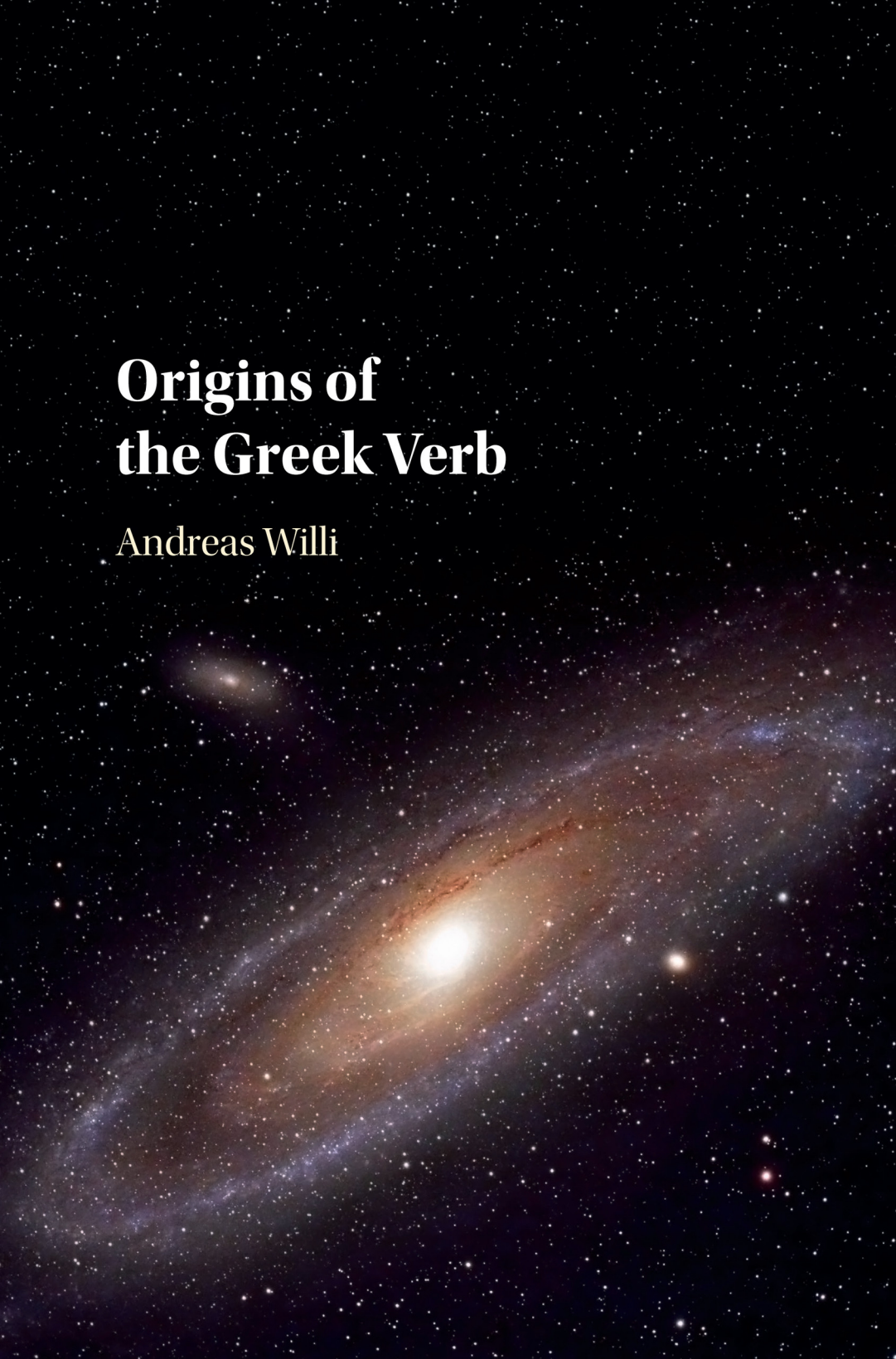
Origins of the Greek Verb

Andreas Willi



ORIGINS OF THE GREEK VERB

Situated at the crossroads of comparative philology, classics, and general historical linguistics, this study is the first ever attempt to outline in full the developments which led from the remotest recoverable stages of the Indo-European proto-language to the complex verbal system encountered in Homer and other early Greek texts. By combining the methods of comparative and internal reconstruction with a careful examination of large collections of primary data and insights gained from the study of language change and linguistic typology, Andreas Willi uncovers the deeper reasons behind many surface irregularities and offers a new understanding of how categories such as aspect, tense, and voice interact. Drawing upon evidence from all major branches of Indo-European, and providing exhaustive critical coverage of scholarly debate on the most controversial issues, this book will be an essential reference tool for anyone seeking orientation in this burgeoning but increasingly fragmented area of linguistic research.

ANDREAS WILLI is Diebold Professor of Comparative Philology at the University of Oxford and a Fellow of Worcester College. He is author of *The Languages of Aristophanes: Aspects of Linguistic Variation in Classical Attic Greek* (2003) and *Sikelismos: Sprache, Literatur und Gesellschaft im griechischen Sizilien* (2008). He is editor of *The Language of Greek Comedy* (2002) and co-editor (with P. Probert) of *Laws and Rules in Indo-European* (2012).

ORIGINS OF THE GREEK VERB

ANDREAS WILLI

University of Oxford

CAMBRIDGE
UNIVERSITY PRESS

CAMBRIDGE
UNIVERSITY PRESS

University Printing House, Cambridge CB2 8BS, United Kingdom

One Liberty Plaza, 20th Floor, New York, NY 10006, USA

477 Williamstown Road, Port Melbourne, VIC 3207, Australia

314–321, 3rd Floor, Plot 3, Splendor Forum, Jasola District Centre,
New Delhi – 110025, India

79 Anson Road, #06–04/06, Singapore 079906

Cambridge University Press is part of the University of Cambridge.

It furthers the University's mission by disseminating knowledge in the pursuit of education, learning, and research at the highest international levels of excellence.

www.cambridge.org
Information on this title: www.cambridge.org/9781107195554
DOI: 10.1017/9781108164207

First published 2018

Printed in the United Kingdom by Clays, St Ives plc

A catalogue record for this publication is available from the British Library.

ISBN 978-1-107-19555-4 Hardback

For Jonas, Mirjam, and Lea

Contents

Figures

Tables

Preface

Умный любит учиться, дурак учить.

The wise man loves to learn, the fool to teach.

(A. P. Čexov, Notebook I, p. 125)

The intention of this book is not to teach. The wish to write it arose when I was teaching on the topics it deals with, and when I realised how often I could not wholeheartedly agree with some of the things I had to say in order to present my students with the state of the art in the field. However, I am not naive (or conceited) enough to believe that I can do better than the great scholars whose opinions I found myself questioning. My first and foremost aim is therefore merely to set out where and why, in my view, their ideas call for discussion and improvement. If I then also offer a theory of how I think some improvement may be achieved, it is not because I believe to have found the holy grail, but because it would be too easy to criticise others without exposing one's own views to the same kind of critical scrutiny. So what follows wants to be read, not as a handbook, but as a contribution to an open debate.

Even so, the study is not without ambitions. Whoever observes recent developments in Indo-European comparative linguistics will notice that there are two ever-increasing divides. The first is a divide between national or local 'schools', which have all but stopped to engage with one another; the second, a divide between 'reconstructionists' whose aim is to uncover even the most recondite formal minutiae of the Proto-Indo-European *signifiant* without spending much thought on the *signifié*, traditional 'philologists' who could not care less for that but rather concentrate on the historical evolution of individual languages that just happen to be Indo-European, and 'typologists' for whom the big picture of grammatical design and language change counts so much that unwieldy details have to be generously ignored. To be sure, the boundaries between these groups are

never hard and fast; but neither are efforts common really to listen and respond to their adherents on an equal footing. Such an effort will be made here, partly because there is often food for thought even in ideas one feels the urge to reject, and partly because others may welcome an intentionally wide-ranging coverage of diverse opinions as much as I would have welcomed it, had it been available when I set out to write this book. Unfortunately, though, so much has been and is being published that even such an inclusive approach will inevitably overlook some contributions, and not necessarily the least valuable ones; and not every one of those that are not overlooked can be engaged with in equal depth. For such omissions and inadequacies I apologise: as best I could and space permitted, I have sought to voice assent or dissent openly, not by inclusion or exclusion.

If, then, the scope of the undertaking is avowedly Indo-Europeanist, why entitle it 'Origins of the Greek Verb'? That there is more emphasis on *origins* than on what is specifically *Greek* will quickly become clear to the reader. Although I have tried to be understandable *also* to those who have so far spent more time thinking about Greek than about Indo-European, I have had to assume some basic familiarity with many notions and concepts of historical grammar and comparative linguistics. But the choice of title is not of course meaningless, and it connects with what has just been said about my ambitions for this book. One further trend that is discernible in recent Indo-European studies is the shift of attention away from those branches of Indo-European which dominated the discussion in the earlier days of the discipline's history, notably Greek and Indo-Iranian. Though taking a long while to assert itself, this shift was essentially triggered by the discovery of Hittite and, to a lesser extent, Tocharian some one hundred years ago; but although Hittite and Tocharian still play a major role in current reassessments of fundamental parts of Indo-European grammar, their new status as 'mainstream' branches has also promoted a greater equilibrium in the study of other members of the family. Given the relative neglect from which *all* the 'non-core' branches had suffered under the previous regime, such a corrective was overdue. And yet, the pendulum may have swung too much to the other side – and perhaps especially where Greek is concerned. Thanks to its combination of a uniquely rich morphosyntactic system with an early, long, and varied attested history, no one will ever question the relevance of Greek for Indo-European linguistics. But precisely because Greek offers so much material for linguistic enquiry,

its study has somewhat detached itself from research with a comparative focus. As a result, there seems to be even less interaction than in other domains of Indo-European between 'reconstructionists' and 'philologists' in the narrow sense, to the detriment of both sides. This gap too can hopefully be narrowed, if not bridged, by the present attempt to re-establish Greek at the heart of the agenda, and to demonstrate afresh how much of crucial importance is missed if the understandable fascination for hitherto less explored subjects makes Indo-Europeanists forget what one of their most informative 'old' sources has to tell. In this spirit, the Greek verbal system is here used as an anchor point and primary *explanandum*, from which we set out and to which we return. But (re)assigning Greek the leading solo part it has not had for a while must not mean that other soloists will not be heard as well. Ultimately, it is only in harmony with these, and the orchestra as a whole, that Greek will be allowed to perform.

Orchestral, too, has been the support I have had in various forms while writing this book. My deepest gratitude I owe to the Leverhulme Trust, for awarding me a Major Research Fellowship that freed me from virtually all teaching and administrative duties during three blissful years of uninterrupted research: I know of no other funding body that fosters research in the humanities in an equally generous, unintrusive, and therefore fruitful manner. During this period of leave, Peter Barber covered for my absence, and did this so well that my return could have been a real loss for the students had he not continued to be with us in another role. Meanwhile, little regret will have been felt by my other philological colleagues at Oxford, Philomen Probert and Wolfgang de Melo, when I finally took over again some of the additional burdens they had to shoulder for far too long.

For invaluable advice I am grateful to Alessandro Vatri and John Penney: to the former because he made up for my ignorance in statistical matters by testing all the relevant data for their significance; to the latter not only because his unsurpassably clear lectures and lecture handouts first introduced me to the Indo-European verb many years ago, but because he also kindly read and gave much-needed feedback on several sections in which Tocharian issues are dealt with – as he put it, "what an intractable language Tocharian is!" Less directly, but no less profoundly, my thinking on all that is presented below is also indebted to Anna Morpurgo Davies, whose death overshadowed the last year of work on it. Even if the outcome is unlike anything she would have promoted, she never failed to encourage

everyone to 'think for themselves', no matter what the great and good had said. Without that encouragement, I would hardly have dared even to start.

On several occasions, I had the opportunity to air my ideas by attending conferences or giving lectures at home and abroad. So many discussions and casual conversations at such events have shaped and refined them that I would be sure to forget someone if I began to enumerate all those who (often unwittingly) helped me along. I must however single out David Langslow, Brent Vine, and Rudolf Wachter who put enough trust in my plans to write in support of my application to the Leverhulme Trust; John Lowe who – together with many other colleagues and students – eventually sat through an entire seminar series devoted to these 'Origins' and who, during that time, more than once pinpointed areas where what I thought was final was clearly not; the reviewers for Cambridge University Press who suggested further improvements at an even later stage; and finally, Michael Sharp, Marianna Prizio, Lisa Sinclair, and Kate Moreau without whose guidance the manuscript could never have turned into the book I had always hoped it would one day become.

Never before have I spent so many sleepless nights over a research project as this time, not rarely did I feel overwhelmed by the self-imposed task. If such periods did not last forever, it is because my family knew how to cure them: Helen by laughingly asking if I had discovered yet another etymology, Jonas, Mirjam, and Lea by reminding me that almost every aspect of life is more important than the life of aspect.

Abbreviations and Conventions

Authors and Texts

Greek authors and texts are abbreviated according to the *Oxford Classical Dictionary* (3rd edn., Oxford 1996).

AV	*Atharva Veda* (Ved.)
DB	Dareios inscription, Bīsutūn (OPers.)
RV	*Rig Veda (Ṛg Veda)* (Ved.)
V	*Vidēvdād* (Av.)
Y.	*Yasna* (Av.)
Yt	*Yašt* (Av.)

Dialects and Languages

Aeol.	Aeolic (Greek)
Alb.	Albanian
Anat.	Anatolian
Arc.	Arcadian (Greek)
Arm.	Armenian
Av.	Avestan
Boeot.	Boeotian (Greek)
CLuw.	Cuneiform Luwian
CSl.	Church Slavonic
Cypr.	Cyprian (Greek)
Dor.	Doric (Greek)
Engl.	English
Finn.	Finnish
Fr.	French
Gaul.	Gaulish
Germ.	German
Goth.	Gothic

Gr.	Greek
Hitt.	Hittite
HLuw.	Hieroglyphic Luwian
Hom.	Homeric (Greek)
IE	Indo-European
It.	Italian
Lac.	Laconian (Greek)
Lat.	Latin
Lesb.	Lesbian (Greek)
Lith.	Lithuanian
Luw.	Luwian
MidPers.	Middle Persian
Mod. Gr.	Modern Greek
MW	Middle Welsh
Myc.	Mycenaean (Greek)
OAv.	Old Avestan
OCS	Old Church Slavonic
OE	Old English
OHG	Old High German
OHitt.	Old Hittite
OIr.	Old Irish
OLat.	Old Latin
OLith.	Old Lithuanian
ON	Old Norse
OPers.	Old Persian
OPhryg.	Old Phrygian
OPr.	Old Prussian
PGmc	Proto-Germanic
PGr.	Proto-Greek
PIE	Proto-Indo-European
PIIr.	Proto-Indo-Iranian
Russ.	Russian
Skt.	Sanskrit
Span.	Spanish
Toch.	Tocharian
Umbr.	Umbrian
Ved.	Vedic (Sanskrit)
YAv.	Young Avestan

Grammatical Notation and Terminology

In reconstructed forms, *C* stands for any consonant, *V* for any vowel, *H* for any laryngeal, *I* for any semivowel (*i, u*), *R* for any resonant (*l, m, n, r*), *L* for any liquid (*l, r*), and *N* for any nasal (*m, n*). *T* is the cover symbol for any stop, *D* for any voiced stop, and *K* for any voiceless tectal stop.

In structural formulae, *-CeC-* and *-CoC-* represent *e*-graded and *o*-graded roots, *-CC-* zero-graded roots, and *-CēC-* roots with lengthened *ē*-grade (even when more than one consonant precedes/follows the syllable nucleus).

Asterisks (*) indicate reconstructed forms, obeli (†) forms that are set up for argumentative purposes, but whose (pre)historical reality is denied.

A	logical subject in a transitive clause
abl.	ablative
abs.	absolutive
acc.	accusative
act.	active
aor.	aorist
coll.	collective
dat.	dative
dir.	directional
du.	dual
erg.	ergative
fem.	feminine
fut.	future
gen.	genitive
impf.	imperfect
ind.	indicative
inj.	injunctive
instr.	instrumental
intr.	intransitive
ipfv.	imperfective
ipv.	imperative
loc.	locative
masc.	masculine
med.	middle (medium)
nom.	nominative
NP	noun phrase
ntr.	neuter

O	logical direct object in a transitive clause
obl.	oblique
opt.	optative
pass.	passive
perf.	perfect
pfv.	perfective
pl.	plural
plupf.	pluperfect
pres.	present
pret.	preterite
pron.	pronoun
ptcpl.	participle
rel.	relative
S	subject in an intransitive clause
sg.	singular
subj.	subjunctive
tr.	transitive
VP	verb phrase

Journals

AGI	*Archivio Glottologico Italiano*
BSL	*Bulletin de la Société de Linguistique de Paris*
BSOAS	*Bulletin of the School of Oriental and African Studies*
HS	*Historische Sprachforschung*
HSCP	*Harvard Studies in Classical Philology*
IF	*Indogermanische Forschungen*
IIJ	*Indo-Iranian Journal*
IJDLLR	*International Journal of Diachronic Linguistics and Linguistic Reconstruction*
IL	*Incontri Linguistici*
JAOS	*Journal of the American Oriental Society*
JIES	*Journal of Indo-European Studies*
MSL	*Mémoires de la Société de Linguistique de Paris*
MSS	*Münchener Studien zur Sprachwissenschaft*
NAWG	*Nachrichten von der Akademie der Wissenschaften in Göttingen, Phil.-hist. Klasse*
NGWG	*Nachrichten von der Gesellschaft der Wissenschaften zu Göttingen, Phil.-hist. Klasse*
NTS	*Norsk Tidsskrift for Sprogvidenskap*

RANL	*Rendiconti dell'Accademia Nazionale dei Lincei, Classe di Scienze Morali, Storiche e Filologiche*
REA	*Revue des Études Anciennes*
REArm	*Revue des Études Arméniennes*
REIE	*Revue des Études Indo-Européennes*
RIL	*Rendiconti dell'Istituto Lombardo, Classe di Lettere e Scienze Morali*
RPh	*Revue de Philologie*
SbAWW	*Sitzungsberichte der Kaiserlichen Akademie der Wissenschaften Wien, Phil.-hist. Klasse*
SbPAW	*Sitzungsberichte der Preussischen Akademie der Wissenschaften, Phil.-hist. Klasse*
SCO	*Studi Classici e Orientali*
SMEA	*Studi Micenei ed Egeo-Anatolici*
Sprache	*Die Sprache: Zeitschrift für Sprachwissenschaft*
SSL	*Studi e Saggi Linguistici*
TAPhA	*Transactions of the Americal Philological Association*
TIES	*Tocharian and Indo-European Studies*
TPhS	*Transactions of the Philological Society*
VJ	*Voprosy Jazykoznanija*
ZAssyr	*Zeitschrift für Assyriologie und vorderasiatische Archäologie*
ZDMG	*Zeitschrift der Deutschen Morgenländischen Gesellschaft*
ZVS	*Zeitschrift für Vergleichende Sprachforschung*

Translations

Modern secondary literature in languages other than English is quoted in translation. While double quotation marks are used for literal quotations, such translations are enclosed in single quotation marks or, where set off typographically from the surrounding text, labelled by the addition of '(translated)' to the source reference.

CHAPTER 1

The Greek Verbal System

1.1 Introduction

1.1 Variety and Economy in the Verbal System of Ancient Greek

In learning Ancient Greek, most speakers of modern European languages will be surprised by the richness and complexity of its verbal system. According to a basic analysis, we can distinguish

- three persons (first, second, third);
- three numbers (singular, plural, dual);
- seven 'tenses' (present, imperfect, aorist, future, perfect, pluperfect, future perfect);
- four moods (indicative, imperative, subjunctive, optative); and
- three voices (active, middle, passive).

If there were no combinatory restrictions, this would mean that there are 756 functional slots in the paradigm of the finite verb. Effectively the number is somewhat lower because there is no imperfect and pluperfect imperative, subjunctive, or optative, no future and future perfect imperative or subjunctive, and no first-person imperative. Even so, the range of possibilities is impressive and could not be handled if each of the remaining slots were randomly assigned a formal correlate (e.g., in the form of a separate stem/ending construct).

Fortunately this is not the case. Considerable formal economy is achieved in a number of ways. For example, the verbal endings, tasked with encoding person and number, differentiate well between eight out of nine relevant person/number combinations (1sg., 2sg., 3sg., 1pl., 2pl., 3pl., 2du., 3du.; but 1du. = 1pl.), and homonymy is fairly marginal there (e.g., 1sg. = 3pl. -ον in the active voice of thematic imperfects and aorists). But the same 'sets' of endings are attached to several different tense/mood stems, as when the (thematic) present, future, and future perfect share one set, and the imperfect and (thematic) aorist another. Similarly, whereas one can functionally distinguish actives, middles, and passives in all tenses, the passive voice is formally distinct

from the middle only in the aorist and future (where it has its own stem, even though voice is otherwise also encoded in the ending). And although there are seven 'tenses', there are only five different tense stems for any verb: the present and imperfect and the perfect and pluperfect always share a stem (while using different sets of endings).

Once the principles informing this system are grasped, the learner or user of Ancient Greek 'only' has to deal with a manageable range of grammatical formants:

- the verbal endings as exponents of person, number, and voice (as well as imperative mood and perfect 'tense');
- the markers of the subjunctive and optative moods;
- the markers of the different 'tense' stems.

Without entering into every detail, the following paragraphs (**1.2–1.13**) will review the main data for each of these groups. Although reference will already be made to related evidence in other Indo-European languages, the aim is not to replicate the existing reference works[1] and to offer an exhaustive sketch of comparative grammar. Instead, the presentation is merely meant to provide general orientation before formulating the questions this study hopes to answer.

1.2–1.6 Verbal Endings

1.2 Overview

As noted in **1.1**, the verbal endings convey information about person, number, and voice. In the singular, the first person refers to the speaker (addressor), the second to the listener (addressee), and the third to a person or thing spoken about. In the dual and plural, the first person refers to the speaker and one (dual) or more (plural) others, the second to the listener and one or more others, and the third to two or more persons/things spoken about.

In contrast to the unmarked active voice, the middle voice is characteristically used when the subject is in some way especially involved in, or affected by, the action, for instance as an experiencer or beneficiary.[2] Where there is no formally separate passive (**1.1**), this remit includes the subject being a patient.

[1] Such as Chantraine (1961), Rix (1992), Sihler (1995); cf. also Schwyzer (1939), Meier-Brügger (1992a), Duhoux (2000), and works with a more Indo-European focus (e.g., Szemerényi 1996, Meier-Brügger 2002, Beekes 2011).

[2] See Rijksbaron (2002: 161–3), Allan (2003); cf. also **9.20**, with fn. 71.

In purely descriptive terms, we can distinguish not only active vs. middle endings, but also, in each group, thematic vs. athematic and 'primary' vs. 'secondary' ones. The 'primary' endings are used in the indicative of non-past tenses (present, future; also future perfect) and in the subjunctive, the 'secondary' endings in the indicative of past tenses (imperfect, aorist; also pluperfect (**5.11–5.13**)) and in the optative (with exceptions in the 1sg. active). The perfect has its own set of endings in the singular; also (partly) separate are the imperative endings, which we shall leave out of consideration.[3]

In a diachronic perspective, however, the thematic and athematic endings turn out to be identical except in the 1sg. active; and where the 'primary' and 'secondary' endings diverge, they do so in a systematic way as the former commonly equal the latter with an added **-i* ('primary' **-i*).

Almost all finite verb forms – with rare exceptions in thematic aorist imperatives – have a recessive accent; for reconstructive purposes the accentuation of Greek verbs is therefore uninformative.

1.3 Athematic Endings: Active

The following list presents the athematic endings of the active voice, as found in verbs like φημί 'say' or δίδωμι 'give', in their classical Attic form. It includes the mostly uncontroversial reconstruction of the endings for later Proto-Indo-European, selected comparanda in other languages that support this reconstruction, and brief notes. Here and elsewhere in this chapter, we shall not consider questions relating to 'deeper' reconstruction; these matters will occupy us later (in Chapters 9 and 10).

	'Primary'		
1sg.	-μι	**-mi*	Ved. *-mi*, Hitt. *-mi*, Lat. *-m*
2sg.	-ς	**-si*	Ved. *-si*, Hitt. *-ši*, Lat. *-s*
3sg.	-σι	**-ti*	Ved. *-ti*, Hitt. *-zi*, Lat. *-t*
1du.	= 1pl.	**-u̯e(s)*	Ved. *-vaḥ*, Lith. *-va*
2du.	-τον	?	Ved. *-thaḥ*, Lith. *-ta*
3du.	-τον	?	Ved. *-taḥ*, OCS *-te*/*-ta*
1pl.	-μεν	**-me(s)*	Ved. *-maḥ*, Lith. *-me*, Lat. *-mus*
2pl.	-τε	**-te*	Ved. *-tha*, Lith. *-te*, Lat. *-tis*
3pl.	-(ᾱ)σι	**-(e)nti*	Ved. *-a(n)ti*, Hitt. *-anzi*, Lat. *-(u)nt*

[3] They are active 2sg. *-Ø* (thematic **-e*), sometimes extended as -θι (**-dʰi*; cf. Skt. *-(d)hi*), 3sg. -(έ)τω (**-tōd*; cf. Lat. *-tō*), 2pl. -(ε)τε (**-te*; = indicative), 3pl. -(ό)ντων (analogical: cf. 3sg. ind. **-ti* : ipv. **-tō(d)* = 3pl. ind. **-nti* : X → X = **-ntō(d)* + added *-ν*); and middle 2sg. -σο (thematic -ου < **-eso*) (**-so*; = indicative), 3sg. -(έ)σθω (analogical), 2pl. -(ε)σθε (**-dʰu̯e*; = indicative), 3pl. -(έ)σθων (analogical). For more detailed discussion, see Forssman (1985).

'Secondary'			
-ν	**-m*	Ved. *-m*, Hitt. *-un*, Lat. *-m*	(1)
-ς	**-s*	Ved. *-ḥ* (*-s*), Hitt. *-š*, Lat. *-s*	(2)
-Ø	**-t*	Ved. *-t*, Hitt. *-t*, Lat. *-t* (< *-d*)	(3)
= 1pl.	**-u̯e*	Ved. *-va*, Lith. *-va*	(4)
-τον	?	Ved. *-tam*, Lith. *-ta*	(5)
-την	?	Ved. *-tām*, OCS *-te*/*-ta*	(6)
-μεν	**-me*	Ved. *-ma*, Lith. *-me*, Lat. *-mus*	(7)
-τε	**-te*	Ved. *-ta*, Lith. *-te*, Lat. *-tis*	(8)
-(ε)*ν*	**-(e)nt*	Ved. *-an*, Lat. *-(e/u)nt*	(9)

(1) After consonant, **-m* is realised as **-m̥* > -α; cf. e.g. *s*-aorist 1sg. act. -σα < **-s-m̥* (**8.2**).

(2) Greek 'primary' -ς is a product of analogy; in stems ending in a vowel, **-Vsi* > **-Vhi* > **-Vi̯* would have been regular, but since this lacked an overt person marker, the 'secondary' ending was added (and the preceding stem-final diphthong usually eliminated by analogy with the 1sg./3sg.).

(3) Unassibilated 'primary' -τι is preserved outside Attic-Ionic; cf. also Att. ἐστί 'is' < **h₁es-ti*.

(4) Lith. *-va* points to **-u̯o(s)*; cf. **10.5**, fn. 10, on similar 1pl. forms. On the question of final **-s*, cf. below on 1pl. **-me(s)*.

(5), (6) On the reconstructive problems posed by the 2du. and 3du. endings, see **10.14**, fn. 26.

(7) In West Greek (Doric) dialects, -μες is found instead of -μεν, and -μεν is probably a dialectal innovation within Greek, based on **-me* (**10.5**, fn. 12). Although the distribution of **-mes* : **-me* in Indo-Iranian corresponds to that of 'primary' vs. 'secondary' endings, and is so represented above, it is not clear that this was systematically the case already in the proto-language, and that the final **-s* is therefore of the same order as 'primary' **-i*. Compare the 2pl., and see further **1.6**, **5.50**, **10.5**.

(8) The aspirate in Vedic 'primary' *-tha* is an Indo-Iranian innovation; Lat. *-tis* is from **-tes* with **-s* after the 1pl.

(9) The complexity in the 3pl. results from the fact that the athematic ending occurs with ablaut variants depending on paradigmatic patterns, and interparadigmatic analogy (also with thematic paradigms) has further complicated the picture. In root formations, for example, one expects **-ent(i)* (**6.5**–**6.6**), whereas in the *s*-aorist **-s-n̥t* is regular (**8.2**). Attic-Ionic 'primary' -σι < **-nti* is paralleled by preserved -ντι in other dialects. Where -ᾱσι occurs (e.g., διδόᾱσι 'they give'), this originates from **-(C)n̥ti* > **-(C)ati* → remade **-(C)anti* (after postvocalic **-(V)nti*) > Att.-Ion. -ᾱσι. In postvocalic positions, 'secondary' *-ν* is usually replaced by -σαν in Attic-Ionic (e.g., 3pl. aor. pass. -θη-σαν for -θεν < **-tʰē-nt*), following the model of 3pl. ἦσαν 'they were' (itself formed after the *s*-aorist, while **h₁e-h₁s-ent* > ἦεν > ἦν was reinterpreted as a 3sg.: **8.2**, fn. 11).

1.4 Athematic Endings: Middle

The reconstruction of some of the middle endings is more challenging, even if one merely targets a period when Greek and Indo-Iranian were still developing jointly. In the following list, this is reflected both by the more limited comparative evidence cited and by the brackets/alternatives in certain reconstructions. A more detailed exposition of the problems will follow elsewhere (10.4–10.7, 10.14).

	'Primary'		
1sg.	-μαι	**-(m)h₂ei̯*	Ved. *-e*, Hitt. *-ḫḫa(ri)*
2sg.	-σαι	**-soi̯/*-sai̯*	Ved. *-se*, Hitt. *-ta(ri/ti)*
3sg.	-ται	**-toi̯* (**-oi̯*)	Ved. *-te* (*-e*), Hitt. *-(t)a(ri)*
1du.	= 1pl.	?	Ved. *-vahe*
2du.	-σθον	?	Ved. *-āthe*
3du.	-σθον	?	Ved. *-āte*
1pl.	-μεθα	**-medʰh₂*	Ved. *-mahe*, Hitt. *-u̯ašta*
2pl.	-σθε	**-(s)dʰu̯e*	Ved. *-dhve*, Hitt. *-tuma(ri)*
3pl.	-νται	**-ntoi̯*	Ved. *-ate*, Hitt. *-anta(ri)*
	'Secondary'		
	-μην	**-(m)h₂(e)*	Ved. *-i*, Hitt. *-ḫat(i)* (1)
	-σο	**-so*	Ved. *-thāḥ*, Av. *-sa*, Hitt. *-tat(i)* (2)
	-το	**-to* (**-o*)	Ved. *-ta* (*-at*), Hitt. *-(t)at(i)* (3)
	= 1pl.	?	Ved. *-vahi* (4)
	-σθον	?	Ved. *-āthām* (5)
	-σθην	?	Ved. *-ātām* (6)
	-μεθα	**-medʰh₂*	Ved. *-mahi*, Hitt. *-u̯aštat(i)* (7)
	-σθε	**-(s)dʰu̯e*	Ved. *-dhvam*, Hitt. *-tumat* (8)
	-ντο	**-nto*	Ved. *-ata*, Hitt. *-antat(i)* (9)

(1) Att.-Ion. -μην corresponds to -μᾱν in other dialects; in postconsonantal environments this is derivable from an immediate pre-form **-(C)m̥h₂-m* whose **-m* may be secondarily added. Note that OHitt. *-ḫḫa* continues **-h₂e/o-r* and therefore suggests a relatively late addition of 'primary' **-i* to **-h₂e*; *-t(i)* in the 'secondary' endings has been added within Anatolian.

(2) The Hittite endings demonstrate that the reconstructions given are at best reliable for Graeco-Aryan; even for this period the seemingly straightforward 'primary' **-soi̯*, though usually posited, remains uncertain, and the presence of a Vedic 'secondary' ending with a dental as in Hittite is noteworthy (cf. 5.3, 10.14 on **-(s)th₂e* as a possible predecessor/competitor of **-so*; 5.11 on Ved. *-thāḥ*).

(3) In Greek, **-toi̯* > -τοι is attested in Arcado-Cyprian and Mycenaean; -ται is analogical after the 1sg./2sg. For reconstructive purposes, the Vedic and Hittite variant endings without a dental are of some significance: see 4.34, 4.42, 10.14.

(4) Given the general parallelism of 1du. and 1pl. forms, one might (internally) reconstruct **-u̯ed^{h}h$_{2}$-*.

(5), (6) The evidence is too scarce to allow a meaningful reconstruction; Gr. 2du. -σθον : 2pl. -σθε is clearly analogical to active 2du. -τον : 2pl. -τε, and the distribution of -σθον/-σθην matches that of active -τον/-την.

(7) The differentiation of 'primary' and 'secondary' endings is an Indo-Iranian innovation (modelled after the 1sg.). Since -μεθα has a poetic by-form -μεσθα and since an internal **-s-* is also seen in Hittite, a parallel existence of **-med^{h}h$_{2}$* and **-mesd^{h}h$_{2}$* in the proto-language is conceivable (cf. **10.5**).

(8) On the **-s-* of **-(s)d^{h}u̯e*, which may be secondary, see **10.6**, fn. 13.

(9) Like Ved. *-ate/-ata* < **-n̥to(i̯)*, postconsonantal -ατα<u>ι</u>/-ατο < **-n̥to(i̯)* is also found in Greek, notably in the optative and perfect/pluperfect.

1.5 Thematic Endings: Active and Middle

A full list of the thematic endings need not be given since most of them replicate the athematic ones. The main difference consists in the 'thematic vowel' **-e/o-* preceding the ending. In the first person, the thematic vowel appears as **-o-*, in the second and third as **-e-*; on this distribution, and its possible origins, see further **3.38**. Note the loss of intervocalic **-s-* and the subsequent vowel contraction in the 2sg. middle ('primary' **-e-sai̯* > -εαι > -ῃ; 'secondary' **-e-so* > -εο > -ου).

In the 'primary' active singular, the situation is more complex. 1sg. -ω cannot straightforwardly continue a late-PIE ending **-o-mi*, but rather points to **-oH* (cf. **10.4**). In the 2sg., **-e-si* > **-e-hi* > **-ei̯* is unproblematic as such, and **-ei̯* may have been differentiated from the 3sg. by the analogical addition of **-s* as a 2sg. marker (→ -ει-ς). Regarding the 3sg. -ει itself, however, two fundamentally different lines of thought exist. Some scholars analyse this as **-ei̯*, i.e. **-e* with added 'primary' **-i*, and see in it a survival from a time when the thematic conjugation had not yet adopted the 3sg. marker **-t(i)*.[4] The advantage of this approach is its phonological simplicity; and as we shall see, there is much to be said for an early PIE thematic 3sg. without **-t(i)* (**4.34**–**4.44**). Nevertheless, given the overwhelming evidence for thematic 3sg. **-e-ti* in other branches of Indo-European, including Indo-Iranian which generally matches Greek quite well, another explanation is preferred here. In prevocalic sentence

[4] See especially Bonfante (1934: 222–3), Pedersen (1938a: 87–8), Ruipérez (1952: 12–13), Lazzeroni (1965: 81–3), Watkins (1969: 121–3), Negri (1974: 361–71), Kortlandt (1979a: 61; 1979b: 37–9; 1997: 134), Erhart (1984: 242–3; 1989: 47), Hart (1990: 448–50). Since the 3sg. pres. *-(ä)ṣ* of Tocharian A probably continues **-(e)ti* (Jasanoff 1987a: 110–11, Ringe 1996: 80), the main supporting evidence from outside Greek would be found in Baltic, with Lith. thematic 3sg. *-a* also apparently reflecting an ending without **-ti*. However, here too **-eti* has been defended, either by reference to an early *i*-apocope (Vaillant 1966: 10, Hock 2007) or by a (prosodically conditioned?) generalisation of the 'secondary' ending **-t* (Stang 1942: 230–1; 1966: 410, Mottausch 2003 [2009]: 83–4, Olander 2015: 327).

sandhi, Proto-Greek **-e-ti V-* first became **-e-ti̯ V-* > **-e-t^{i} V-* in a phonologically regular manner. This variant of the ending was then generalised to all positions. Finally, the loss of final stops affected palatal **-t^{i}* as much as non-palatal **-t*, except that its palatal feature was retained and reported onto the preceding vowel (**-e^{i}* > -ει).[5] Accordingly, Greek only superficially diverges from most other Indo-European languages, and the reconstruction of **-e-t(i)* need not be questioned.

Act.	*'Primary'*			
1sg.	-ω	**-oH*	Av. *-ā(mi),* Lat. *-ō*, Lith. *-ù*	
2sg.	-εις	**-e-si*	Ved. *-asi*, Hitt. *-eši*, Lat. *-is*	
3sg.	-ει	**-e-ti*	Ved. *-ati*, Hitt. *-ezzi*, Lat. *-it*	
1pl.	-ομεν	**-o-me(s)*	Ved. *-āmaḥ*, Lith. *-ame*, Lat. *-imus*	
etc.				
	'Secondary'			
	-ον	**-o-m*	Ved. *-am*, Hitt. *-anun*, OCS *-ъ*	(1)
	-ες	**-e-s*	Ved. *-aḥ* (*-as*), Hitt. *-eš*, OCS *-e*	
	-ε	**-e-t*	Ved. *-at*, Hitt. *-et*, OCS *-e*	
	-ομεν	**-o-me*	Ved. *-āma*, OCS *-omъ*	(2)

(1) The Vedic 'primary' ending is *-āmi*, but OAv. *-ā* which is subsequently remade into *-āmi* suggests a similar story for Vedic, and hence PIIr. **-ō* > **-ā*. Cf. **10.4**, with fn. 3, on a parallel but probably independent process in Anatolian. In Hittite 'secondary' *-anun, -un* is analogically added to **-om* > *-an*.

(2) The issues regarding -(ο)μες vs. -(ο)μεν, **-(o)mes* vs. **-(o)me*, and **-(o)mes* vs. **-(o)mos* are parallel to those in the athematic inflection (**1.3**).

Med.	*'Primary'*			
1sg.	-ομαι	**-o-(m)h$_2$ei̯*	Ved. *-e*, Hitt. *-aḫḫa(ri)*	
2sg.	-ῃ	**-e-soi̯/*-e-sai̯*	Ved. *-ase*, Hitt. *-atta(ri/ti)*	
etc.				
	'Secondary'			
	-ομην	**-o-(m)h$_2$(e)*	Ved. *-e*, Hitt. *-aḫḫat(i)*	(1)
	-ου	**-e-so*	Av. *-aŋha*, Hitt. *-attat(i)*	(2)

(1), (2) The divergences among the attested endings again match those in the athematic conjugation; but note that Hittite generally uses the *o*-variant of the thematic vowel in the mediopassive (**4.42**, fn. 154).

[5] For a more detailed account, see Willi (2012a: esp. 266–9) and, independently, Ellsworth (2011), following Kiparsky (1967a) and Cowgill (1985a: 99–101; 2006: 536–9). Similar ideas were already mooted in the nineteenth century (Bopp 1837: 649–50, 652–3, 660, Curtius 1877–80: 1.205–10; cf. Cowgill 2006: 537 n. 3). Other scholars tried to save **-eti* by postulating analogical processes pivoting, rather implausibly, around either the 2sg. or the 'secondary' 3sg. endings (Brugman 1878: 173–9; 1903/4; 1904/5: 179–81, Brugmann and Thumb 1913: 397–8, Devoto 1929, Kuryłowicz 1967: 166; 1977: 29–30, Hoenigswald 1986; 1997: 93–5, Bammesberger 1993 [1994]: 13–14); or by assuming an irregular, frequency-conditioned, loss of **-t-* (Mańczak 1992: 72).

1.6 Perfect Endings

The perfect has its own set of endings not only in Greek, but also in Indo-Iranian; and reflexes of a separate set of PIE perfect endings are observed in other languages too, for instance in the perfect endings of Latin. The comparison of these data shows that Greek has innovated (and regularised) in the 2sg. and throughout the plural, introducing an alphathematic pattern reminiscent of the *s*-aorist (8.2). However, Homeric forms such as ἴδμεν 'we know', μέμαμεν 'we are keen' still show an earlier state of affairs with a truly athematic ending (**u̯id-me(n), *me-mn̥-me(n)*; cf. e.g. Ved. 1pl. perf. *ja-gan-má* 'we have gone' for **ja-ga-má* < **gᵘe-gᵘm̥-mé*). As in the *s*-aorist, the alphathematisation may have been prompted not only by the 1sg. in -α, but also by the phonologically regular development of athematic 1pl. **-me(n)* after heavy bases. Following the generalisation of the singular stem (5.5), a form like **de-dork-me(n)* 'we look, stare' would have been realised as **de-dork-m̥e (n)* > δεδόρκαμεν; and the 2pl. could then be adjusted accordingly (-ατε for athematic **-te*). Similarly, once the inherited 3pl. **-r̥s* (> **-ar(s)/*-as*, depending on sandhi) had been replaced by the more familiar-looking athematic **-n̥ti* (cf. 1.3), the latter also had to develop *a*-vocalism (> **-ati*, whence **-anti* > -ᾱσι by analogy with 3pl. **-nti* in postvocalic contexts).

In the middle voice, the perfect uses the regular athematic 'primary' middle endings (1.4). A distinctive perfect inflection can therefore safely be postulated only for the active singular and 3pl. of the late-PIE paradigm, although the 2pl. is suggestive too (cf. below, and see 5.50 for further exploration). The discussion of Hittite comparanda is postponed to 5.3, 5.33, and 5.50.

1sg.	-α	**-h_2e*	Ved. *-a*, OLat. *-ai* > *-ī*	(1)
2sg.	-ας	**-th_2e*	Ved. *-tha*, Lat. *-(is)tī*	(2)
3sg.	-ε	**-e*	Ved. *-a*, OLat. *-eit*	(3)
1pl.	-(α)μεν	**-me*	Ved. *-ma*, Lat. *-imus*	(4)
2pl.	-(α)τε	**-te (*-e)*	Ved. *-a*, Lat. *-(is)tis*	(5)
3pl.	-ᾱσι	**-(e)rs*	Ved. *-uḥ*, OAv. *-ərəš*, Lat. *-ēre*	(6)

(1) The presence of a laryngeal is indicated by the differential treatment, according to Brugmann's Law, of 1sg. vs. 3sg. perfect forms in Vedic: the non-lengthening of radical **-o-* in 1sg. *ja-gám-a* 'I have gone' < **gᵘe-gᵘóm-h_2e* (≠ 3sg. *ja-gā́m-a* < **gᵘe-gᵘóm-e*) is regular in a closed syllable. In Latin, 'primary' **-i* has been added (since the early perfect had present-tense reference: cf. 5.14–5.23).

(2) Gr. 2sg. -ας : 1sg. -α follows the *s*-aorist pattern (although 2sg. -(σ)ας is also innovated there: 8.2). A trace of the original ending persists in the synchronically irregular 2sg. perf. οἶσθα < **u̯oid-th_2e*, whence -(σ)θα was occasionally copied into non-perfect forms (esp. 2sg. impf. ἦσθα 'you were' for **ἦς).

Whereas the aspirate of Ved. *-tha* is due to the laryngeal, in Greek it may rather be owed to the sibilant preceding the ending. On the element *-is-* in the Latin ending (which again contains 'primary' **-i*), cf. **8.20**, fn. 87.

(3) After the addition of 'primary' **-i*, Latin **-ei̯* was recharacterised by adding 3sg. *-t*, and *-eit* > *-īt* is still reflected in Plautine scansion; but the classical Latin ending *-it* < OLat. *-ed* continues thematic 'secondary' **-et* (**1.5**; cf. **3.23**).

(4) The ending **-me* is not specific to the perfect (cf. **1.3**). Since the perfect originally had present-tense reference, it should be noted that the Vedic ending is *-ma*, not *-maḥ*; this weakens the idea that the initial function of **-s* in **-mes* was similar to that of 'primary' **-i*. In any case, 1pl. perf. **-me* is best regarded as an archaism beside 1pl. pres. **-mes*.

(5) Ved. *-a* (e.g., *ja-gm-á* 'you have gone' < **g^{u}e-g^{u}m-ê*) is so irregular that an archaism is more likely than an innovation;[6] by contrast, **-te* is as unspecific to the perfect as is 1pl. **-me*.

(6) On the Greek ending, see above. Ved. *-uḥ* and OAv. *-ərəš* continue **-r̥̊s*, whereas Lat. *-ēre* < **-ēri* goes back to **-ers* > **-ēr* with added 'primary' **-i*.

1.7–1.8 Modal Stem Markers

1.7 Subjunctive

Whereas the imperative shares the stem of present, aorist, and (rarely) perfect indicatives, but has its own endings (**1.2**, fn. 3), the subjunctive and optative moods are characterised by adding a modal stem suffix to an indicative stem, followed by the normal non-perfect endings: 'primary' ones for the subjunctive, 'secondary' ones for the optative (**1.2**, **1.8**; but cf. **4.47**, fn. 170, on the subjunctive[7]).

The subjunctive marker in classical Greek regularly appears as a lengthened thematic vowel -η/ω- with the same distribution among persons as for the unlengthened -ε/ο- of thematic indicatives. In Homeric Greek, however, a healthy number of short-vocalic -ε/ο- subjunctives to athematic stems are still attested.[8] Together with concurrent data in other languages these show that the original subjunctive marker was just **-e/o-*, with long **-ē/ō-* arising in thematic stems from contraction already in the proto-language (**-e-e-* > **-ē-*, **-o-o-* > **-ō-*). Because of its greater distinctiveness, **-ē/ō-* was then transferred from thematic to athematic stems as well. Note that the original

[6] Weiss (2009: 393) tentatively compares Paelignian *lexe* 'you have read' (?) (< **leg-s-e̯*). However, it seems unlikely that an underspecified ending such as 2pl. perf. **-e* not only survived as an isolated relic in a perfect paradigm but was even transferred from there into a form with a preceding aorist formant (**-s-*).

[7] Some subjunctives with 'secondary' endings are also found in Greek dialect inscriptions: cf. Schwyzer (1939: 661).

[8] The Homeric text is normalised in that these short-vowel subjunctives are only attested where a different metrical structure results (Chantraine 1958: 454): thus, e.g., *s*-aor. subj. 1pl. act. -σομεν (**-s-o-mes*), 3sg. med. -σεται (**-s-e-toi̯*), but 3sg. act. -σῃ (**-s-ē-ti*), not *-σει (**-s-e-ti*). Outside the *s*-aorist, examples are rarer, but see, e.g., ἴ-ο-μεν 'let us go' for ἴ-ω-μεν (ind. ἴ-μεν 'we go').

homology of subjunctives to athematic stems with thematic indicatives extends to the 1sg. act., where the subjunctive ends in -ω, not †-ομι.

Example (thematic φερε/ο- 'carry', active voice):

	Indicative		*Subjunctive*			
1sg.	φέρω	**-oH*	φέρω	**-ŏH*	Ved. *-ā(ni)*	(1)
2sg.	φέρεις	**-e-si*	φέρῃς	**-ē-s(i)*	Ved. *-ās(i)*, Lat. fut. *-ēs*	(2)
3sg.	φέρει	**-e-ti*	φέρῃ	**-ē-t(i)*	Ved. *-āt(i)*, Lat. fut. *-et*	(3)
1pl.	φέρομεν	**-o-me(s)*	φέρωμεν	**-ō-me(s)*	Ved. *-āma*	
2pl.	φέρετε	**-e-te*	φέρητε	**-ē-te*	Ved. *-ātha,* Lat. fut. *-ētis*	(4)
3pl.	φέρουσι	**-o-nti*	φέρωσι	**-ō-nt(i)*	Ved. *-ān*	(5)

(1) The ending *-āni* is an Indo-Iranian innovation.

(2), (3) Vedic uses 'primary' *or* 'secondary' endings in the subjunctive singular, but 'secondary' endings in the 1pl. and 3pl. (cf. **4.47**, fn. 170). In Latin, the future continues inherited subjunctive forms (with *-ē-* generalised throughout the paradigm: e.g., 1pl. *-ēmus*). For the development of subj. -ῃς, -ῃ, cf. **1.5** on ind. -εις, -ει.

(4) Vedic 'primary' *-ātha* for **-āta* is an Indo-Iranian innovation, also observed in the indicative (2pl. *-atha*); contrast 'secondary' ind. *-ata.*

(5) In Gr. -ωσι, **-ō-* is analogically retained; by Osthoff's Law, **-ōnti* should have yielded **-onti* > †-ουσι.

The subjunctive is used in a variety of functions. In main clauses it occurs as an adhortative or deliberative subjunctive in the first person ('let me/us X', 'shall I/we X?') or as a prohibitive subjunctive in the second person ('do not X!'). In subordinate clauses, final and prospective subjunctives are most common ('in order that he/she X-es . . .', 'if/when he/she X-es . . .'). The common denominator appears to be the speaker's expectation that an eventuality is or may be coming about (cf. **4.47**).

1.8 Optative

For the optative, an ablauting suffix **-i̯eh$_1$-/-ih$_1$-* can be reconstructed. The variant **-ih$_1$-*, added to the thematic vowel **-o-*, yields the thematic optative suffix **-oi̯(h$_1$)-* > Gr. -οι- (~ Ved. *-e-*). Unlike **-ē/ō-* in the subjunctive, this -οι- has not been generalised to all athematic stems (but see at least ἴοι 'might go', δεικνύοι 'might show', etc.). However, its diphthongal nature was perceived as characteristic of the mood and exerted some analogical influence. Thus, following the alphathematisation of the *s*-aorist (**8.2**), the corresponding optative[9] acquired the suffix -σαι- (in lieu of

[9] Contrast the perfect optative, which has -οι- despite its alphathematic remodelling (**1.6**).

*-s-ih$_1$- > †-σῑ-[10]). Diphthongal structures were also maintained where they should have been lost by sound change (loss of intervocalic *-i̯-): e.g., opt. 3sg. aor. *dh$_3$-i̯eh$_1$-t 'might give' > *do-i̯ē-t → δοίη (not: †δόη), 3sg. aor. pass. *-t^{h}ē-i̯ē-t → -θείη (not: *-θήη > †-θῆ); contrast 1pl. aor. (*dh$_3$-ih$_1$-me →) *do-ī-me(n) > δοῖμεν, 1pl. aor. pass. *-t^{h}ē-ī-me(n) > -θεῖμεν (whence also δοίημεν, -θείημεν by analogy with -ιη- in the singular).

As in Vedic, 'secondary' endings are used. Only in the 1sg. do thematic -οιμι and, by analogy, *s*-aor. -σαιμι depart from this rule (contrast δοίην, -θείην, etc.). Even here, dialectal -οια (with -α < *-m̥) preserves the older situation.

Examples (thematic φερε/ο- 'carry' and athematic ἐσ- 'be', active voice):

	Thematic		
1sg.	φέροιμι	*-oi̯(h$_1$)-m(i)	Ved. *-eyam,* Goth. *-au*
2sg.	φέροις	*-oi̯(h$_1$)-s	Ved. *-eḥ*, Goth. *-ais*
3sg.	φέροι	*-oi̯(h$_1$)-t	Ved. *-et,* Goth. *-ai*
1pl.	φέροιμεν	*-oi̯(h$_1$)-me(s)	Ved. *-ema,* Goth. *-aima*
2pl.	φέροιτε	*-oi̯(h$_1$)-te	Ved. *-eta*, Goth. *-aiþ*
3pl.	φέροιεν	*-oi̯(h$_1$)-(e)nt	Ved. *-eyuḥ*

	Athematic		
εἴην	*h$_1$s-i̯eh$_1$-m	Ved. *syām*, OLat. *siēm*	(1)
εἴης	*h$_1$s-i̯eh$_1$-s	Ved. *syāḥ*, OLat. *siēs*	
εἴη	*h$_1$s-i̯eh$_1$-t	Ved. *syāt*, OLat. *siēt*	
εἶμεν	*h$_1$s-ih$_1$-me(s)	Lat. *sīmus*	(2)
εἶτε	*h$_1$s-ih$_1$-te	Lat. *sītis*	(3)
εἶεν	*h$_1$s-ih$_1$-ent	OLat. *sient*	(4)

(1) Ved. *-eyam* is analogical for *-aya(m) < *-oi̯(h$_1$)-m̥ (as is Arc. -οια for *-οα). The Latin subjunctive *siēm* continues the inherited optative (→ classical Lat. *sim*, by analogy with non-alternating *s*-aorist optatives (subjunctives) in *-s-ih$_1$-m: type OLat. *faxim*).

(2), (3) In Vedic, the singular alternant of the suffix has been generalised (1pl. *syāma*, 2pl. *syāta*), as in the Greek by-forms εἴημεν, εἴητε, εἴησαν.

(4) In Vedic, the old perfect ending *-r̥s (**1.6**) has replaced *-n̥t (as also in the *s*-aorist); *-eyuḥ* is analogical for *-ayuḥ < *-oi̯(h$_1$)-r̥s. Gr. -οιεν is remodelled for *-οαν < *-oi̯(h$_1$)-n̥t; -εν for *-αν follows the athematic paradigm with ablauting suffix (cf. regular εἶεν).

[10] The so-called 'Aeolic' optatives (type 2sg. δείξειας, 3sg. δείξειε, 3pl. δείξειαν) may also be due to analogical diphthongisation if they reflect the old *s*-aorist optative in *-sī-. 3sg. *deik̯-s-ī-t > *deik̯sī would have been recharacterised, after the loss of *-t, as 3sg. by the addition of 'thematic' *-e*, allowing a further transformation *deik̯sī-e > *deik̯siu̯-e → deik̯seie (= δείξειε) with 'optatival' diphthong. 2sg. δείξειας, 3pl. δείξειαν : 3sg. δείξειε analogically match ind. 2sg. ἔδειξας, 3pl. ἔδειξαν : 3sg. ἔδειξε. For a similar explanation, but with a less likely starting point in the 3pl., see Rix (1992: 233), after Pisani (1943/4: 537–8); for other opinions and earlier literature, Schwyzer (1939: 796–7), F. Thomas (1957; 1961), Forbes (1958), Chantraine (1961: 266), Taillardat (1967), Hilmarsson (1977: 197), Jasanoff (1991a: 116–19), Kortlandt (1992), Sihler (1995: 598).

Like the subjunctive, the Greek optative has various syntactic functions. In main clauses we can distinguish a 'cupitive' optative in wishes ('may I/you/he/she X . . . !') and a 'potential' optative in statements referring to possible/conceivable eventualities ('I/you/he/she might/would X . . .'). The potential optative also occurs in subordinate clauses, notably conditional and relative ones ('if he/she might X . . .'), but also past iterative temporal clauses ('whenever he/she would X . . .'). A special development is the 'oblique' optative, which replaces indicatives and subjunctives in dependent clauses if the verb in the main clause has past-tense reference; the future optative is restricted to this environment. Overall, if the subjunctive is the mood of expectation, the optative is the mood of (mere) possibility.

1.9–1.13 'Tense' Stems

1.9 Overview

Although the term 'tense stems' is handy, it is somewhat misleading when applied to the Greek verbal system. Only the future and future perfect stems are tense stems in the strict sense, as they unequivocally refer to future not-now eventualities.

By contrast, the present and perfect stems are found with either present (now) or past (not-now) reference. The former are shared between the present (with 'primary' endings) and the imperfect (with 'secondary' endings); the latter, between the perfect (with perfect endings) and the pluperfect (with 'secondary' endings: for detail, see 5.11–5.13).

The aorist stems generally have past (not-now) reference as well, but only in the indicative; in the other moods, they are not past-tense stems. The real contrast between at least present and aorist stems is therefore aspectual, not temporal. Whereas the present stems are aspectually imperfective, being used to view eventualities 'from the inside', as internally structured or 'unfolding', the aorist stems are aspectually perfective and therefore employed when eventualities are viewed 'from the outside', in their entirety and without regard for their internal structure (4.4). If the aorist indicative has present reference only in exceptional circumstances, this is because a truly presentic eventuality cannot normally be viewed in its entirety as it is still ongoing (as opposed to extratemporal or 'timeless': cf. 5.29 and 7.15 on the 'gnomic aorist').

With regard to this aspectual contrast, the position of the perfect stems is more ambiguous. Although the perfect is sometimes presented as such, it is not a 'third aspect': an eventuality can only be viewed 'from the inside' (imperfective) or 'from the outside' (perfective), *tertium non datur*. Because

	perfective aspect	*imperfective aspect*	*stative domain*
future tense	future stem (future)		future perfect stem (future perfect)
present tense (+ non-indicative moods)	– [except 'gnomic' aor.] (modal: aorist stem)	present stem (present)	perfect stem (perfect)
past tense (augmented)	aorist stem (aorist)	present stem (imperfect)	perfect stem (pluperfect)

Fig. 1.1. The distribution of 'tense' stems in classical Greek

the perfect has present (now) reference in early and classical Greek, it might thus be classified as aspectually imperfective. However, the perfect characteristically refers to states, whether or not these result from a past action (5.14–5.23); and since states are by definition internally unstructured, viewing them from the inside or from the outside makes little difference. In this sense, a typical perfect can be compared as readily to a 'timeless' perfective as to a 'general' imperfective present. As we shall see, to acknowledge this ambiguity is not without importance for our understanding of the prehistory of the perfect category (5.29).

Finally, in the future the imperfective vs. perfective contrast could in theory be realised as easily as in the past (with the imperfect vs. aorist indicative); but in Ancient Greek it is neutralised here, so that one and the same formation regularly serves for both aspects. Similarly, *all* indicatives with past reference, regardless of aspect, share the use of the prefixed augment (**h₁e-*) in the classical language. On the more complex situation in Homer, see 7.2–7.10.

1.10 Aorist Stems

With the exception of some aspectually defective items (e.g., λέγω 'say, speak', with suppletive aorist εἰπε/ο-), each verbal lexeme has both an aorist and a present stem. Since there are various types of both, which aorist and which present stem type are selected is not entirely predictable but lexically determined. There are of course recurrent patterns, like the frequent pairing of simple thematic presents with *s*-aorists (e.g., pres. νεμε/ο- < **nem-e/o-* : *s*-aor. νειμα- < **nem-s(a)-* 'distribute', Table 8.1), but exceptions are easy to find (e.g., pres. ἔχε/ο- < **seĝʰ-e/o-* : thematic aor. σχε/ο- < **sĝʰ-e/o-* 'have, hold', Table 8.2). The available formations must therefore be reviewed separately.

The following aorist stem types (active/middle voice) can be distinguished:

(i) Root aorists: The stem is identical with the root: it contains no affixes and is followed directly by athematic endings. Although analogical

levelling has taken place in many cases, it seems that the root originally alternated between full-grade forms (in the active singular) and zero-grade forms (in the active plural and in the middle) (**6.11**). In early and classical Greek, the root aorist is relatively rare and mostly confined to roots in a long vowel (often, but not always, **CeH-* roots; **6.11–6.13**). Other old root aorists are hidden behind certain thematic and *s*-aorists (**6.15–6.21**, **8.3**). A special offshoot of the root aorist is the κ-aorist. This is restricted to very few roots and even there to the active singular and, sometimes, 3pl.; see **6.12** for further detail.

Examples (cf. Table 6.1, Table 6.2): act. βη- 'go' (root **g$^{\mu}$eh$_2$-*), γνω- 'recognise' (**ĝneh$_3$-*), στη- '(take a) stand' (**steh$_2$-*), med. χυ- 'pour out (intr.)' (**ĝ^{h}eu̯-*); κ-aor.: δωκ(α)- 'give' (**deh$_3$-*), θηκ(α)- 'put' (**d^{h}eh$_1$-*).

(ii) Thematic aorists: The non-ablauting root, which is mostly but not always in the zero grade, is followed by thematic endings (stem structure **CC-e/o-*). It is indisputable that some thematic aorists represent secondarily thematised root aorists, but the extent to which this is true for the type as a whole requires further discussion (Chapter 6).

Examples (cf. **6.22**): (ϝ)ιδ-ε/ο- 'see' (root **u̯eid-*), λιπ-ε/ο- 'leave' (**leik$^{\mu}$-*), πυθ-ε/ο- 'become aware' (**b^{h}eu̯d^{h}-*), σχε/ο- 'hold' (**seĝ^{h}-*), τεμ-ε/ο- 'cut' (**temh$_1$-*), τραπ-ε/ο- 'turn' (**trep-*).

(iii) Reduplicated aorists: The zero-graded root is preceded by a reduplication syllable, normally with *e*-vocalism, and followed by thematic endings (stem structure **C$_1$e-C$_1$C-e/o-*). On the principles governing the shape of the reduplication syllable, also when vowel-initial roots are involved, see **3.10–3.13**.

Examples (cf. Table 3.1): ἀγ-αγ-ε/ο- 'lead' (root **h$_2$eĝ-*), εἰπ-ε/ο- 'say' ← **u̯e-u̯k$^{\mu}$-e/o-* (**u̯ek$^{\mu}$-*), πε-πιθ-ε/ο- 'persuade' (**b^{h}eid^{h}-*), πε-φν-ε/ο- 'kill' (**g^{uh}en-*).

(iv) Aorists in **-s(a)-* (*s*-aorists): Where the *s*-aorist is a primary (root-based) formation, the root typically shows full-grade vocalism throughout the paradigm. It is suffixed with **-s-* before an 'alphathematic' set of endings, which is ultimately based on the inherited athematic endings (**8.2**: stem structure **CeC-s(a)-*). However, due to regular sound change, the stem marker **-s-* is no longer recognisable in many cases (e.g., νειμα- < **nem-s(a)-*; cf. also **8.18** on 'restituted' intervocalic **-s-*). On the PIE background of the root vocalism, see **8.46–8.52**.

Being the only fully productive aorist type, the *s*-aorist is also used to form secondary (stem-based) aorists next to denominal or deverbal present stems which never had, or have lost, a corresponding aorist.

In these cases, the stem suffix *-*s*- replaces the present-stem suffix (e.g., *-*i̯e/o*-), but otherwise the present-stem structure is replicated (e.g., aor. βασιλευσα- to denominal pres. βασιλευε/ο- 'be king', **8.4**; aor. γραψα- with zero-grade root to γραφε/ο- 'write', **6.28**; cf. also **5.44** on aorists in -ησα- to presents in *-*ei̯e/o*-).

Examples (cf. Table 8.1): δειξα- 'show' (root **dei̯k̂*-), θεινα- 'strike' (**g^{uh}en*-), πεισα- 'persuade' (**b^{h}ei̯d^{h}*-), τεινα- 'stretch' (**ten*-), τρεψα- 'turn' (**trep*-).

A separate stem is used in the aorist passive. Here a suffix -η- or -θη- is added to the root, which is in the zero grade unless it is analogically influenced by the active aorist or the present. For the endings, the athematic *active* set is used. Together with a number of distributional features within the history of Greek and the likely connection of -η- with a PIE stative-intransitive suffix *-*eh*$_1$- (cf. **5.44**), this suggests that the passive use represents a late specialisation of an originally intransitive type. In fact, intransitive but not passive uses of aorists in -(θ)η- are also commonly found, both among deponents and elsewhere, and in Homer middle aorists often still serve in the passive voice. In classical times, the variant -θη- dominates and is the productive counterpart to active/middle -σα-. The origin and genetic relation of -θη- with -η- are controversial (cf. the Epilogue, with fn. 3).

Examples: δειχ-θη- 'be shown' (root **dei̯k̂*-), δο-θη- 'be given' (**deh*$_3$-), μαν-η- 'be mad' (**men*-), τα-θη- 'be stretched' (**ten*-), τραπ-η- 'turn (intr.), be turned' (**trep*-).

1.11 Present Stems

The variety of present-stem types is even greater than that of the aorist ones. The following list is not exhaustive but concentrates on the more prominent formations, most of which will be discussed in greater detail in subsequent chapters. Occasional mention will also be made there of Greek presents in *-*ke/o*- (**8.39**) and *-*se/o*- (**3.2**, **8.29**, **8.41**).

(i) Athematic root presents: As in the root aorist, the root equals the stem; it is followed by athematic endings. Only very few such presents survive with full paradigms in historical Greek, but those that do preserve well the ablaut pattern with a full-grade root in the singular and a zero-grade root in the plural. (On athematic middles like κεῖμαι 'lie' with full-grade root, see **4.34** and **4.44**, fn. 159.)

Examples: εἰ-/ἰ- 'go' (root **h$_1$ei̯*-), ἐσ- 'be' (**h$_1$es*-), φη-/φα- 'say' (**b^{h}eh$_2$*-).

(ii) Thematic root presents: Most thematic root presents have a non-ablauting full-grade root, followed by thematic endings (stem structure **CeC-e/o*-); a much smaller group shows a zero-grade root (**6.28**).

The formation is common and in many cases a thematic root present may supersede a previous athematic one. However, the thematic root present as a *type* must not be regarded as a straight descendant of the athematic root present (**4.34**–**4.44**).

Examples (cf. **4.44**, Table 8.1, Table 8.2): ἀγ-ε/ο- 'lead' (root **h₂eǵ-*), ἐχ-ε/ο- (**seǵʰ-*), λεγ-ε/ο- 'collect, say' (**leǵ-*), λειπ-ε/ο- 'leave' (**leiḱʷ-*), μεν-ε/ο- 'stay, remain' (**men-*), φερ-ε/ο- 'carry' (**bʰer-*).

(iii) Reduplicated presents: There are both athematic and thematic reduplicated presents. The former have a root with full-grade vocalism in the active singular and zero-grade vocalism in the plural and middle, the latter a non-ablauting zero-grade root followed by the thematic vowel, or in some cases the suffixes **-i̯e/o-* (**4.16**) or **-(i)ske/o-* (**8.44**; cf. below). Both types share the reduplication syllable: with consonant-initial roots, this differs from the reduplication syllable of the reduplicated aorist (**1.10**) in showing *i*-vocalism. This feature certainly reaches back to the proto-language, although it need not be equally old everywhere (stem structure athematic **C₁i-C₁eC-/ C₁i-C₁C-*, thematic **C₁i-C₁C-e/o-*). Like the relationship between the thematic and athematic types (**4.19**–**4.21**), this matter will be considered more carefully later (**4.24**–**4.25**).

Examples (cf. Table 4.1): γι-γν-ε/ο- 'become' (root **ǵenh₁-*), δι-δω-/δι-δο- 'give' (root **deh₃-*), ἱ-ζ-ε/ο- 'sit down, seat' (**sed-*), ἱ-στη-/ἱ-στα- 'set up, stand' (**steh₂-*), μι-μν-ε/ο- 'await' (**men-*), τι-θη-/τι-θε- 'put' (**dʰeh₁-*).

(iv) Presents in **-ske/o-*: Presents with the suffix **-(i)ske/o-* > -(ι)σκε/ο- occur either with or without reduplication syllable (cf. above). The non-ablauting root is usually in the zero grade in either case, and the endings are thematic (stem structure **[C₁i-]C₁C-(i)ske/o-*). On the (unclear) origin of the suffix variant -ισκε/ο- next to -σκε/ο-, see **8.44**, with fn. 192.

Examples (cf. **8.43**–**8.44**, Table 8.4): βα-σκε/ο- 'go, come' (root **gʷem-*), βλω-σκε/ο- 'go, come' (**melh₃-*), θνη-(ι)σκε/ο- 'die' (**dʰenh₂-*); ἀρ-αρ-ισκε/ο- 'fit together' (**h₂er-*), γι-γνω-σκε/ο- 'recognise' (**ǵneh₃-*).

(v) Presents in **-i̯e/o-* (*i̯*-presents): Because the suffix **-i̯e/o-* was a highly productive means to form secondary denominal verbs both within Greek and already in Proto-Indo-European, present stems in **-i̯e/o-* are very common. Several composite suffixes, which have become productive in their own right and sometimes yield deverbatives as

well, originate from such denominal items: e.g., -αε/ο- < *-ā-i̯e/o- (*-eh$_2$-i̯e/o-), -αινε/ο- < *-n̥-i̯e/o-, -ιζε/ο- < *-id-i̯e/o- (cf. 8.4; also 5.44 on -εε/ο-).

However, *-i̯e/o- is also a frequent primary suffix. As such it characteristically occurs after a zero-grade root (stem structure *CC-i̯e/o-). Where the root appears in the full grade instead, this is usually because a zero grade would have created phonotactic problems (8.4, 10.33) and/or because the vocalism has been adjusted to other parts of the paradigm, notably a corresponding *s*-aorist (cf. Table 4.2 on τείνω (*ten-), 6.20). Although regular sound change has led to the disappearance of *-i̯- in all positions in Greek, the suffix is recognisable thanks to the phonological effects *-i̯- had on preceding segments.

Examples: ἁλλε/ο- 'jump' (root *sel-), βαινε/ο- 'go, come' (*g$^{\text{u}}$em-), θεινε/ο- 'strike' (*g$^{\text{uh}}$en-), μαινε/ο- 'be crazy' (*men-), νιζε/ο- 'wash' (*neig$^{\text{u}}$-), χαιρε/ο- 'rejoice' (*ĝ$^{\text{h}}$er-).

(vi) Presents in *-e.i̯e/o-: Although there is a remote connection with the *i̯*-presents (5.34), *-e.i̯e/o- was used as an independent primary suffix in both Proto-Indo-European and Greek, with very limited productivity in historical times. Many formations in *-e.i̯e/o- show a non-ablauting root with *o*-grade vocalism (stem structure *CoC-e.i̯e/o-; 5.34–5.39), but some lexemes with a zero-grade root are also found (5.43–5.47). Since certain representatives of the class could be semantically reanalysed as denominal verbs to related *o*-stem nouns (e.g., φοβέομαι 'fear' ~ φόβος 'fear'), *-e.i̯e/o- > -εε/ο- became a denominal suffix, and as such it is still productive in classical Greek.

Examples (cf. Table 5.4, Table 5.5): δοκεε/ο- 'expect, suppose' (root *dek̂-), σοβεε/ο- 'scare away' (*ti̯eg$^{\text{u}}$-), φοβεε/ο- '(act.) scare, (med.) fear' (*b$^{\text{h}}$eg$^{\text{u}}$-), φορεε/ο- 'carry' (*b$^{\text{h}}$er-).

(vii) Nasal presents: Like the *i̯*-presents, the nasal presents come in a variety of subtypes. Apart from the root, the stem always contains a nasal affix (*-n-), but this can be realised as a root infix, a root suffix, or even both. Also, both athematic and thematic variants are frequent; and although sometimes the thematicity of the latter has to be a recent (and occasionally still incomplete) innovation, the situation is too complex to assert that thematic nasal presents were unknown in Proto-Indo-European.[11]

[11] Against today's *communis opinio*, a PIE thematic suffix *-ne/o- was accepted by García Teijeiro (1970: 143), after Meillet (1908/9a: 100–1).

Within Greek, the athematic type is represented by verbs with an ablauting stem in -νη-/-νᾰ- or -νῡ-/-νῠ-. Whereas the former belongs to roots in *-h_2- (typically *-$CeRh_2$-: stem structure *-$C\underset{\circ}{R}neh_2$-/-$C\underset{\circ}{R}nh_2$-; e.g., δαμνη-/δαμνᾰ- 'tame' to *-$demh_2$-), the latter may continue, at least in part, an already PIE suffix *-neu-/-nu- that arose by resegmentation of similarly built nasal-infix presents to roots in *-$\underset{\smile}{u}$-.[12] Since -νῡ-/-νῠ- was a productive suffix, it is no longer restricted, as it was originally, to formations with a preceding zero-grade root (e.g., ζεύγ-νῡ- 'yoke' < *$\underset{\smile}{ieug}$-$nū$- vs. (med.) τά-νυ- 'be stretched' < *$t\underset{\circ}{n}$-nu-).

The thematic type comprises verbs in *-νϝε/ο- > -νε/ο-, which are analysable as thematised versions of the athematic -νῡ-/-νῠ- group (e.g., τῑνε/ο- '(act.) pay, (med.) punish' < *$k^{u}i$-nu-e/o-), but also verbs in simple -νε/ο- behind which thematised variants of nasal presents in *-neH-/-nH- can be suspected (e.g., βαλλε/ο- 'throw' with -λλ- < *-ln-, to *$g^{u}elh_1$-). Because synchronically suffixed nasal presents predominated over infixed ones, a mixed type was created on this basis by addition of *-$n[H]e/o$- – realised as *-$\underset{\circ}{n}e/o$- > -ανε/ο-, notably after *-CC- sequences – to formations that already contained an infixed *-n-[13] (e.g., λιμπανε/ο- 'leave' < *li-n-k^{u}-$\underset{\circ}{n}e/o$-, replacing either athematic *$linek^{u}$-/*$link^{u}$- or thematic *$link^{u}$-e/o-: cf. Ved. *riṇakti* 'leaves' vs. Lat. *linquō* 'leave'[14]). Moreover, next to thematic aorists in particular, the type in -(α)νε/ο- eventually extended its productivity (e.g., λαμβανε/ο- 'take' ~ aor. λαβε/ο-, replacing earlier (Hom.) λαζε/ο- < *$slag^{u}$-$\underset{\circ}{i}e/o$-).

[12] Cf. e.g. Rix (1992: 210); but via 'Cowgill's Law', -νῡ-/-νῠ- also continues *-neh_3-/-nh_3-: see Cowgill (1965: 157), Willi (2012a: 269–70).

[13] This innovation may be shared with Armenian, but the Armenian evidence is at best indirect: see Kuiper (1937: 117), Hamp (1975: 106), and Clackson (1994: 84–5), and on the general recency of the type already Thurneysen (1894).

[14] Stems whose structure is comparable to that of Lat. *linque/o-* < *$link^{u}$-e/o- (to *$l\underset{\circ}{ei}k^{u}$-) are so widespread in Indo-European (cf. e.g. Gr. πυνθάνομαι 'become aware, learn' ~ OIr. *ad·boind* 'gives notice', Lith. *bundù* 'wake up' < *$b^{h}und^{h}$-e/o- to *$b^{h}eud^{h}$-) that it may be wrong to equate the Indo-Iranian athematic type with the Proto-Indo-European one in cases like this. An Indo-Iranian athematisation is by no means excluded (cf. **4.21** for a similar development), and the athematic prototype envisaged by Strunk (1969: 222–6; 1973: 68–73; 1979b) (e.g., *$l\underset{\circ}{ei}nk^{u}$-/$link^{u}$-) clarifies the thematic material no more than *$linek^{u}$-/$link^{u}$- does. The matter will not be fully investigated here, but see the Epilogue for some further remarks. A similar question is whether formations like Gr. φαίνω 'reveal', πλύνω 'wash' < *$b^{h}\underset{\circ}{l}_2$-$\underset{\circ}{ni}e/o$-, *$plu$-$\underset{\circ}{ni}e/o$- require a PIE present class in *-$n\underset{\circ}{ei}$-/-ni- (Sandoz 1974, Praust 2004), rather than just *-$\underset{\circ}{ni}e/o$-. Were it not for controversial evidence for *-$\underset{\circ}{ni}e/o$- (or *-$nH\underset{\circ}{i}e/o$-?) in other branches as well (esp. Ved. -*anyá*-, Hitt. -*annye/a*-: cf. Jasanoff 1983: 74–5 and 2003: 122–6, F. Bader 1987: 132–5, Oettinger 1992 [1994], Lindeman 2001, Meier-Brügger 2005), an inner-Greek remake of *-ne/o- into *-$\underset{\circ}{ni}e/o$- could hardly be doubted (cf. Tucker 1981: 28).

Further examples: δεικνῡ-/δεικνῠ- 'show' (root **deiḱ-*), θῡνε/ο- 'rush' (**dʰeu̯-*), λανθανε/ο- 'escape notice, hide' (?**leh₂dʰ-*), περνη-/περνᾰ- 'sell' (**perh₂-*), ταμνε/ο-, τεμνε/ο- 'cut' (**temh₁-*; 6.20).

1.12 Perfect Stems

Because of intricate restructuring processes within Greek, even a summary account of its perfect-stem formation is complicated; for more detail, see 5.4–5.8. Broadly speaking, we may separate a root-based 'strong' perfect from an innovated 'weak' perfect with κ-suffix in the active voice. Since the latter is an offshoot of the former, without direct comparanda outside Greek, only the strong perfect is relevant for reconstructive purposes.

Except for οἶδα 'know' (5.30), all Greek perfects are reduplicated. Where applicable, the reduplication syllable contains an *e*-vowel. Also shared are the special endings of the active perfect (1.6).

(i) Strong perfects: Although residual paradigms still show root ablaut, with *o*-grade singular vs. zero-grade plural and participle (5.4; stem structure **C₁e-C₁oC-/C₁e-C₁C-*), this has mostly been levelled. As may be expected, it is often the *o*-grade of the singular that has been generalised. However, since the 'active' perfect originally paired with middle presents and aorists (5.9, 5.26; e.g., perf. γέγονα 'have become, am' ~ pres. γίγνομαι) and since this form–function mismatch was partially remedied by the secondary creation of *formally* middle perfects (with zero-grade roots) (5.9), the resulting functional similarity of old active with newer middle perfects could also trigger the generalisation of the zero-grade variant, a development supported by the prominence of the participles in the perfect paradigm. With certain roots (**CeRH-*), the regular outcome was then a long-vowel perfect (e.g., 3sg. med.(-pass.) εἴρηται 'is said' < **u̯e-u̯rh₁-toi̯*); and because independent developments had generated a long vowel also in at least some active perfects, a range of (analogical) long-vowel perfects was built as well (5.7). Finally, in the wake of these, and of the weak κ-perfect, the root shape of corresponding presents was occasionally copied into the perfect (e.g., πέφευγα 'have fled' ~ pres. φεύγω).

Since only the active endings underwent alphathematisation (1.6), root-final stops were regularly assimilated to consonant-initial middle endings (e.g., 3sg. med.-pass. κέ-κρυπ-ται 'is hidden', τέ-τακ-ται 'is arranged' to κρυφ-, ταγ-). The neutralised outcome of labials and velars so affected was then interpreted as representing an underlying aspirate, and root-final (non-etymological) aspiration generalised as a

categorial marker in (new) *transitive* active perfects ('aspirated perfects': e.g., 3sg. act. τέταχε 'has arranged' to ταγ-).[15]

Further examples (cf. **5.4–5.7**): εἴληφ(α)- 'have taken' < **se-slh$_2$g$^{\mu}$-* (root **sleh$_2$g$^{\mu}$-*), κε-κλοφ(α)- 'have stolen' (**klep-*), λε-λοιπ(α)- 'have left' (**leiḱ$^{\mu}$-*), πε-ποιθ(α)- 'trust' (**b^{h}eid^{h}-*).

(ii) Weak perfects (κ-perfects): The κ(α)-suffixed perfect is restricted to the active voice, and in some of the earliest (Homeric) examples to the active singular. Secondary verbs in need of a middle perfect add the relevant endings directly to the verbal base (i.e., the stem without tense suffixes: e.g., 3sg. τε-τίμη-ται 'is honoured' to τιμη-; contrast 3sg. act. τε-τίμη-κ-ε 'has honoured'). As in the strong perfect, where an *o*-graded active may coexist with a zero-graded middle (cf. above), this means that active and middle perfect stems are similar, but not identical.

Apart from being the only perfect formation available to secondary verbs, in classical times the weak perfect also encroached upon the strong perfect in the paradigm of primary verbs (except where a strong perfect was firmly established and/or the addition of the κ-suffix would have caused phonotactic difficulties, notably with roots in a velar or labial). Unlike the inherited perfects and also the older (Homeric) κ-perfects, all such newly-built perfects in -κ(α)- are transitive ('resultative': cf. **5.14**).

On the background and original role of the suffix -κ(α)-, see **5.7** and **6.12**.

Examples: ἔ-σταλκ(α)- 'have sent' (root **stel-*), πε-πεικ(α)- 'have convinced' (**b^{h}eid^{h}-*), τε-θηκ(α)- 'have put' (**d^{h}eh$_1$-*), τε-θνηκ(α)-/τε-θνα- 'be dead' (**d^{h}enh$_2$-*), τε-τληκ(α)-/τε-τλα- 'endure' (**telh$_2$-*).

1.13 Future and Future Perfect Stems

The Greek future is built with a thematic *s*-suffix. In the active voice and middle voice of primary verbs, this is added directly to the root, which shows a full grade unless it has undergone analogical levelling from the present or aorist stem (stem structure **CeC-se/o-*). Save for the thematic nature of the future, this means that future and *s*-aorist stems coincide (e.g.,

[15] The exact mechanism of this innovation has caused much debate: apart from the handbooks, see Osthoff (1884: 284–91), J. Schmidt (1885; 1887), Meillet (1905/6: 50–2), Kent (1941) (against Sturtevant 1940a), Christol (1972), Ringe (1984), Slings (1986). Based on Christol, but responding to the objections of Ringe (1984: 130), it seems most promising to assume that, because aspirate-final roots yielded forms like 3sg. med. ἔστραπται (< **-p^{h}-toi̯*, to στρεφ- 'turn') vs. 3pl. med. ἐστράφαται (< **-p^{h}-n̥toi̯*), the middle 3pl. ending was taken to include a feature [+aspirating] and then, as /-^{h}ataı̯/, extended to other roots (e.g., 3pl. τετράφαται, to τρεπ- 'turn'). Thus transformed into a categorial marker, the aspiration was transferred from the frequent middle/passive to the corresponding active voice.

fut. δειξε/ο- 'will show' ~ aor. δειξα-), and that many futures are formally indistinguishable from *s*-aorist subjunctives before the latter generalise the subjunctive's characteristic long-vowel marker (**1.7**).

There is, however, some discussion as to whether the future suffix is in origin just **-se/o-* and not rather **-h₁se/o-*, with loss of **-h₁-* in certain environments. The main language-internal argument for the latter assumption comes from the so-called Attic (or 'contract') futures to roots/bases in nasals and liquids (type μενῶ 'I will stay' < μεν-εε/ο-). These regularly feature a suffix **-ese/o-* > **-ehe/o-* > **-ee/o-* (with *no* analogical restitution of **-s-*, but vowel contraction); and this allows a reconstruction **-h₁se/o-*, no matter if the laryngeal involved always formed part of the suffix or was missegmented from roots in **-h₁-*. In the West Greek dialects, the future in **-h₁se/o-* > **-ese/o-* was generalised so that the future marker **-s-* is virtually repeated in stems like δειξεε/ο- (as if from **-s-ese/o-*: 'Doric future'). See further **8.15–8.19**, also on the tendency of the Greek future to inflect medially and on some exceptional asigmatic futures.

Further examples: δωσε/ο- 'will give' (root **deh₃-*), ἐλευσε/ο- 'will come' (**h₁leu̯dʰ-*), ἐρεε/ο- 'will say' (**u̯erh₁-*), λεξε/ο- 'will collect' (**leĝ-*), στελεε/ο- 'will send' (**stel-*).

A future passive which is formally distinct from the middle is only gradually developing; in Homer it is still all but inexistent. The formation combines the passive-intransitive aorist stem in -(θ)η- (**1.10**) with the future suffix -σε/ο-. In classical Greek, the endings used are the middle ones, in line with the tendency just mentioned but in contrast with the aorist in -(θ)η-.

Examples (cf. **1.10**): δειχ-θη-σε/ο- 'will be shown', δο-θη-σε/ο- 'will be given', τραπ-η-σε/ο- 'will be turned'.

The rare future perfect stem also uses the suffix -σε/ο-, adding it to the perfect stem (in the case of secondary κ-perfects without the -κ(α)- suffix). However, this formation almost exclusively occurs in the mediopassive, and not with all perfect stems. Elsewhere, and throughout the active voice, the future perfect is formed periphrastically (perf. ptcpl. + fut. of εἰμί).

Examples (cf. **1.12**): κεκρυψε/ο- 'will be hidden', τεθνηξε/ο- 'will be dead', τεταξε/ο- 'will be arranged'.

1.14–1.15 Non-finite Forms

1.14 Participles and Verbal Adjectives

In addition to the finite forms, there are participles and infinitives to all the 'tense' stems. Whereas some of the participles will occasionally be referred

to in the following chapters, the infinitives are mentioned here only to complete the survey.

Active participles are built with an athematic suffix -(ο)ντ- < **-(o)nt-* (fem. **-(o)nt-ih*$_2$*-* > **-(o)nti̯ă̄-*), middle ones with a thematic suffix -(ο)μενο/η- < **-(o)meno/ā-* < **-(o)mh*$_1$*no/eh*$_2$*-* (*s*-aor.: -(σ)α-μενο/η-). Where there is a separate passive, the participial form selected corresponds to the set of finite endings used (cf. 'active' -(θ)ε-ντ- in the aorist passive). Also, just as there are separate finite endings in the active perfect, so the active perfect participle has its own suffix **-u̯os-* (fem. **-us-ih*$_2$*-* > **-usi̯ă̄-* > -υια-). In post-Mycenaean times, but already in archaic Greek, this appears as remodelled **-u̯ot-* > -(ϝ)οτ- (except in the endingless nom.-acc. ntr. sg. -(ϝ)ος; the long-vocalic masculine nom. -(ϝ)ως is ambiguous).

As expected, the active participle to thematic stems shows invariant **-ont-* (e.g., φεροντ- 'carrying' < **b*^{h}*er-o-nt-*). In most athematic stems, we similarly find invariant **-nt-* (e.g., *s*-aorist: -σαντ- < **-s(a)-nt-*; aor. in -(θ)η-: -(θ)εντ- < **-(t*^{h}*)ē-nt-*; pres. in -νῡ-/-νῠ-: -νυντ- < **-nu-nt-*). However, there are traces of an older state of affairs with ablaut in the suffix (**-ont-/-nt-*): see especially the present participle of athematic εἰμί 'am', Ion. ἐοντ- (Att. ὀντ-) < **h*$_1$*(e)s-ont-*, with dialectal fem. ἐασσα- < **h*$_1$*s-n̥ti̯ă̄-*.[16] In the perfect participle, only the derived feminine stem still reflects the erstwhile ablaut variant **-us-* of **-u̯os-*.

Functionally similar to the perfect (medio)passive participle is the verbal adjective in -τό- < **-tó-*. When formed to primary verbs, this normally adds the suffix to the zero-grade root (e.g., τατό- 'stretched' < **tn̥-tó-*, to **ten-*; cf. perf. pass. ptcpl. τεταμένο- 'stretched'). A parallel formation is the deontic verbal adjective in -τέο-, which has no direct correspondent outside Greek (e.g., τατέο- 'to be stretched').[17]

1.15 Infinitives

Among the Greek infinitive formations there is some dialectal variation. As a rule, they continue case forms of verbal action nouns, which were grammaticalised as infinitives in the strict sense only in Proto-Greek.

In classical Greek (Attic-Ionic), the normal athematic active infinitive ends in -(ε)ναι (≠ Hom., Dor. -μεν; Hom. -μεναι by contamination), the thematic one in -ειν < **-e-sen* (e.g., athematic ἰ-έναι 'to go' to **h*$_1$*ei̯-*, δοῦναι < **do-enai̯* 'to give' to **deh*$_3$*-*; thematic φέρειν 'to carry' to **b*^{h}*er-*). While the endings

[16] For more detail on this participle, see Morpurgo Davies (1978) and Meier-Brügger (1999); cf. also **10.9** on the wider question of PIE participial ablaut, and **6.6,** fn. 27, on (probably secondary) forms with *e*-grade in the suffix. Note that among the nasal presents, **-nu-ont-* would probably also have resulted in **-nunt-* (via **-n(u)u̯-ont-* and 'Cowgill's Law').

[17] For discussion of the (controversial) origin of this formation, see Willi (2009b).

without -αι may be traced back to endingless locatives, of abstract nouns in **-s-en-* and **-m-en-* respectively, the explanation of -(ε)*ν*αι as an old dative – of yet another abstract noun in **-en-* (?) – is phonologically difficult. Possibly the regular dative ending **-ei̯* was adjusted to **-ai̯* under the influence of another active infinitive, in -(σ)σαι < **-dʰi̯eh₂-i*, locative of a further abstract noun in **-dʰi̯eh₂*. Gr. -(σ)σαι is associated with the *s*-aorist in historical times, but comparative evidence (Ved. inf. (< dat.?) *-(a)dhyai* in e.g. *bhára-dhyai* 'to carry') suggests that this is a secondary restriction due to the superficial similarity of -σαι with the *s*-aorist suffix -σα-. Such a view would be strengthened if the middle infinitive ending -σθαι (thematic -εσθαι) were somehow descended from an originally voice-neutral -(σ)σαι:[18] for -(ε)σθαι is used in all 'tense' stems.

1.16–1.18 Approaching Prehistory

1.16 Comparative (External) Observations

If we want to understand not only how the verbal system of Ancient Greek worked in synchrony but also how its richness is to be explained in diachrony, we may approach this question from two complementary angles, an external and an internal one. Externally, the comparison with the verbal systems of related Indo-European languages immediately reveals that the Greek situation is by no means 'normal'. A language like Latin, for example, still shows much more morphological complexity in its verbal inflection than, say, modern English, but its categorial layout is noticeably simpler than that of Greek: there is no dual number, no optative mood, no aorist 'tense', and no middle voice. Vedic Sanskrit, on the other hand, does provide a good match for Greek. In fact, the homologies between the Greek system and that of Vedic are so remarkable, in terms of both categories used and formal expression assigned to them, that the reconstruction of the verbal system of Proto-Indo-European has traditionally been based on these concordances more than anything else. It is thus no coincidence that Vedic comparanda have featured prominently in the preceding sections. Also, it has long been recognised that if we posit for Proto-Indo-European a verbal system similar to the one observed in Greek and Vedic,

[18] See in this sense Rix (1992: 239), who adds that 'the genetic process is unclear'; Sihler (1995: 609–10). In 10.14, it will be argued that 2sg. med. **-sai̯* > -σαι may have replaced **-s-tʰai̯*. If this process was completed only when **-dʰi̯ai̯* had also become **-sai̯*, the **-sai̯* ~ **-stʰai̯* equivalence in the 2sg. middle could have triggered the introduction of **-stʰai̯* as a variant of **-sai̯* in the infinitive as well. In the 2sg., **-stʰai̯* would then have disappeared, whereas in the infinitive the voice differentiation between act. **-sai̯* (surviving in the *s*-aorist: see above) and med. **-stʰai̯* would have been established. Obviously, much is uncertain here.

we can without difficulty derive from it the verbal systems of languages like Latin. This is all the more true since the processes of categorial simplification that tend to be involved have often left in the historical data unmistakable morphological traces of the earlier state of affairs. To give but one example, although there is no longer a *categorial* separation of aorists and perfects in Latin, the Latin perfect stems are a mixed group consisting of stems that match either aorist or perfect stems in Greek or Vedic.

And yet, Greek and Vedic are of course not identical. Discrepancies that go beyond what is predictable from the different phonological developments affecting Greek and Indo-Iranian therefore have to be accommodated in our reconstruction of Proto-Indo-European. If, say, the future formations of Greek and Vedic do not correspond to each other, we have to decide whether we believe that Proto-Indo-European had (a) two different future formations, each of which survived in one branch but not the other, (b) only one future formation, which is continued in one branch whereas the other has innovated, or (c) no future formation that is ancestral to those of Vedic and Greek, so that both branches have innovated independently. In order to choose between these scenarios, evidence in other languages will be of great help. But often language-internal clues may already point in the right direction – as when we see that one of the candidate formations is still in its infancy and only gradually expanding in the branch in which it occurs. In other words, even the most rigorous comparative reconstruction must never forget the many things philology can tell us.

1.17 The Anatolian Challenge

As long as all ancient (or modern) Indo-European languages could be accommodated, like Latin, within an essentially Greek/Vedic-based (i.e., 'Graeco-Aryan') framework, there was little incentive to look beyond the proto-language thus reconstructed. This is not to say that scholars never tried to do it, for the morphological intricacy of this Graeco-Aryan Proto-Indo-European provided fertile ground for further, 'internal', reconstruction (cf. **1.18**). The real game-changer, however, came with the decipherment of Hittite, and with it the discovery for comparative linguistics of the Anatolian branch of Indo-European.

At first sight, the verbal system of Hittite may also look like an impoverished version of the Graeco-Aryan one, as it contents itself for instance with just two tenses (present, preterite) and two moods (indicative, imperative). That Hittite is attested relatively early – though not *that* much earlier than the earliest layers of Greek and Vedic – does not of course invalidate such a supposition. In the linguistically diverse world of ancient Anatolia, sociocultural factors like language contact with non-Indo-European idioms could easily account

for accelerated systemic simplification. The real issue is a different one. Certain morphological features of the Hittite (and Anatolian) verbal system are not straightforwardly derivable from Graeco-Aryan Proto-Indo-European; but neither are they so completely alien that a non-Indo-European source must be envisaged. The most important such feature is the existence of two separate conjugation classes, one in (1sg.) *-mi*, the other in *-ḫi*. Although this dichotomy is unattested elsewhere in Indo-European, the inflectional characteristics of both classes have unmistakable correlates in the Graeco-Aryan system. Once Anatolian is added to the dossier, the task is therefore to 'adjust' the Graeco-Aryan reconstruction in such a way that it also accounts for any recalcitrant data. And if it is indeed the case that the Anatolian idiosyncracies are such that they cannot easily have developed from a 'Graeco-Aryan' starting point, it becomes unavoidable to extend the reconstruction of Proto-Indo-European into a more distant past, to a point when there was a common ancestor of both the Anatolian system and that of Graeco-Aryan Indo-European – whether or not that ancestor is then given the label 'Proto-Indo-Hittite' (**2.8**).

1.18 Systemic (Internal) Observations

While the advent of Anatolian has thus led to intense scrutiny of traditional 'Graeco-Aryan' models of Proto-Indo-European, often prompting fundamental revisions (**2.8**–**2.16**), it would be wrong to assume that without Anatolian the Graeco-Aryan reconstruction would not have invited further thought. As mentioned above (**1.17**), its very nature calls for internal as well as external clarification.

In **1.1** we started our survey of the Greek verbal system by setting out not only how its grammatical categories, for all their diversity, are functionally well-ordered, but also how substantial formal economy is achieved within them. However, Ancient Greek is not as simple as it could be, even without abandoning its categorial layout. The descriptive overview provided in **1.2**–**1.15** immediately shows some areas in which there is a serious lack of linguistic economy. In particular, the following features are noteworthy:

(i) there are athematic and thematic inflections/endings (**1.3**–**1.5**), without a difference in function, and the relation of the thematic 'primary' 1sg. ending (**-oH* > -ω) to its athematic counterpart (**-mi* > -μι) does not formally match the same relation in other persons like the 3sg. (**-e-ti* > -ει : **-ti* > -σι);

(ii) the perfect has a (partly) separate set of endings (**1.6**) when its stem is already distinctive on its own (**1.12**);

(iii) the original subjunctive stem formant **-e/o-* is indistinguishable from the stem formant of thematic indicatives (**1.7**);

(iv) there are four different types of aorist stems, the use of which is lexically rather than functionally determined (**1.10**);
(v) there are even more different types of present stems, occasionally with but more often without a clear-cut functional division of labour (**1.11**);
(vi) certain aorist-stem formations are identical to certain present-stem formations (**1.10**–**1.11**); and
(vii) the future-stem formant -σε/ο- is identical to the stem formant of the oldest layer of *s*-aorist subjunctives (**1.13**).

Among these, features (iii), (vi), and (vii) form a group. They are instances where there is too *little* formal differentiation to achieve an ideally economical 1:1 form–function relationship. They could therefore perhaps be explained as due to chance: since there is only a limited number of simple formal elements which a language can assign to its functional categories, some overlap may be unavoidable. But with features (i), (ii), (iv), and (v), there are also areas in which there is too *much* formal differentiation. And since all of these are features where reconstructed 'Graeco-Aryan' Proto-Indo-European matches historical Greek, they constitute the classical input for 'internal' reconstruction, under the premise that a language may tolerate redundancies when they arise from systemic rearrangements, but not actively create such redundancies *ex nihilo*.[19] In other words, whether we start from Greek or 'Graeco-Aryan' Proto-Indo-European, the synchronic set-up of the grammatical system calls for additional diachronic elucidation by whatever method is feasible: comparative reconstruction where 'outside' evidence like that of Hittite is available, and internal reconstruction where it is not but where the general (typological) principles of language development and change still allow us to make inferences that are no less controlled than those based on the comparative method.

1.19 Agenda

1.19 Agenda

In the following chapters, we will thus try to form a better understanding of how the Greek verbal system came to be what it is in historical times. In order to achieve this, we must take into account not only the wealth of comparative data at our disposal, but also the systemic shortcomings highlighted in **1.18**. In fact, our ability to explain the genesis of these

[19] According to Bechert (1962), the extent of uneconomical form–function relationships in the older Indo-European languages is typologically remarkable; but even if it were not (as implied by Di Giovine 1999: 35–6, 44), it is not clear why internal reconstruction should be less applicable to a proto-language than to historical idioms (Di Giovine 1997a: 19–22). Against such doubts, the method is justly defended by Rix (1986: 6–7), Morpurgo Davies (1994: 262–3), and Bauer (2009).

shortcomings within an overall model of Indo-European morphosyntactic evolution must constitute a crucial measure of success for a study entitled 'Origins of the Greek Verb'.

As in the present chapter, our aim will not be to reiterate well-known facts of late-PIE or Proto-Greek comparative morphology. To the extent that these are not covered by the above overview, they can be looked up in many reliable handbooks (**1.1**). Such matters will be discussed only if and where they have a direct impact on the broader argument. Similarly, all established principles of comparative phonology will be adhered to – so much so that a certain amount of anachronism may result when forms in earlier phases of Proto-Indo-European are given as if we could take it for granted that the phonology of that period was identical to that of later Proto-Indo-European.[20]

Instead, the focus throughout this book will be on the history of the verbal system *as a system*: how the historical categories come into being, interact, and are formally and functionally renewed. This too has been discussed before, of course, but in comparison with the vast amount of secondary literature on individual topics and problems, relatively little effort has been made to present such a larger picture in any detail. Some of the more influential and prominent Indo-Europeanist theories on what is probably the single most burning issue, the historical interrelation of aspect and tense, will be reviewed in Chapter 2, in preparation for our own exploration of the subject. Chapters 3–5 will then concentrate on reduplicated 'tense' stems, arguing that reduplication played an important role in the evolution of aspect in Indo-European. Chapters 6–8 will complement these by looking at the systemic position of a range of unreduplicated tense/aspect stems and stem features that are not covered in the earlier part but whose traditional explanation has to be revisited in the light of the preceding discussion. In Chapters 9–10, the results will be integrated in a wider typological framework: while most scholars studying the development of Indo-European verbal grammar have been neglectful of the long-standing debates about early PIE alignment, it will be shown that these questions too are key to a comprehensive and internally coherent reconstruction. Finally, a short Epilogue will highlight certain issues that are left open, make a few suggestions as to how they might be addressed in the future, and draw some general conclusions.

[20] Judgment is thus suspended, in particular, on the 'glottalic theory' (cf. Mayrhofer 1986: 92–7). If, say, a notation **t, *d, *dʰ* is adopted for what 'glottalicists' would note as **t(ʰ), *t', *d(ʰ)* at least at earlier stages of PIE, this is done for the sake of clarity and not meant to imply a categorial rejection of the latter reconstruction.

CHAPTER 2

From Greek to Proto-Indo-European

2.1 Introduction

2.1 Competing Theories

Ever since the beginnings of modern comparative philology, scholars have asked how best to explain the bewildering formal variety and structural complexity we encounter in the verbal system of Indo-European languages such as Ancient Greek. A history of these investigations would fill a book, not least because there is hardly any point on which complete consensus has been reached. Looking back over the past few decades, it seems however possible to distinguish some particularly prominent lines of thought, which are often associated with one or two specific names although of course all of them are equally rooted in the long history of the discipline. The present chapter will briefly review some of these 'main' theories, paying particular attention to overlaps and disagreements and also to their respective advantages and disadvantages. As we shall see, one key issue in most of them is the relationship between (grammatical) aspect, tense, verbal stem formation, and lexical *Aktionsart* (or 'lexical aspect'); but the origins of voice too have become an important matter of debate.

2.2–2.7 The 'Hoffmann–Strunk Model'

2.2 Hoffmann's Graeco-Aryan Premise

A good starting point for our survey, and still one of the most influential treatments of the topic, is Karl Hoffmann's incisive article on the categorial system of the Indo-European verb.[1] In this piece, Hoffmann set out from the premise that the reconstruction of PIE verbal grammar should be most deeply informed by the evidence of Greek and Indo-Iranian (cf. **1.16**). Although Hoffmann's defence of this 'bias' reflects his

[1] Hoffmann (1970); cf. also the summary by Haug (2008: 63–5).

Indo-Iranian interests, the formulation makes it clear that Greek must be regarded as an equivalent partner:

> The totality of the morphological facts that can be ascertained in their relation to the grammatical and noematic categories makes the verbal system of Vedic appear to be largely well-founded and consistent. Now, it is known that most of the morphological paradigms and classes of Vedic have their respective correspondents in one or several other Indo-European languages: they thus turn out to be inherited from Proto-Indo-European. Put the other way round, this means: the relevant morphological paradigms and classes of Vedic already belonged to Proto-Indo-European. The individual formation patterns of this Proto-Indo-European stock which are preserved in other Indo-European languages do not as a rule contradict the syntactic usage that can be inferred from Vedic; moreover, Greek shows a far-reaching similarity in the overall structure of its verbal system. Hence, one cannot but suspect that the internal consistency of the Vedic verbal system and its Greek correspondent is descended in its entirety from Proto-Indo-European.[2]

2.3 Root Formations and Root (A)telicity

Against this background, Hoffmann grounds his reconstructive proposal in one particularly striking homology of the Greek and Indo-Iranian verbal systems: the existence in these branches of two general types of present (imperfective) and aorist (perfective) stems (cf. **1.10–1.11**). On each side of the aspectual divide, we find

(i) root formations, which consist of nothing but a verbal root and personal endings; and
(ii) characterised formations, which consist of a verbal root, a 'characterising' affix, and personal endings.

Of special interest is the aspectual 'indeterminacy' of group (i). Since the personal endings are not aspectually distinctive (cf. **1.2**), Hoffmann concludes that the classification of any individual root formation as either perfective (i.e., as a 'root aorist') or imperfective (i.e., as a 'root present') must have depended on the lexical meaning of the root involved. In this context, Hoffmann distinguishes between durative (e.g., 'search'), punctual (e.g., 'find'), momentative (e.g., 'stand up'), and terminative (e.g., 'come')

[2] Hoffmann (1970: 26–7) (translated); similarly Eichner (1975: 71–2): 'The special importance assigned to Aryan and Greek in Indo-European studies is due to the fact that in these languages the presumptively old system has undergone fewer substantial transformations and losses than elsewhere, that the original functional mechanism has partly stayed alive and may be concretely observed in the texts. It would be a misunderstanding therefore to speak of a specifically Aryo-Graecan tendency in the traditional reconstruction of the verbal system at the expense of the other evidence.'

roots. However, only the difference between the first and the latter three types is truly essential for his further argument; for Hoffmann's 'durative' refers to what may also be called 'atelic', and his 'punctual', 'momentative', and 'terminative' may be subsumed under the label 'telic' since in each case the denoted eventuality has a temporal boundary (τέλος). 'Telic roots' would thus yield root aorists because their inherent semantic boundedness aligns with the conceptual boundedness or 'complexivity' of the perfective aspect (cf. **1.9**, **4.4**), whereas 'atelic roots' would yield root presents because their lack of semantic boundedness matches the notionally similar 'non-complexive' or 'cursive' nature of the imperfective aspect.[3] Examples for the former would include **deh$_3$-* 'give', **steh$_2$-* 'take a stand', **d^{h}eh$_1$-* 'put', etc. (with the root aorists (3sg.) **(h$_1$e-)deh$_3$-t* 'gave', **(h$_1$e-)steh$_2$-t* 'took a stand', **(h$_1$e-)d^{h}eh$_1$-t* 'put' >⟶ Gr. ἔδωκε, ἔστη, ἔθηκε; **1.10**), examples for the latter **h$_1$ei̯-* 'go' or **h$_1$es-* 'be' (with the root presents (3sg.) **h$_1$ei̯-ti* 'is going, goes', **h$_1$es-ti* 'is' > Gr. εἶσι, ἐστί; **1.11**).[4]

2.4 Radical or Phrasal Telicity?

Unfortunately, in order to make them fit the theory, the primary meaning of a number of roots must be adjusted in an *ad hoc* manner. That a root **steh$_2$-* should originally have meant (telic) 'take a stand' rather than (atelic) 'stand' may be acceptable, even if 'stand' looks like the more basic notion which one might perhaps expect to appear in the root formation. More artificially, though, Hoffmann also has to posit punctual primary meanings such as 'take a step' or 'take a sip' instead of 'go' and 'drink' for roots like **g$^{\mu}$eh$_2$-* (root aor. **(h$_1$e-)g$^{\mu}$eh$_2$-t* > Gr. ἔβη 'went') or **peh$_3$-* (root aor. **(h$_1$e-)peh$_3$-t* > Ved. *ápāt* 'drank'). Yet, this need not trip up the theory. What Hoffmann fails to note[5] is that (a)telicity is often a matter of entire phrases rather than individual verb forms. For example, Engl. *go home* or *drink a glass of beer* are telic, as the two

[3] See in this sense already Delbrück (1897: 74–6), Meillet (1922d: 70–5), or Safarewicz (1965); later e.g. W. P. Lehmann (1974: 144), Risch (1985: 408), García Ramón (2002: 109–12). However, already Meltzer (1904/5: 229) remarked that 'in any case Delbrück has hardly provided a real proof for the punctual nature of his roots', and he stressed 'that punctual and perfective . . . are not the same' (cf. **4.6**). More questionably, Drinka (1995b: 146–7) claims that Vedic root aorists "showed almost the same proportion of durative to punctuative meanings" as root presents.

[4] Hoffmann (1970: 30) also mentions **h$_1$ed-* 'eat' (3sg. **h$_1$ed-ti* > Ved. *átti* 'eats'), where the situation is less clear. Some would posit an 'acrostatic present' (**3.40**) next to a root aorist (cf. *LIV* 230–1, s.v. **h$_1$ed-*, after Kümmel 1998: 203–4 and others), although the evidence is not strong (e.g., Lat. subj. *edim* 'I shall eat' may well show analogical **(h$_1$)ed-* for **(h$_1$)d-*).

[5] Instead, he envisages semantic analogies: 'If such meanings [e.g., "went", "drank" for ἔβη, *ápāt*] have developed in the Indo-European daughter languages, this is due to the fact that, by the addition of formants – e.g., in creating the present stem –, semantic changes were triggered which led to a simultaneous change of the *Aktionsart*' (Hoffmann 1970: 31).

eventualities come to a natural end when home is reached and the glass is empty. In other words, one may retain 'go' and 'drink' as the fundamental meanings of **g$^{\text{u}}$eh$_2$-* and **peh$_3$-*, but assume that these roots occurred often enough in telic phrases to ensure the classification of the respective root formations as root aorists. In order to capture this, it may be best merely to speak of *prototypically* telic roots (cf. further **5.19**).[6]

2.5 Characterised Stems and *Aktionsarten*

Things become more complicated when we turn to the characterised stems (group (2) in **2.3**). According to Hoffmann, all of the stem formants used here must have made a distinct contribution to lexical semantics at some point in the remote past. In the historical period, however, this is often no longer visible. For example, the formant **-s-* of the *s*-aorist δειξα- (**1.10**) endows the root **deiḱ-* with the grammatical value [PERFECTIVE], but the root's lexical meaning 'show' is not affected by this; and similarly, the formant **-i̯e/o-* of the *i̯*-present βαινε/ο- 'go' (**1.11**) specifies the value [IMPERFECTIVE] for the root **g$^{\text{u}}$em-*, but again the lexical – as opposed to grammatical – semantics remain unchanged. The one exception, where the original situation is said by Hoffmann still to be recognisable, concerns the reduplicated presents: these are alleged to share an iterative-durative *Aktionsart* conveyed iconically by their reduplication. So, for example, Ved. 3sg. *píbati* ~ Lat. *bibit* 'drinks' (< **pi-ph$_3$-e-ti*) is to be explained as *'takes a sip repeatedly' ("wiederholt einen Schluck tun"). But since these matters are not fully explored by Hoffmann, one is left to wonder why, say, Gr. ἵστησι ~ Lat. *sistit* 'sets up' agree in their factitive meaning (*'makes stand'), but diverge from Ved. *tíṣṭhati* 'steps, takes a stand': after all, only the latter meaning can (more or less) result from an iterative-durative 'take a stand (repeatedly)'.[7]

2.6 Strunk on the Genesis of Tense and Aspect

Leaving aside such quibbles, we must pose the more fundamental question of how to explain the functional distribution that is observed in historical

[6] Cf. already Pedersen (1904: 220–2). Precisely because of the aspectual classification of Indo-European root formations, Bartolotta (2009) and (2016) argues that telicity should *also* be seen as an inherent property of lexical roots, but for her too this results from them being "naturally associated with one *prototypical* syntactic context" (italics added). In Homeric Greek, Napoli (2006: 85–128, 190; 2007) makes out a comparable tendency of durative process verbs to select the aorist when they occur in telic phrases.

[7] Importantly, the Vedic meaning can be explained as analogical more easily: cf. *LIV* 590–1, s.v. **steh$_2$-* ('originally probably factitive; . . . the meaning "to take a stand" has been transferred from the root aorist'), and see further Table 4.1, **4.32**.

times. If we concentrate on one typical pattern and abstract from secondary remodellings and suppletion phenomena, we may acknowledge with Hoffmann that either a root aorist pairs with a characterised present (e.g., root aor. **d^{h}eh$_{1}$-* >⟶ Gr. θη(κα)- : reduplicated pres. **d^{h}e/i-d^{h}eh$_{1}$-* > Gr. τιθη- 'put'), or a root present with a characterised aorist (e.g., (thematic) root pres. **h$_{2}$eĝ-e/o-* > ἀγε/ο- 'drive, lead' : reduplicated aor. [**h$_{2}$e-h$_{2}$ĝ-e-t* ⟶] **h$_{2}$ĝ-h$_{2}$ĝ-e/o-* > ἀγαγε/ο-). If, according to Hoffmann, differences of grammatical aspect have superseded differences of *Aktionsart* here, his ideas naturally lead to the conclusion that *Aktionsart* distinctions preceded aspect distinctions in Indo-European prehistory. So is it possible to identify a trigger for the rise of aspect?

While Hoffmann himself did not spell out his thoughts on the origins of the new aspectual shape of Proto-Indo-European, he probably had in mind (something like) the development subsequently detailed by Klaus Strunk.[8] Accepting Hoffmann's overall views, Strunk highlights the Indo-European marking of the present tense by means of the 'primary' endings with added **-i* (**1.2**). This **-i* he plausibly takes to have been used at first only in progressive 'actual presents' (e.g., *John is singing [now]*; cf. 7.30, with fn. 131):

> Thus, PIE **weĝ^{h}e-ti* (Ved. *váhati*, Lat. *vehit*, OCS *vezetъ*) with marked ('primary') ending **-ti* meant 'is carrying'. A corresponding form with unmarked ('secondary') ending such as **weg^{h}e-t* (Ved. inj. *váhat*), however, either meant '(usually) carries' without any reference to actual time; or it meant 'was carrying' with reference to the past, optionally specified by prefixation of a former temporal adverb **e-*, i.e., the augment of some south-eastern IE languages (Ved. impf. *ávahat*). On the contrary, since root-verbs with non-durative or punctative semantic characters expressed actions and events being conceived of as momentarily effected, they could do so only in injunctive or preterite forms. It would have been paradoxical to designate such actions or events by present tense forms. For these – as long as

[8] Strunk (1994a); cf. Di Giovine (1997b: 326–7), Clackson (2007: 134–5). Drinka (1995b: 152–6) implausibly ascribes the same consequences to the introduction of the augment rather than 'primary' **-i* and therefore has to claim that aspect never existed in augment-free Western Indo-European (and that the augment was a past-tense marker: but see **7.11**). Already before Strunk, ideas like his were voiced by scholars such as Porzig (1927: 153), Velten (1933), Safarewicz (1963a), Adrados (1971: 112–13; 1974: 1.213–23; 1981: 109–11), Lazzeroni (1980: 48–52), and Back (1991). Adrados, however, restricted the aspectualisation process to Proto-Greek, or at best Central Proto-Indo-European (Adrados 1974: 1.273–9), and assumed arbitrary 'semantisation' processes for previously 'meaningless' formants (cf. **8.9**, fn. 31). By contrast, essential disagreement is voiced by Giannakis (1993), Hewson and Bubeník (1997: 245–7), and Napoli (2006: 210–12), who all think that aspect must be older than tense; but they fail to explain what made this or that root/stem formation perfective (or not) before tense distinctions came into being: it cannot have been a stem's (prototypical) telicity if, say, the nasal present stems are imperfective when they are just as telic as the average root aorist (cf. below and the Epilogue, with fn. 7).

> the category 'injunctive' was also still alive – normally presupposed the unfolding of an actual event synchronous with that of a speaker's wording it. Thus injunctive and preterite forms of the type **g^{w}eh$_2$-t* (Ved. *gāt*) '(usually) takes a step' and **(e)g^{w}eh$_2$-t* (Ved. *ágāt*, Gr. ἔβη) 'took a step' were quite natural. Present forms such as *$^{+}$g^{w}eh$_2$-ti^{+}* 'is taking a step', however, were impossible and never coined, because their punctative root-meaning ('verbal character') and the function of the present tense excluded each other.[9]

A certain paradox is undeniable here. Modern English is the perfect example of a language with a formal distinction between progressive/actual and non-progressive/general presents. And yet, Strunk comfortably glosses the allegedly "impossible" **g^{u}eh$_2$-ti* with the English progressive present "is taking a step". This is because even notionally "punctative" eventualities can be conceptualised as extending beyond the point on which they focus – to say nothing of *non*-punctative telic eventualities such as *drink a glass of beer*.[10]

One could perhaps try to save Strunk's argument by postulating for Proto-Indo-European a particularly strong aversion to such extended conceptualisations of punctative eventualities, and of telic eventualities more generally. But in doing so one would run into another difficulty as soon as Strunk turns to the rise of aspect:

> Secondly, if an action or event referred to by a punctative or non-durative verbal root was nevertheless to be expressed in the present tense, such a root previously had to be either enlarged or replaced. Roots enlarged by different affixes or by the nasal infix yielded differently marked present stems. The 'Aktionsarten' thereby effected had – unlike the underlying roots – not punctative, but iterative, intensive, inchoative, terminative etc. meanings. In this way, the respective verbs could adopt primary endings, that is, they could be used in the present tense. Or, for the same purpose of present forms being rendered possible, punctative root-lexemes were replaced by others which were partly synonymous, but not punctative. This procedure is known as 'suppletion'.[11]

[9] Strunk (1994a: 420); similarly Back (1991: esp. 285, 299).

[10] But as Ö. Dahl (1985: 91) points out, the labels 'progressive' and 'durative' must not be mixed up anyway. Hence, Haug (2008: 65) also remarks that "[o]n typological grounds, it seems unlikely that telic verbs could not form a present in PIE", without pursuing the matter further; nor does Bartolotta (2016) really address the issue. Pooth (2009a: 397–400) seeks to avoid the obstacle by postulating that only 'totally terminative' roots (e.g., 'find') never formed a 'progressive' with **-i*; but many root aorists do not have pertinent semantics, and for these it therefore remains unclear why affixed imperfective stems should have been preferred to simple forms in **-i* in the incipient aspect/tense system.

[11] Strunk (1994a: 421).

In other words, even according to Strunk the Proto-Indo-Europeans occasionally wanted to refer to telic eventualities in the (actual) present tense. But if this is so, why did they not do it by building forms such as **gᵘeh₂-ti*, but instead resorted to formations that initially had a (slightly) different lexical meaning (such as **gᵘi-gᵘeh₂-ti* >→ Ved. *jígāti* 'strides'; cf. Hom. βιβάς 'striding', Table 4.1). This might perhaps make sense if the substitute stems had lost their distinctive (iterative, intensive, etc.) nuance and become synonymous with the root formations. However, for Strunk's theory it is essential that this was not the case: for outside the present – in the pre-aspectual preterite – the retention of a separate semantic nuance is needed to justify the continued coexistence of a 'root preterite' and a 'characterised preterite' as the germs of the later aspectual contrast. More concretely, if in the preterite a punctual 3sg. **gᵘeh₂-t* 'took a step' contrasted with an iterative **gᵘi-gᵘeh₂-t* 'took steps (repeatedly)', and if in the present **gᵘi-gᵘeh₂-ti* meant 'is (in the process of) taking steps' (as allegedly still seen in Ved. *jígāti*[12]), why should a Proto-Indo-European have thought that **gᵘi-gᵘeh₂-ti* was an adequate form *also* to express the novel concept of 'is (in the process of) taking *a* step'? And to make things worse, if we look beyond the presumed iterative *Aktionsart* of the example just discussed, several of the potential *Aktionsarten* Strunk himself enumerates as sources of later present stems are quintessentially telic rather than atelic. Both inchoatives and terminatives, which focus on a starting or end point respectively, fulfil the basic criterion of telicity since they refer to eventualities with a temporal boundary; and as we shall see later (**4.2**), intensives too have a greater affinity with aspectual perfectivity than with imperfectivity.

2.7 A Special Role for the *s*-Aorist?

It is possible that Strunk himself perceived some weaknesses in his account. To support his general point that aspect arose fairly late in Proto-Indo-European (**2.8**), he stresses that while there are various present-stem formants which never serve as aorist-stem ones (infixed **-n-*, suffixed **-i̯e/o-, *-sḱe/o-, *-ei̯e/o-*), the aorist-stem formants (i.e., perfectivity markers) seen in Greek or Indo-Iranian tend to be matched by similar or identical formants among the present stems. Just as there are root aorists *and* root presents, both athematic and thematic, there are also reduplicated aorists *and* reduplicated presents (**1.10**–**1.11**). Disregarding the marginal existence of Indo-European *s*-presents (**3.2**, **8.29**, **8.41**), he sees however one exception:

[12] Gotō (2013: 83 n. 197) speaks of an "iterative meaning 'repeat striding action'".

> On the level of Proto-Indo-European only the sigmatic subclass of aorist-formations in its definitive structure never applied to anything else. Its main function presumably consisted in bestowing perfectivity on durative verbs, so that these could be used in the sense of a perfective past (aorist). That means, only when this morphological sub-class was in fact available, a clear-cut aspectual system based upon a ubiquitous distinction of present- and aorist-stems was really established. Now the sigmatic aorist for its part seems to have arisen comparatively late in the prehistory of IE verb morphology, as has repeatedly been supposed since Meillet 1908 . . . Consequently, ascribing the sigmatic subclass of aorists and thereby the category of aspects altogether to a late period of Proto-Indo-European may be a rather consistent conclusion.[13]

Once again this formulation raises concerns. On the one hand, Strunk seems to admit that his earlier hypothesis was insufficient to explain the conversion of lexical *Aktionsart* into grammatical aspect: otherwise one would not have to wait for the advent of the *s*-aorist until "a clear-cut aspectual system . . . was really established". On the other hand, the *s*-aorist itself, which is supposed to have settled the matter, was "bestowing perfectivity on durative verbs". But whatever the source of the *s*-aorist may have been, we should then be told why this new formation was deployed to establish a grammatical category (perfectivity) that had not truly existed in the language before (as long as *no* "clear-cut aspectual system" was available).

In the end, then, the Hoffmann–Strunk model (summarised in Fig. 2.1) still contains too many loose ends to provide a fully convincing account of the rise of aspect in Proto-Indo-European. However, this should not detract from the important insights it contains, notably with regard to the connection between the aspectual categorisation of root formations and their prototypical (a)telicity. As the next section will show, these same insights do not lose their relevance when the matter is approached from a different, and less 'Graeco-Aryan', angle.

2.8–2.12 Cowgill's Model and 'Proto-Indo-Hittite'

2.8 Positioning Anatolian

In the article in which he outlined his ideas on the emergence of PIE aspect, Strunk's principal aim was to demonstrate that this development took place only after the Anatolian branch had split off the Indo-European family tree. The essential argument here is that all the major present-stem formations of Proto-Indo-European are reflected, with or without

[13] Strunk (1994a: 428–9).

<table>
<tr><td>STAGE I</td><td colspan="2">telic roots
e.g., *$d^h eh_1$- ‘put’
3sg. *$d^h eh_1$-t ‘put(s)’</td><td>atelic roots
e.g., *h_1ei- ‘go’
3sg. *h_1ei-t ‘goes/went’</td></tr>
<tr><td>STAGE II</td><td colspan="2">formation of derived Aktionsarten
e.g., reduplicated iterative</td><td rowspan="2"></td></tr>
<tr><td>*$d^h eh_1$-t
‘put(s)’</td><td>*$d^h e$-$d^h eh_1$-t
‘put(s) repeatedly’</td></tr>
<tr><td>STAGE III</td><td colspan="2">introduction of (actual) present with *-i</td><td></td></tr>
<tr><td>~~pres. *$d^h eh_1$- -ti
‘is putting’~~
pret. *$d^h eh_1$-t ‘put’</td><td>pres. *$d^h e$-$d^h eh_1$-ti
‘is puttting repeatedly’
pret. *$d^h e$-$d^h eh_1$-t
‘put repeatedly’</td><td>pres. *h_1ei-ti ‘is going’
pret. *h_1ei-t ‘went’</td></tr>
<tr><td>STAGE IV</td><td colspan="2">aspectualisation of the system</td><td></td></tr>
<tr><td>→ perfective aspect</td><td>→ imperfective aspect</td><td>→ imperfective aspect
(+ possible perfectivisation with *-s-)</td></tr>
<tr><td>STAGE V</td><td colspan="2">telic root formations (> root aorists)
paired with characterised presents
= aspectual pair pfv. : ipfv.</td><td>atelic root formations (> root presents)
paired with characterised aorists (in *-s-)
= aspectual pair ipfv. : pfv.</td></tr>
</table>

Fig. 2.1. The development of the PIE aspectual system according to Hoffmann and Strunk

recognisable *Aktionsart* values, in Hittite and other Anatolian languages, but that the same languages feature a simple preterite tense without aspect differentiation. Obviously, this *need* not reflect an older state of affairs since Anatolian might have lost the category of aspect. However, to counter such a ‘reduction hypothesis’, Strunk observes that

> in its framework Old Anatolian preserving different present stems and thereby ‘Aktionsarten’ from an earlier period of Proto-Indo-European would have abandoned the distinctive aorist-stems and thereby the aspects, although these had arisen later on in the parent language, and that in the relatively short time span between this late stage of Proto-Indo-European and the first appearance of Hittite texts in the middle of the second millennium B.C. To be sure, such a sequence of processes with somewhat curious implications concerning their relative chronology may not be wholly impossible, but in any case it is far from being probable.[14]

Of course, even if one subscribes to the Hoffmann–Strunk model, there is nothing to establish in absolute terms how much or little time there would have been available for the loss of aspect in Anatolian, that is, exactly how late Strunk’s “late stage of Proto-Indo-European” would have been. In fact,

[14] Strunk (1994a: 431); cf. also Adrados (1981b: esp. 99), and contrast the view previously expressed by Strunk (1968: 309) himself: ‘The deep-rooted aspectual reference of the Indo-European verb as a function of oppositional verbal stems was joined . . ., at least in later prehistory, by the temporal reference, initially as a function of oppositional verbal endings.’

the 'reduction hypothesis' may create less of a chronological difficulty than Strunk's own assumptions. If aspect had really arisen only in post-Anatolian Proto-Indo-European, it would be curious that in the large majority of non-Anatolian Indo-European languages traces of aspect are still visible but a fully-fledged aspect category of the kind seen in Greek has disappeared. In order to explain this situation, we would have to assume that aspect first blossomed and then withered away again in the time between the separation of Anatolian and the historical period.[15]

Having said that, Strunk is certainly right when he stresses the need to accommodate within the model the evidence of the earliest attested branch of Indo-European. As already noted (**1.17**), the Anatolian verb is similar enough to what we find in other Indo-European languages to put its Indo-European nature beyond doubt; but it also features certain peculiarities that are remarkable enough to have been used in support of the 'Indo-Hittite hypothesis', whereby Anatolian branched off the Indo-European family tree before the rest of the family underwent its latest shared innovations. A landmark contribution to the verbal dimension of this debate was made in the late 1970s in two articles by Warren Cowgill.[16]

2.9 Cowgill on the Hittite *ḫi*-Conjugation

Regarding the origins of PIE aspect, Cowgill at first explicitly subscribed to Hoffmann's views; only later did he dissent in some important details (**2.10**). To begin with, Cowgill's agenda was rather to underline the impossibility of deriving the Anatolian – and more specifically Hittite – verbal system from Hoffmann's 'Graeco-Aryan' reconstruction:

> The basic difficulty is the Hittite *hi*-conjugation. Hittite has no aspect as a grammatical category, and only two tenses, present (or non-past) and past. The lack of a distinction between perfective and imperfective aspect is easy to see as a loss. . . . Of the three main types of Hittite verbs – mediopassive, active in *-mi*, and active in *-hi* – the first two correspond excellently, in form, in meaning, and in lexical constituency to the mediopassive presents and to

[15] For critical remarks along these lines, see also Kammenhuber (1968: 87).

[16] Cowgill (1975; 1979). The 'Indo-Hittite hypothesis' was first promoted by Sturtevant (1929), and the term 'Proto-Indo-Hittite' (PIH) remains a convenient shorthand for 'Proto-Indo-European before Anatolian split off' (cf. also Sturtevant 1962). Some scholars prefer labels such as 'early Proto-Indo-European' ("Frühindogermanisch", cf. Meid 1975: 212); but Neu's (1976: 243–4) attack against the term 'Indo-Hittite' is odd when his stance is even more clearly 'Indo-Hittite' than that of Meid (1979: 161–2) whose 'space/time model' he promotes.

the active presents respectively of Greek and Indo-Iranian and the other Indo-European languages.[17]

A number of equations illustrate this point. For the middle, Cowgill compares

- Hitt. *arta(ri)* 'stands, is stationed' ~ Gr. ὦρτο 'arose', Ved. aor. *(prá) ārta* 'has moved' < **(h₁e-)h₃r-to*,
- Hitt. *kitta(ri)* 'lies' ~ Gr. κεῖται, Ved. *śéte* 'lies' < **k̂eḭ-to(ḭ)* (cf. CLuw. *zīḭari* ~ Ved. *śáye* < **k̂eḭ-o*),
- Hitt. *u̯ešta* 'is dressed' ~ Gr. (ἐπί-)εσται, Ved. *váste* 'wears, is dressed' < **u̯es-to(ḭ)*,

and for the active *mi*-conjugation,

- Hitt. *ēšzi* 'is' ~ Gr. ἐστί, Ved. *ásti* 'is' < **h₁es-ti*,
- Hitt. *kuenzi* 'kills' ~ Ved. *hánti* 'strikes, kills' < **gʷʰen-ti* (cf. Gr. θείνω 'strike' < **gʷʰen-ḭe/o-*),
- Hitt. *u̯ekzi* 'wishes, desires' ~ Ved. *vāṣṭi* 'wants' < **u̯ek̂-ti* (cf. Gr. *ptcpl. ἑκών 'willing'),

as well as entire stem classes like the *mi*-conjugation verbs with nasal infix/suffix *-nin-/-nu-*, with the imperfective marker *-ške/a-*, or with the denominal suffix *-ḭe/a-*: these mirror the Indo-European nasal presents, presents in **-sk̂e/o-*, and presents in **-ḭe/o-*, respectively (**1.11**).

By contrast, the *ḫi*-conjugation displays (a) endings that are unquestionably related to the PIE perfect endings 1sg. **-h₂e*, 2sg. **-th₂e*, 3sg. *-e* (**1.6**), all with added 'primary' **-i* yielding OHitt. 1sg. *-ḫe* (later *-ḫi*), 2sg. **-te* (later *-ti*), 3sg. *-i*,[18] and (b) a singular stem whose radical *a*-vocalism matches the *o*-grade of the Indo-European perfect. From a structural point of view, the singular of the Hittite *ḫi*-conjugation thus resembles a PIE perfect, save for its usual lack of reduplication (e.g., 3sg. **CoC-e(ḭ)* ~ PIE perf. **C₁e-C₁oC-e*: **1.12**); but this divergence Cowgill – like many others before and after him[19] – regards as

[17] Cowgill (1975: 563–4).

[18] The connection of the Hittite *ḫi*-conjugation endings with those of the PIE perfect was recognised by Kellogg (1925). Kuryłowicz (1927c: 102–3; 1932) and Stang (1932) added the comparison with the middle (cf. **2.14**, **5.3**; Pedersen 1938a: 80–100, 115–25). That the Hittite endings must be diphthongal in origin, hence contain added **-i*, was first acknowledged by Sturtevant (1933: 257; cf. 1938) and Rosenkranz (1952/3: 344–7); cf. now Jasanoff (2003: 4–7).

[19] E.g., Risch (1975: 250), Kammenhuber (1980: 36); further references in **5.30**, fn. 115. However, Jasanoff (2003: 15–16) pertinently remarks that "the nearly complete loss of reduplication [*sc.*, except in *u̯eu̯akk-*^{i} 'demand' (**2.13**, **4.11**)] in the perfect in Anatolian would not have been a trivial occurrence. Most of the other IE branches that retain the perfect as a finite tense – Indo-Iranian, Greek, and even Italic and Celtic – also maintain reduplicaton in the perfect with considerable regularity. The only real exception is

negligible, not least because the equation Gr. οἶδε ~ Ved. *véda* 'knows' (< **u̯oi̯d-e*) also allows the reconstruction of at least one unreduplicated PIE perfect. Yet,

> [t]he difficulties come when we try to compare the Hittite *hi*-conjugation to the Indo-European perfect on the semantic and lexical levels. Semantically, very few Hittite *hi*-verbs have a stative value comparable to that reconstructed as original for the Indo-European perfect. The best case is *šakk-* 'know', comparable to οἶδα, *véda*. Good also is *dakk-* 'correspond to, resemble' beside Gk. ἔοικα 'am like'. Still other *hi*-verbs have stative meanings, even if these meanings elsewhere are expressed by various present formations; e.g. *au-* 'see', *waggar-* 'be lacking', *karmalaššai-* 'is stiff'. There are also verbs for vocal actions, *mema-* 'speak', *halzai-* 'call', *išhamihhi* 'I sing', *malt-* 'vow', that compare with the Homeric type κεκληγώς, ἄνωγα, μεμηκώς, μέμυκε, γέγωνα, Ved. *āha*. But by and large, Hittite *hi*-verbs express decidedly non-stative ideas, e.g. *ar-* 'arrive', *ak-* 'die', *huwai-* 'run', *šipant-* 'pour a libation'. Often they are transitive as well, e.g. *arr-* 'wash', *ark-* 'cut up', *haš-* 'open', *išhai-* 'bind', *kank-* 'hang', *lahu-* 'pour', *pai-* 'give', *da-* 'take', *dai-* 'place', *wak-* 'bite'. This is true of the whole class of *ahh*-factitives, which inflect basically according to the *hi*-conjugation, e.g., *šuppiyahh-* 'make pure', *dašuwahh-* 'make blind'.[20]

Furthermore, Cowgill points out that quite a few of the verbs listed have well-established present-stem or aorist-stem cognates in other languages, but no equally well-established perfect-stem cognates (e.g., *dai-* 'put' to **d^{h}eh$_{1}$-*, *da-* 'take' to **deh$_{3}$-*, *šipant-* 'libate' to **spend-*, etc.). Hence, he concludes, the only way in which the Hittite *ḫi*-conjugation could in theory be derived from a PIE perfect would be to assume that such a perfect expanded considerably and took on preterital value in Anatolian (as in many other languages: **5.24**); and that subsequently new presents were formed to supplement the paradigms of these novel preterites (e.g., unreduplicated perf. 3sg. **d^{h}oh$_{1}$-e* 'has placed' > pret. 'placed' → new pres. **d^{h}oh$_{1}$-ei̯* 'places' > Hitt. *dāi*). But although precisely this scenario was in fact promoted by others at the same time,[21] Cowgill justly

Germanic, where strong verbs of the 'normal' ablaut types (classes I–VI) have given up reduplication in the preterite completely . . .; yet even here the tenacity of reduplication in the perfect is shown by the survival of nearly two dozen reduplicating strong verbs in Gothic alone."

[20] Cowgill (1975: 566–7), to be held against S. R. Rose (2006: 171–470) who claims 'medial' values for even the most patently non-medial *ḫi*-conjugation verbs; cf. more sensibly Rosenkranz (1952/3; 1958: 215). That Hittite *ḫi*-conjugation root presents often feature roots appearing in root aorists (and/or *i̯*-presents) in other languages was already stressed by Ivanov (1965: 77–112).

[21] See Risch (1975: esp. 255–7) and Eichner (1975: esp. 87–92), to whom Cowgill (1979: 28–32) replies; cf. now also the critique in Jasanoff (2003: 10–17). Against Neu (1968a: esp. 154–60) (**2.14**), Risch and Eichner do agree with Cowgill that the Anatolian and non-Anatolian mediopassives belong closely

felt that the absence of comparable depreterital presents in Indo-European, coupled with the general unlikelihood of the presumed preterite → present analogy, make "[a]ll of this … too arbitrary and implausible to be believed".[22] Instead, he argued, "the Indo-European perfect, as we know it, can have arisen only as an innovation common to the ancestor dialects of Indo-Iranian, Greek, Germanic, etc., during a period of several centuries after their split from the dialect ancestral to Hittite". And if this is the case, we have here a feature of the Anatolian verbal system that vindicates the Indo-Hittite hypothesis.

2.10 Cowgill's 'Nominal Verbs' and PIE Aspect

In Cowgill's 'second instalment', published a few years after the first, the aspectual questions raised by Hoffmann's model gained in prominence.[23] Here, Cowgill proposed for Proto-Indo-Hittite (PIH) "two types of verbs, 'verbs proper' and 'nominal verbs'":

> The former are ancestral to the presents and aorists, of both voices, of Indo-European and to the *mi*-conjugation and the mediopassive of Anatolian. They distinguished tense (present and past) and voice (active and mediopassive) much as in PIE and Hittite; the agreements in formation of primary vs. secondary endings and of active vs. mediopassive endings in both branches attest to that. But they did not in PIH distinguish a grammatical category of aspect, perfective vs. imperfective, any verb being conjugatable in both tenses, regardless of its semantic Aktionsart.
>
> Nominal verbs, ancestral to the Indo-European perfect and the Anatolian *ḫi*-conjugation, did not distinguish tense or voice, and were based on a third singular of nominal origin, comparable (typologically!) to the Sanskrit periphrastic future (type *dātā́smi*, 3rd. sg. *dātā́*) or to the Semitic formation that in Akkadian functions as stative (permansive) and elsewhere as 'perfect'. Similar views have been expressed before, of course, in recent years, notably by J. Kuryłowicz … and O. Szemerényi …; but I differ from these authors in

together, whereas the *ḫi*-conjugation should be kept separate, despite its similar endings. In essence a perfect derivation for the Hittite *ḫi*-conjugation may already inform Kuryłowicz (1927c: 103). Eichner's account was followed by Oettinger (1979 [= 2002]: 399–512; 1992: 227–30); but it no longer is (Oettinger 2001a: 80–3; 2002: XXIII–XXVI). Most recently, Lazzeroni (2011a) has sought to avoid a depreterital present by postulating that the perfect became transitive ('resultative') in Proto-Anatolian as in Greek (**5.14**); but effectively he thus just replicates, with more traditional terminology, the central ideas of Cowgill's nominal-verb theory (cf. **2.10**, **5.27–5.29**).

[22] Cowgill (1975: 568). The argument is questioned by Cardona (1992: 8–10), but Cardona's 'parallels' do not involve the creation of *new* present types. The mere addition of 'primary' **-i* to the perfect endings in languages like Latin (**1.6**) is of course a different matter since this did not have semantic repercussions: cf. Cowgill (1979: 29), also in response to Oettinger (1976: 109, 114) who wondered if **-i* was added already in Proto-Indo-European.

[23] Cowgill (1979), followed by Hart (1988: 84–5); cf. also Austefjord (1988).

> supposing that the underlying nominal was not a passive participle (Kuryłowicz) or an endingless root noun (Szemerényi), but rather a thematic adjective or noun of basically active meaning, comparable to the agent noun that lies at the base of the Sanskrit periphrastic future … As such, the meaning of the PIH nominal verb would have been to assert only in the most general way that the subject was involved in the action, state, or process denoted by the verb stem, a meaning sufficiently vague and labile that I think it possible to imagine without excessive straining of credulity that it could have gone off in one direction to become the PIE perfect and in another to become the Anatolian *hi*-conjugation.[24]

Against this background, Cowgill suggests, both the Anatolian branch and the rest of Proto-Indo-European began to develop aspectual distinctions, by a process that may have just started when Anatolian split off, but was implemented separately. Since tense distinctions already existed, as witnessed by the use of 'primary' **-i* endings in both Anatolian and elsewhere, the trigger for the rise of aspect is not as clearly identified as with Strunk; but in principle Cowgill might still have held the introduction of a distinct present responsible if this had happened just before the Anatolian departure. More crucially, however, Cowgill does not think that prototypically telic roots failed to acquire the newfangled present in **-i*. Instead he assumes that they lost their presents.[25] He thus avoids the objection that one can easily say things like 'is taking a step' (**$g^{\underline{u}h}eh_2$-ti*) (**2.6**). The reasons for the loss are not specified, somewhat curiously; for if Cowgill subsequently argues that in Anatolian the 'nominal verbs' stepped in to fill the gap (i.e., notional **$g^{\underline{u}h}oh_2$-e(i)* '(is a) step-taker'; cf. **5.27**), whereas in the other branches the various characterised present stems did the same job (e.g., reduplicated **$g^{\underline{u}}i$-$g^{\underline{u}}eh_2$-ti*: **2.6**), and if he recognises that therefore the present-stem affixes in non-Anatolian Proto-Indo-European must have been emptied of their semantic content, one may easily hypothesise that, when the characterised presents (or, in Anatolian, the 'nominal verbs') had lost their semantic autonomy, it was precisely the resulting synonymy with the old telic root presents that caused the loss. In this way, Cowgill's theory acquires greater

[24] Cowgill (1979: 33–4); he makes reference to Kuryłowicz (1964a: 62), which is comparable to Watkins (1969: 107), and Szemerényi (1970: 306) (cf. Szemerényi 1996: 333). A nominal source for the PIE perfect was already postulated by Brugmann (1913–16: 435; 1921a: 139) ('verbal abstract'; contrast Brugman 1878: 161), Grünenthal (1936: 138–40) ('a verbal adjective, i.e., a root noun'), and others cited in Szemerényi (1996: 335 nn. 6, 7). Particularly close to Cowgill's position is Hirt (1913: 313–17; 1928: 270–1, 273).

[25] Thus already Curtius (1877–80: 2.22); see also Safarewicz (1974: 61) on the feasibility of 'determined [i.e., telic/bounded] radical presents'.