both root and suffix and stressed inflectional endings). Hence, e.g., the PIE word for ‘water’ would have had a partial paradigm like (4):

(4) PIE ‘water’

	Singular (AS II)	“Plural” (= AK collective)
NOM/ACC	*wód- <i>r</i>	*wéd-or- <i>h</i> ₂
GEN	*wéd- <i>ŋ-s</i>	*ud-n-élós

On Schindler’s account, GEN.SG Ved. *udnás* ‘of water’ in (2c) above does not directly continue the AS GEN.SG PIE *wéd-*ŋ-s* in (5), but instead the genitive

of this AK collective, **ud-n-élós*, which was reanalyzed as the GEN.SG of NOM/ACC.SG **wód-r*, thereby replacing **wéd-ŋ-s* in this function. More generally, his proposal provides a means for reconciling the ending-stressed IE OBL.SG forms in (2)–(3) above with the AS reconstruction of simple **-r/n*-stems in (1): they likewise phonologically continue oblique case-forms of AK collectives that have morphologically replaced their inherited AS OBL.SG counterparts, as in (5):

(5)	IE singular			PIE collective		
a.	GEN	Ved.	<i>ud-n-ás</i>	‘of water’	<	GEN <i>*ud-n-élós</i>
b.	ABL	Ved.	<i>yak-n-ás</i>	‘from the liver’	<<	ABL <i>*h₁ik^w-n-élós</i>
c.	INS	Ved.	<i>as-n-á</i>	‘with blood’	<	INS <i>*h₁(e)sh₂-n-éh₁</i>
d.	DAT/LOC	Hitt.	<i>išhanī</i>	‘for/in blood’	<	DAT <i>*h₁(e)sh₂-n-éi</i>
			[iʃχ:-n-í:]			

Yet while Schindler’s (1975a) account has won widespread acceptance (see Nussbaum 1986:161, Rieken 1999:296–302, i.a.; in standard handbooks, e.g., *NIL*: 712 n.37, Weiss 2020:278, Fritz and Meier-Brügger 2021:210), there are reasons to be skeptical—in particular, about the reconstructibility of the singular-marked oblique case-forms of the AK collective at the core of this explanation. In the first place, the evidential basis for their reconstruction is very limited. On Schindler’s hypothesis, all athematic neuter nominals should have had their plural forms supplied by AK collectives in PIE, including “proterokinetic” (PK) deverbal neuter **-men-* and **-es-*stem nouns, which were highly productive and thus robustly attested in the daughter languages. One might therefore expect to find among the numerous attested reflexes of these categories some trace of the oblique stem of the AK collective. For instance, the same reanalysis that putatively yielded (5) could have led to OBL.SG forms of neuter **-men-* or **-es-*stem nouns with stressed endings (and root/suffixal zero-grade). Alternatively, the attested OBL.PL forms of these categories might show some hint of erstwhile AK inflection. The standard view among scholars who adopt Schindler’s hypothesis is that the oblique forms of this originally singular collective paradigm were at some prehistoric stage “pluralized”—i.e., fitted out with plural inflectional endings found in animates (DAT.PL **(b^h)os*, GEN.PL **-oh₁/som*, etc.) on their way to becoming ordinary plurals in the IE languages synchronically (e.g., Jasanoff 2008:144–5). It would be unsurprising, then, if some of these OBL.PL forms preserved the stressed endings (and root/suffixal zero-grade) characteristic of AK nominals. Yet neither of these scenarios—laid out in (6)—finds any support in the IE data. There is no evidence for stressed oblique case-endings in neuter **-men-* or **-es-*stems, which show only root stress in Vedic and “recessive accent” in Greek, regularly accompanied by full-grade of

the root—e.g., GEN.SG/PL Ved. *bráhmaṇas/bráhmaṇām* ‘of the formulation/s’; INS.SG/GEN.PL Ved. *chándasā/chándasām* ‘with meter/of meters’; GEN.SG/PL Gk. *χέυματος/χευμάτων* ‘of the outpouring/s’, GEN.SG/PL Gk. *ἔπειος/ἑπέων* ‘of the word/s’.³

(6)	PIE collective		Reanalyzed SG or renewed PL		IE		
a.	GEN	*R(∅)-s-él/ós	{	>	GEN.SG *R(∅)-s-él/ós	>	—
				>>	GEN.PL *R(∅)-s-óh _{1/3} om	>	—
b.	GEN	*R(∅)-mn-él/ós	{	>	GEN.SG *R(∅)-mn-él/ós	>	—
				>>	GEN.PL *R(∅)-mn-óh _{1/3} om	>	—

The dearth of evidence for Schindler’s singular-marked AK oblique case-forms in neuter *-men- and *-es-stems is striking, but hardly anomalous. Outside of *-r/n-stems, it is difficult even to find alleged reflexes of these oblique case-forms, let alone compelling examples.⁴ Empirically, then, the reconstruction of singular-marked AK oblique case-forms would appear to rest on *-r/n-stems alone.

Recent work on IE morphosyntax has raised further doubts about this reconstruction. Specifically, Melchert (2011, 2014) has challenged the traditional view that neuter collectives were at some historical stage grammatically singular. The main argument for this view is that neuter plural subjects (terminating in *(e)h₂) regularly exhibit singular verb agreement in Greek and Anatolian, and on a more limited basis in Indo-Iranian as well. Its proponents interpret these verbal agreement patterns as a morphosyntactic archaism, a relic of their earlier status as singular collectives.⁵ As observed by Melchert (2011:396), however, cross-

3 The mobility of neuter *-men- and *-es-stems in Balto-Slavic is broadly regarded as analogical; see Yates 2022:§4 on the former, and on the latter Jasanoff 2017:164 with references. On “recessive accent” as a reflex of root stress see again Yates 2022:§2.2 with references.

4 One such claim is made by Ringe (2017:94), who argues that the AS I paradigm of PIE ‘name’ was in Germanic replaced wholesale by the AK collective, hence that the attested OBL.SG forms of ‘name’ continue the SG-marked oblique forms of this collective. Yet as Ringe demonstrates, the actual Germanic outcomes of these forms reflect root full-grade and suffixal zero-grade, which are precisely the properties expected in the OBL.SG of the inherited AS I paradigm, and can thus be straightforwardly derived from this paradigm. In contrast, his own analysis requires the additional assumption that the root zero-grade in the oblique of the AK collective was analogically replaced by full-grade from the NOM/ACC, thereby unnecessarily complicating the diachrony.

5 On this type of analysis, the word-final *(e)h₂ observed in the NOM/ACC.SG would ultimately reflect **-(e)h₂-∅—viz., (theme vowel +) derivational suffix *-h₂ + the phonologically null NOM/ACC.SG ending found in IE athematic neuters (see, e.g., Nussbaum 1986:129–33 for discussion).

linguistically low animacy nouns morphologically marked as plural often fail to trigger plural agreement on the verb; the apparent singular agreement observed with IE neuter plurals is thus plausibly analyzed as a “default” marking strategy used in the absence of a sufficiently animate controller, and so does not justify the assumption of erstwhile singular status for these neuter plurals (cf. Lundquist and Yates 2018:2092–3 with references). Melchert (2011:396–8) argues rather that the word-final $*(e)h_2$ in the NOM/ACC of these nouns was already in pre-PIE a plural inflectional ending used with neuter nominals, ultimately grammaticalized from a derivational suffix $*-h_2$ that formed neuter *pluralia tantum* of the kind directly continued in Anatolian—e.g., NOM/ACC.PL Hitt. *warpa* ‘enclosure’ ($< *w(o)rb^heh_2$) ~ DAT/LOC.PL *warpaš* ‘in the enclosure’. He therefore concludes “that these nouns were plurals from the very beginning and that they remained so in PIE” (2014:258).

If Melchert is correct, then the Schindlerian account in (5) of stressed OBL.SG endings in simple $*-r/n$ -stems is excluded: the attested forms cannot continue the singular-marked oblique case-forms of a (pre-)PIE neuter collective, since such forms would never have been characterized by singular endings, but rather by plural endings “from the very beginning.” The stress patterns observed in simple $*-r/n$ -stems like (5) would thus require an alternative explanation. Yet even for scholars who reject Melchert’s claim (e.g., Nussbaum 2014), the very limited empirical support for the singular-marked oblique case-forms of the AK collective should make it attractive to look for a different account of these stress patterns. All of the other IE evidence suggests that the “pluralization” of neuter collectives had occurred already in PIE and involved not just the replacement of its singular-looking oblique endings by ordinary plural endings but also remodeling of the oblique stem of the collective after the singular (cf. Nussbaum 1986:130). This contrasts strikingly with $*-r/n$ -stems, where “pluralization” would necessarily be a post-PIE phenomenon: as will be shown in §4 below, there are clear cases in which the same simple $*-r/n$ -stem has IE reflexes of the AS OBL.SG in addition to reflexes that have been attributed to the oblique stem of the AK collective; the former thus cannot have been replaced across the board by the latter already in PIE. Advocates of the Schindlerian account in (5) are therefore faced with a (thus far unaddressed) puzzle: why did the $*-r/n$ -stems alone escape “pluralization” in PIE?

In the next two sections (§§3–4), I propose an alternative approach to ending-stress in the oblique case-forms of IE $*-r/n$ -stems which obviates this question. I argue that these forms are instead the result of a recurring type of morphophonological change whereby intraparadigmatic stress mobility was introduced into inherited AS paradigms. Because this proposal makes no reference to the (singular-

marked oblique forms of the) AK collective, it is consistent with Melchert's (2011, 2014) hypothesis that neuter collectives were always grammatically plural.

3 Emergent mobility as an IE phenomenon

3.1 Recurring morphophonological change in IE "acrostatic" root nouns

In his influential treatment of IE root nouns, Schindler (1972:32–6) argued that AS types tend to undergo the series of step-wise diachronic developments in (7). As a result of these innovations, root nouns for which AS inflection can be (internally) reconstructed are often continued in the IE languages by synchronically mobile paradigms, viz., with stress alternations between root and inflectional endings.

- (7) Recurring changes in IE root nouns per Schindler:
- a. Renewal of athematic GEN.SG *-s by productive *-e/os.
 - b. Shift of stress in oblique cases from root to inflectional endings.
 - c. Unstressed root full-grade in oblique cases replaced by zero-grade.

In Schindler's view (1972:32), these developments are best illustrated by the PIE word for 'house', relevant IE reflexes of which are given in (8).⁶ The root *o-grade characteristic of the direct cases of an AS II nominal is reflected in Armenian (and likely too in Greek), while the *e-grade of its oblique cases and archaic GEN.SG ending *-s are preserved in the fixed collocation *dém-s póti- 'lord of the house', which is directly continued in Old Avestan and (univerbated) in Greek.

- (8) Development of AS II 'house' in IE:
- | | | | |
|--|--------|---|--|
| ACC.SG | *dóm | > | Arm. <i>tun</i> , Gk. δῶ 'house' |
| GEN.SG | *dém-s | > | OAv. <i>dəng (paiti-)</i> , Gk. δεσ(πότης) '(lord) of the house' |
| >> GEN.SG *dm-é/ós > Arm. <i>tan</i> , YAv. <i>nəmō</i> 'of the house' | | | |

At some (post-)PIE stage, however, GEN.SG was renewed with the productive ending *-e/os (= (7a)); stress shifted onto *-e/os and the other oblique inflectional endings (= (7b)); and as a consequence of this stress shift the root */e/-vowel was

6 Schindler's (1975a:32) reconstruction is effectively *communis opinio*, appearing in most standard handbooks (Weiss 2020:219, 286; Fritz and Meier-Brügger 2021:221, i.a.). The long vowel in the ACC.SG results from Stang's Law (← */dóm-m/). Arm. *tan* must reflect a Lindeman-variant *[dṛmm-é/ós], which per Weiss (2017) is also continued in Old Irish. Weiss also argues that Old Irish inherited the *o-grade of the direct cases, but does not preserve GEN.SG *dém-s.

deleted (= (7c)), yielding the innovative root zero-grade that is found in oblique case-forms in Armenian and Younger Avestan. Change (7b) is not directly observed, but reasonably inferred from (7c).

Schindler (1972:33) saw a similar diachronic trajectory in the inherited word for ‘foot’ in (9) (cf. *NIL*:526–32). The root **o*-grade characteristic of original AS II inflection is well-supported by the comparative evidence, including direct reflexes of the expected ACC.SG in Vedic, Greek, and Armenian and of the ACC.PL in Hittite (PIE **pód-ṃs* ‘feet’ > Hitt. *pātu[s]* [pá:t-os]). The original oblique stem with stressed root full-grade (and GEN.SG **-s*) is not preserved, but it appears that this full-grade survived (7b) the introduction of stress mobility into the paradigm—surely already in PIE, in view of the convergence between Vedic, Greek, and Hittite (e.g., GEN.PL Gk. ποδῶν, Hitt. *patān* [pat-á:n] ‘of the feet’)—since an oblique stem **ped-* is continued in Vedic and Latin. Vedic thus perfectly reflects the root **o/e*-alternation expected in an AS II nominal: root *ā*-vocalism (< **o* via Brugmann’s Law) in the direct cases, *ǎ*-vocalism in the oblique (< **e*).⁷ Latin further shows another common development: the root vocalism of the oblique—in this case, full-grade—was leveled back to the direct cases (e.g., ACC.SG Lat. *pedem*).⁸

(9) Development of AS II ‘foot’ in IE:

ACC.SG	<i>*pód-ṃ</i>	>	Ved. <i>pádam</i> , Gk. πόδα, Arm. <i>otn</i> ‘foot’
GEN.SG	<i>*péd-s</i>	>	—
>> GEN.SG	<i>*ped-élós</i>	>	Ved. <i>padás</i> ; Lat. <i>pedis</i> ‘of the foot’

Schindler (1972:32–6) proposes a number of other AS root nouns that may have undergone (7) (cf. Weiss 2020:278–9), but here it will suffice to examine just one more example, the word for ‘voice’ in (10). Like ‘foot’, there are no attested reflexes of its original oblique stem, but its root full-grade was retained even when stress mobility was introduced into the paradigm (= (7b)) and is continued in Avestan (whereas Vedic and Greek have independently generalized **o*-vocalism

7 Greek and Armenian clearly exhibit leveling of root **o*-grade to the oblique cases in ‘foot’, but see van Beek (2018:338–40) for arguments that Greek also inherited full-grade in this context. He therefore concludes that the PIE paradigm of ‘foot’ was mobile with root **ó/e*-ablaut (contra Kloekhorst 2014:152–3), although he proposes a different pre-PIE starting point than Schindler (1972).

8 Per Schindler (1972:32) the inherited word for ‘clan; settlement’ (e.g., ACC.SG Ved. *viśam*) shows the same leveling, but since it developed oblique case-forms with zero-grade after stress shift (GEN.SG Ved. *viśás*), leveling yielded zero-grade in the direct cases as well, thereby eliminating the root **o*-grade characteristic of AS II inflection.

from the direct cases). The Avestan paradigm therefore shows that Indo-Iranian inherited the root **o/e*-alternation characteristic of AS II inflection.

(10) Development of AS II ‘voice’ in IE:

ACC.SG	<i>*wók^w-m̃</i>	>	OAv. <i>vācim</i> , Ved. <i>vācam</i> , Gk. ὄπα ‘voice’
GEN.SG	<i>*wék^w-s</i>	>	—
>> GEN.SG	<i>*wek^w-é/ós</i>	>(>)	OAv. <i>vacō</i> ; Ved. <i>vācás</i> , Gk. ὀπός ‘of the voice’

A final point that must be addressed before proceeding is why the root full-grade of ‘foot’ and ‘voice’ in (9)–(10) persisted when stress shifted to the oblique cases, but ‘house’ in (8) developed an innovative root zero-grade. Schindler (1972: 35–6) proposes that stress shift in these lexemes occurred at “un état de langue, auquel le remplacement de *ER* inaccentué par *R*, mais plus celui de *(R)ET* par *(R̥)T*, était un procès vivant” (*R* = [+sonorant], *T* = [–sonorant]). In this conception, there was at some stage of the proto-language a regular phonological process whereby unstressed mid vowels were deleted;⁹ but by the time (8)–(10) underwent stress shift, deletion had become restricted in such a way that it applied only to roots with a post-nuclear sonorant. The root in (8) thus develops an innovative zero-grade because it contains a post-nuclear sonorant (i.e., OBL **dém-* >> **dm-*), but the roots in (9)–(10) retain full-grade because they do not (**péd-* >> **ped-*; **wék^w-* >> **wek^w-*). Since stress mobility in ‘foot’ in (9) is datable to PIE (as discussed just above), the restriction of deletion to roots of the shape *ER* must have developed prior to this stage.

If Schindler’s hypothesis is correct, one should expect to find different outcomes in the IE languages in what appear to be identical phonological contexts: deletion of **/e/* in *(R)ET* roots in formations like (11a) with originally stress-bearing inflectional endings or derivational suffixes (cf. 3SG.PRS.ACT Ved. *váṣṭi*, OAv. *vaštī* ‘wants’); but non-deletion in erstwhile AS paradigms like (11b) (cf. (10) above), where the environment for deletion emerged only at a later historical stage.

- (11) a. **/wek̄-mé/* → [ūk̄-mé] > Ved. *uśmāsi*, OAv. *us̄mahī* ‘we want’
 b. **/wek^w-é/ós/* → **[wek^w-é/ós]* >(>) OAv. *vacō*; Ved. *vācás* ‘of the voice’

In the next section, it will be demonstrated that Schindler’s hypothesis also accounts for the behavior of other AS formations subject to stress shift. I will then

9 Such a process was later explicitly proposed by Schindler (1975b) for pre-PIE (see Lundquist and Yates 2018: 2133–7 for discussion).

turn to the IE reflexes of PIE **-r/n-*stems in §4 and show that these likewise fit the profile of erstwhile AS nominals.

3.2 Recurring morphophonological change in other IE “acrostatic” formations

In Schindler’s view (1972:35), the morphophonological changes in (7) frequently undergone by AS root nouns were not unique to this category; he suggested that they also affected other AS formations, such as animate **-t-*stems.¹⁰ Evidence for the same pattern in the verbal system had already been identified by Narten (1968), who reconstructed AS I-type **é/é-*root ablaut in certain IE root presents (“Narten presents”), e.g., of **steu-* ‘praise’ in (12) (cf. *LIV*²:600–1). In Indo-Iranian the SG.PRS.ACT forms continue root **é-*vocalism, but within its synchronic paradigm the corresponding plural forms with expected stressed full-grade of the root have been replaced by ending-stressed forms with zero-grade of the root (= (7b)–(c); cf. Jasanoff 2003:68–9, 2017:9). That this replacement occurred, very likely at a post-Proto-Indo-Iranian stage per Narten (1968:16–18), is suggested by traces of stressed full-grade of the root (i.e., **[stéw-]/*[stéu-]*) in other “weak” prosodic contexts, e.g., PRS.ACT.PTCP OAv. *stauuat-*, MID Ved. *stávāna-* / YAv. *stauuana-*, and 1PL.PRS.MID YAv. *staomaide* (cf. 3SG Gk. *στεῦται* ‘boasts’).¹¹ The innovative root zero-grade is expected in a root with a post-nuclear sonorant (**/w/*).

- (12) Development of AS I root present to **steu-* ‘praise’ in IE:
- | | | |
|----------------------------------|---|--|
| 1SG.PRS.ACT <i>*stéu-mi</i> | > | Ved. <i>stáumi</i> , OAv. <i>stāumī</i> ‘I praise’ |
| 1PL.PRS.ACT <i>*stéu-me(-)</i> | > | — |
| >> 1PL.PRS.ACT <i>*stu-mé(-)</i> | > | Ved. <i>stumási</i> ‘we praise’ |

Subsequent scholarship has added further examples of the same pattern in other AS formations. Melchert (2010) implicates the recurring changes in (7) in the development of the neuter **s-*stem ‘mouth’ in (13). The stressed root **o-*grade in the direct cases characteristic of AS II inflection is continued in Anatolian, Latin, and elsewhere (see *NIL*:387).¹² In both Hittite and Vedic its oblique case-forms are

-
- 10 Schindler (1972:35) cites the Hittite word for ‘flood’ (NOM.SG *karaz* < **ĝrói-t-s*) as an AS **-t-*stem subject to (7a)–(c), but phonological and etymological difficulties leave this highly uncertain; see Rieken 1999:134–5, Vijūnas 2009:45–53, and Kloekhorst 2014:159.
- 11 In support of this chronology Narten (1968:15–18) points out that in Iranian weak full-grades begin to yield to zero-grades only in Younger Avestan (e.g., 2SG.IMP.ACT YAv. *stū’đi*) and even there are outnumbered by weak full-grades (e.g., 3SG.PRS.MID YAv. *stao’te*).
- 12 Per Melchert (2010:59) the Anatolian NOM/ACC.SG forms reflect PA **h₁óh₁-es* with epenthetic **[e]* in the word-final consonant cluster.

uniformly ending-stressed; nevertheless, the original full-grade of the root was preserved (as expected in an (R)ET root) at least into Hittite, where only a pre-form **h₁eh₁-s-* ' can account for the (i) stressed inflectional endings; (ii) root [i]-vocalism (< **e* via pretonic raising); and (iii) stem-final geminate [s:] (< **Vh₁sV-* via assimilation) of its oblique case-forms (thus Melchert 2010:58–9).¹³

(13) Development of AS II ‘mouth’ in IE:

ACC.SG	<i>*h₁óh₁-s</i>	>	Hitt. <i>āiš</i> ([á:is]), CLuw. <i>āš</i> ([á:s]), Lat. <i>ōs</i> ‘mouth’
OBL.SG	<i>*h₁éh₁-s-</i>	>	—
>> INS.SG	<i>*h₁eh₁-s-éh₁</i>	>	Ved. <i>āsá</i> , YAv. <i>āṇha</i> ‘with the mouth’
>> DAT.SG	<i>*h₁eh₁-s-éi</i>	>	Hitt. <i>iššī</i> ([is:-i:]) ‘in the mouth’

The same set of changes can also be observed in the diachronic development of **h₂e*-conjugation root presents and aorists. Jasanoff (1978; 2003:71, 151; et alibi) reconstructs AS II **ó/é*-ablaut for these categories (see further Melchert 2013:138–41, contra Kloekhorst 2012), but synchronically the majority of Hittite radical *hi*-verbs instead show stress mobility within their NPST.ACT paradigm: root **ó*-vocalism is continued in the singular, while the corresponding plural forms reflect (“morphological”) zero-grade of the root and ending stress (see Yates 2017:121–4).¹⁴ Both Jasanoff (2003:73–4) and Melchert (2013:143) attribute this situation to the recurring changes in (7). Meanwhile, in the Nuclear Indo-European (NIE) languages some of these **h₂e*-conjugation verbs were thematized, with generalization of either the root **ó*-vocalism of the singular or—crucially—the

13 Most of the IE evidence is consistent with generalized root **o*-grade in ‘mouth’; Indo-Iranian is also compatible with **e*-grade. The unambiguous reflex of root **[e]* in Hittite rules out older reconstructions with root-initial or -final **h₃*. Melchert (2010:59) proposes that stress shift in ‘mouth’ had occurred already in PIE, but since Hittite reflects root **[e]* rather than **[ə]* (which is reconstructible for Proto-Anatolian in most “morphological zero-grade” contexts; see Yates 2021b and n.14 below), I suggest that mobility developed independently in Indo-Iranian and Anatolian—in the latter, just prior to the Hittite-specific raising of pretonic **e* (cf. §4.1).

14 Yates 2021b argues that (i) PA developed new stress-conditioned alternations between mid vowels (**ó*, **é*) and **ə* (> Hitt. *a*), the latter serving as a reduced allophone in “morphological zero-grade” contexts; and (ii) that these alternations are an important source of [á:] ~ [a-] ablaut in Hittite. For instance, when **h₂e*-conjugation radical verbs to roots of the shape **TeT* underwent emergent mobility, the root **e* vowel was retained and then reduced to **ə*—e.g., 3PL.PRS.ACT PIE **b^héd^hh₂-nti* >> **b^hed^hh₂-énti* > PA **bath₂-énti* > Hitt. *paddanzi* ‘dig’ (modifying Jasanoff 2003:77; cf. 3SG *paddai*). In the **m*-conjugation, Hittite *e/a*-ablauting radical verbs built to roots of the shape **h₁eT* reflect the same reduced vowel in weak contexts (e.g., 3PL.PRS.ACT PA **h₁əs-énti* > Hitt. *asanzi* ‘are’).

*é-grade of the present plural;¹⁵ the latter type show that stress shift and root zero-grade were Anatolian innovations.

The broad takeaway from the nominal and verbal formations discussed in this section is that it is not just AS root nouns that tend to undergo the changes in (7) identified by Schindler (1972); these root nouns are rather part of a more general diachronic phenomenon that affected AS formations. I propose that the fundamental innovation underlying this phenomenon is EMERGENT MOBILITY, defined in (14):

(14) EMERGENT MOBILITY

Stress shifts from the root to “weak” (= lexically accented) inflectional endings, with the result that paradigms with fixed root stress become mobile.

In §4 below I will argue that emergent mobility is responsible for the ending-stressed reflexes of the PIE simple *-r/n-stems in the IE languages.

4 Emergent mobility in Indo-European primary *-r/n-stems

In this section I outline a new diachronic account of the ending-stressed reflexes of PIE simple *-r/n-stems: of ‘blood’ in §4.1, of ‘liver’ in §4.2, of ‘water’ in §4.3, and of the remaining Hittite data in §4.4. In each case, I contend that the crucial innovation was emergent mobility in (14), and attempt to pin down its chronology as precisely as possible. Finally, in §4.5 I compare this approach to the traditional account of these forms and argue that it is to be preferred on the grounds of parsimony.

4.1 Emergent mobility in PIE ‘blood’

The PIE word for ‘blood’ in (1a) above has ending-stressed reflexes both in Anatolian and in the NIE languages—e.g., DAT/LOC.SG Hitt. *išhanī* ([iʃχ:-n-í:]), GEN.SG *išhanāš* ([iʃχ:-n-á:s]); ABL.SG Ved. *asnás*, INS.SG *asná*. On the basis of these facts one might project such ending-stressed singular forms back to PIE itself (thus Rieken 1999:302). However, there is evidence that AS I inflection was inherited into each of these branches, then altered by independent parallel prosodic innovations.

15 See Jasanoff 2003:64–90 for discussion and examples of the process. In some cases, these thematized *h₂e-conjugation verbs also have NIE reflexes with root zero-grade, which can likewise be attributed to *einzel sprachlich* emergent mobility.

In Anatolian, there is no unambiguous evidence for NOM/ACC.SG PIE **h₁ésh₂-r* with the lengthened-grade root characteristic of an AS I nominal. While this form could be reflected in Hitt. *ēšhar* ([é:sχ:ar]), I assume rather the Proto-Anatolian (PA) paradigm in (15), in which GEN.SG **-s* was renewed by **-os* and the root vocalism of PIE OBL.SG **h₁ésh₂-n-* was leveled to the direct cases. This leveling produced NOM/ACC.SG PA **h₁ésh₂-r*, which yields both Hitt. *ēšhar* and CLuw. *āšhar* via regular sound change (whereas root **é* would have yielded [í:] in Luwian).

(15) Development of AS I ‘blood’ in Anatolian:

- ACC.SG **h₁ésh₂-r* > Hitt. *ēšhar* ([é:sχ:-ar]), CLuw. *āšhar*(*zša*)
 ([á:sχ:-ar])
 GEN.SG **h₁ésh₂-n-os* >? Hitt. *ēšnaš* ([é:s:-n-as])
 >> GEN.SG **h₁esh₂-n-ós* > Hitt. *išhanāš* ([isχ:-n-á:s])

That Anatolian inherited the expected AS oblique stem **h₁ésh₂-n-* is corroborated by several pieces of evidence. The first is NOM/ACC Pal. *ēšha* ‘blood’ ([é:sχ:a]), which is usually derived from NOM/ACC.PL (“collective”) PIE **h₁ésh₂-ōr* with loss of word-final **r* after an unstressed vowel in PA (Melchert 1994:201; cf. *eDiAna*, s.v.).¹⁶ This form is significant because in Hittite, neuter nouns with intraparadigmatic stress mobility always have suffixal stress in their NOM/ACC.PL (i.e., *-ār* [-á:r]; Yates 2021d). If the same holds for PA,¹⁷ then root stress in the NOM/ACC.PL—which is crucial to the conditioning environment for **r*-loss—would imply root stress in the oblique cases as well. A second data-point is ANIM.NOM.SG CLuw. *āšhanuwantiš* ([á:sχ:an-want-is]) ‘bloody’, which is derived from the oblique stem of ‘blood’ with the possessive adjective-forming suffix **-went-*. The cognate suffix in Vedic, *-vant-*, consistently attracts stress when its base exhibits intraparadigmatic stress mobility (e.g., *padvánt-* ‘having feet’; cf. ACC.SG *pādam* ~ GEN *padás* in (9) above), but not when its base has stress fixed on the root (e.g., *ásman-vant-* ‘stony’; cf. ACC.SG *ásmānam* ‘stone’ ~ GEN *ásnas*). If the suffix behaves likewise in Anatolian (the unmarked assumption), then the stressed root of CLuw. *āšhanuwantiš* would imply that the (unattested) oblique cases of ‘blood’ also had root stress in Luwian—i.e., [á:sχ:(a)n-]*, the regular reflex of PIE **h₁ésh₂-n-*. Third, there may be a direct reflex of **h₁ésh₂-n-os*, which per Schindler (1975a:6) is continued in Hitt. *⟨e-eš-na-aš⟩* (KBo 3.1 ii 47) with the

16 Tocharian also attests reflexes of NOM/ACC.PL PIE **h₁ésh₂-ōr*: NOM/ACC.SG TA *ysār*, B *yasar* (Schindler 1975:6).

17 See Yates 2021a and d for arguments that it held already in PIE.

same deletion of root-final **h₂* seen in Ved. *asnás* (cf. Melchert 1994:71); although the form is attested only in New Script in a manuscript that also contains *h*-ful oblique forms, an archaism cannot be excluded.¹⁸

In early Hittite, however, the oblique case-forms of ‘blood’ are regularly stressed on their inflectional endings (cf. Kloekhorst 2008:258): GEN.SG *išhanāš* occurs first in Old Script (KBo 17.1 iv 8), DAT/LOC.SG *išhanī* in Middle Script (KBo 15.33 iii 31, OH).¹⁹ I therefore propose that ‘blood’ underwent emergent mobility between PA and Hittite. Preservation of the root **/e/-*vowel is consistent with the inherited constraint against deletion in (R)ET roots. This root vowel was then subject to pretonic raising in pre-Hittite (**e* > Hitt. *i*; see Melchert 1994:139), whence the attested Hittite forms with root [i]-vocalism.

While Anatolian supports the reconstruction of AS inflection for ‘blood’ in PIE, the NIE languages provide crucial evidence for AS I inflection in particular. The diagnostic form is Gk. ἤαρ ‘blood’, which survives only in Hesychius (glossed ‘αἷμα. ψυχή’). Otherwise, the NIE evidence is consistent with a similar diachronic trajectory, i.e., (16):

(16) Development of AS I ‘blood’ in NIE:

ACC.SG	<i>*h₁ésh₂-r</i>	>	Gk. ἤαρ ‘blood’ (Hsch.)
OBL.SG	<i>*h₁ésh₂-n-</i>	>>	(NOM/ACC.SG) Ved. <i>ásrk</i> , Gk. ἔαρ ‘blood’
>> GEN.SG	<i>*h₁esh₂-n-ós</i>	>	Ved. <i>asnás</i> ‘of blood’

In Vedic and elsewhere in Greek the NOM/ACC.SG historically reflects **é*, which can be explained via paradigm leveling from the inherited OBL.SG **h₁ésh₂-n-*. I suggest that ‘blood’ subsequently underwent emergent mobility—perhaps just prior to or within Indo-Iranian—whence ending-stressed Vedic forms like GEN.SG *asnás* and INS.SG *asná* (with deletion of **h₂*; see Rieken 1999:303 with references). As in Anatolian, non-deletion of root **/e/* is predictable.²⁰

18 Kloekhorst (2008:258) claims that the absence of *h* is a scribal error.

19 Beginning in Middle Hittite oblique case-forms with initial stress appear (e.g., DAT/LOC.SG *ēšhani* [é:sx:-n-i]; KUB 45.47 iii 18, MH/MS), likely due to paradigm leveling from the direct cases. I view the suffixal plene spelling in hapax GEN.SG *išhānaš* (KUB 17.18 ii 29, NS) as a scribal error (cf. Yates 2021d).

20 It has been suggested, however, that Lat. *sanguis* ‘blood’ and *saniēs* ‘ulcer’ (see de Vaan 2008: 537–8 with references), as well as OLat. *asar* ‘blood’ (see Weiss 2020:55 n.9) reflect non-primary derivatives of the inherited word for ‘blood’ with root zero-grade **h₁sh₂-*. If correct, these derivatives would show that a proper root zero-grade was permissible in this lexeme at some stage of the proto-language.

4.2 Emergent mobility in PIE ‘liver’

The reconstruction of an AS paradigm for ‘liver’ is supported by direct and indirect evidence, on which basis I assume the diachronic trajectory in (17).²¹

(17) Development of AS I ‘liver’ in IE:

ACC.SG	* <i>h₁yék^w-r</i>	>	Gk. ἥπαρ, YAv. <i>yākarə</i> ‘liver’
OBL.SG	* <i>h₁yék^w-n-</i>	>>	(GEN.SG) Gk. ἥπατος ‘of the liver’
		>>	(NOM/ACC.SG) Ved. <i>yákṛt</i> , Lat. <i>iecur</i> , CLuw. <i>ikkuwa[r]</i> ([i:k ^w :ar])
>>	ABL.SG * <i>h₁yek^w-n-ós</i>	>	Ved. <i>yaknás</i> ‘from the liver’

AS I inflection is supported by NOM/ACC.SG Gk. ἥπαρ—and possibly also YAv. *yākarə*, although its linguistic reality is disputed by de Vaan (2003:68–9)—which point to root **é*-vocalism (cf. Weiss 2020:277). This paradigm was leveled in all branches: in Greek, by generalization of root **é*-vocalism from the NOM/ACC.SG, and in the others, of **é*-vocalism from the oblique. The latter leveling accounts for the (stressed) full-grade continued in the NOM/ACC.SG of ‘blood’ in Vedic, elsewhere in Avestan, in Latin, and in Luwian (with geminate *-kku-* < unlenited **k^w*; cf. *eDiAna*, s.v.).

In Vedic, though, the synchronic paradigm of ‘liver’ is mobile, with ending-stress in its oblique case-forms: ABL.SG Ved. *yaknás*, INS.SG *yaknā* ‘with the liver’. I attribute these forms to emergent mobility.²² Given the unambiguous reflexes of root **é*-grade in Greek, this development is almost certainly an Indo-Iranian innovation, and if YAv. *yākarə* is real, necessarily post-Proto-Indo-Iranian. The preserved root full-grade is again consistent with Schindler’s (1972:33–4) constraint against deletion when (*R*)*ET* roots undergo emergent mobility. In this respect, it improves on Schindler’s (1975a:6) derivation of Ved. *yaknás* from an original AK collective (< GEN **h₁ik^w-n-élós*; cf. §2 above), which requires analogical leveling to account for the oblique root full-grade in Vedic.

21 As discussed by Weiss (2020:257 n.7), the complicated Latin reflexes of ‘liver’ (e.g., GEN.PL *iocinerum*) can be explained starting from a paradigm with oblique **(h₁)yek^w-en-* (significantly, with root full-grade, not **o*-grade, contra Kloekhorst 2014:142–5). This can simply continue the inherited AS OBL.SG **h₁yék^w-n-* with generalization of suffixal full-grade from the endless locative (also found in Germanic *-r/n-stems; cf. §4.3 below).

22 The plene spelling of the ERG.SG ending in CLuw. *ikkunānti[š]* (KUB 35.735.35 iii³ 8; see Sasseville 2020:192–3, 563) may indicate that this ending is stressed (i.e., [ik^w:n-á:ntis]); if so, it would appear that this lexeme has undergone emergent mobility in Anatolian as well.

4.3 Emergent mobility in PIE ‘water’

In PIE the word for ‘water’ exhibited AS II inflection. This reconstruction is guaranteed by Anatolian, where its reflexes can be plausibly accounted for only starting from an AS II paradigm. The expected NOM/ACC.SG **wód-r̥* with root **ó-*vocalism is directly reflected in Hitt. *wātar* ([wá:t-ar]). The archaic INS Hitt. *witanda/we-danda* ([wí:t-an-t]) probably continues PA **wéd-ŋ-d*,²³ with the stressed full-grade root and zero-grade suffix characteristic of AS oblique case-forms (cf. Melchert apud Ringe 2017:58). Per Schindler (1975a:7), however, the Hittite paradigm of ‘water’ was ultimately remodeled after ‘fire’, thus acquiring stressed full-grade of the suffix in its oblique case-forms—i.e., OBL.SG **wéd-n-* >> **wid-én-* > DAT.SG Hitt. *witēni* ([wit-é:n-i]; e.g., KUB 31.79 vs. 8', MH/MS).²⁴ The mechanism for this prosodic change is lexical analogy rather than emergent mobility; but because both introduce stress mobility into originally immobile paradigms, they have similar consequences for newly unstressed root vowels—namely, non-deletion in (R)ET roots.

I propose that emergent mobility in ‘water’ was a common innovation of the NIE languages—thus, e.g., GEN.SG PIE **wéd-ŋ-s* >> PNIE **wed-n-é/ós*, with predictable non-deletion of the root vowel just as in Anatolian.²⁵ The resulting para-

-
- 23 In Hittite (and several other Anatolian languages) **e* was raised to **i* between **w* and a coronal consonant (Melchert 1994:144–5); the resulting vowel is spelled variably [i] and [e] in Hittite, perhaps because the phonemic contrast was neutralized in this context. Kloekhorst (2019:144) assumes suffixal stress (i.e., [-án-t]), which cannot be ruled out synchronically, but a pre-form **-én-t* would have lost its final coronal stop, yielding Hitt. **[-an]* (cf. PTC.P.N.NOM/ACC.SG Hitt. *-ān* [-á:n] < **-ónt-Ø*).
- 24 See further Yates 2021a. Kloekhorst (2008:987–8, 2019) instead reconstructs “proterodynamic” inflection for ‘water’, hence NOM/ACC.SG **wód-r̥*, OBL.SG **ud-én-*. Correctly observing that synchronically Hittite lacks intraparadigmatic $_{\omega}$ [w ~ $_{\omega}$ [u] alternations, he proposes that the irregular inherited alternation in ‘water’ was repaired by epenthesis of “/i/” into the root in oblique case-forms. However, it is not credible that speakers would choose a “repair” that introduces a new irregularity (viz., an unparalleled alternation between [á:] and [i]) in preference to an available repair that is actually regularizing: they could have generalized the root shape of the NOM/ACC.SG, yielding $_{\omega}$ [wá:t ~ $_{\omega}$ [wat-’ with root [á:] ~ [a-’] ablaut, which is a well-established Hittite pattern both in the verbal system (see n.14 above) and in the nominal system (e.g., Hitt. *pāt-* [pá:t-] ~ *pat-* [pat-’] ‘foot’; see §4.1 above). See also Melchert (2013:138–41), who shows that there is no independent evidence for “/i/” as distinct from /e/ or /i/. The actual root shape *wid-/wed-* thus has just one plausible historical source, an inherited root full-grade (contra Kloekhorst).
- 25 I assume that emergent mobility also involved a rightward stress shift in the NOM/ACC.PL of neuter nouns: **-or-h₂* >> **-ór-h₂* (because the ending **/-h₂* was preaccenting; see Yates 2021d). This hypothesis is supported by the fact—noted in §4.1 above—that all (and only) Hittite **-r/n-*

digm is nowhere attested as such; the NIE languages instead exhibit paradigms in which all case-forms reflect root *o-grade (i.e., *wod-) or zero-grade (*ud-). To understand these forms it is necessary to briefly consider why roots of the shape *RET* in particular fail to undergo vowel deletion in the wake of emergent mobility. In his treatment of ‘voice’ in (10), Schindler (1972:33–4) suggests that *RET* roots exhibit full-grade because *samprasāraṇa*-type intraparadigmatic alternations were avoided. In other words, the regular application of deletion to unstressed root vowels was phonologically blocked when it would produce *samprasāraṇa*-type ablaut—in this case, alternations between word-initial *[w] in the direct cases and *[u] in the oblique.

I therefore propose that the newly-mobile PNIE paradigm of ‘water’ was unstable due to competing pressures in the oblique case-forms (and in the NOM/ACC.PL)—on the one hand, to delete root /e/ in a pretonic syllable (cf. Yates 2019); and on the other, to avoid intraparadigmatic $\omega[w \sim \omega[u]$ alternations. This paradigm was accordingly repaired in several different ways. In Germanic, the root *ó-vocalism of NOM/ACC.SG *wód-ŕ spread throughout the paradigm—thus, e.g., GEN.SG PNIE *wed-n-él/ós >> *wód-n-e/os >> PGmc. *watenaz (with analogical suffixal-full grade from the endingless locative; cf. Neri 2005:29–30) > Goth. *watins* ‘of water’.

A different, more radical repair may be reflected in several NIE languages. I suggest that the competing pressures noted just above were resolved by allowing pretonic deletion of the root /e/ vowel but then analogically spreading the resulting zero-grade into the NOM/ACC.SG. These changes—represented in (18)—yielded a mobile paradigm with invariant root zero-grade *ud- (i.e., with no *samprasāraṇa*-type ablaut).

(18) Radical remodeling of PNIE ‘water’

ACC.SG *wód-ŕ >> *úd-ŕ >? TB *war*, A *wär* ‘water’
 GEN.SG *wed-n-él/ós > *ud-n-él/ós >(>) Ved. *udnás*; Gk. ὕδατος ‘of water’

The oblique stem of this paradigm is directly continued in Vedic and likely also in Umbrian (ABL.SG Umb. **une**; cf. Weiss 2020:183), and with innovative *-t-stem inflection in Greek (ὑδατ- < *ud-ŋ-t). The analogical NOM/ACC.SG could be reflected in Tocharian (see Kim 2018:146–7), but was morphologically replaced in Vedic, Umbrian, and Greek. In Vedic, ‘water’ has a suppletive paradigm in which

stems with stress mobility in the NOM/ACC.SG vis-à-vis oblique have suffixal stress (-ār [-á:r] < *-ór-h₂), and also by Ved. *udā* ‘waters’ (< *-ór-h₂) treated just below.

vár or *udakám* (< **ud-ŋ-kó-*) serves as NOM/ACC.SG (see Lubotsky 2013).²⁶ In the latter two, the NOM/ACC.SG forms are Gk. ὕδωρ and Umb. **utur**; both can reflect the NOM/ACC.PL of the same paradigm, **ud-ór* (< **ud-ór-h₂*; cf. n.25), which is preserved as such in Ved. *udā* ‘waters’.²⁷

Finally, there is the complicated evidence of the Balto-Slavic languages. As elsewhere in NIE, ‘water’ exhibits no root ablaut: in Lithuanian (OLith. *vánduo*, Lith. *vanduō*) and in Slavic (e.g., OCS *voda*, Pol. *woda*) the synchronic paradigms are based on the **o*-grade root allomorph **wod-*, but in Latvian (*ūdēns*) and Old Prussian (*wunda(n)/unds*) on zero-grade **ud-*. How these forms should be analyzed is disputed, but according to Petit (2004:71–100) this mixture of root ablaut grades, the intrusive nasal in the root, and the initial [w] in OPr. *wundan* collectively point to a prehistoric ablauting paradigm with **wód-* in the direct cases and an oblique stem **ud-n-*. I tentatively suggest that this paradigm arose in Proto-Balto-Slavic. Villanueva Svensson (2022) has called attention to the surprising number of verbs which can be reconstructed for Proto-Balto-Slavic with *samprasāraṇa*-type ablaut between present and aorist stems, although such ablaut is systematically eliminated in the attested Baltic and Slavic languages. In the context of this system, it seems plausible that the inherited constraint against *samprasāraṇa*-type intraparadigmatic ablaut was lost, thereby allowing for innovative deletion of the root mid vowel in the oblique cases of ‘water’.

4.4 Emergent mobility in other Hittite **-r/n*-stems

Most of the Hittite reflexes of simple **-r/n*-stems are attested with stressed inflectional endings. In addition to ‘blood’ (§4.1), this stress pattern can be observed in all of the nouns in (19).²⁸

(19)	a.	‘head’	DAT/LOC.SG	<i>ḫaršanī</i>	[χars:-n-í:]
			ALL.SG	<i>ḫaraššanā</i>	[χars:-n-á:]

26 But according to Lubotsky (2013:162) the Vedic paradigm is not historically suppletive, since Ved. *vár* (and CLuw. *wār*) continue **wóh₁-r₂*, itself ultimately a reflex of **wód₂-r₂* (via **d* > **h₁*).

27 This derivation is standard (see, e.g., Ringe 2017:308–9, Weiss 2020:278), though the historical source **ud-ór* is typically called a “collective” (cf. §2 above).

28 Examples (19b)–(c) also attest DAT/LOC.SG forms with suffixal plene—e.g., Hitt. *paddāni* ([pat-á:n-i]) ‘in the basket’ (KBo 17.4 iii 10). I assume such forms reflect endingless locatives (re-characterized with DAT/LOC.SG *-i*; cf. Rieken 1999:298), which regularly show suffixal stress in Hittite and Vedic paradigms in which other oblique case-forms are ending-stressed—e.g., Ved. *udán(i)* ‘in the water’ (~ GEN.SG *udnás*), Hitt. *tagān* ([taká:n]) ‘on the earth’ (~ GEN.SG *taknāš* [takn-á:s]). See further Yates 2021d.

b.	‘moment’	DAT/LOC.SG	<i>lamnī</i>	[lam-n-í:]
c.	‘basket’	DAT/LOC.SG	<i>paddanī</i>	[pat:-n-í:]
d.	‘word’	GEN.SG	<i>uttanāš</i>	[ut:-n-á:s]
		DAT/LOC.SG	<i>uddanī</i>	[ut:-n-í:]

In the absence of extra-Anatolian comparanda, the reconstruction of these nouns at the PIE level is less secure. However, the available evidence is consistent with original AS II nominals that underwent emergent mobility at some point in the prehistory of Hittite. All of the NOM/ACC.SG forms of (19a)–(c) can reflect root *ó-vocalism: *ḫaršar* (< **h₃órs-r*), *lammar* (< **nóm-r*), *pattar* (< **póth₂-r*).²⁹ In (19a)–(b) oblique case-forms like *ḫaršanī* and *lamnī* can be traced back to DAT.SG **h₃rs-n-éi* and **nṃn-n-éi* in which stress shift triggered root vowel deletion (<< **h₃érs-n-ei*, **ném-n-ei*).³⁰ In (19c) the root */e/ vowel was preserved, whence, e.g., DAT.SG **peth₂-n-éi* (<< **péth₂-n-ei*). This pre-form can account for Hitt. *paddanī*, either directly via PA **pəth₂-n-éi* (with reduced root vowel in a “morphological zero-grade” context; cf. n.14 above), or else with analogical *a*-root vocalism after NOM/ACC.SG *pattar*.

Example (19d) differs in that it reflects invariant zero-grade of the root (**uth₂*; cf. Kloekhorst 2008:932–3). It thus may have undergone the same radical remodeling as ‘water’ in (18): deletion was permitted to apply in the weak cases (e.g., GEN.SG *uttanāš* < **uth₂-n-é/ós* < **weth₂-n-é/ós*), and the resulting root zero-grade was generalized to NOM/ACC.SG *uttar* ([út:-ar] < **úth₂-r* << **wéth₂-r/wóth₂-r*).³¹ It should be noted, though, that the reconstruction of original AS inflection for (19d) is based purely on its identification as a simple primary *-r/n-stem.

4.5 Evaluating hypotheses: emergent mobility vs. AK “collective”

In §§4.1–4 I adduced evidence in support of the traditional reconstruction of original AS inflection for simple primary *-r/n-stems; and for ‘blood’ (§4.1), ‘liver’ (§4.2), and ‘water’ (§4.3) in particular, that this inflectional pattern still obtained

29 See Rieken 1999:296–8 on (19b–c). On (19a) I follow Kloekhorst 2008:314–5 but reconstruct **o*-grade rather than full-grade (differently see Rieken 1999:310–11). The root etymology of (19c) is uncertain (cf. Kloekhorst 2008:660), but its shape is clearly *ET* and so non-deletion is predictable.

30 Arguably with some adjustment in consonantism after NOM/ACC.SG *ḫaršar* and *lammar*, depending on the (uncertain) outcome of **ṃ* and **h₃* in these contexts (see Melchert 2020:264–6).

31 In the prehistory of Luwian the NOM/ACC.SG was rebuilt as **eut(h₂-r* (> CLuw. *utarzša* ‘word, spell’) with a neo-full-grade (cf. Rieken 1999:299–302).

in PIE and was maintained into one or more IE language branches. Each of these nouns then underwent a similar innovation, developing OBL.SG case-forms with stressed inflectional endings (and in some cases, root zero-grade) in place of their inherited forms with stressed full-grade of the root. Significantly, these innovations are in some cases relatively recent: stress shift in ‘blood’ is almost certainly post-PA, and in ‘liver’ very likely post-Proto-Indo-Iranian.

The traditional explanation of this change was critically examined in §2. Schindler’s (1975a) account requires (i) that IE neuter nouns originally had their plural forms supplied by a collective stem, which had SG-marked oblique case-forms; and (ii) that at least for some **-r/n*-stems these suppletive paradigms survived into the (sometimes shallow) prehistory of the IE languages, where the inherited OBL.SG case-forms were then ousted by the corresponding SG-looking case-forms of the formally singular, functionally plural collective. Melchert (2011, 2014) provides good reasons to doubt that such SG-marked collective oblique-case forms ever existed, but even if they did, it would be surprising if they were preserved in **-r/n*-stems even as other neuter nouns were systematically “pluralized” in PIE. It would be still more remarkable if these anomalous **-r/n*-stem paradigms were stably inherited into the individual IE language branches (e.g., in ‘blood’ for over a millennium into post-PA) and only then eliminated, either with replacement of the singular by erstwhile collective case-forms or with the total disappearance of these case-forms. Other indirect reflexes are conceivable—for instance, ending-stressed OBL.PL case-forms in an **-r/n*-stem that does not develop ending-stressed OBL.SG case-forms—but unattested; instead, the OBL.PL forms of such **-r/n*-stems consistently exhibit the same stress pattern and ablaut as their OBL.SG counterparts, e.g., GEN.SG Ved. *áhnas* ~ PL *áhnām* ‘of the day/s’ (cf. NOM/ACC.SG *áhar*); DAT/LOC.SG Hitt. *witēni* ([wit-é:n-i]) ~ PL *witenaš* ([wit-é:n-as]) ‘in the water/s’ (cf. §4.3 above).

Ultimately, it is not possible to rule out Schindler’s (1975a) account. However, I contend that it is less economical than attributing this change to emergent mobility, as proposed above. On this analysis, the attested forms of **-r/n*-stems can all be derived from PIE paradigms with OBL.PL case-forms that (i) are characterized by plural endings and (ii) have the same ablaut and stress pattern as the OBL.SG—viz., from paradigms just like those of other PIE neuter nouns. It thus avoids the need to assume that **-r/n*-stems were morphologically exceptional at the PIE level, and only (much) later in the prehistory of the IE languages remodeled such that they inflect like ordinary neuters. At the same time, it also straightforwardly captures the fact that their OBL.SG and OBL.PL case-forms always pattern together formally in the IE languages. If an **-r/n*-stem underwent emergent mobility, it

developed ending-stress both in its OBL.SG and OBL.PL case-forms—e.g., DAT/LOC.SG Hitt. *uddanī* ([ut:-n-í:]) ~ PL *uddanāš* ([ut:-n-á:s]) ‘to the word/s’. If its inherited AS stress was maintained, on the other hand, it is manifest both in its OBL.SG and OBL.PL case-forms—e.g., Ved. *áhnas* ~ PL *áhnām* ‘of the day/s’ (discussed just above). Finally, the proposed analysis requires no novel machinery. It is already widely accepted that AS root nouns were subject to emergent mobility (§3.1), and the same explanation has been extended to the AS verbs like (12) and to the overtly suffixed AS noun in (13) (§3.2). It is natural to assume that AS *-r/n-stems should be explained in the same way, since their prosodic development closely matches that of these other AS formations (viz., in terms of stress and root vocalism).

5 Conclusion

In this paper I have argued that the ending-stressed OBL.SG case-forms of simple neuter *-r/n-stems attested in the IE languages continue precisely what is expected on morphological grounds—i.e., inherited OBL.SG case-forms originally characterized by AS inflection—and owe their stressed inflectional endings to emergent mobility.

5.1 *On the nature and causes of emergent mobility*

If this analysis is correct, these *-r/n-stems (treated in §4) should be added to the other AS formations adduced in previous scholarship (collected and discussed in §3) as examples of emergent mobility. This robust and growing body of evidence suggests that there was a strong diachronic tendency for AS formations to undergo emergent mobility, in some cases already in PIE itself, and as such, naturally gives rise to a question: why does this prosodic change occur? In the oral version of this paper (Yates 2021c), I suggested that two factors were at work: (i) an ambiguity in the learning data specific to AS formations; and (ii) a preference for weak inflectional endings to bear stress in AS formations just as in mobile paradigms (i.e., interparadigmatic analogy). These are merely possibilities, however. Determining why emergent mobility occurs remains an important task for future research.

5.2 *Consequences for the inflection of IE neuter nouns*

It follows from the analysis advanced in this paper that the ending-stressed OBL.SG case-forms of the neuter *-r/n-stems examined in §4 have nothing to do with an AK collective (contra Schindler 1975a and much subsequent scholarship). This

finding is significant, since as discussed in §2 these forms are almost uniquely cited as direct reflexes of the SG-marked oblique case-forms of the AK collectives previously claimed (i) to supply plural forms for athematic neuter nominals lacking them and (ii) to be internally derived from their singular stem.³² Without their support, I submit that there is insufficient evidence in the IE languages to reconstruct plural oblique-case forms characterized by AK inflection and singular inflectional endings for any neuter nouns at any historical stage. Instead, I suggest that these always had plural endings and were built to the same stem as their OBL.SG case-forms—thus, e.g., in PIE neuter **-es-*stems GEN.SG/PL **'-es-e/os* / **'-es-oh_{1/3}om*; in neuter **-men-*stems GEN.SG/PL **'-men-s* / **'-men-oh_{1/3}om*; and in simple **-r/n-*stems GEN.SG/PL **'-ŋ-s* / **'-n-oh_{1/3}om* (cf. §2 and §4.5 above). If this proposal is correct, athematic neuter nouns had ordinary non-suppletive paradigms in their NOM/ACC.SG and oblique case-forms. The reconstruction of suppletive AK collectives for such nominals would therefore depend wholly on how their NOM/ACC forms in **[-o:C]* (< **-oC-h₂#*) should be interpreted. I leave it to future research to determine whether alternative analyses of these forms are viable.³³

References

- van Beek, Lucien. 2018. Greek πῆδλον ‘sandal’ and the Origin of the *e*-grade in PIE ‘foot’. In Lucien van Beek, Alwin Kloekhorst, Guus Kroonen, Michaël Peyrot, Tijmen Pronk and Michiel de Vaan (eds.), *Farnah: Indo-Iranian and Indo-European Studies in Honor of Sasha Lubotsky*, 335–49. Ann Arbor: Beech Stave.
- eDiAna = Olav Hackstein, Jared Miller, Elisabeth Rieken, and Ilya Yakubovich (eds.). 2014–. *The Digital Philological-Etymological Dictionary of the Minor Anatolian Corpus Languages*. <http://www.ediana.gwi.uni-muenchen.de> (accessed 1 May 2022).
- Jasanoff, Jay H. 1978. *Stative and Middle in Indo-European*. Innsbruck: Institut für Sprachwissenschaft der Universität Innsbruck.
- . 2003. *Hittite and the Indo-European Verb*. Oxford: Oxford University Press.
- . 2017. *The Prehistory of the Balto-Slavic Accent*. Leiden: Brill.
- Kim, Ronald I. 2018. The Derivational History of Tocharian B *war*, A *wär* ‘water’. In Dieter Gunkel, Stephanie W. Jamison, Angelo O. Mercado, and Kazuhiko Yoshida (eds.), *Vina Diem Celebrent: Studies in Linguistics and Philology in Honor of Brent Vine*, 141–51. Ann Arbor: Beech Stave.

32 One potentially relevant lexeme not discussed above is ‘fire’, a “complex” **-r/n-*stem with PK inflection in SG (NOM/ACC.SG **péh₂-wŷ*, OBL **ph₂-wén-*). According to Schindler (1975a:10) its OBL.SG IE reflexes continue an AK collective, but see Yates 2019 for a possible alternative explanation.

33 See Yates 2021a and d for preliminary discussion.

- Kloekhorst, Alwin. 2008. *Etymological Dictionary of the Hittite Inherited Lexicon*. Leiden: Brill.
- . 2012. Hittite “ā/e”-ablauting Verbs. In H. Craig Melchert (ed.), *The Indo-European Verb: Proceedings of the Conference of the Society for Indo-European Studies, Los Angeles 13–15 September 2010*, 151–60. Wiesbaden: Reichert.
- . 2014. The Proto-Indo-European Acrostatic Inflection Reconsidered. In Norbert Oettinger and Thomas Steer (eds.), *Das Nomen im Indogermanischen: Morphologie, Substantiv, versus Adjektiv, Kollektivum. Akten der Arbeitstagung der Indogermanischen Gesellschaft vom 14. bis 16. September 2011 in Erlangen*, 140–63. Wiesbaden: Reichert.
- . 2019. Hittite ‘water’. In Uwe Bläsing, Jasmine Dum-Tragut, and Theo M. van Lint (eds.), *Armenian, Hittite, and Indo-European Studies: A Commemoration Volume for Jos J. S. Weitenberg*, 143–8. Louvain: Peeters.
- LIV² = Helmut Rix and Martin J. Kümmel (eds.). 2001. *Lexikon der indogermanischen Verben: Die Wurzeln und ihre Primärstammbildungen²*. Wiesbaden: Reichert.
- Lubotsky, Alexander. 2013. The Vedic Paradigm for ‘water’. In Adam Cooper, Jeremy Rau, and Michael Weiss (eds.), *Multi Nominis Grammaticus: Studies in Classical and Indo-European Linguistics in Honor of Alan J. Nussbaum on the Occasion of His Sixty-Fifth Birthday*, 159–64. Ann Arbor: Beech Stave.
- Lundquist, Jesse, and Anthony D. Yates. 2018. The Morphology of Proto-Indo-European. In Jared S. Klein, Brian D. Joseph, and Matthias Fritz (eds.), *The Handbook of Comparative and Historical Indo-European Linguistics*, 2079–195. Berlin: de Gruyter.
- Meier-Brügger, Michael, and Matthias Fritz. 2021. *Indogermanische Sprachwissenschaft¹⁰*. Berlin: de Gruyter.
- Melchert, H. Craig. 1994. *Anatolian Historical Phonology*. Amsterdam: Rodopi.
- . 2010. The Word for ‘mouth’ in Hittite and Proto-Indo-European. *International Journal of Diachronic Linguistics and Linguistic Reconstruction* 7.55–63.
- . 2011. The PIE Collective Plural and the “τὰ ζῶα τρέχει rule”. In Thomas Krisch and Thomas Lindner (eds.), *Indogermanistik und Linguistik im Dialog: Akten der XIII. Fachtagung der Indogermanischen Gesellschaft vom 21. bis 27. September 2008 in Salzburg*, 395–400. Wiesbaden: Reichert.
- . 2013. Ablaut Patterns in the Hittite *hi*-Conjugation. In Stephanie W. Jamison, H. Craig Melchert, and Brent Vine (eds.), *Proceedings of the 24th Annual UCLA Indo-European Conference, Los Angeles, 26–27 October 2012*, 137–50. Bremen: Hempen.
- . 2014. PIE *-eh₂ as an “Individualizing” Suffix and the Feminine Gender. In Neri and Schuhmann 2014, 257–71.
- . 2020. Hittite Historical Phonology after 100 Years (and after 20 years). In Ronald Kim, Jana Mynářová, and Peter Pavúk (eds.), *Hrozný and Hittite: The First 100 Years. Prague, 11–14 November 2015*, 258–76. Leiden: Brill.
- Narten, Johanna. 1968. Zum ‘proterodynamischen’ Wurzelpresens. In J. C. Heesterman, G. H. Schokker, and V. I. Subramoniam (eds.), *Pratidānam: Indian, Iranian and Indo-*

- European Studies Presented to Franciscus Bernardus Jacobus Kuiper on his Sixtieth Birthday*, 9–19. The Hague: Mouton.
- Neri, Sergio. 2005. Riflessioni sull'apofonia radicale di proto-germanico **namōn* 'nome'. *Historische Sprachforschung* 118.201–50.
- Neri, Sergio, and Roland Schuhmann (eds.). 2014. *Studies on the Collective and Feminine in Indo-European from a Diachronic and Typological Perspective*. Leiden: Brill.
- NIL* = Dagmar S. Wodtke, Britta Sofie Irslinger, and Carolin Schneider (eds.). 2008. *Nomina im Indogermanischen Lexikon*. Heidelberg: Winter.
- Nussbaum, Alan J. 1986. *Head and Horn in Indo-European*. Berlin: de Gruyter.
- . 2014. Feminine, Abstract, Collective, Neuter Plural: Some Remarks on Each (Expanded Handout). In Neri and Schuhmann 2014, 273–306.
- Rieken, Elisabeth. 1999. *Untersuchungen zur nominalen Stammbildung des Hethitischen*. Wiesbaden: Harrassowitz.
- Ringe, Donald. 2017. *From Proto-Indo-European to Proto-Germanic*². Oxford: Oxford University Press.
- Sasseville, David. 2020. *Anatolian Verbal Stem Formation*. Leiden: Brill.
- Schindler, Jochem. 1972. L'apophonie des noms-racines. *Bulletin de la Société de Linguistique de Paris* 67.31–8.
- . 1975a. L'apophonie des thèmes indo-européens en *-r/n-*. *Bulletin de la Société de Linguistique de Paris* 70.1–10.
- . 1975b. Zum Ablaut der neutralen *s*-Stämme des Indogermanischen. In Helmut Rix (ed.), *Flexion und Wortbildung. Akten der V. Fachtagung der Indogermanischen Gesellschaft, Regensburg, 9. bis 14. September 1975*, 259–67. Wiesbaden: Reichert.
- Schmidt, Johannes. 1889. *Die Pluralbildungen der indogermanischen Neutra*. Weimar: Böhlau.
- de Vaan, Michiel. 2003. *The Avestan Vowels*. Leiden: Brill.
- . 2008. *Etymological Dictionary of Latin and the Other Italic Languages*. Leiden: Brill.
- Vijūnas, Aurelijus. 2009. *The Indo-European Primary T-Stems*. Innsbruck: Institut für Sprachen und Literaturen der Universität Innsbruck.
- Villanueva Svensson, Miguel. 2022. *Samprasāraṇa* Ablaut in the Balto-Slavic Verb. In Melanie Malzahn, Hannes A. Fellner, and Theresa-Susanna Illés (eds.), *Zurück zur Wurzel: Struktur, Funktion und Semantik der Wurzel im Indogermanischen. Akten der 15. Fachtagung der Indogermanischen Gesellschaft vom 13. bis 16. September 2016 in Wien*, 295–303. Wiesbaden: Reichert.
- Weiss, Michael. 2017. The Paradigm of the Word for 'house, home' in Old Irish and Related Issues. *Indogermanische Forschungen* 122.61–82.
- . 2020. *Outline of the Historical and Comparative Grammar of Latin*². Ann Arbor: Beech Stave.
- Yates, Anthony D. 2017. *Lexical Accent in Cupeño, Hittite, and Indo-European*. Ph.D. diss., University of California, Los Angeles.

- . 2019. Hittite *pahḫweni*, Greek *πῦρ*, and their Implications for Indo-European Ablaut. Paper presented 22 June at the 38th Annual East Coast Indo-European Conference, University of Pennsylvania. Handout available at <http://www.adyates.com/research/>.
- . 2021a. Indo-European Word-Prosody and the Impact of Anatolian. Paper presented 16 July at the Oxford Workshop on Indo-European Accentuation, University of Oxford. Handout available at <http://www.adyates.com/research/>.
- . 2021b. ‘kill’, ‘cut’, and the Restructuring of Root Ablaut in Anatolian Radical *-mi-Verbs. Lecture given 21 April at Cornell University. Slides available at <http://www.adyates.com/research/>.
- . 2021c. The Origin of Stress Mobility in Indo-European *-r/n-stems. Paper presented 5 November at the 32nd Annual UCLA Indo-European Conference, Los Angeles. Slides available at <http://www.adyates.com/research/>.
- . 2021d. The Synchronic and Diachronic Prosody of Hittite -r/n-stems. Paper presented 18 June at the 40th East Coast Indo-European Conference, Cornell University and Virginia Tech. Slides available at <http://www.adyates.com/research/>.
- . 2022. A New Prosodic Reconstruction of Proto-Indo-European *-mon-Stems. *Indo-European Linguistics* 10.

List of Contributors

Michele BIANCONI	michele.bianconi@classics.ox.ac.uk
Chiara BOZZONE	chiarabozzone@gmail.com
Isabelle DE MEYER	Isabelle.deMeyer@UGent.be isabelledemeyer1@hotmail.com
Benjamin W. FORTSON IV	fortsonb@umich.edu
José L. GARCÍA RAMÓN	garcia.ramon@uni-koeln.de
Riccardo GINEVRA	riccardo.ginevra@unicatt.it rginevra@chs.harvard.edu
Stefan HÖFLER	hoefler.ling@gmail.com
Anahita HOOSE	ahoose@humnet.ucla.edu
Ronald I. KIM	rkim@amu.edu.pl
Jared S. KLEIN	jklein@uga.edu
Valentina LUNARDI	vlunardi@humnet.ucla.edu
Teigo ONISHI	teigoonishi@ucla.edu
Zachary ROTHSTEIN-DOWDEN	rothsteindowden@g.harvard.edu
Ryan SANDELL	ryan.sandell@gmail.com
Andrei SIDELTSEV	acidelcev@gmail.com
Anthony D. YATES	anthony.yates@lrz.uni-muenchen.de

Index Verborum

I. Indo-European

Hittite and other Anatolian

āiš, išši, išša 88, 88 n.17, 281
antuahha-, antuḥša- 88 n.17, 91
ārazza- (*CLuw.*) 139
-aš 264
āš (*CLuw.*) 281
āšhanuwantiš (*CLuw.*) 283
āšhar(=ša) (*CLuw.*) 283
ašanzi 281 n.14
URUDUatešš- 88 n.17

dūwazza- (*CLuw.*) 139

ēsha (*Pal.*) 283
ēšḥani 284 n.19
ēšḥar, ēšnaš 283

ḥaršar, ḥaršanī, ḥaraššanā 272, 288f.,
289 n.30

ikkunānti[š] (*CLuw.*) 285 n.22
ikkuwar (*CLuw.*) 285
išḥanī, išḥanāš 272, 274, 282ff.
išḥānaš 284 n.19
išši *see* āiš

karaiz 280 n.10
kumaza- (*Lyc.*) 132

lammar, lamnī 289, 289 n.30

man, mān 260
mēna/i-, mēnaḥḥanda-, IGI-anda- 87

DINGIR.MEŠNa-ša-at-ti-ya-an-na (*Mitanni*
Aryan) 108
nepiš-, nepiša 88, 88 n.17
nu 258, 260ff., 260 n.4

paddai, paddanzi 281 n.14
paddāni 288 n.28
pattar, paddanī 289
pātu[š], patān 278, 286 n.24

=ŠU 265

tagān, taknāš, taknā 87, 288 n.28
tappaš- (*CLuw.*), tipaš- (*HLuw.*) 88 n.17
URUTaurišizzaš 139
tuḥḥae-^{mi} 91 n.27

urazza- 139
utar=ša (*CLuw.*) 289 n.31
uttar, uttanāš, uddanī, uddanāš 291,
289, 291

-wa(r) 256f., 260
wār (*CLuw.*) 288 n.26
warpa, warpaš 276
wašḥazzaš 139
wātar, witanda, wedanda, witēni, witenāš
286, 290

-za 262

Vedic and other Sanskrit and Indic

- akārṣīt 147f.
 akṛthāḥ 146
 agamat, agaman 146, 150
 agāt 146
 agrahīt 147, 147 n.4
 ághat, aghattām 247, 247 n.11
 ajtjanat 147, 151
 ajñāsiṣam 147, 151
 ájman- 51
 atigāt 146
 atyagāt 149
 adhvaryú 118f.
 adāt 146
 adīdharan 147, 151
 adhijage 149
 apagamat 149
 apacakrāma 151
 apás-, apásu 245
 apākramat 147, 151
 abhār 148
 abhūt, abhū- 146, 148, 150
 abhyupāgamat 151
 ará- 59
 araut, arautsīt 247
 aratī- 59
 aritár- 89 n.19
 ársas- 96 n.43
 avadhīt 147, 147 n.4
 avamaṁsthāḥ 147ff.
 avākṣīt 147
 avātsīt, ávātsam, vatsyāmaḥ, etc. 243,
 246f., 251
 avādīḥ 147
 avocat, avocaḥ 147, 149
 ásmānam, áśnas, áśmanvant- 283
 aśrauṣam 147
 ášana-, asaná- 88 n.16
 ási 245
 áśrk, asná, asnás 272, 274, 282ff.
 astauṣam 147
 asrāk, asrākṣīt 247
 áhar, áhnas, áhnām 290f.
 áṁhas-, áṁhasu 245f.
 āttām 247 n.11
 āsán, āsáni, āsá, āsná 87, 281
 icchāti 250
 ucchāti 250
 utpapāta 145
 udakám 288
 udnás, udán(i), udá 272ff., 287 n.25,
 288, 288 n.28
 upajagāma, upajagmuḥ 151
 upāgamat, upāgaman 145, 151
 uṣar-budh- 92 n.29
 uṣaḥsu 246
 uśmási 279
 ṛcāse 89
 óhas- 96
 kārṣīḥ 149
 kṛthāḥ 149
 kravíṣ- 92 n.32
 kṣámi, kṣáman, kṣámaṇi 87 n.13
 gácchati, gacchata 162, 250
 gamaḥ 149
 girí- 137
 grṇā-/grṇī-, grṇīṣáni 89
 granthí- 163 n.24
 ghastām 247 n.11
 cakrá- 49
 cakre 145
 chándasā, chándasām 275

- jage 149
 jajñau 151
 janayati 147
 janayām āsa 151
 jīghatsati, jīghatsah, jīghatsú-, *etc.*
 246f., 247 n.13
 jiṣé 89
 jīváse 89
 jmán 87
 tápas- 92
 tarīṣ-, tarīṣāṇi 89
 dáśas-* 96, 98
 dāman- 51
 ducchúnā-, ducchuna- 248, 250
 dúvas- 90 n.24
 duṣ-, dur- 250
 duṣvápnya- 250
 duḥśáha- 250
 duḥśámsa- 250
 duḥśásu- 250
 duḥśíma- 250
 duḥśéva- 250
 devá-, devyá-, daívyā- 111
 dóhas- 91
 dhārayati 147
 dhārayām āsuḥ 151
 na 150
 námas-, námate 93
 nāma, námnas 92 n.31
 nāsatiyāya- 112, 112 n.9
 Nāsatiya- 105f., 108f., 111f., 112 n.9,
 120
 nivatsyanti 246
 niṣṣapī 246 n.9
 niṣṣāt 246 n.9
 niṣṣídh- 246 n.9
 nṛtú-, nṛtú- 107, 107 n.2
 nyavadhīt 147
 páti-, patitva- 116f.
 padvánt- 283
 Párucchepa- 248, 249f.
 parút 248
 palitá- 111
 pádam, padás 278, 283
 pālitya- 111
 pitár-, pitúr 249
 pitucchā (*Pāli*) 248f., 251
 pucchi (*Pāli*) 148
 pūrpāti- 250
 pṛcchāti 250
 pradāt 146
 pravát- 110
 pravavrajuḥ 145
 práṣi 86 n.9
 barhiṣád- 245, 245 n.7
 bráhmaṇas, bráhmaṇám 275
 bhára 69
 bháraṇam 88 n.16
 bháva- 168
 bhūt 149
 manthi 162
 mā 149f.
 mātár-, mātúr 249
 mātucchā- (*Pāli*) 248f., 251
 yákr̥t, yaknás, yakná 272, 274, 285
 yúvan- 136
 rájassu 246 n.9
 rátha- 50 n.1
 ráhas-* , rahasú- 98 n.48, 245
 rodhaná- 88 n.16
 vákṣassu 246 n.9
 vadhīḥ 149
 vanánā- 88, 88 n.16
 vas 'spend the night' see avātsīt, *etc.*
 vas 'shine' see vivatsyati, *etc.*

vas 'wear' *see* nivatsyanti
 vasatí- 108
 vácám, vácás 279
 vār 288, 288 n.26
 vārkāryá- 250
 vikārṣīḥ 149
 vivatsyati, vyāvatsyat, *etc.* 246
 víśam, viśás 278 n.8
 vocaḥ 149
 vṛdháse 89

 śavas- 92
 śássi 246
 śuná- 250
 Śúnaḥśépa- 248
 śúra- 92 n.33
 śūśáni 92
 śṛṇóti, śṛṇvánti 155

śrávas ... akṣítám 41 n.31
 śrávassu 246 n.9

 sádassu 246 n.9
 samajījanat 147, 151
 samabhyayuḥ 145
 samāsadat 147, 151
 samāśasāda 151
 samupāgamat 151
 sáhas-, sáhate, sakṣáni 90ff.
 sóma- 118
 stáumi, stumási, stávāna-, stuśé 89, 280
 stṛṇā-/stṛṇī-, stṛṇīśáni 89
 srávas- 90
 svārcanas- 250
 svayaṃvara 112, 116f.

 havíṣṣu 246 n.9
 hoṣi 86 n.9

Iranian

Avestan and Old Persian

āṇha 281
 ašiyavam (*OPers.*) 166 n.32
 ahī (*OAv.*), ahīy (*OPers.*) 157, 245
 ā-uuaocāma 166 n.33
 aḏahu (*YAv.*) 245f.

 usōmahī (*OAv.*) 279
 uzīrah-, uzīrō.huua (*YAv.*) 246
 ušah-, ušahuu-a (*YAv.*) 246

 jasatā (*OAv.*) 162

 tōmah-, tōmō.huua (*YAv.*) 246

 θrāiiō, θraiias-ca (*YAv.*) 159

 daēuua- 112f.
 dəṅg paiti- 277

 paθana (*YAv.*) 159

baēuuarə, baēuuān, baēuuani 159
 bauua- (*YAv.*), bava- (*OPers.*) 164, 168
 baraiti, baratu (*YAv.*), baratiy, baratuv
 (*OPers.*) 161
 buua- 164

 Nāṅḡhaiθiia- 108, 112f.
 nāma 277
 nōmah- 93
 nōmō 92 n.31

 -manā 92 n.30

 yauua- (*YAv.*) 165 n.28
 yākarə (*YAv.*) 285

 vaocaṅḡhe (*OAv.*) 89
 vananā- (*OAv.*) 88 n.16
 vācim, vacō (*OAv.*) 279

raocah-, raocahuua, raocō.huua (*YAv.*)
246, 246 n.8

rauuah-, rauuohu (*YAv.*) 246

sauuah- 92

surunaoitī, surunuuaīntī 155

sūra- 92 n.33

staomaide, stauuana- (*YAv.*) 280

stāumī, stauuat- (*OAv.*) 280

stūiḍi, staoite 280 n.11

zamarə, zəmarə^(o), zəmarə-guz- (*YAv.*)
87

hazaṅrəm 159

hazah- 91

Ossetic and other Middle Iranian

a, ami/a(j), am 156 n.6

acchu (*Tumšuuq.*) 166 n.32

afæj/afæz 158

ajtæ 160

aly 166 n.31

angulzæ/ang^wylz 160

æfsoj/æfsonz 160

ælxij/ælxync 163 n.24

æmburd/æmbyrd 165 n.31

ændæ/æddæ 157, 162 n.21

ærcij/ærcynz 160

ærtæ 159

ærzæ 159

ævγæd 159

bal 166 n.31

bærzond 160, 162

be(u)ræ, beretæ/biræ 159

bīdā, baḍa, baḍe (*Khot.*) 159 n.16

βarti/βart, βarθa/βarta (*Sogd.*) 159 n.16

calx 166 n.31

d-æ, dæn 157, 157 n.7, 163

dælæ 157

du/dy, dæu 164

duuæ/dyuuæ 157

fætæn 159

fæ-wun/fæ-wyn 164

fiddæltæ/fydæltæ 166 n.31

fonz 162

insæj/(y)ssæz 158

jæw 165 n.28

je, woj, jetæ, womi/wyj, wydon, wym
155 n.3, 156 n.6

ka/či, kæmi/kæm 155 n.3, 156 n.6

kanthā- (*Khot.*), knḍ (*BSogd.*), knt, kt
(*CSogd.*) 162

kæn-, kænun/kæny 155, 161f.

kænt 162

kuj/kwyz 158

maṃth- (*Khot.*), mnḍ- (*BSogd.*) 162

nissaxtæ 162 n.20

niuuaxtæ 162 n.20

non/nom 156

parsu (*OKhot.*) 166 n.32

un/wyn, won 164

væjjyn 164 n.26

wanēm (*Sogd.*) 160

wβ- (*MSogd.*) 164 n.27

wo/u, wæd, wæntæ/wænt, wotæ/ut 165

(y)stut 165

zældæ 159

Greek

Attic-Ionic and other dialects

- ἀγαθός 125
 ἀγγεῖλαι 94
 ἀδικεῖσι (Boeotian) 85 n.6
 ἀεῖραι 94
 ἄεσα 247
 αἰθός, αἶθων 138
 αἰχμή, αἰχητήης 98, 125, 132ff., 134 n.27
 αἰχητις 134
 αἰχητά 133 n.25
 ἀμῦναι, ἀπαμύνασθαι 94, 97
 ἀμφιβαλέσθαι 96
 ἄν 14, 39 n.28
 ἀνάρμοστος 61 n.20
 ἀνγραψη (Boeotian) 85
 ἄνεμος 137f.
 ἀνήρ 126, 126 n.5, 134
 ἄνθρωπος 126
 ἀπαρκτίας, ἀπάρκτιος 138
 ἀποστελιη (Boeotian) 85
 ἀραρίσκω 49f., 52ff., 55 n.11, 55 n.12, 56 n.13, 63
 ἀραρυῖαι, ἀρηρότα, ἀράρη, ἄραρον 53f., 56
 ἀργεννός 135
 ἀργεστής, Ἀργέστης 125, 135, 135 n.31, 137f.
 ἀργής, ἀργός 138
 ἀργητα, ἀργέτα 110, 110 n.4
 ἄρθεν, ἄρμενον 56, 60
 ἄρμα, ἄρματα 49ff., 50 n.3, 63
 ἄρματοπηγός, ἄρματοτροχίη 62 n.21
 ἀρμόζω, ἄρμοστός 58, 61 n.20
 ἄρσάμενος, ἄρσαντες 57, 60
 ἀρτύνω 57 n.14
 ἀσπίς, ἀσπιστής 132f.
 ἀστεροπή, ἀστεροπητής 132, 134, 137
 αὐτόθι, αὐτόφι 86
 ἀφῖχθαι 98
 ἄχθος, ἄχθεσθαι 96
 βάρβαρος 125
 βασιλεύτερος, βασιλεύτατος 129
 βλήσθαι 97
 Βορέας, Βορρᾶς, Βορέης 137f.
 γεννάδας 136
 γένος, γενέσθαι, γένετο 83, 96, 99
 γραπώνω, γράπωσε, γράπω (*Triglia Bithynian*) 78
 γυμνής, γυμνός 138
 δάμνασθαι, δαμάσασθαι 97
 δεδάρθαι 97 n.45
 δεδιδάχθαι 98
 δεῖ 39 n.28
 δεῖξαι, οδείξασθαι 93, 97 n.46
 δεσμός 53
 δεσπότης 277
 δέχεσθαι, δέχεται, δέχθαι, δέκτο, δέξαι, δέξασθαι, (ἐ)δέξατο 86, 96ff., 98 n.51, 99 n.52, 100
 διδόναι 88
 δίσσθαι, δίσσθε 83, 97, 100
 Διόσκουροι 111
 δῦσαι 94
 δῶ 277
 ἔαρ 284
 ἔβη 146
 ἐγγεγόρθαι 97
 ἔγχος, ἐγχέσπαλος 54, 58
 εἶ 245
 εἶδεσθαι 86 n.10
 εἶδόν- 244
 εἶπε 147
 εἶρῦσθαι 97

- ἐκτῆσθαι 97
 ἐλάσσαι/ἐλάσαι 84, 85 n.7, 94
 ἐλέσθαι 96
 ἐλευθερῶσαι 94
 ἔλκεσθαι 96
 ἔλκος 96 n.43
 Ἑλλησποντίας, Ἑλλησπόντιος 138
 ἐναργής 135
 ἐνί 39 n.28
 ἔπεος, ἐπέων 275
 ἐπητής 133
 ἐπητύς 133 n.24
 ἐπί 39 n.28
 ἐπίθετον 127, 135
 ἐρείδω 56
 Ἐρετριᾶ 89 n.19
 ἐρύειν, ἐξερύσαι, ἐρύσ(σ)ασθαι, ἐρύεσθαι,
 κατειρύσθαι 96, 100
 ἐρύσαι 94
 ἐσπάρθαι 97 n.45
 ἐτήσιος 125, 138, 140
 εὐδήμιος, εὐκτίμενος, εὐπηγής,
 εὐποίητος, εὐτυκτος 55 n.11
 Εὐρυσθέυς, Εὐρυσθένης 87 n.12
 εὐχος, εὐχεσθαι, εὐχεται, εὐζατο,
 ἐπεύζασθαι 83, 96f., 99
 ἔφω 146
 ἔχειν, ἔχεσθαι, οεχίς 72 n.12, 83, 90f.,
 94 n.38, 95ff., 99
 ἔχθος, ἔχθεσθαι, ἤχθετο, ἔχθειν 96, 96
 n.41
 ζεῦξαι 94
 ἦαρ 284
 ἠδονή 88 n.16
 ἠδος, ἠδεσθαι 96
 ἠλυθε 146
 ἠνία 54
 ἦπαρ 285
 ἦρι 92 n.29
 ἦσθαι 97
 θέρος, θέρεσθαι, θέρηται 96, 96 n.42
 θέσθαι, θέσθε 83, 97, 100
 θοῦρος 137 n.33
 θῦο/ε-, θυίο/ε- 93 n.35
 θύος, θύειν, θύεσθαι, θῦσαι, θύσασθαι
 83, 91, 93ff., 97, 97 n.46, 99
 θώρηξ, θωρηκτής 133f., 137
 ἴδος 92 n.32
 ἰέναι 88
 Ἰλιόθι, Ἰλιόφι 86
 ἴον, ἰοεῖς 135
 ἵππος 54
 ἴστασθαι 83, 97, 100
 ἴσχεσθαι 96
 καί 181 n.7
 κακῶσαι 94
 καλέσαι/καλέσσαι, καλεσαι (*Cretan*),
 καλεσσα- (*Boeotian, Lesbian,*
 Thessal.), καλέσασθαι 85, 85
 n.7, 94, 94 n.36, 97 n.46
 κατασκευαττη (*Boeotian*) 85
 κείρασθαι, κεκάρθαι 97, 97 n.45
 κείσθαι 83, 100
 κέλεσθαι 96
 κέλσαι 94
 κέρας, κεραστής 132
 κέρδος, κέρδιον 129 n.13
 κέρσαι, κείρασθαι, κείρεσθαι, κείρειν
 94, 100
 κεχολῶσθαι 97
 κῆδος, κῆδιστος, κῆδειν, κῆδεσθαι 95,
 129 n.13
 κλέος ... ἄφθιτον 41 n.31
 κλέπτεις, κλέπτω, κλέψαι 94, 126, 131,
 140
 κλέπτεις 130f.
 κλεπτίστατος 131
 κόρος, κόρη, κοῦρος, κούρη 137
 κορύνη, κορυνήτης 132, 134, 134 n.28
 κόρυς, κόρυθι, κορυστής 86, 133

- κρέας 92 n.32
 κριτής, κρίνω 126, 140
 κτίζω, κτίσμα 54
 κύαρ 86
 κύκλος, κύκλα 49f., 50 n.1, 61 n.20
 κυνηγέτης 131
 κυφός, κύφων 130, 136, 138
 κύων, κύντερος, κύντατος 129

 λελεῖσθαι 97
 ὀλεῖσαι, κατάλεξι, λέξασθαι, λέχθαι,
 λέκτο 86, 97ff., 99 n.52
 λευκόνωτος 135 n.30
 λευκός, λεῦκος 130
 λέχος, λέχεται 98, 98 n.49
 ληκύθιον 86
 λοέσαι/λοέσσαι, λοῦσαι, λούεσθαι,
 λούσασθαι 94, 94 n.36, 100
 λούεσθαι 96
 λῦσαι 94

 μαινόλης 136
 Μαχάων 89
 μάχη, μαχητής 131f., 134
 μεῖναι 94
 Μενεσθεύς, Μενεσθένης 87 n.12
 μέσης, μέσος, μέσον, μέσος (*WGk.*),
 μεττος (*Boeotian*), μεττον (*Cretan*)
 85, 138
 μετά 39 n.28
 μῆδος, μῆδεσθαι, μῆσασθαι, μῆσατο
 96
 μούνος 137 n.33

 ναύτης 131
 νεανίας, νεηνίης 136f., 140
 νεᾶνις, νεῆνις 136
 νέμος, νέμο/ε-, νεῖμαι 93ff.
 νότος, Νότος 135 n.30, 135 n.31

 Ὀζόλαι 136f.
 ὀλέσθαι 97

 ὀμόσαι/ὀμόσσαι, ὀμοσαι (*Cretan*),
 ὀμοσσα- (*Boeotian, Lesbian, Thes-*
sal.) 85, 85 n.7, 94, 94 n.36
 ὄνομα 127
 ὄπα, ὀπός 279
 ὄποσος, ὀποττος (*Boeotian*) 85
 Ὀρεσθεύς, Ὀρεσθέσιον, Ὀρεσθίς 86,
 87 n.12
 ὄρεσφι 86, 87 n.12
 ὄρθαι, ὄρσας 97, 98 n.47, 100
 ὄρνηθιάς, ὄρνηθίαί 138 n.35
 ὄς 14
 ὄσοι, ὄσος (*WGk.*), ὀττοι (*Cretan*), ὀζοί
 (*Arch. Cretan*) 85

 πάλλω, πάλλεν 58ff.
 παρθένος 131
 παρμενη (*Boeotian*) 85
 πατροφόντης 129
 παύεσθαι, παῦσαι, παύσασθαι, παύειν
 94, 96, 100
 πεῖραρ, πείρατος, πέρας 248
 πέλεσθαι, πέλειν, ἔπλε 96
 Πελῆις, πελιός 132
 πέρθαι, διεπράθετο, πέρθετο, πέρθεσθαι
 98, 98 n.47
 περικτίται 131
 πέρυσι 248
 πεφάσθαι 97
 πῆγγνυμι 62 n.21
 ὀπλήσον 86 n.9
 ὀπλόμενος 96 n.44
 πόδα, ποδῶν 278
 πολίτης 131
 πότης, πότις 131
 πριστήρ 53 n.5
 πυκ(ι)νός 56
 πυργηδόν 57 n.14

 ῥέειν, ῥέος 90
 ῥεῦμα 51
 ῥήγγυσθαι, ῥήξαι 94, 97

- σακέσπαλος 58
 σίντης, σίνομαι 126, 130, 140
 σιτωνιση, σιτωνεοντα[ς] (*Boeotian*) 85
 n.6
 σουνκαλεσαντες (*Boeotian*) 85
 στεῦται 280
 στορέσαι/στορέσσαι, στρωτός 94, 94
 n.36
 συβώτης 131
 σχεῖν, σχέσθαι 95f.
 ταμέσθαι 97
 ταχινός, ταχίνης, ταχίνᾱς 132
 τεῖσαι 86
 τελεσσα- 85 n.7
 τεῦχος, τεύχειν, τεύχεσθαι, τεῦξαι,
 τεύξασθαι, (προ)τετύχθαι 83, 91,
 91 nn.25 and 26, 93, 95, 97ff.
 τιθέναι 88
 τιμησαι 94
 τίς 14
 τραπέσθαι 96
 τρήρων, τρηρός 139
 τρῖψαι 94
 τρόχος 49f.
 ὑβρίζω, ὑβριστής 125ff., 130f., 140
 ὕβρις 131
 ὕβριστις, ὕβριστον, ὕβριστικός 130
 ὕβριστότερος, ὕβριστότατος 129
 ὕδωρ, ὕδατος 287f.
 ὑπήνη, ὑπηνήτης 132, 134
 φάσγανα 53
 φέρε 69
 φέρεσθαι 86, 96
 φέρνη 88 n.16
 φθείρεσθ'(ε), φθείρεσθ'(αι), ἐφθάρθαι
 95 n.39, 97 n.45
 -φι 54
 φιλησαι 94
 φράσσω 57 n.14
 φωνάζω, φώναξε, φώνα (*Triglia Bithyn-
 ian*) 78
 χαλκός, χαλκήρης 54, 54 n.10
 χαμαί 86f.
 χεύματος, χευμάτων 275
 χεῦον 86 n.9
 χλούνης 137
 χλοῦνις 137 n.33
 χρή 39 n.28
 χρῖσαι 94
 ψάω 56
 ψεῦδος, ψεύδεσθαι, ψεύσασθαι 96, 97
 n.46
 ὄρετο 98 n.47
 ὄς 39 n.28
 ὄσασθαι 97
Mycenaean
 a-mo, a-mo-ta, a-mo-te 49ff., 54 n.9, 61
 n.20, 62 n.21, 63
 a-mo-te-wo 62 n.21
 a-ra-ro-mo-te-me-no 54
 a-ra-ru-wo-a, a-ra-ru-ja 53f.
 a3-ka-sa-ma 98
 de-ka-sa-to, o-de-ka-sa-to, de-ko-to 98
 n.50
 de-so-mo 53
 e-]ke-a 54
 e-ke-e 90, 95
 e-re-e, e-re-ta 89
 e-re-u-te-ro-se 94
 i-qi-jo 54
 ka-ka re-a 54
 ko-wo, ko-wa 137
 ma-ka-wo 89

o-u-qe 54
 pa-ka-na 53
 pi-ri-je-te 53 n.5
 po-ro-e-ke 91 n.28

re-woo 94
 te-re-ja-e, te-re-ja-wo 89
 te-u-ke-pi 91 n.25
 tu-wo, tu-we-a 91

Latin and other Italic

amāre, amārī 89
 audīre, audīrī 89
 aqua 12 n.19, 111
 asar (*OLat.*) 284 n.20
 cruor 92 n.32
 decus 96, 98
 dīc 71
 dūc 71
 esse 89
 fac 71
 habēre, habērī 89
 iecur 285
 ill', ille 71
 iocinerum 285 n.21
 iuuenis 136
 lecet (*Fal.*) 98 n.49
 legere 89
 lūna, lūnātus 135f.

nemp', nempe 71
 nemus 93
 Nerthus (*Gmc.*) 105ff., 120
 ōs 281
 pedem, pedis 278
 rota 49, 50 n.1
 sanguīs, saniēs 284 n.20
 scaeuus, scaeua 132
 stīpes 110
 sudor 92 n.32
 tepor 92
 termen 51
 uelle 89
 uīn 71
 ulcus 96 n.43
utur, une (*Umb.*) 287f.
 vēxit 147

Old Irish

ainsi-um 215
 anm(a)e 92 n.31
 ara 201
 as-beir 203
 beires 203
 beirth-i 201

cartha-i 200
 co 201
 dech 98
 día 201
 do, dūn 200
 epred 203

fedan 88 n.16
 foilge 98 n.48
 fo-s-ceird 200
 i 201
 in 201
 laigid 98 n.49
 luid 146
 mlegon 88 n.16

n-a-beir 201
 no- 200ff., 205, 209, 209 n.11,
 216f.
 not-charaimm-se, not-charaimm-siu 217
 n.15
 orcaid, orcun 88 n.16
 (s)a 201
 tath-ut 215

Germanic

agis (*Goth.*) 90
 Ægir (*ON*) 111
 bair, bairan (*Goth.*) 69, 88 n.16
 bajōps (*Goth.*) 244
 björn (*ON*) 110
 blótgoða (*ON*) 118
 build, building (*Eng.*) 55
 dēor (*OE*), dȳr (*ON*) 91 n.27
 egiso(n) (*OSax.*) 90
 fōtus (*Goth.*) 110
 frár (*ON*) 110
 ligan (*Goth.*) 98 n.49
 menōps (*Goth.*) 244

niman (*Goth.*) 93
 Njǫrðr, Njǫrð (*ON*) 105ff., 109ff., 119f.
 Nóatún (*ON*) 106, 114
 ǫrn (*ON*) 110
 sigis (*Goth.*) 91
 tunþus (*Goth.*) 110
 ubila, ubils (*Goth.*) 139
 vagna guð (*ON*) 106, 114
 Vanir (*ON*) 118
 watins (*Goth.*) 287
 weitwods (*Goth.*) 244
 wheels (*Eng.*) 50

Old Church Slavic and other Slavic

byvát' (*Russ.*), bywać (*Pol.*) 164
 dam (*Pol.*) 156f.
 em (*Pol.*) 156f.
 gołąb, gołębia (*Pol.*) 157
 Kocham (*Pol.*) 156

siedem, siedmiu (*Pol.*) 156f.
 umiem (*Pol.*) 156
 voda 288
 woda (*Pol.*) 288
 Wrocław, Wrocławia (*Pol.*) 157

Lithuanian and other Baltic

Dieva dēla (*Latv.*) 113
 es[i] 245
 iriù, irti 89 n.19
 mėnuo 244

ûdēns (*Latv.*) 288
 vanduõ, vánduo (*OLith.*) 288
 wunda(n), unds (*OPruss.*) 288

Tocharian

-(ä)m, -(ä)m (*A*) 221
 kokale (*B*), kukäl (*A*) 50 n.1
 -ci (*A*), -c (*B*) 221
 -ñi (*A*), -ñ (*B*) 221
 *twā- (*PToch.*), /twa-/ (*B*), twā- (*A*) 93
 n.35

-ne (*B*) 221
 -me (*B*) 221
 yasar (*B*), ysār (*A*) 283 n.16
 lac (*B*) 146
 lyaś- (*B*) 98 n.49
 war (*B*), wār (*A*) 287

Armenian

ahawadik 189
 ała, ałac´, ałac´i 68
 amenayn 190
 ayd, ayn, ays 174
 ayr 185
 anēc, anici 68, 70, 79
 ašakertk´ 192, 196
 aprec´oy 78 n.32
 aṙāji 179
 asa, asac´, asac´i 68
 ara, arar, arari, araric´, arasc´es, arasc´ē
 79, 79n.33
 argel 79
 ari *see* yaṙnem
 arjanac´ir 74
 bazmeac´, bazmec´ay 69
 bac´, bac´i, ebac´, bac´c´es, bac´jir 68f.,
 72, 75f., 79, 79 n.34
 ber, beri, eber, berir 68ff., 72f., 75

gt´a 73
 gitem, gitenam, gitanam, gita, gitea,
 gitac´i, gitac´ay 74 n.17
 gorceay 78 n.32
 -d 174
 da 77, 179
 dadarem, dadarec´i, dadarea, dadareac´
 74 n.18
 darj, darjay, darjoy 72f., 78 n.32
 dir 73
 doła 73
 dora 179
 dow, dowk´ 179
 ebarj 70
 ełbayr 185
 es 179
 z- 176 n.4, 178
 zato, zatoyc´, zatowc´i 68f.

- | | | | |
|------------------------------------|-----------------------|--|--------------------------|
| zawrac'ir | 74 | mayr | 185 |
| złja | 74 | matoy | 78 n.32 |
| zok'anč' | 185 | margarea, margarēa | 74 |
| ēj | 70 | mart'em, mart'ac'i, mart'ac'ir | 73 n.16 |
| ənd | 193 | mer, mek', meroy | 179 |
| əndelo, əndeloyz, əndelowzi | 68, 77 | mi | 76 |
| ənt'a | 73 | miacin | 186 n.8 |
| ənkloyz, ənklo | 77 | mo'a | 73 |
| t'oł, t'oli, et'oł | 68 | ya'nem, yareay, yarir, ari | 72ff., 73 n.15 |
| t'owk', t'k'i, et'owk' | 68 | yawel, yaweli | 68, 79 |
| i | 193 n.11 | yet | 193 |
| im, imoy | 179, 196 | yowsa | 74 |
| ima | 73 | -n | 174, 182 |
| ler, ełew | 73 | na | 77, 179 |
| lic', lc'i, elic' | 68, 76 | nist, nstay | 72f., 72 n.12 |
| lik' | 69 | nora, norayoy | 179, 196 |
| loyc', lowc'i, eloyc' | 68 | noc'a, noc'ayoy | 179 |
| lowac'ir | 74 | nok'a | 179 |
| lowr, loway | 73, 78 n.32 | šrjea, šrjeac' | 74 |
| kal, kalay | 72f., 72 n.12, 74, 79 | ołormea, ołormeac' | 74 |
| kam, kac', kac'i, kac'ir | 73 n.16 | ołjoyn | 72 n.12 |
| karem, karac'i, karac'ir | 73 n.16 | oč' | 70 |
| kēz, kizi, ekēz | 68 | otn | 278 |
| kin | 185 | ordi | 185f. |
| koskočem | 80 n.34 | orsa | 74 |
| koro, koroys, korowski, korowsc'em | 68, 77, 79 n.36 | ownim | 72 n.12 |
| hayr | 185 | owsoy | 78 n.32 |
| hangeay, hangir | 72f. | jana | 74 |
| hatoy | 78 n.32 | -s | 174, 178 n.5 |
| hawata, hawatay | 78 n.32 | sa | 77, 179 |
| hing | 70 | sirem, sireac', sirea, sirec'i, sirec'ay, sirec'ir, etc. | 68ff., 68 n.3, 73ff., 79 |
| hiwandac'ir | 74 | sora | 179 |
| hoga | 74 | stac'ir | 74 |
| jer, jeroy | 179 | | |

vasn	193
vec´	70
tan	277, 277 n.6
tar, taray	73, 73 n.14
towr	73
tun	277
c´anka	74
c´nca	74

p´esayac´ir	74
p´loyz, p´lo	77
p´owt´a	74
k´o, k´oy(oy)	179
k´ork´	72 n.11

Phrygian

αββερετ, αβερετ	4
αδδακετ, αδακετ	4
ακκαλος	12 n.19
ακκε	12 n.21
αζ βαταν, αζ τιαν	7
βεκος	12 n.19
δεως	4 n.7
ειος	11
ζεμελως, ζεμελωσι	4 n.7, 6, 8, 15
θαλαμειδη	5 n.8
ιος	11, 14

κε	5 n.9
κλευμαχοι	4
κνουμανει, κνουμανι, κνουμανε	4
με	5 n.9
νι	14
νικοστρατος	4
σζεμελως	4
σκελεδριαι	10 n.18
τιε, τη	5
τιττετικμενος, τιτετικμενος	4

II. Non-Indo-European*Akkadian*

akalu-	12 n.19
--------	---------

Modern Hebrew

ti-ftax, ptax, ftax, ti-ftexi, pitxi, ftexi
