Diachronic Studies in Indo-European Degree Morphology

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Abstract

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This work comprises three thematically linked studies in typologically informed Indo-European historical linguistics, each dealing with different aspects of the development of degree morphology within the family. The first study shows that multiple morphological and syntactic strategies for the expression of degree should be reconstructed for Proto-Indo-European, with semantic and morphological factors governing the choice of strategy for a given word. Furthermore, the origin of the "secondary comparative" of Indo-Iranian and Greek is traced to an archaic locatival morpheme *-*er*. The second study uses Greek and Latin evidence to investigate the origin of the Latvian comparative marker -*āk*- and its close cognates within Balto-Slavic. This leads to the reconstruction for Proto-Nuclear Indo-European of an athematic compound suffix *-*eh*$_2$-*k*- (deriving evaluative-characterizing substantives from nominal bases) and of its thematic counterpart *-*eh*$_2$-*ko*- (deriving corresponding adjectives). The third study explains why several branches of Indo-European show variation

between degree forms with or without a seemingly unetymological long vowel. It is argued that in each case, adjectival degree forms were influenced by their adverbial counterparts, with the same process operating on different morphological material in different branches. Parallels from other language families (Uralic, Tungusic, Turkic) bolster various aspects of these proposals.

As Indo-European is the only language family combining a wide variety of synthetic degree forms with a long history of attestation, it is uniquely capable of providing insight into processes of development, decay, and renewal in this morphosyntactic subcategory. This dissertation is thus a contribution both to the historical morphology of Indo-European in particular and to the typology of degree morphology in general.

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Symbols and Abbreviations

Symbols:

*A	A is reconstructed
**A	A is hypothetical
†A	A is expected but unattested
A°	A is initial member of a compound
°A	A is final member of a compound
=A	A is enclitic
/A/	A is a phonological interpretation
A → B	B is derived from A
A ⇒ B	A becomes B
A > B	A becomes B by regular sound change
A × B = C	C is a hybrid of A and B
X	any segment or morpheme

C	any consonant
H	any “laryngeal” (in Indo-Europeanist terms)
V	any vowel
-	morpheme boundary
//	caesura

Linguistic and philological terms:

abl.	ablative
acc.	accusative
act.	active
adv.	adverb
adj.	adjective
anim.	animate
athem.	athematic
cpt.	comparative

dat.	dative
f.	feminine
gen.	genitive
id.	idem (“the same”)
lit.	literally
m.	masculine
nom.	nominative
nt.	neuter
pass.	passive
PC	property-concept
perf.	perfect
pl.	plural
PN	personal name
pos.	positive
poss.	possessive

pres.	present
ptc.	participle
sg.	singular
spl.	superlative
subj.	subjunctive
s.v.	sub voce (“under the word”)
TAM	tense, aspect, mood
them.	thematic
ThN	theonym
TN	toponym
vel sim.	vel similia (“or similar things”)

Languages and dialects:

Aeol.	Aeolic
Alb.	Albanian

Arm.	Armenian
Att.	Attic
Av.	Avestan
Az.	Azerbaijani
Bal.	Balochi
Bel.	Belarusian
Br.	Brittonic
Brah.	Brahui
Bret.	Breton
CArm.	Classical Armenian
Celtib.	Celtiberian
Chuv.	Chuvash
CS	Church Slavonic
Cypr.	Cyprian
Delph.	Delphian

El.	Elean
Engl.	English
Ev.	Even
Evk.	Evenki
Fi.	Finnish
Fr.	French
Gaul.	Gaulish
Germ.	German
Gk.	Greek
Gmc.	Germanic
Go.	Gothic
Hitt.	Hittite
Hom.	Homeric
IE	Indo-European
IIr.	Indo-Iranian

Ion.	Ionic
It.	Italian
It.-Celt.	Italo-Celtic
Kaz.	Kazakh
Kha.	Khakas
Lac.	Laconic
Lat.	Latin
Ltv.	Latvian
Lith.	Lithuanian
Locr.	Locrian
Luw.	Luwian
Lyc.	Lycian
Lyd.	Lydian
Mac.	Macedonian
Mand.	Mandaic

MIr.	Middle Iranian
MW	Middle Welsh
Myc.	Mycenaean
NIE	Nuclear Indo-European
NoSa.	North Saami
OAv.	Old Avestan
OCS	Old Church Slavonic
OCz.	Old Czech
OE	Old English
OFr.	Old French
OGheg	Old Gheg
OIr.	Old Irish
OHG	Old High German
OLat.	Old Latin
OLith.	Old Lithuanian

ON	Old Norse
OPers.	Old Persian
OPr.	Old Prussian
Or.	Orok
ORuss.	Old Russian
Osc.	Oscan
OTosk	Old Tosk
OTrk.	Old Turkic
PAlb.	Proto-Albanian
PAnat.	Proto-Anatolian
PBalt.	Proto-Baltic
PBr.	Proto-Brittonic
PBSl.	Proto-Balto-Slavic
PCelt.	Proto-Celtic
PEBalt.	Proto-East Baltic

Pers.	Persian
PGmc.	Proto-Germanic
PGk.	Proto-Greek
PIIr.	Proto-Indo-Iranian
PIr.	Proto-Iranian
Pis.	Pisidian
PIt.	Proto-Italic
PNIE	Proto-Nuclear Indo-European
PNTu.	Proto-Northern Tungusic
Pol.	Polish
PSl.	Proto-Slavic
PTo.	Proto-Tocharian
PTu.	Proto-Tungusic
PTrk.	Proto-Turkic
PU	Proto-Uralic

PWGmc.	Proto-West Germanic
Russ.	Russian
Sa.	Saami
Serb.	Serbian
Skt.	Sanskrit
SoSa.	South Saami
Sp.	Spanish
SPic.	South Picene
TA	Tocharian A
TB	Tocharian B
To.	Tocharian
Tyv.	Tyvan
Ukr.	Ukrainian
Ul.	Ulch
Umbr.	Umbrian

Ved.	Vedic
W	Welsh
WGmc.	West Germanic
YAv.	Young Avestan

Texts:

Greek and Latin texts are cited according to the conventions of the *LSJ* and *OLD*.

A	Aṣṭādhyāyī
Anukr.	Anukramaṇī
DB	Behistun Inscription
KUB	*Keilschrifturkunden aus Boghazköi*
ŚBr.	Śatapathabrāhmaṇa
TS.	Tāittirīyasaṁhitā
Y	Yasna
Yt.	Yašt

1. Preliminaries and introduction

Indo-European (IE), as the only language family combining a wide variety of synthetic gradation forms with a long history of attestation[1] from antiquity down to the present, is uniquely capable of providing insight into processes of development and decay in this morphosyntactic subcategory. However, there is a surprising lack of dedicated literature on the specifically diachronic typology of comparatives and related forms (YLIKOSKI 2018, 52). As a contribution towards filling this gap, this thesis aims to describe certain diachronic aspects of gradation morphology in IE. To quote an assessment referring in the first place to Old Irish but also more broadly to the family as a whole: "Der Gesamtkomplex [...] der *tero-* und *i̯es-* Bildungen verdiente eine Spezialuntersuchung" (MEID 1967, 242 fn. 56). This remains true despite many advances – especially regarding IE derivational morphology – in the years since, and I hope that my results will both stimulate further investigation and constitute building blocks for a comprehensive theory.

1 The few language families to rival IE as regards time-depth of attestation – including Dravidian, the Egyptian and Semitic branches of Afro-Asiatic, and the Sinitic branch of Sino-Tibetan – mostly lack morphological-synthetic means of gradation; the few exceptions are limited to developments internal to a particular language or else to transparent borrowings from other languages. The former is exemplified by the Arabic elative (for which see WEHR 1952 and BRAVMANN 1968), the latter by the PIr. cpt. suffix *-*tara-* in both Mand. *-tær* (MACUCH 1965, 427) and Brah. *-tir* (ELFENBEIN 2019, 504).

The throughline of this thesis, then, is the origin and elaboration of Indo-European degree morphemes, each study dealing with a different problem and a different set of languages. The focus of the first study (chapter 2) is on the different gradation strategies found in early IE languages. I argue that multiple strategies with different core domains of application should be reconstructed for PNIE and PIE, and that the "secondary comparative" of Indo-Iranian and Greek in particular represents a late innovation. The second study (chapter 3) investigates the IE connections of the Latvian comparative marker *-āk-* and its evaluative cognates within Balto-Slavic. I identify as its ancestor an athematic suffix forming evaluative substantives, which I reconstruct for PNIE on the basis of Greek and Latin evidence. The third study (chapter 4) asks why several branches of IE show variation between gradation forms with or without an extraneous long vowel. I propose that in each case, adjectival degree forms were influenced by their adverbial counterparts, with the same process operating on different morphological material in different branches. Thus each chapter focuses on a different facet of the diachrony of gradation: the origin of one component of PNIE gradation morphology, the renewal of the inherited system with elements drawn from other areas of nominal morphology, and the analogical remodeling of a particular formation.

The literature on the topic of morphological comparison and gradation is extensive. For the classical Indo-Europeanist perspective, see *DelSyn* I, 411–418 and *BrGr* II/1, 654–661 as well

as the seminal studies of Ziemer 1884, Sommer 1900, Osthoff 1910a, Osthoff 1910b, Benveniste 1948, Berg 1958, and Seiler 1950 in addition to the standard historical grammars of individual languages. Among recent contributions, the reader is referred to Dieu 2011 for a study of specifically suppletive forms, to Rau 2014 for a derivational prehistory of the primary comparative, and to the branch-specific analyses collected in *CGIE* for a mostly synchronic and typological perspective. Meanwhile, Jensen 1934, Ultan 1972, Andersen 1983, Stassen 1985, Heine 1994, Dixon 2008, Bobaljik 2012, Gorshenin 2012, and Stolz 2013 constitute important studies of different issues in the syntax and morphology of gradation across language families. More specialized literature on particular problems is cited throughout the thesis where relevant.

Comparative constructions in the languages of the world may be divided into conjoined comparatives, *exceed*-comparatives, and standard-marking comparatives (see Bobaljik 2012, 18–25 modifying Stassen 1985). Conjoined comparatives contrast a positive predication of the parameter with either a corresponding negation, an antonymic predication, or an intensified predication.[2] As the label implies, *exceed*-comparatives instead use a verb meaning to "to exceed", "to surpass", "to defeat" *vel sim.* to express that the subject of comparison is superior

2 Thus a language with conjoined comparatives might express "Peter is taller than Paul" by phrases literally translating to "Peter is tall and Paul is not (tall)" or "Peter is tall and Paul is short" or even "Paul is tall and Peter is taller".

to the standard of comparison with respect to the paramater of comparison.[3] Finally, standard-marking comparatives signal comparison by analytically or synthetically modifying the standard; this frequently takes the form of case-marking, with the ablative being common in this function.[4] Some languages (including Modern English) of this type additionally mark the parameter for degree, either analytically or synthetically; most NIE languages are of this particular type, with case-marking of the standard and synthetic marking of the parameter being the norm especially in their early attested stages.[5] It is synthetic, or bound, degree-marking with which I am concerned in this thesis. However, the role and extent of analytic marking for degree in early IE and P(N)IE will also be discussed (see specifically section 2.2.2).

I conclude with a few remarks on terminology and notation. First, in this thesis I use the term "gradation" in the sense of placement along a scale of possible values relative to an implicit or explicit point of reference (see KEYDANA, HOCK & WIDMER 2021). In this usage, "gradation forms" are forms morphologically marked for degree in a given language; this may

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3 The equivalent of "Peter is taller than Paul" in a language using *exceed*-comparatives might therefore be an expression literally translating to "Peter exceeds Paul in height" or "Peter is tall, surpassing Paul".

4 Accordingly, "Peter is taller than Paul" in a language using ablative case for the standard and no special marking on the predicate could be expressed by a phrase translating literally (if awkwardly) to "Peter is tall from Paul".

5 Thus Old English still uses either the dative case or the particle *þonne* to mark the standard and the suffix *-ra* to mark the predicate for degree; see SMALL 1929, 38–83. Modern English has shifted further towards analytic marking, using only the particle *than* to mark the standard and either the suffix *-er* or the adverb *more* to mark the predicate for degree.

include comparatives, superlatives, and more rarely equatives. Second, I only reconstruct an initial laryngeal when there is positive evidence for it, rather than as a general principle. A PIE constraint requiring an onset for all words – or even all lexical words – is plausible but unproven; see *LIPP* I, 31–32 and Byrd 2018, 2067. Third, as I consider the phonemic status of PIE *a and *$ā$ reasonably certain (following Mayrhofer 1986, 168–172 but contra e.g. Lubotsky 1989), I do not reconstruct *h_2e or *$eh_2(V)$ instead of these unless there is positive reason to do so. Fourth, in some contexts I use the term "invariable" to refer to uninflected words such as adpositions, adverbs, and particles; specifically, I call "positional invariable" an uninflected word expressing position in time and space (a category which roughly corresponds to the "setting adverbs" of Ramat & Ricca 1994, 308). Drawing a sharp distinction between uninflected word classes is difficult at the level of PIE and even in the early attested languages, as is the assignment of a given etymon to one or more of these classes.[6]

For the sake of readability, I consistently abbreviate grammatical terms and names of languages when citing forms, but usually not in other contexts. The gender of substantives is given when it is known or can be confidently inferred. All other notable conventions are listed under "Symbols and Abbreviations" or introduced as they come up in the chapters.

6 For instance, the reflexes of *pro "in front, to the front" can function as adpositions, adverbs, and preverbs even within a single language (such as Greek). See Cuzzolin, Putzu & Ramat 2006, 5–15 regarding an originally undifferentiated category "ADV/ADP/PREV" and *LIPP* I, 13–24 for an attempt at a systematic account.

2. Origins: Gradation in early Indo-European and the secondary comparative

2.1. Introduction

The comparative morphemes as usually reconstructed for Proto-Indo-European (PIE) are the so-called "primary comparative" in ablauting *-*yes*- (with phonologically determined Sievers variants *-*iyes*- etc. and a correlated "primary superlative" in *-*isto*-) and the so-called "secondary comparative" in non-ablauting *-*tero*- (with a correlated "secondary superlative" in *-*tm̥o*-). The primary process ("PRIM") is root-based and substitutive[7] while the secondary process ("SEC") is stem-based and additive: thus **new-o*- "new" → **new-yos*- (> Ved. *návyas*-) with the degree marker replacing the stem vowel, but **new-o*- "new" → **new-o-tero*- (> Late Ved. *návatara*- in the ŚBr.) with addition of the degree marker to the stem vowel. I use "STAND" for the strategy in which comparison is signaled only by case-marking of the standard,

7 This is characteristic of the more archaic strata of IE derivational morphology overall, as exemplified by the "Caland system" and best preserved in Indo-Iranian and to a lesser extent Greek; see especially NUSSBAUM 1976 and RAU 2009, 87–186 as well as the historical survey and bibliography in DELL'ORO 2015. Importantly, Caland-style suffix substitution is only applicable to formations analysable as consisting of a root with at most one derivational suffix, to the exclusion of items that are more complex (including multiply suffixed words and compounds containing multiple roots or stems) or morphologically opaque (whether due to morpheme boundaries becoming obscured by sound changes or due to e.g. borrowing from a non-IE language of unfamiliar structure). The substitutive character of PRIM is maintained most thoroughly in those branches which continue such suffix alternations in general.

"STAND+ADV" for the strategy in which the paramater is marked by a comparative adverb or particle in addition to case-marking of the standard.[8]

Some elaboration on *-*tero*- is necessary, as this suffix actually occurs in a number of broadly related functions; in some but not all of these we also find *-*ero*- as an apparently lexical variant (see section 2.3 below for an etymological explanation). We may distinguish at least[9] the following categories of occurrence:

(A) *-*(t)ero*- attached to positional invariables, which are otherwise often marked with a suffix *-*(t)er* (for which see section 2.3.1 below): thus **en* "in" → **en-ter* > Lat. *inter* "among" and **en-tero*- "located inside" > Gk. ἔντερα nt. pl. "innards". Although semantic distinctions are not recoverable in every instance, it seems that the primary function of both *-*(t)ero*- and invariable *-*(t)er* in this category was to express emphasis or comparative degree: thus e.g. basic **sup* "above" (> Lat. *sub*° in *subvolāre* "to fly up",

8 In terms of the original classificatory scheme of Stassen 1985 and Stassen 2001, the "adverbial comparative" subtype of the "fixed-case comparative" type corresponds to STAND, while the "particle comparative" type corresponds to STAND+ADV. In discussing primarily IE languages, many aspects of his typologically oriented classification are irrelevant, hence the adoption of a simplified system in this study. As noted in the introduction, case-marking of the standard is also part of the strategies PRIM and SEC, although it bears less functional load due to the degree-marking of the parameter.

9 I set aside the occasional and exclusively Indo-Aryan use of cpt. *-tarām* attached to finite and even highly agentive verbal forms: thus e.g. Skt. *vyathayatitarām* "disturbs more" (with the even rarer corresponding spl. *-tamām* in e.g. *pacatitamām* A 6,3,55 "cooks best, cooks most"). Even adherents of the view that Indo-Iranian gradation forms to verbal roots (rather than to finite forms) represent an archaism agree that this post-Vedic phenomenon is a clear innovation; see Cardona 1991.

sublīmis “lofty”) with corresponding adjective **sewp-o-* “located above” (> Lat. *suppus* “upside down”; see WEISS 2010, 378–380) and derived **sup-er* “(farther) above, upper” (> Lat. *super*) with corresponding adjective **sup-ero-* “located (farther) above” (> Lat. *superus*).

(B) **-(t)ero-* attached to pronominal bases, most commonly **k^{w}o-* “which” (appearing as interrogative, indefinite, and relative pronoun in various branches) → **k^{w}o-tero-* “which (of two)” > Ved. *katará-*, Gk. πότερος, OCS *koteryi* “id.” It is also found in several branches deriving first and second person plural possessives: **-tero-* in Lat. *noster* “our”, *vester* “your” and Gk. ἡμέτερος “our”, ὑμέτερος “your”; **-ero-* in Go. *unsar* “our”, *izwar* “your”; both versions may be preserved in OIr. *náthar* or *nár* “our”, *sethar* or *sar* “your”. The original function may have been emphatic, distinguishing marked forms (“this one”, “ours”, etc.) for use in contentious or adversarial situations from unmarked ones (“this one”, “ours”, etc.) for use in pragmatically more neutral contexts.

(C) **-tero-* attached to substantival bases: Gk. βασιλεύς m. “king” → βασιλεύτερος “more royal” (thus functioning as the comparative to βασίλειος “royal”), Ved. *vīrá-* m. “hero” → *vīrátara-* “stronger” (see ZEILFELDER 2003 on the general phenomenon). In

at least some cases in which the derivative is substantivized, the function of the suffix appears to be similative or approximative: Ved. *áśva-* m. "horse" → *aśvatará-* m. "mule", Lat. *māter* f. "mother" → *mātertera* f. "aunt" (see SCHAFFNER 2005, 345-377 on this type). Desubstantival derivatives can also function as invariables by lexicalization of an appropriate case-form; thus Osc. **húnttram** acc. sg. f. "lower" and Umbr. *hondra* prep. "below", both from **(d^h)ǵ^h-om-tero-* ← **d^{h}eǵ^h-om-* "earth".

(D) **-tero-* attached to the verbal base **b^{h}er-* "to carry". This remarkable pattern is attested only in Gk. φέρτερος "better" and the Italic clan name *Ferter*. It is unclear whether this is a remnant of what was once a larger deverbal pattern or a phenomenon unique to the verbal root **b^{h}er-*.[10]

(E) **-tero-* marking one member of an oppositional-contrastive pair of adjectives in a given syntactic context. The clearest examples come from Greek, where e.g. a contrast of right versus left is expressed by means of either δεξιός "right" versus ἀριστερός "left"

10 Despite its highly agentive semantics, **b^{h}er-* clearly has a special affinity for degree forms, since it also forms a secondary superlative in Hom. φέρτατος and a primary superlative in Hom. φέριστος (both meaning "outstanding, best") as well as arguably a remodeled primary comparative in Arm. *bari* "good". While YAv. *bairišta-* corresponds exactly to φέριστος, primary gradation forms built directly to verbal roots are a characteristic feature of Indo-Iranian and thus the form taken by itself is not as remarkable.

(euphemistic, lit. "better") or δεξιτερός "right" versus σκαιός "left", but never δεξιός versus σκαιός or δεξιτερός versus ἀριστερός (see BENVENISTE 1948, 117–119 and WITTWER 1969).[11] While Greek only shows *-*tero*- in this function, evidence from category F (below) indicates that *-*ero*- was at some stage employed in the same way.

(F) *-*(t)ero*- lexically marking one or both members of an oppositional-contrastive pair of adjectives irrespective of syntactic context. This type clearly results from the lexicalization of instances of catogory E. Both members are marked in e.g. Lat. *dexter* (corresponding exactly to δεξιτερός) versus *sinister* "left" (< **sen-is-tero*-, derived from the primary comparative of **sen*- "old" used euphemistically), OIr. *ósar* "younger" versus *sinser* "older" (formally = Lat. *sinister*); only one member is marked in Av. *dašiia*- "right" versus *vairiiastāra*- "left" and (with correlated *-*ṃo*- taking the place of *-*ero*-) Go. *taihswa* "right" versus *hleiduma* "left".

This classificatory scheme is, of course, based on morphosyntactic criteria, and partly redundant from a semantic point of view; thus Lat. *noster* versus *vester* (category B) and *dexter*

11 Salient Hom. passages include P 330–331 (πλήθεΐ τε σφετέρῳ [...] ἡμῖν δὲ), Ψ 336 (ἐπ' ἀριστερὰ [...] ἀτὰρ τὸν δεξιὸν), and γ 24 (αἰδὼς [...] νέον ἄνδρα γεραίτερον ἐξερέεσθαι).

versus *sinister* (category F) almost certainly both originate in lexicalization of contextually conditioned expressions of binary contrast or opposition (category E). I will nevertheless refer to these different categories below when discussing comparative formations in the various branches.

The emphatic and binary-contrastive usage represented by category E may have given rise to the use of category A *-*(t)ero*-derivatives as gradation forms to positionals. Consider the following scenarios involving a speaker of P(N)IE. First, the speaker is presented with an object above (**sup*) them. They might refer to it as **sewpo*-, meaning simply "located above" with the speaker themselves being the point of reference.[12] Second, the speaker is presented with two objects, one located above them and one below them. They might refer to the former as **supero*- in the emphatic sense of "located above", implying a binary contrast with the other object; as the latter is below their own level, they would not designate it as **sewpo*-. Third, the speaker is presented with two objects, both located above them at different heights. They might then refer to the higher of the two emphatically as **supero*- "located above", but in this case the binary contrast is not with an object below their own level, but with an object that is

12 It is possible that **supero*- was also soon used in this function, given the scarcity of evidence for **sewpo*-. Consider the effective equivalence of e.g. "the far side" and "the farther side" when referring to a location or giving directions. This can be observed across IE languages: OCS *dal'e* adv. "far" and the corresponding comparative *daleče* adv. "farther" could be used interchangeably (DORITSCH 1910, 119–120), and in Latin the creation of the renewed and more strongly characterized comparative *superior* indicates that the original comparative meaning of *superus* had faded through such interchangeable use (KOCH 1999, 459).

itself **sewpo-* from their perspective. Thus, in this case, both objects have the property (relative to the speaker) of being **sewpo-*, but one of them is more **sewpo-* than the other and therefore **supero-*.[13] Thus **-(t)ero-* could be contextually interpreted either as a marker of emphasis and binary contrast and emphasis (scenario 2) or as a marker of comparative degree (scenario 3).

Note that there are typological parallels for the use of a morpheme to mark both comparative degree and emphasis as well as specifically binary contrast. Thus the PU morpheme **-mpV* > Fi. *-mpi* furnishes not only the productive comparative formation of that language (e.g. *iso* "large" → *iso-mpi* "larger", *kirkas* → *kirkka-mpi* "clearer"), but also a range of synchronically unusual binary-contrastive forms such as the relative pronoun *jompi* and its interrogative equivalent *kumpi* "which of two" (HAKULINEN 1957, 74–76). In the related Saami languages, SSa. *gåabpa* and NSa. *goabbá* "which of two" are also formally comparatives.[14] The parallel with Ved. *katará-*, Av. *katāra-* "which of two" indicates that the PU morpheme **-mpV*

13 There is reason to believe that as **-(t)ero-* designated one object among two and developed comparative nuance secondarily, so **-(t)ṃo-* designated one object among several and developed superlative nuance secondarily. Note, for instance, that the inherited ordinal "second" is replaced by various **-tero-*derivatives independently in several branches (e.g. Gk. δεύτερος, Lith. *añtras*, OCS *vъtorъ*), while **-(t)ṃo-* appears as a formant in the highter ordinals of multiple branches.

14 In some Saami varieties this parallel with Indo-Iranian extends to forms such as the apparent superlative *guhtemuš* "which of several" corresponding to Ved. *katamá-*, Av. *katāma-* "id." (see BERGSLAND 1946, 182 and especially ITKONEN 1964). Note also that SSa. *mubpie* "other; second" recalls the use of **-tero-* in various NIE words with the same meaning. It appears unlikely that language contact is responsible for these fine-grained correspondences in derivational behaviour, despite the undisputed existence of early Indo-Iranian loanwords in the Finnic and Saami languages (see e.g. RÉDEI 1986, 25–26).

underwent a semantic development very similar to *-*tero*- in at least the Saami and Finnic branches.[15] In the Tungusic language Even, meanwhile, one suffix – reconstructed variously as PTu. *-*dımar* (Benzing 1956, 92) or PNTu. *-*tmAr* ~ *-*d(ï)mAr* (Alonso de la Fuente 2011) – appears both as an optional comparative marker and as a binary-contrastive marker (confusingly also labeled "potential dual" by Benzing 1955, "selective" by Kazama 2008, "antinomic" by Alonso de la Fuente 2011) expressing that one member of a pair is being referred to; thus Ev. *hagdi-dmar* "(the) older (of two)", *ewee-dmer* "the Even (of two men)". Although it is the comparative function that appears to be more widespread in Tungusic (thus Evk. *eŋesi-tmer* "stronger", Or. *aptauli-dumä* "tastier", Ul. *ülën-dümë* "better"), it seems that the binary-contrastive function is older and was secondarily drawn into comparative constructions which previously used mainly analytic strategies (as is still the case in many Tungusic languages).[16]

15 The broader picture is complicated by the attenuative use of *-*mpV* in various Samoyedic languages; see e.g. Décsy 1966, 59 and Nikolaeva 2014, 135 for both attenuative and intensive usage in Nenets. For a wide-ranging discussion of the Saami phenomenon in particular, see Ylikoski 2018.

16 Alonso de la Fuente 2011 explicitly draws a comparison to IE. However, the Tungusic construction marks both members of a contrasting pair rather than just one as in Ancient Greek: Ev. *ewee-dmer Fedor, mene-dmer Innokentij* "the Even (is) Fedor, (as for) the Kamchadal, (he is) Innokentij" (Benzing 1955, 53). Incidentally, Even also makes use of the elative suffix *-sukān* (Benzing 1955, 25) to mark comparative degree, a phenomenon which recalls the occasional elative usage of the primary comparative in archaic NIE texts (for which see e.g. *BrGr* II/1, 658–659 and *AiGr* II/2, 460).

Turning now to the semantic classification[17] of early IE adjectives, I assume the following main types: (1) Verbal adjectives, both participial (formed to a TAM-marked stem) and non-participial (formed directly to a verbal root); (2) functional adjectives, including pronominals, ordinals, positionals, quantificationals, and qualificationals; (3) relational adjectives, including possessives and genitivals; (4) property-concept adjectives, serving to predicate properties belonging to the semantic classes of DIMENSION, PHYSICAL PROPERTY, COLOUR, AGE, VALUE, SPEED, and HUMAN PROPENSITY. We may note the following. First, adjectives may undergo semantic shift from one class to another, resulting in atypical pairings of form and meaning; thus e.g. Gk. εἰκώς "seeming" (verbal adjective of subtype ptc. perf. act.) ⇒ "seemly" (PC adjective of subtype VALUE) or Lat. *sapiens* "knowing" (verbal adjective of subtype ptc. perf. pass.) ⇒ "wise" (PC adjective of subtype HUMAN PROPENSITY). Second, gradation is generally[18] limited to PC adjectives and to some extent (see above) the positional subtype of functional adjectives. Third, it will be useful to distinguish between, on the hand, morphologically simple PC adjectives synchronically analysable as consisting of a (generally monosyllabic) root plus at

17 Based on typological work such as DIXON 1982, 1–62, but especially following RAU 2009, 77-79. For examples and observations concerning the traits of each class, the reader is also referred to RAU 2014, 330–332.

18 See section 2.2.1 for occasional examples of verbal adjectives subjected to gradation in Greek and especially Indo-Iranian. At least some such cases are best understood as members of class 1 being contextually reinterpreted and used as members of class 4 (as with aforementioned Gk. εἰκώς and Lat. *sapiens*).

most one derivational suffix and, on the other hand, morphologically more complex or opaque PC adjectives.

2.2. Gradation in PIE and its descendants

It is now widely accepted that Pre-Anatolian was the first dialect to separate from the PIE continuum, followed most likely by Pre-Tocharian, leaving Proto-Nuclear Indo-European (PNIE) as the ancestor of the remaning branches which constitute the Nuclear IE (NIE) subfamily. In this respect, traditional subgrouping methods agree with modern computational techniques drawn from phylogenetic studies in biology.[19] In order to decide what can be reconstructed for PIE proper, this section will therefore contrast the PNIE situation with the Anatolian and Tocharian data, including any hints of fossilized – i.e. synchronically opaque and non-productive – gradation forms.

It would, however, be too rigid to say categorically that a grammatical feature such as gradation morphology can only be reconstructed for PIE if it is also present in Anatolian or at least Tocharian. For one thing, both branches are decidedly innovative in certain respects, even

19 Compare the "neo-traditional" model with both the "Ringe group" model (Ringe, Warnow & Taylor 2002) and the "Gray group" model (Bouckaert et al. 2012), as they are dubbed in Olander 2022. Despite significant differences regarding terminology (see Olander 2019), method, and the lower-level structure of the resulting family trees, agreement on the initial separation of first Anatolian, then Tocharian is shared by all models.

as they show striking archaism in others; see the morphological overviews in Oettinger 2017 and Pinault 2018. For another, the distribution and morphological structure of a given item within NIE may itself indicate considerable antiquity, such as would be hard to reconcile with a post-PIE innovation.[20] Finally, a given feature may be preserved non-productively at the margins, rendered synchronically opaque by both phonological and morphological changes.[21] These caveats notwithstanding, I begin by outlining the main strategies for comparisons of inequality in each of the uncontroversial and well-attested branches of NIE, drawing conclusions about PNIE as appropriate; I then discuss Anatolian and Tocharian, and attempt to determine what should be reconstructed for PIE proper.[22]

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20 One example of this from the verbal domain is the ablauting optative in *-*yeh*$_1$-. Although no remnant of this formation has yet been identified in Anatolian (as opposed to Tocharian, where -*i*- < *-*ih*$_1$- can mark both optative mood and imperfect tense), its status as the only ablauting TAM-suffix renders its PIE pedigree all but certain; see Jasanoff 2009b.

21 For instance, the PIE status of the subjunctive as a formal category is guaranteed by Hittite imperative singular forms of type *paḫši* "guard!", derived by haplology from *s*-present subjunctives of type **péh$_2$-s-e-si* (see Jasanoff 2012); it was simply lost to prehistoric Anatolian as a productive mood.

22 Priority is obviously given to the oldest accessible stages of each branch, leaving out unambigously secondary developments. Non-comparative uses of *-*tero*- are adduced where available to show its broader semantic and derivational range. For a more concise overview, see Rau 2014, 327–328; for more detailed investigations with examples, encompassing also comparisons of inferiority and equality, see the contributions to *CGIE*. The branches are discussed roughly in order of least to most elaborate with respect to gradation morphology.

2.2.1. NIE languages and PNIE

Albanian[23] has no synthetic comparative or superlative, at best preserving scant lexical traces of one or two old formations; its late first attestation, complex phonological history, and sizeable influx of Greek, Latin, Slavic, Italian, and Turkish vocabulary in multiple layers no doubt contribute to this.[24] Both the modern standard language (see NEWMARK, HUBBARD & PRIFTI 1982, 235–238 as well as BUCHHOLZ & FIEDLER 1987, 333–335) and the Old Albanian varieties (see GENESIN & MATZINGER 2021, 85–89) mark the comparative or superlative parameter with the particle PAlb. **man* "more" > OGheg *mã*, OTosk *mẽ* > Standard Alb. *më*; thus OGheg *i mirë* "good" and *mã i mirë* "better" correspond exactly to *i mirë* and *më i mirë* in the Standard Albanian variety of Tosk. The superlative is generally distinguished from the comparative by making either the adjective or the noun which it modifies definite via the addition of the postposed

23 Regarding citation forms, note that many Albanian adjectives are obligatorily marked by a preposed inflected article (*i* in the nom. sg. m.). This lexically determined preposed article marks attributivity and is independent of the syntactically determined postposed article, which marks definiteness and is also inflected; see BUCHHOLZ & FIEDLER 1987, 198–201 and 232–241.

24 Potential relics include *i madh* "large" < **m₂ǵ-yos-* (DEMIRAJ 1997, s.v.) and *i mádhësht* "proud" < **m₂ǵ-isto-* (suggested by JOKL 1911, 73 without discussing the semantic development). The analytic comparative marker has itself been etymologized as adverbial **meh₂-is-on* "larger" > **maisan* > **maihan* > **mẹhan* > PAlb. **mān* "more" (see MATZINGER 2006, 105 as well as SCHUMACHER & MATZINGER 2013, 262). This would explain the provenance of the PAlb. final nasal and comports well with the Germanic and Greek evidence for **-is-on-* as a variant of the primary comparative in PNIE. There are plausible remnants of category B **-(t)ero-*derivatives among pronominal forms (although e.g. OTosk *jetërë* "another" may also be owed to the model of Slavic forms such as OCS *jeterъ* "a certain"). Category A is represented by OGheg *i poshtërë* "lower, below", which is much more likely to be a **-(t)ero-*derivative connected to *poshtë* "below" and *përposh* "downwards" (see *NIL*, s.v. *ped-* and MATZINGER 2016, 341–342) than a loan from Lat. *posterus* (DEMIRAJ 1997, s.v. *póshtë*).

article; thus OGheg *mã i madh* “bigger” but *mã i madhi* “biggest”, Standard Alb. *vajzë më e bukur* “prettier girl” but *vajza më e bukur* or *më e bukura vajzë* “the prettiest girl”. Overall, then, the default strategy of Albanian appears to have been of type STAND+ADV for the entirety of its history and reconstructible prehistory.

Armenian arguably preserves obscure lexical traces of primary comparatives[25] or *-*tero*-formations[26] of different kinds, but its history also presents an interesting case of incomplete grammaticalization of a new comparative suffix. In Classical Armenian, the adjective in a comparative construction can be unmodified or reduplicated (e.g. *mec* “big” → *mecamec* “very big, bigger”, with the CArm. composition vowel *-a-*), the latter also serving as elatives; the adverbs *aṙawel* and *aweli* “more” are used as optional parameter markers. The standard is

25 By regular phonological developments, *bari* “good” may reflect *b^her-iyes- “more powerful(?)” to the root *b^her- “to carry” (KÖLLIGAN 2019, 204–207); this requires both the addition of the primary comparative morpheme to a verbal root (highly unusual outside Indo-Iranian, but compare Hom. φέριστος “outstanding, best” < *b^her-isto-) and the occurrence of the Sievers variant *-*iyes*- where the phonological environment would license simple *-*yes*-. Instead, *bari* may reflect either a loan of hypothetical Iranian †*bāria*- “bearable” (compare Skt. °*bhārya*-) or †*bāδria*- “fortunate” (compare Ved. *bhadrá*-), or else a Pre-Arm. *b^hṛ-*yo*- “bearable”; see OLSEN 1999, 436–437.

26 Thematic *aner* “father-in-law” might reflect **an-ero*- (the alternative **an-o-tero*- would probably have resulted in †*anor*); see OHG *ano* “grandfather” for the root (probably extracted from a nursery word) and category C for the formation. Category B is probably reflected by *or* “which” < *k^wo-*tero*-, although this requires either *ad hoc* loss of the initial stop (as per SCHMITT 2007, 123) or the conditioned merger of *k^w with *p > *h > Ø specifically before *o (but not before *ō, witness *k^wōl-o- > *kʿowł* “thread”). Notably, *nor* “new” probably reflects **new-o-tero*- (less plausibly **now-ero*- with unusual *o*-grade of the root) ← **new-o*- “new”, making this a true degree form in origin; regarding the requisite semantic bleaching of a comparative into a positive, note that cognate Ved. *návyas*- < **new-yes*- is on occasion used interchangeably with *náva*- < **new-o*- (see GRASSMANN 1996, s.v.).

preceded by the particle *kʿan* "than" (compare Lat. *quam* in identical function) and given accusative marking, although in later texts one also finds accusative and more rarely genitive marking without the use of the particle (Zeilfelder 1996b, 190–191). In superlative constructions, the adjective is unmodified while the standard is in the genitive plural or locative plural, or else expressed by a universal quantification such as *yamenesin* "among all" (Kölligan 2021, 50). However, there also exists a suffixoid[27] *-agoyn* productively deriving denominal adjectives with elative force (*zawr* "strong" → *zawragoyn* "very strong, stronger"). It is sometimes amplified further by *aṙawel* "more" or *ews* "even", and frequently – but neither obligatorily nor exclusively – used in comparative or superlative constructions. It can also be used to form variants of some lexical comparatives (*erēcʿ* "older" → *erēcʿagoyn* "id.") and positional adverbs (*mōt* "near" → *mōtagoyn* "id."). Adverbs can also be formed secondarily from adjectives in *-agoyn* by addition of the adverbial suffix *-s*; thus *hzōr* "mighty" → *hzōragoyn* "very mighty, mightier" → *hzōragoyns* "very mightily, more mightily". Although *-agoyn* failed to

27 That is to say, a suffix originating from an independent word (see Stein 1970, 157–161 and Heidermanns 2004, 13–14), in this case *goyn* "colour" as borrowed from MIr. *gōn* "colour; hair; kind, manner". The development of *-agoyn*, where *-a-* is in origin the aforementioned composition vowel, may be summed up thus: (1) independepent lexeme ⇒ (2) second member of possessive compounds ⇒ (3) similative-attenuative suffixoid ⇒ (4) elative suffixoid ⇒ (5) optional degree marker, with stages (1) through (3) attested in Middle Iranian and (1) through (5) in Armenian. See Olsen 1999, 219–226 for the Armenian facts and Szemerényi 1980 for a wide-ranging discussion of the Iranian material and its further etymological connections. Regarding the phonetically surprising substitution of the CArm. diphthong *oy* for MIr. *ō*, compare Bolognesi 1951, 150–151 and Schmitt 1983, 96–101.

achieve the full status of an obligatory comparative marker, and by Middle Armenian was relegated to marginal elative function (KARST 1901, 394–395), it does occur as an optional marker of the superlative – but not the comparative – in at least some varieties, both Eastern and Western, of the modern language.[28] While Armenian thus at no point in its attested history made use of strategies PRIM or SEC (possible lexicalized archaisms notwithstanding), it presents an intriguing case of innovative gradation morphology which ultimately fell short of full grammaticalization. Its default strategies, however, are clearly of type STAND and secondarily STAND+ADV.

In Slavic, we may take OCS as representative of the older stages of the branch. Strategy PRIM prevails entirely for the comparative, analytic degree-marking being rare at best in OCS (ACKERMANN 2021, 171–181). Ablauting *-*yes*- has been analogically remodelled to -*jьš*-[29] with a more common variant -*ějьš*- of disputed but probably adverbial origin; on the latter point, see section 4.5.2. Thus e.g. *vysokъ* "high" → *vyšьjь* "higher" (with characteristic deletion of the

28 See DUM-TRAGUT 2009, 117 as well as SAKAYAN 2000, 157; for a theory-oriented discussion of the morphological status of Modern Armenian superlatives, compare BOBALJIK 2012, 87–93.

29 While -*jьš*- is phonologically regular only in the oblique cases of the *ja*-stem feminine (thus acc. sg. -*jьš-ǫ* < Pre-Sl. *-*yis-yām*, loc. sg. -*jьš-i* < Pre-Sl. *-*yis-yāy*, and so forth), it has spread throughout the paradigm at the expense of expected †-*jьx*- < *-*jьs*-; see AITZETMÜLLER 1991, 133. Note that *-*jьs*- < Pre-Sl. *-*yis*- itself appears to be the result of contamination between the zero-grade and full-grade of the primary comparative morpheme. More precisely, after a root-final vowel the zero-grade *-*is*- must have received a yod as on-glide, probably on the model of full-grade *-*yes*- or *-*yos*-. The resulting allomorph *-*yis*- was then generalized throughout the paradigm. This parallels exactly the process by which the ablauting PIE perf. ptc. act. marker *-*wos*- ~ *-*us*- gave rise to *-*wus*- as continued e.g. in OCS -*vъš*-; see RAU 2017.

velar suffix) besides the more common pattern *novъ* "new" → *novějь* "newer". The superlative is not expressed by a distinct inherited suffix, but by the comparative form with optional prefixation of *nai-* (related to *na-* employed as an elative marker in Russian).[30] There is no trace of comparative *-*tero-*, although that suffix occurs in a few lexemes (such as *koterъ* "which" and *vъtorъ* "second") reflecting categories A and B.[31]

Baltic shows more internal diversity than Slavic, but the overall pattern is very similar, with PRIM generalized at the Proto-Baltic level. The superlative is formed by placing Ltv. *vis* (proclitic for *visu* "of all"), OPr. *ucka* before the comparative; Lithuanian has an innovative superlative suffix *-iáusias* clearly related to its neuter adjectival comparative and adverbial comparative in *-iaũ(s)*, although the details remain controversial.[32] By constrast, the masculine and feminine comparative in the same language is an *i*-stem formed with *-esn-* continuing *-*yes-* with a nasal suffix.[33] The small Old Prussian corpus has adjectival comparative *-ais-* and

30 Remnants of primary superlative *-*isto-* have been identified in isolated lexemes such as OCS *nevěsta* "bride" and ORuss. *starosta* "eldest"; see *GCS* II, 591–592.

31 Although *vъtorъ* is synchronically an ordinal, it is almost certainly derived from an invariable; if the occasional variant *vъtorъ* is regarded as archaic, this would suggest a connection with Skt. *vitáram* "again".

32 Traditional solutions derive *-iaũs* from *-*ē-yōs-* (a variant of the primary comparative structurally similar to OCS *-*ě-jьš-*), but must reckon with the fact that yod is otherwise retained before non-front vowels in Lithuanian; this is attempted in various ways by *GCS* II, Kuryłowicz 1964, Rasmussen 1992, and Klingenschmitt 2008. One alternative, advanced by Ostrowski 2013 and Ostrowski 2018, sets aside putative Slavic parallels and seeks to explain the Lithuanian morphemes as due to grammaticalization of the OLith. adverb *jaũ* "already", also found as a focus particle. Neither approach has much bearing on the broader NIE picture.

33 Pre-Balt. acc. sg. m. *-*yes-n-m̥* (> Lith. *-es-n-in*) probably served as the pivot for reinterpreting this formation as a *i*-stem; a process observed with many original consonant stems in both Baltic and Slavic (Darden 2018, 1987).

adverbial comparative variants *-ais*, *-is*, and (presumably by syncope from the former) *-s*. This points to the zero-grade **-is-* of the primary comparative marker, with *-ais-* probably due to a similar process as PSl. **-ějьš-*. The hapax *muisieson* "greater" seems to indicate hypercharacterized **-is-yes-on-*, but this is uncertain. Latvian diverges from this relatively conservative picture by its use of thematic *-āk-* < PBalt. **-āka-* for both adjectival and adverbial comparatives; this can be traced back to an evaluative suffix found in Lithuanian as well as several other branches, as explained elsewhere in this dissertation. As in Slavic, **-tero-* is found only non-productively in category B lexemes such as Lith. *katràs* "which of two" and *añtras*

Interestingly, while Greek and Germanic continue the zero-grade **-is-* with *o*-grade **-on-*, Lithuanian combines *e*-grade **-yes-* with zero-grade **-n-*, which suggests different levelings of an original ablaut pattern for the nasal-suffixed primary comparative which differed from that of the plain primary comparative (KLINGENSCHMITT 2008, 208–209).

"second" (pronominal origin shown by Go. *anþars* "other"), with no indication of use as a comparative formant in the prehistory of Baltic.

Celtic evidence is, in effect, limited to the Goidelic and Brittonic branches, with the more archaic Continental Celtic languages furnishing only sparse and uncertain indications in onomastic guise.[34] The default Old Irish formation shows generalized *o*-grade of the primary comparative: *sen* "old" → *siniu* "older", with *-iu* < **-yōs*.[35] While the Brittonic languages do preserve synchronically irregular remnants of this formation (e.g. MW *hen* "old" → *hyn* "older" with probative umlaut), the productive comparative employs a suffix of doubtful origin most safely[36] reconstructed as PBr. **-a/oχ* < Pre-Br. **-a/okko-*. By contrast, the superlative univocally points to PCelt. **-isamo-* < **-is-m̥o-*, an innovative formation shared with Proto-Italic (as

34 Such as the Celtib. TN *Segisama* and Gaul. ThN *Belisama*, interpretable as superlatives meaning "most victorious" and "strongest", respectively; see Wodtko 2021 for what else can be gleaned.

35 The long vowel, here as in the amphikinetic anim. *s*-stems more generally, may be by ancient (already PIE) analogy to the nom. sg. m. of resonant-final roots (e.g. **ph₂tēr* < **ph₂ter-s* by Szemerényi's Law). Since both Goidelic and Brittonic limit gradation forms to predicative usage only, Celtic provides hardly any evidence for non-nominative case-forms.

36 But see the complex alternative proposal **-oχ* < **-(y)os-V(C)* in Schrijver 2007, relying on a novel sound law and analogical reshaping. The older suggestion **-aχ* < **-āk-is-on-* (Morris-Jones 1913, 243 followed by Jensen 1934, 129 and Zimmer 2000, 274) is phonologically untenable due to requiring an *ad hoc* and extremely early syncope of medial **i*, as pointed out by de Bernardo Stempel 1989. Other proposals (such as **-okso-* as per Sommer 1900, 244) lack morphological motivation. Regarding the possibility of expressive gemination in specifically predicative adjective forms, compare Chuv. *ku śĭn pĕччĕkĕ* "this man is small" versus *pĕччĕk śĭn* "small man" (Clark 1998, 437).

elucidated by COWGILL 1970) and structurally equivalent to *-*is-to*- found elsewhere. Once again *-*tero*- survives in lexicalized forms from categories A (e.g. OIr. *óchtar* "the upper part" < Pre-Celt. **owps-tero*-) and B (e.g. the OIr. pl. poss. pronouns *náthar* and *sethar*); but in addition there are remnants of category F, such as the aforementioned OIr. *ósar* "younger", *sinser* "older" (besides regular *siniu*). On the curious case of the morphological-synthetic equatives in OIr. -*ithir* and PBr. *-*het*, see KAHL 2017 (with reference to the older literature) as well as now GRIFFITH 2021, 237–240 and NURMIO & RUSSELL 2021, 204–211. While it cannot be ruled out that -*ithir* continues a comparative *-*tero*-formation (as per MEID 1967 following ASCOLI 1891 and in essence already ZEUSS 1871, 274–275), this would leave the functionally equivalent Brittonic morpheme unexplained. In sum, PRIM is likely to have been the default strategy for PC adjectives at the Proto-Celtic level, while SEC appears in the domain of positionals.

The Italic evidence for comparative formations is predominantly Latin, as are forms cited here unless otherwise indicated. The *o*-grade of the primary comparative has been generalized in adjectival forms; thus e.g. *senior*, gen. -*ōris* "older" < **sen-yos*- (as in at least the Goidelic branch of Celtic). The adverbial evidence for the primary comparative points to both zero-grade (e.g. *magis* "more") and *o*-grade (e.g. *fortius* "more strongly", Osc. *fortis*[37] "id.").

37 Sabellic syncope rules mean that -*is* here must be from *-*yos* (or less plausibly *-*yes*) rather than reflecting old zero-grade *-*is* (see BUCK 1904, 59); Osc. *mais* "more" could arguably go back to either.

Notably, lexicalized *māiestās* f. “majesty” indicates rare *e*-grade of the suffix, being an abstract formed to **mḗǵ-yes-* “larger” which has not left any other trace. As expected, there are numerous instances of **-tero-* reflecting categories A (e.g. *exter* “located outside”), B (e.g. *alter* “the one, the other”, *vester* “your” and Umbr. *uestra* abl. sg. f. “id.”), C (*mātertera* f. “aunt” ← *māter* f. “mother”) and notably D in the clan name *Ferter* < **b^{h}er-tero-* (as per García Ramón 2013). As in Celtic, we find category F particularly with the compound suffix **-is-tero-* (*sinister* “left”, but also *magister* m. “master” and Umbr. **mestru** nom. sg. f. “larger” versus *minister* “servant” and Osc. *minstreis* gen. sg. f. “smaller”). Conversely, **-tero-* formations are also hypercharacterized with the primary comparative, sometimes replacing the more basic form: thus e.g. *interior* “inner”, *ulterior* “farther” (replacing unattested **ulter*). While the attested superlative formations raise many phonological problems of detail (see e.g. Nishimura 2005 and Nishimura 2017), the productive Lat. suffix *-issimus* and its variants clearly go back to characteristically It.-Celt. **-is-mo̯-*, with archaic **-mo̯-* and **-tmo̯-* in isolated positionals (e.g. *summus* “highest” < **sup-mo̯-*, *ultimus* “last” < **ol-tmo̯-*). The overall picture is very close to that presented by Celtic, with PRIM the clear default strategy for PC adjectives, but evidence for SEC with positionals (along instances of **-tero-* in other functions).

Germanic has clearly generalized the zero-grade of the primary comparative with an additional nasal suffix; the Proto-Germanic suffix is thus reconstructible as *-*iz-an-* < *-*is-on-* with a variant *-*ōz-an-* of adverbial origin (see section 4.5.1 below). The corresponding superlative is *-*ista-* < *-*isto-* with the variant *-*ōsta-*. The system is best preserved in Gothic; thus *hardus* "hard" → *hardiza* "harder", *hardista* "hardest". Traces of gradation without the nasal suffix are preserved in certain *devī́*-style feminines (e.g. Go. *juhizei* nom. sg. f. "younger") as well as adverbs (e.g. Go. *mais* "more"). Comparative *-*tero-* is not in evidence with PC adjectives, but other categories are well-attested; thus in OHG e.g. *nidar* "below" (< **ni-tero-*) from category A and *andar* "other" from category B as well as probably *mūstro* "bat" (← *mūs* "mouse") from category C and *winistar* "left" (← *wini* m. "friend", thus lit. "the friendlier one" as euphemism) as an instance of category F corresponding to Lat. *sinister*.[38] The Germanic picture thus broadly resembles that of Italic and Celtic, with PRIM indisputably the default strategy for PC adjectives while the ample evidence for *-*tero-* includes degree formation of positionals.

38 More examples from the range of Germanic languages in KRAHE & MEID 1967, 179–180. Beside basic *-*ter* and *-*tero-*, the variants *-*tor*, *-*toro-*, and *-*tro-* seem unusually well-represented in Germanic, as is disagreement among languages concerning the suffix vocalism of a given lexeme. This at least suggests derivational processes at the Germanic level, but the matter is far from clear given the complex developments of post-tonic vowels throughout the branch.

Greek is one of two branches to make productive use of two different morphological-synthetic strategies. Aside from a few relics reflecting *o*-grade PGk. **-(ī)yos-*, the primary comparative is continued in the zero-grade with an additional nasal suffix **-ĭ̄s-on-* > -ιον- (variant *-jov- by late contamination), with corresponding superlative **-isto-* > -ιστο-. Meanwhile, **-tero-* > -τερο- constitutes the secondary comparative, with corresponding superlative -τατο-.[39] Crucially, there is a clear pattern to the distribution and usage of the primary and secondary degree formations: PRIM is restricted to adjectives with at most one suffix, with the degree marker substituting for said suffix (e.g. ἐλαχύς "small" → ἐλάσσων "smaller", ἐλάχιστος "smallest"); SEC is used in all other cases, with the degree marker appended to the existing suffix or suffixes (e.g. παλαιός "old" → παλαιότερος "older", παλαιότατος "oldest" and with a substantival base βασιλεύς "king" → βασιλεύτερος "more kingly", βασιλεύτατος "most kingly").[40] Already in Homer, and throughout the dialects, the

39 Given the clear evidence for **-tm̥o-* from several other branches, it is likely that -τατο- is the result of remodeling under the influence of the primary superlative in **-isto-* and the ordinals in **-to-*; thus already ASCOLI 1876. This may have occurred either before the vocalization of syllabic nasals (**-tm̥to-* replacing **-tm̥o-*) or after (-τατο- replacing †-ταμο-). A special connection between ordinal and superlative suffixes in PIE is noted by BENVENISTE 1948, 161–168 and KURYŁOWICZ 1964, 238–239; see also NISHIMURA 2001 and LUJÁN 2019. A related issue in the history of French is raised by SPITZER 1925, 8–10. In some Modern Iranian languages, furthermore, the superlative suffix reflects the combination of inherited comparative *-tar-* with an attributive marker that is also obligatory on ordinals; see e.g. AXENOV 2006 for Bal. *tar-ēn* and YOUSEF 2018 for Pers. *-tar-in*.

40 See also ROSENKRANZ 1930, 150 on εἰκότερον as comparative to adverbially used εἰκός ptc. perf. act. nt. "resembling; probable; seemly" in the Attic of Antiphon. As we will return to below, the normal strategy for participles is of type STAND+ADV with μᾶλλον "more" and μάλιστα "most" as degree adverbs.

morphonologically simpler SEC is encroaching strongly on the domain of PRIM (e.g. μικρός "small" → μικρότερος not †μίσσων "smaller", μικρότατος not †μίκιστος "smallest"), a process also indicated by the occurrence of hypercharacterized forms such as χειρότερος (O 513) "inferior" ← χείρων "id."; see SEILER 1950, 124 for additional examples. Of course, there are also many instances of non-comparative function, including categories A (e.g. πρό "in front, before, earlier" → πρότερος "located in front") and B (e.g. ἡμέτερος "our", ὑμέτερος "your") as well as the rare D (φέρτερος "better"); as mentioned in the introduction, Greek also provides the best evidence for category E. Note that δεύτερος "second" is probably from a deictic invariable *δευ, rather than deverbal to Hom. δεύομαι "to need" as per *DELG*[2], s.v.[41]

The Indo-Iranian languages (examples here drawn from Vedic unless otherwise indicated) most closely match Greek in the essentials. Proto-Indo-Iranian comparative *-*(ī)yas*-[42] and superlative *-*ista*-[43] are used directly with verbal roots (e.g. *yaj* "to sacrifice" → *yájīyāṁs*- "sacrificing better", *yájiṣṭha*- "sacrificing best") as well as substitutively with

41 RUIJGH 1970, 317–318 convincingly argues that *δευ (itself a Greek innovation perhaps connected to the -δε of demonstratives like ὅδε "this") is preserved in the "pseudo-imperatives" δεῦτε as well as δεῦρο and δεύρω "(come) here!", explaining the latter as the instrumental of an adjective *δεῦρος "located here".

42 It cannot be said with certainty whether this reflects original *o*-grade or *e*-grade, given persistent uncertainties about the precise scope of Brugmann's Law and the strong possibility of paradigmatic leveling. The Indo-Aryan suffix variant *-(ī)yāṁs*- is obviously secondary; compare the perfect active participle in strong stem *-vāṁs*- ~ middle stem *-vas*- ~ weak stem *-uṣ*-.

43 For present purposes, I treat the dental aspirate of Ved. *-iṣṭha*- as an innovation; but it may well be evidence of an original cluster with *h_2 (see MAYRHOFER 1986, 135–136) or – less likely – owed to the sporadic aspiration caused by a preceding sibilant (see HIERSCHE 1964, 254 and KÜMMEL 2007, 170).

adjectives containing at most one suffix (e.g. *áṇu-* "small" → *áṇīyas-* "smaller", *áṇiṣṭha-* "smallest"), while **-tara-* and **-tama-* are used with adjectives of more than one suffix (e.g. *bhágavat-* "bounteous" → *bhágavattara-* "more bounteous", *bhágavattama-* "most bounteous").[44] At least in the earliest attested stages, Indo-Iranian maintains distinct spheres of application for PRIM and SEC with greater consistency than does Greek, although already in Vedic one finds exceptions (e.g. *purú-* "plentiful" → *purutáma-* "most plentiful") and hypercharacterized forms (e.g. *śréṣṭhatama-* "most beautiful" ← *śréṣṭha-* "id." ← *śrī-* "beautiful"), and the secondary comparative was increasingly generalized in this branch as it was in Greek. As might be expected, **-tero-* is not found exclusively as a degree formant, but also reflecting categories A (e.g. Av. *fra* "in front, before, earlier" → *fratara-* "located in front"), B (e.g. *katará-* "which of two") and C (e.g. *aśvatará-* m. "mule" ← *aśva-* m. "horse", *Vṛtra-* PN → *vṛtratára-* "more like Vṛtra, a worse Vṛtra"); F is seen in Av. *vairiiastāra-* "left".

Having completed this brief survey of comparative formation in the oldest stages of the NIE group, a few remarks on accent and ablaut are in order. The amphikinetic accent-ablaut pattern generally reconstructed for the primary comparative is not preserved as such in any language. Paradigmatic leveling and renewal appear to have obscured everywhere the original

44 This is extended even to participles: thus Ved. *juṣ-* "to enjoy" → *júṣṭa-* ptc. perf. pass. "delightful" → *júṣṭatara-* "more delightful", Skt. *ved-* "to know" → *viduṣ-* ptc. perf. act. "wise" → *viduṣṭara-* "more knowing, wiser".

distribution of the inflectional allomorphs; however, there is ample cumulative evidence for the existence *e*-grade, *o*-grade, and zero-grade of the suffix across branches. It is the existence of this variation, but especially the preponderance of *o*-grade over *e*-grade specifically in Greek and Latin (more marginally also Insular Celtic) which most directly points to amphikinetic inflection. Beside the clearly derivational zero-grades contained in **-is-on-*[45] and superlative **-is-to-*, the bulk of the evidence for allomorph **-is-* consists of comparative adverbs in various branches continuing nominative-accusative neuter forms predating paradigmatic leveling in favour of the full-grade allomorph. The best evidence for *e*-grade **-yes-* comes from Lithuanian, where it may have been generalized from the locative singular, and a few scattered forms such as the aforementioned Lat. *māiestās* f. "majesty". The secondary comparative of Indo-Iranian and Greek, meanwhile, does not display apophonic variation of any kind; in this function at least, the *e*-grade of **-tero-* seems to have been universal. There is some evidence that in its other functions **-tero-* displayed ablaut in derivation (though not in inflection, being a thematic suffix). An *o*-grade allomorph is indicated by such category B forms such as Av. *katāra-*

45 The combined testimony of Greek, Germanic, and Lithuanian (as well as arguably Albanian) strongly suggests that extending the primary comparative with a nasal suffix was an option already at the level of PNIE; see Rau 2014, 329. As the nasal variant has been generalized wherever it appears unambigously, its original distribution is uncertain. It is probably identical in origin to the suffix **-on-* deriving substantives with an evaluative or characterizing nuance, preserved in personal names such as Gk. Στράβων ← στραβός "squinting", Lat. *Catō* ← *catus* "cunning" and continued by Romance augmentative suffixes (e.g. It. *libro* m. "book" → *librone* m. "very big book, tome" or Sp. *taza* f. "cup" → *tazón* m. "very big cup, bowl").

"which of two" (versus Ved. *katará-*), OCS *kotoryi* "which" (versus less frequent *koteryi*) and *vъtoryi* "second", Cham Alb. *tjatrë* "another" (versus OTosk *jetërë* and Standard Alb. *tjetër*).[46] Meanwhile, evidence for a zero-grade allomorph of either **-tero-* or related **-ter* appears in forms such as Ved. *kútra* "where?" and *devatrā́* "among the gods", Go. *þaþrō* "hence", Gk. ἀλλότριος "of another", and Lat. *intrā* as well as *intrō* "inward, within".[47] The contrast of Ved. *āntrá-* n. "innards" and its Gk. synonym ἔντερα is particularly striking.[48] Granting that at least some of these forms reflect archaic processes, the material is nevertheless too sparse and disparate to permit any conclusions as to the distribution and function of (especially qualitative) ablaut as regards this suffix, or for that matter its athematic ancestor; see also KLINGENSCHMITT 2005, 145.

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46 Various Germanic forms (such as Go. *hvaþar* and OE *hwæþer* "which") could go back to either ablaut variant. On the suffix of Hitt. *nuntaraš*, see the discussion in section 2.2.2 below. Note that some cases of apparent suffixal *o*-grade could be due to a sporadic assimilation ***o...e(...o)* ⇒ **o...o(...o)*.

47 Notably, the semantic relationship of e.g. *inter* "within" < **en-ter* and *intrō* "inward"< **en-tr-oh₂* is that of a locative and a directive. Although the directive morpheme (athematic **-h₂e* ~ thematic **-o-h₂* < **-o-h₂e*) is usually construed as a case-ending, this does not preclude its application to what are synchronically positionals; compare such Anatolian sets as Hitt. *šarā* "upwards", *šēr* "above", Luw. *šarri* "id." or Hitt. *peran* "before", *parā* "toward", *parza* "...wards", Lyc. *pri* "in front". Such processes are most likely at the heart of the forms with zero-grade suffix considered here.

48 The words may reflect a *vṛddhi*-derivation **en-ter* "inside, inner" → **ēn-tr-o-* "that which is inside" (> *āntrá-* "innards"); an otherwise plausible genitival thematization of type **dm̥h₂-er* "in the house" → **dm̥h₂-r-o-* "one who is in the house" (> *dārá-* f. "wife") would leave the long initial – secondarily shortened in the later language – unexplained. The Greek full-grade suffix form could in principle be due to analogical restoration, but in light of e.g. Ved. *ántara-* and Lat. *interior*, it is more plausible to set up a different, though ultimately synonymous, formation **en-tero-*. Note that parallel **en-ero-* > ἔνεροι "those in the Underworld" (not ***en-r-o-* > †ἐνροι) also argues for this pathway concerning Greek, at least.

We turn now to the observed distribution of gradation strategies across NIE. Setting aside Albanian and Armenian, we may summarize the default gradation strategies for different adjectives classes as follows:

	simple PC	complex PC	positional
Indo-Iranian	PRIM & SEC	SEC	SEC
Greek	PRIM & SEC	SEC	SEC
other	PRIM	PRIM	SEC

Table 2.1

Clearly, SEC as a productive strategy for PC adjectives is indeed limited to Indo-Iranian and Greek.[49] Setting this aside for the moment, two conclusions regarding PNIE suggest themselves. First, the universal agreement concerning the strategy applied to positional adjectives suggests that they are the original domain of SEC – a hypothesis further bolstered by data from Anatolian and Tocharian as well as by the derivational history of *-*tero*- (see below). Second, simple PC adjectives constituted the core domain of PRIM in PNIE, as this is the situation in the only two branches which neither generalized nor lost that strategy; it also accords with

49 While this has often been recognized, disagreement has historically centered on whether to interpret the secondary comparative as a common Graeco-Indo-Iranian innovation (thus e.g. MEILLET 1908, 114 and BONFANTE 1931, 130) or as the result of more or less independent developments in the separate prehistory of each branch (thus e.g. GÜNTERT 1909, 119 and SOMMER 1947, 54). As will be explored in the next section, there are morphonological reasons why derivational patterns with *-*tero*- would have gained ground in both Greek and Indo-Iranian, whatever their relationship in phylogenetic or areal terms.

observation that SEC progressively encroaches on this domain in the attested history of those same branches. Thus:

	simple PC	complex PC	positional
Indo-Iranian	PRIM & SEC	SEC	SEC
Greek	PRIM & SEC	SEC	SEC
other	PRIM	PRIM	SEC
PNIE	PRIM	?	SEC

Table 2.2

By contrast, the strategy used in PNIE to handle gradation of complex PC adjectives is not immediately evident from the above. The substitutive and root-based character[50] of PRIM makes it difficult to see how it would have been consistently applied to this heterogeneous class in the protolanguage, especially in cases where morpheme boundaries were not obvious to speakers. It is more plausible that such adjectives were instead handled by means of SEC; but there is in fact a broader range of possibilities that merit consideration on the hypothesis that morphological-synthetic gradation strategies were, in fact, defective in the protolanguage.

Lacking a way to form comparatives or superlatives to morphologically complex or opaque PC adjectives, speakers could in principle simply avoid utterances which would require

50 A trait best preserved in Greek and Indo-Iranian, but also visible in other branches, where it in some cases is even expanded to novel derivational patterns; see e.g. BALLES 2003 on substitutive *-idus* in Latin and MAJER 2017a, 231–235 on "neo-Caland" in Slavic.

constructing such forms; but it is unlikely that complete avoidance of all such recalcitrant adjectives in contexts of comparison and gradation was ever the only recourse. Another solution was to press into service unrelated lexemes to serve as irregular gradation forms, thus creating suppletive paradigms. There is ample evidence for suppletive degree forms throughout NIE with certain high-frequency, semantically basic lexemes (see DIEU 2011 and already OSTHOFF 1899, 20–31); but the strategy is too uneconomical to have ever been generalized. The expression of comparison by other means – mainly by case-marking of the standard either by itself (STAND) or in addition to the use of a comparative adverb (STAND+ADV) – is another possibility. Even setting aside Anatolian and Tocharian for the moment, we have seen that Armenian and Albanian make use of such strategies almost exclusively, and that although Balto-Slavic retained versions of the primary comparative, the expression of superlatives seems to have been handled syntactically at least as far back as Proto-Slavic and Proto-Baltic.[51] These patterns may represent the survival and expansion of archaisms, rather than having emerged without precedent in each branch or language individually.[52] And indeed the most archaic stages of several branches provide evidence thereof. We see STAND+ADV in the

51 See *GCS* II, 591–595 and STANG 1966, 269–270. The superlative morpheme *-iáusia-* appears to be an innovation peculiar to Lithuanian, and the prefixes used in Slavic and Latvian obviously originated in free morphemes.

52 The later histories of Indo-Iranian, Greek, Italic (specifically Romance), and indeed English do show that it is possible for multiple languages to individually reinvent or reintroduce gradation by means of STAND+ADV strategies; but there remains the central question of what PNIE did when the PRIM and SEC were not applicable.

aforementioned use of Gk. μᾶλλον as a comparative marker in both Homer and the Classical language; thus μᾶλλον ἐπήρατος "more delightful" (δ 606) and μᾶλλον οἰκτρόν "more piteous" (Eur. *Her.* 536). Similarly, Lat. *magis* (OLat. also *mage*) and *plūs* "more" are actually found as comparative markers already in pre-Classical usage, centuries before the ascendance of Romance varieties; thus *argūtum magis* "more garrulous" (Plaut. *Trin.* 200) and *mage vērum* "more true" (Ter. *Andr.* 698) as well as *tibi infesta // plūs quam cuiquam* "more hostile to you than to anyone" (Plaut. *Cas.* 676–677).[53] In the Baltic languages, participles are subject mostly to gradation of type STAND+ADV, as in Lith. *žìnomas* "well-known" → comparative *labiaũ žìnomas* "more well-known", superlative *labiáusiai žìnomas* "the most well-known" (PETIT 1999, 119); of course, this is largely[54] true of e.g. Modern English as well. Ancient examples of STAND are more controversial, but one may adduce Latin constructions such as *prae nōbis beātus* "happier than ourselves" (Cic. *Fam.* 4, 4, 2) in which the standard is governed by a preposition such as *prae* "in front of", *praeter* "beyond", *ante* "before", or *super* "above" while the parameter is expressed by

53 See CUZZOLIN 2011, 597–601 for differences in the usage of *plūs* versus *magis* and speculation concerning their original distribution. It is tempting to imagine but difficult to corroborate or falsify that the Romance usage reflects the pre-Classical pattern, which had never vanished completely, having simply been restricted to non-literary registers for several centuries. Regarding the relevant conception of Vulgar Latin as a sociolect coexisting with – rather than a historical stage succeeding – Classical Latin, see e.g. the remarks in ADAMS 2013, 3–27.

54 Notwithstanding the occasional striking innovation such as *winninger* "having more wins" and *winningest* "having the most wins".

the positive adjective without any additional synthetic or analytic marking.[55] More marginally, there is the Avestan use of the positive instead of the comparative as the first member of a compound, while preserving the rection of the standard which would be proper to a comparative: *uγra.zaošå ṯbišiianṇbiiō* "having stronger desires than those hostile" (Yt. 13.31; see SKJÆRVØ 2009, 125). Consider also the "paronomastic genitive of intensity"[56] in expressions such as Gk. κακὰ κακῶν "woes of woes = worst woes" (Soph. *OC* 1238), Ved. *satyásya satyá-* "truth of truth = quintessence of truth" (TS. 1.6.1.1.), OPers. *xšāyaθya xšāyaθiyānām* "king of kings = supreme king" (DB 1,1), and OLat. *summa summarum* "sum of sums = final sum" (Plaut. *Truc*. 25); while not all examples lend themselves to translation by means of an adjectival degree form, the pattern can clearly be used as a periphrastic superlative (thus e.g. κακὰ κακῶν corresponds to κάκιστα κακά).

It is possible that all these cases – like sporadic instances of analytic comparatives in early North Germanic (ENGER, HÖDER & VINDENES 2021, 270) – along with the Armenian and Albanian states of affairs represent independent innovations with respect to the proto-language. But this cannot simply be assumed without painting a coherent picture of how

55 See ITTZÉS 2021, 515 following KÜHNER & STEGMANN 1914, 468 contra PINKSTER 2015, 928.

56 On this phenomenon, more familiar from Biblical Hebrew expressions such as *šīr ha-šīrīm* "song of songs", see OERTEL 1937 and especially SCHÄFER 1974 with literature.

gradation of morphologically recalcitrant or opaque lexemes was effected instead.[57] Given the disagreement between branches and the reasons for regarding the use of SEC with PC adjectives as an innovation of Greek and Indo-Iranian, I suggest rather that analytic as well as synthetic gradation occurred in the protolanguage, with complex PC adjectives as the core domain of the former. Moreover, the evidence we have mainly points to STAND+ADV rather than STAND. Thus:

	simple PC	complex PC	positional
Indo-Iranian	PRIM & SEC	SEC	SEC
Greek	PRIM & SEC	SEC	SEC
other	PRIM	PRIM	SEC
PNIE	PRIM	STAND+ADV	SEC

Table 2.3

At the PNIE level, then, gradation forms were available – by means of two entirely distinct suffixes – for both positional adjectives and morphologically simple PC adjectives; yet for morphologically complex PC adjectives speakers either had to resort to analytic degree-marking or dispense with it entirely.[58]

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57 With respect to similative and equative constructions, the absence of synthetic degree-marking on the parameter is, of course, universal in IE outside Insular Celtic; the extension of this to comparisons of inequality would have been an obvious solution to problem cases where both PRIM and SEC were difficult or infelicitous.

58 Note that while GALLIS 1948, 21–22 anticipates the view that synthetic degree-marking was not universal in the proto-language, he does not elaborate on the patterns that likely structured this variation.

2.2.2. Anatolian, Tocharian, and PIE

The Anatolian languages (of which Hittite and the Luwian dialects provide the vast majority of total material, including all unambiguous instances of comparisons of inequality) are generally taken not to mark degree of comparison on PC adjectives in any way. While the extensive Hittite corpus contains relatively few comparisons of inequality as opposed to similative or equative constructions (Zeilfelder 2001, 475–476), there is sufficient data to show that the unmodified adjective is used in comparative constructions. The standard of comparison is in the dative-locative[59] for the comparative degree, and in the dative-locative plural or genitive plural for the superlative degree (see Hoffner & Melchert 2008, 273–275 as well as Zeilfelder 1996a). The default strategy is probably of the type STAND, but there does appear to be limited or optional use of analytic degree markers such as the focus particles *imma* and *=pat*, which perhaps serve to strengthen or disambiguate comparative and superlative readings (Molina 2021, 43–45). Recently, Yakubovich 2013 has claimed that Luwian did possess a synthetic

59 There is apparently a single instance of the ablative in this function, considered secondary or even erroneous by Melchert 1977, 215–216. Interestingly, it is rather the ablative (or equivalent) that is the unmarked case for the standard in comparative constructions (see Stassen 1985, 39–40 and Creissels 2008, 624).

comparative-superlative[60] for PC adjectives marked by the suffix *-zza-* < **-tyo-* (or arguably **-tyeh$_2$-* as per HAJNAL 2004, 193). The suffix has Anatolian cognates in Hitt. *-zzi(ya)-* and Lyc. *-zze/i-*, serving to derive adjectives from positional invariables; thus Hitt. *šarā* "up(wards)" → *šarazzi(ya)-* "upper" and Lyc. *hri* "up" → *hrzze/i-* "upper". Indeed, not only does **-tyo-* in this function likely go back to PIE, but there is also at least one[61] perfect cognate uniting multiple Anatolian and non-Anatolian languages: Ved. *ápatya-* "descendant" together with Hom. ὀπίσσω "backwards" and Hitt. *appezziya-* "hindmost" suggest **opV-tyo-* "at the back" (HAJNAL 1994, 151), competing with **op-ero-* (category A) as continued in Lyc. *epri-* adj. "later", Luw. *apara/i-* "later, younger", and arguably Lyd. *afari-* "descendant(?)".[62] Yakubovich's proposal unfortunately rests on a very few instances, of which only one (Tell Ahmar 1 § 16 per HAWKINS 2000, 240) actually contains an explicit standard licensing a comparative reading; the other passages permit positive, elative, or "absolute" superlative interpretations (e.g. "Great Sun-

60 Disambiguated by context, although MOLINA 2019, 302 argues that all passages adduced by Yakubovich are best read as superlatives. The interpretation of related Hitt. *-zzi(ya)-* as a degree marker goes back *in nuce* at least to GÖTZE 1925, 91; see also BENVENISTE 1962, 102–105.

61 Perhaps **ni-tero-* > ON *neðri* "low(er)", Ved. *nitarā́m* adv. "down(wards)" forms another such pair with **ni-tyo-* if the latter is indeed the source of OCS *ništь* "poor" or Lyc. *ñzzi-* "lower(?)"; see *LIPP* II, s.v. *ní*. Note that *EWAi* II, s.v. advises separating the **ni* of Ved. *nítya-* "own; perpetual" from that of *nitarā́m*. The concatenation of both suffixes may be reflected in CArm. *krcʿer* "younger, youngest", if it is indeed metathesized from *†erkcʿer* < **dwity-ero-* ← **dwi-tyo-* (> *erkicʿs* "second"); but see OLSEN 1999, 180–181. On **-tyo-* having apparently replaced **-ero-* in Hittite, see already KURYŁOWICZ 1964, 236.

62 If correctly identified by MELCHERT 1997, 37 contra CARRUBA 1959, 35 and GUSMANI 1964, s.v. The emended reading *afaril* by EULER & SASSEVILLE 2019, 131 fn. 24 suggests a verbal form instead.

God!" versus "Very great Sun-God!" versus "Greatest Sun-God!" at KUB 9 31 ii 30) with no clear criterion for distinguishing between them. The principal examples involve *ura-* "great" versus *urazza-* and *wašḫaya-* "devoted(?)" versus *wašḫazza-*.[63] The argument for a consistent contrast between base adjective and *-zza-*derivative is not convincing on this slender basis. New Luwian finds may expand the evidence for a true comparative-superlative in that language; if so, there would be a striking parallelism between **-tero-* and **-tyo-*, as they would both fulfill a binary-contrastive function across branches and be used as a generalized gradation marker in a specific subset of languages (Greek and Indo-Iranian in the one case, Luwian in the other). For the time being, this must be regarded as an interesting but unproven possibility.

The absence of productive degree markers for PC adjectives could be convincingly interpreted as due to loss if any clear remnants of it were to be identified in Anatolian; but attempts to do so, stemming mainly from the early years of the field, have not found acceptance.[64] The existence of **-(t)ero-* with Anatolian positionals, on the other hand, is

63 Presumably *wašḫaya-* and *wašḫazza-* derive separately from *wašḫa-* nt. "sacralized object", unless an otherwise unattested suffix substitution is posited.

64 For instance, the tentative suggestion of Pedersen 1938, 48 that Hitt. *-aiš* in *ḫandaiš* "heat" may continue the neuter of a "long-vowel" comparative of the Germanic or Slavic variety (discussed here in section 4.5) is essentially baseless; see rather *EDH*, s.v. and Rieken 1999, 218–220. Similarly unconvincing is the attempt of Rosenkranz 1964, 170–171 to connect the suffix *-šmi-* of certain derived anthroponyms to the Italo-Celtic superlative suffix, as nothing except superficial similarity appears to recommend this. Oettinger 2001, 87 connects the oronym *Šummiyara-* with Lat. *summus* "highest"; however, given the nature of toponymy and the status of the Hittites as relative newcomers to the region, it is unlikely that the name in question is originally Hittite or indeed Anatolian at all.

assured. Thus the aforementioned reflexes of **op-ero-* represent an old formation of type A. Similarly, the Lyc. adjective *ẽtri-* "lower, located below" (cf. *ẽnẽ* "under") and its Luw. equivalent *anantara/i-* (cf. *anan* "under") most likely go back to **n̥d^{h}-ero-* as reflected in NIE by forms such as Lat. *inferus* "low" and OHG *unter* "under"; see NEUMANN 2007, s.v. It is also probable that the onomastic element Luw. *uppara-*, Lyc. οπρα-, Pis. ουπερ- continues **up-ero-* "upper, located above" (MELCHERT 2013, 44). One could in principle attribute this element to the Indo-Aryan language attested in anthroponyms, theonyms, and hippological terms from the otherwise Hurrian-speaking Mitanni kingdom[65] of the mid-second millennium BCE; but there is no positive reason to do so instead of accepting a PAnat. **upara-* beside e.g. PIIr. **upara-* > Ved. *úpara-*, Av. *upara-*.[66] Finally, and despite initial appearance, it is probable that **-ero-* rather than **-tero-* is also the suffix in Hitt. *kattera-* "lower, inferior", an adjective obviously connected to local adverb *kattan* "below, under" and motion adverb *katta* "down". As the Luwian equivalent of the latter has now been identified[67] as *zanta*, the PAnat. reconstruction comes to **ḱm̥tero-*, which may in turn be analysed as **ḱm̥t-ero-* (as suggested in essence already by LOHMANN 1933,

65 The linguistic side of the "Mitanni Aryan" question is presented extensively in MAYRHOFER 1966 and KAMMENHUBER 1968. Concerning lexical influence on Hittite, see KRONASSER 1962–1966, 141–152.

66 In support of a PAnat. form **up* as opposed to **sup*, note Hitt. *ūpp-^{zi}* "to come up (of the sun)" (OETTINGER 1979, 233) and more speculatively *ummiyant-* "young(?)" (WEEKS 1985, 200).

67 GOEDEGEBUURE 2010, with further connection to Luw. INFRA-*ta* and the Lyd. preverb *kat* / *kan* / *kaτ*. On the irregular absence of a nasal in the Hittite reflex, see also MELCHERT 1994, 126; compare also instances of *-nC-* ~ *-C(C)-* fluctuation within Hittite itself, such as *nuntariya-* ~ *nut(t)ariya-* "swift".

319–320) or **ḱm̥-tero-*.[68] With reference only to Anatolian material, the former analysis is clearly preferable, and it furthermore aligns with Gk. κάτα and κασι° / κατι°; deeper connections to It.-Celt. **kom* remain too uncertain to influence the conclusion. As regards **-tero-* in Anatolian, the best evidence consists in the Hitt. adverb *nuntaraš* adv. "soon, quickly" and a Luw. congener †*nuntarra/i-* implied by *nănuntar(r)iyal(i)-* "present".[69] Although details are subject to debate, *nuntaraš* almost certainly represents a **-tero-*derivation to the positional invariable **nu* "now".[70]

We can conclude that Anatolian inherited **-(t)ero-* as a comparative formant for positionals, a function in which it apparently competed with **-tyo-*; barring vindication of Yakubovich's Luwian proposal, there is still no evidence it ever possessed synthetic PC comparatives or superlatives as a morphological category. The basic strategy instead appears to have been of type STAND.

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68 A hypothetical **ḱm̥t-tero-* should have given †*ka(n)zzazza-* or the like (cf. *ēzzazzi* < **h₁ed-ti* "eats"). Haplology from Pre-Hittite ***katta-tera-* (KRONASSER 1962–1966, 187) or reshaping under the influence of *katta* "downwards" (OETTINGER 1979, 537) are less probable than direct descent from **ḱm̥tero-*.

69 The apparent reduplication is shared by *nănun* "now", and may be due to a late development within Luwian.

70 See MELCHERT 1979, 262–265 and OETTINGER 2012. The Hittite suffix may go back to **-toro-* or **-tro-* by sound-law. Alternatively, Hittite may have borrowed a related form from Luwian following **-téro-* > *-tarra-* (as per ČOP 1970); the absence of evidence for *i*-mutation in the Hittite attestations could easily be due to morphological remodeling. Note also that a *vṛddhi*-derivation **nun-ter* → **newn-tr-o-* > **nūn-tr-o-* with subsequent analogical shortening is not out of the question, but nothing recommends it above the more obvious approach.

Turning to the second-most archaic branch of IE, we note first that the two Tocharian languages also do not mark degree on PC adjectives by morphological-synthetic means. Instead, both Tocharian A and B use case-marking on the standard of comparison frequently supplemented with various comparative adverbs. Comparative degree is indicated by the ablative and e.g. *lyutār* "more" in TA, by the ablative or more commonly the perlative and e.g. *olypo* "more" in TB; while superlative degree is indicated by the locative plural in TA and by either the locative plural or the genitive plural and e.g. *śpālmeṃ* adv. "excellent" in TB (Malzahn & Fellner 2021, 579–580). Other adverbs such as TB *tsamo* "very" or TA *ṣokyo* "id." are used to render elatives, but apparently not in actual comparisons of inequality. Without a token count of comparative constructions, it cannot be decided whether the default construction in each language was of type STAND or STAND+ADV, but it appears that both were employed in both languages; it may be significant that no lexeme can be reconstructed as a comparative or superlative marker for Proto-Tocharian. No reflexes of primary or secondary comparatives have been securely identified so far, nor any affixes that appear to be on the path towards grammaticalization as degree markers (as in the case of CArm. *-agoyn*). Some proposals in the older literature can now be ruled out simply due to our better understanding of the

intricacies of Tocharian historical phonology.[71] But even recent suggestions by specialists are generally unconvincing.[72] The evidence for Tocharian relics of positional *-*ero*-formations is better, but still inconclusive.[73] Perhaps the best case can be made for TA *mäcriṃ* "southern" reflecting *med^h-ero- > *$m^yäcäræ$ > *mäcär with the addition of an adverbial suffix -*iṃ*.[74] PINAULT 1998, 364 suggests *med^h-*i*-*ro*- instead, but the existence of *med^h-*ṃo*- (the "superlative" corresponding to *med^h-*ero*-) in YAv. *maδəma*- "middle", OE *medume* "common", etc. militates against this. The conspicuous absence of *-*tero*- from native Tocharian material is probably due

71 Thus FRAENKEL 1932, 14–15 attempts to derive aforementioned TA *lyutār* "more" from a *-*tero*-formation, but it is now clear that an *ā* in that language cannot reflect a PIE **e* in any position. To satisfy sound laws, an ablaut variant *-*tōro*- would have to be invoked; but although – as discussed above – there is some debatable evidence for *o*- and zero-grade of this suffix, there is none for the requisite lengthened *ō*-grade, nor is there any general morphological motivation for it.

72 To take one example: TB *nauṣ* (variant *noṣ*), TA *neṣ* adv. "earlier; formerly" has been tentatively explained as a dat. primary comparative **now-is-ey* to the root **new*- "new" (*DTB*, s.v.). But the regular outcome of **ow* > **æw* in TA is *o* rather than *e*, and the loss of final *-*ey* is unexpected in either language. Furthermore, starting from a root meaning "new" one should expect an adverbial **now-is-ey* to mean "(more) recently" rather than the opposite. Equally problematic is the suggestion by Melchert (reported in *DTB*, s.v.) that TB *olya* "more" might continue a Pre-To. adverbialized nom. sg. **oluyōs* of **ol-u*- (presumably an adjective meaning "far, distant") derived from **ol* "over there, far away" (*LIPP* II, s.v.). This is phonologically licit, but morphologically implausible: There is no other evidence or motivation for a stem **ol-u*- in IE, nor any reason to expect that the primary comparative suffix should be attached to such a base. Indeed, in Lat. †*ulter* (presupposed by *ulterior* "farther") < **ol-tero*- and *ultimus* "farthest" < **ol-tṃo*- we find the secondary suffixes as expected.

73 For instance, TB *parna*, TA *pärne* adv. "outside, beyond" < PTo. **päräna*- could be explained as dissimilated from ***pärära*- < PIE **per-ero*- (suggested by Meillet *apud* LÉVI 1916, 381). This **per-ero*- is also reflected by PGmc. **ferrē* adv. "far" (*pace* SCHMIDT 1962, 340).

74 See *DTB*, s.v. *omotruññaiṣṣe*. Since $*med^h$- "mid" denotes a position in space and time relative to two points of reference, it would have been susceptible to receiving the contrastive markers mostly employed with positional invariables. For the further semantic development, compare "mid-day" ⇒ "south" in both Lat. *merīdiēs* and Gk. μεσημβρία; the relevant physical fact being that, in the Northern Hemisphere, the sun is to the south when in the middle of its daily course.

to loss, given the suggestive Anatolian evidence – which may indicate that this version of the suffix had not attained a very wide distribution in the ancestral language.[75] Tocharian agrees with Anatolian, of course, in showing no probative trace of the primary comparative formant nor any remnant of synthetic superlatives.

We can now attempt to adapt the scheme used above for PNIE to include Anatolian and Tocharian:

	simple PC	complex PC	positional
Anatolian	STAND (& STAND+ADV)	STAND (& STAND+ADV)	(SEC)
Tocharian	STAND & STAND+ADV	STAND & STAND+ADV	(SEC)
PNIE	PRIM	STAND+ADV	SEC

Table 2.4

The qualified use of SEC for Anatolian and Tocharian positionals requires comment. There is very limited evidence for how gradation of positional adjectives was handled productively in the attested languages, but given the testimony of Anatolian it is clear that *-*(t)ero*- (perhaps in competition with *-*tyo*-) fulfilled that function in the prehistory of these branches. We can thus reconstruct for PIE that SEC was used for positional adjectives.

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75 Albanian, Armenian, and Balto-Slavic have also largely dispensed with *-*tero*- by their first attestation, but not as thoroughly as Tocharian and, except in the Armenian case, with several centuries of additional development in play: The oldest Tocharian texts date from the 6th century CE as compared to Armenian from the 5th, Slavic from the 9th, Baltic (fragmentarily) from the 14th and Albanian from the 15th century.

The distinction between simple and complex PC adjectives is predictably as irrelevant in Anatolian and Tocharian as it is in Armenian and Albanian, since synthetic degree-marking does not occur. Whether this state of affairs should be reconstructed for PIE is, of course, intimately linked to the question of whether PRIM was a PNIE innovation, and it is here that the limitations of data and method continue to preclude a definite statement. On the one hand, no trace of *-*yes*- can be identified in either Anatolian or Tocharian; on the other hand, its character as an ablauting *s*-stem formant embedded in an archaic system of substitutive root-based derivation argues for its antiquity in form if not necessarily in function. Taking into account the (nearly?) traceless loss of PRIM in the prehistory of Armenian and Albanian, I am ultimately inclined (*pace* e.g. BERG 1958, 217) to regard its corresponding absence from Anatolian and Tocharian as innovation rather than archaism. Meanwhile, complex PC adjectives might have been handled with STAND+ADV as in PNIE; but the simplicity of STAND as found prominently in Anatolian and Tocharian certainly has the appearance of archaism. Thus it is more plausible, in my view, to reconstruct for the oldest layer a mix of strategies STAND and STAND+ADV:

	simple PC	complex PC	positional
Anatolian	STAND (& STAND+ADV)	STAND (& STAND+ADV)	(SEC)
Tocharian	STAND & STAND+ADV	STAND & STAND+ADV	(SEC)
PNIE	PRIM	STAND+ADV	SEC
PIE	(PRIM)	STAND & STAND+ADV	SEC

Table 2.5

2.3. The development of the secondary comparative

Having established the distribution of gradation strategies, we can affirm (among other things) that the spread of SEC to PC adjectives is characteristic of Indo-Iranian and Greek. Note, however, that only *-*tero*- occurs in that particular function, while the gradation of positional adjectives uses both *-*tero*- and *-*ero*- in PNIE and most likely PIE as well. (Recall that *-*ero*- also competes with *-*tero*- among categories A and B as listed in the introduction.) Thus for Greek and Indo-Iranian:

	SEC with *-*tero*-	SEC with *-*ero*-
PC	✓	✗
positional	✓	✓

Several questions naturally arise at this point. First, what is the origin and original function of *-*ero*- itself? Second, how did *-*tero*- arise as a variant?[76] And third, how did the latter eventually (in historical times) become the unmarked comparative morpheme in two branches? I shall treat these questions in order, reflecting the most likely chronology of developments.

2.3.1. The locatival origin of *-*ero*-

As recognized already by JOHANNSON 1892, PIE[77] had a type of positional invariable consisting of a nominal stem (originally but not consistently in zero-grade) plus *-*er* or *-*en*.[78] Whether or not these were in origin true locative case-forms, with *-*er* and *-*en* fully integrated into the inflectional paradigm alongside the better-preserved locative singular exponents *-*i* and *-*Ø*, is

76 For an overview of older answers to these questions, see LUJÁN 2000, 89–91 (whose own approach, morphologically implausible in my estimation, is to separate *-*tero*- from *-*ero*- entirely and follow BOPP 1833, 388–389 as well as more recently BALDI & CUZZOLIN 2010, 56–59 by connecting it to the verbal root *$terh_2$- "to traverse").

77 The main body of evidence is drawn from descendants of PNIE; however, PIE status is ensured by additional Anatolian data. Thus Hitt. *utnē* "land" via a complex derivational chain ultimately reflects *(*H*)*wéd-en*, irrespective of whether the root is identified with that of Gk. οὖδας "ground" (see PETERS 1980, 57–58 as well as PETERS 1997, 109 fn. 23) or that of Greek ὕδωρ "water" (see OETTINGER 2000, 184 on the counterintuitive semantic development).

78 Despite their relatively early discovery, detailed study of these forms and their importance to nominal derivation across the family commenced with NUSSBAUM 1986, 235–238. See HAJNAL 1992, NUSSBAUM 1998, RAU 2007, NIKOLAEV 2009 (also arguing for *-*el* besides *-*er* and *-*en*), LUNDQUIST 2014, and MAJER 2017b for further details and examples.

a separate question.[79] At any rate, they are best preserved in Indo-Iranian, both directly in forms such as Ved. *jmán* "on earth" < **(dʰ)ǵʰ-m-en* "id." or *héman* "in winter" < **ǵʰey-m-en* "id." and indirectly in compounds such as Ved. *uṣar-búdh-* "who wakes up at dawn" reflecting **h₂us-er* "at dawn" or YAv. *zəmar-guz-* "who hides in the earth" reflecting **(dʰ)ǵʰ-m-er* "in the earth". They could serve as derivational bases[80] in processes of both internal (e.g. **h₂us-er* "at dawn" → **h₂us-er-* > Gk. ἕἠρ f./m. "morning mist") and external (e.g. **dm̥h₂-er* "in the house" → **dm̥h₂-r-o-* > Ved. *dārá-* f. "wife") derivation. Importantly, **-er* could also be attached to positional invariables as well as nouns; thus **(s)up* "above"[81] → **(s)up-er* "(farther) above, upper" > Lat. *super* "above", Go. *ufar* "over" and **op* "behind" → **op-er* "(farther) behind, after" > Go. *afar* "after". This could be seen as evidence against the function of **-er* as a case-marker, but it must be kept in mind that the boundary between nouns and invariables is porous: Adverbs and adpositions cross-linguistically often represent nouns which have been

79 The same goes for a possible relationship with the adposition **en* "in", on the one hand, and (as adumbrated by NIKOLAEV 2009, 481 fn. 69 following BENVENISTE 1935, 89-90) with the class of *r*/*n*-heteroclitics such as **wód-r-* / **wéd-(e)n-* "water", on the other hand. These lines of inquiry would obviously also be relevant to determining the original distribution of **-er* and **-en*. All this lies beyond the scope of the present study.

80 Compare e.g. Ved. *apsú* loc. pl. "in the waters" → *apsavyá-* adj. "located in water" and *Āpsava-* PN (Anukr.); see OSTHOFF 1878, 190–191 and *AiGr* II/2, 212. For (perhaps excessively) sceptical assessments of decasuative derivation in general, see LUNDQUIST & YATES 2018, 2107–2108 and especially FORTSON 2020; but as already noted, it is not clear that the relevant forms in **-er* and **-en* must be regarded as true case-forms.

81 See convincingly *LIPP* II, s.v. **súp* on this apparent case of "mobile **s*" as a result of contamination between originally distinct **up* "above" and **sup* "below".

reinterpreted and are no longer recognized as inflectional forms.[82] It is likely that a nucleus of *-*er*-locativals from nouns designating locations or times became lexicalized as positionals very early, and the morpheme then spread within that broader class.

At any rate, I argue that the origin of *-*ero*- and of its distributional properties can be found in thematic derivatives of locativals in *-*er*. From a locatival *X-*er* "in/at X" (whether synchronically interpretable as a case-form or not) could be derived a thematic hypostasis *X-*er*-*o*-[83] "located in/at X". As the productivity of *-*er* waned, the suffix conglomerate *-*er*-*o*- would easily have been reinterpreted as a single thematic suffix *-*ero*-. The initial and overall most productive domain of *-*ero*-derivatives – judging by the majority of branches, including the most archaic ones – was category A: hence *(*s*)*up*-*ero*- > Lat. *superus* "above, upper" or *op-*ero*- > Ved. *ápara*- "remote, later". The other categories developed out of this nucleus, although largely after the rise of the *-*tero*-variant.

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82 This can apply whether the base noun still recognizably exists in the language (as in Germ. *heim* adv. "at home, homewards" < OHG *heime* < PGmc. **haimei* dat. sg.) or not (as in Fr. *chez* "at" < OFr. *chies*, itself irregularly from Lat. *casa* or from an exceedingly rare by-form *casus*).

83 Note that while *$dm̥h_2$-er* → *$dm̥h_2$-r-o*- shows zero-grade of the suffix in derivation, the type posited here retained or analogically reintroduced full-grade of the suffix; this may indicate a distinction between substantivizing and adjectivizing derivation, respectively, but could also be due to other factors. As the correlation between accent and ablaut broke down in the later stages of the proto-language, multiple full-grade morphemes became common. Consider e.g. the hypercharacterized locatival *h_2*ews-er-i* "at dawn" (> Hom. ἦρι adv. "early" contracted from *ἠερι), which even retained its double full-grade when serving as the derivational base of the adjective *h_2*ews-er-i-o*- > ἠέριος "early"; see Peters 1980, 32–34.

If the function of *-*er* when attached to substantives was straightforwardly locatival, the exact nuance of difference between e.g. **(s)up* and **(s)up-er* is no longer accessible. It may, indeed, originally have been almost nonexistent, as the tendency of "small words" to accrue additional phonological material from different sources is well-known and may by itself account for the initial spread of *-*er* with the class of invariables. But in at least some contexts, the addition of a recognizable locative morpheme to an already positional invariable would plausibly have had a pleonastic and therefore potentially emphatic effect, akin to e.g. Germ. *innendrin* adv. "within" and *obendrauf* adv. "on top" with emphatic nuance as opposed to unmarked *innen* and *oben*, respectively. The derivatives in *-*ero*- were not true comparatives in the absence of corresponding positive adjectives with which they could be arranged on a scale; but they inherited from their bases in *-*er* this emphatic character. The use of *-*ero*- and later *-*tero*- in category B is to be understood in that light, as is the use of *-*tero*- to mark members of an oppositional pairs, originally conditioned by context (category E) and later inscribed in the lexicon (category F). However, explaining the integration of *-*(t)ero*-forms into the gradation system proper, and especially the extension of their domain to include PC adjectives, will require some additional steps.

2.3.2. The genesis of *-*ter* and *-*tero*- by metanalysis

Taking locatival-emphatic *-*er* and *-*ero*- as the starting point – securely established for PIE – the most plausible origin for *-*ter* and ultimately *-*tero*- lies in junctural metanalysis.[84] While it is probably impossible to identify the particular word or words on which this process was enacted, consider as one plausible candidate the PIE invariable **pro*[85] "in front, to the front" as continued by Hitt. *parā* /prā́/, Gk. πρό, Ved. *prá*, etc. For PNIE, we can reconstruct **prō-ter* (> Ved. *prātár* "early in the morning", Umbr. *pruter* "before") and **pro-tero*- (> Gk. πρότερος, Av. *fratara*- "in front, before, earlier") as well as **pro/e-ti* (> Hom. προτί, Ved. *práti*, Ltv. *pret* "towards, against").[86] Given the secure status of *-*i* as a locative singular morpheme, **pro-ti* might on occasion have been analysed morphologically as **prot-i*, which in turn could give rise

84 Regarding this term and its many (near-)synonyms in the linguistic literature, see Reece 2009, 15–26 and 359–360. It is here intended to refer to the familiar process of resegmentation or misanalysis by which e.g. ME (*a) naddere* and (*an) ewte* became *(an) adder* and *(a) newt*, respectively, in Modern English.

85 Quality and quantity of the root vowel is a vexed issue. While most languages seem to reflect **o* (e.g. Gk. πρό), there is clear evidence for **e* (Ltv. *pret*) and **ō* (Umbr. *pruter*) in certain forms; see *LIPP* II for exhaustive collections of material with sometimes idiosyncratic interpretations. Indo-Iranian reflexes do not consistently show the effect of Brugmann's Law (Ved. *prātár* versus Av. *fratara*-); see Volkart 1994 on the general issue. For present purposes, I operate with basic **pro*, indicating a different vowel only when the evidence calls for it unambiguously. Whether **pre*, **prō*, or indeed **pro-(V)H(V)* existed besides **pro* at the PIE and PNIE levels is not crucial for the scenario sketched here.

86 This suffix *-*ti* (perhaps ultimately connected to the PAnat. instrumental case morpheme) appears to have formed adverbs mainly to particle and pronominal bases; compare **e-ti* > Gk. ἔτι "still, besides", Ved. *áti* "beyond, over", Lat. *et* "and, too", Go. *iþ* "but, if" as well as **k*^{w}*o-ti* "how many" > Ved. *káti*, Lat. *quot*.

to **prot-er* given the semantic overlap between **-er* and **-i*.[87] Notably, if a hypothetical ***prōr* < ***pro-er* or indeed ***prōro-* < ***pro-ero-* ever existed, they were ousted completely by this variant, which had the phonotactic advantage of not necessitating vowel hiatus or contraction. Once **prot-er* achieved some currency among speakers whose lexicon nevertheless contained **pro*, the creation of a suffix variant[88] **-ter* would have been another trivial act of junctural metanalysis. The genesis of **-tero-* could then have occurred either by thematization of forms in **-ter* (parallel to and presumably influenced by the genesis of **-ero-* from **-er*) or again by resegmentation (with **prot-ero-* being interpreted as **pro-tero-*, to stick with the current example); both pathways are plausible on their own terms, and indeed they are not mutually exclusive. Note that (as mentioned in passing by Rieken 1999, 99, among others) there is an abundance of cases where, at least superficially, a nominal suffix appears to have a variant with

87 The semantic change of **-er* from locative to emphatic may have occurred after the rise of **-ter* as sketched here. In that scenario, **proter* and **proti* would have coexisted as (pseudo-)locatives, differentiating semantically once **-er* and **-ter* took on emphatic meaning in general. The absence of evidence for locatival **-ter* applied specifically to nouns could be due to chance.

88 I avoid the term 'allomorph' since the distribution of the variants at any given stage may have been lexically determined rather than governed by morphonological rules, even though – as stated above – hiatus avoidance and similar phenomena are likely to have played a role in the success of **-ter* and **-tero-*. Note that there are cases of different suffix variants being applied to the same root, as in the aforementioned Gk. ἔντερα nt. pl. "innards" versus ἔνεροι nom. pl. "those in the Underworld" (with semantic differentiation unconnected to the broader use of the suffix variants).

initial *_t_ alongside one without.[89] Some of these are surely to be explained by instances of junctural metanalysis similar to the one proposed here.

The required development could be ascribed either to PIE or PNIE, depending on the etymological assessment of Anatolian and Tocharian evidence; the earlier date appears preferable, mainly on the strength of Hitt. *nuntaraš* (and related forms). Either way, the origin of *-*ter* and *-*tero*- is thus comparatively trivial, assuming one is willing to separate these suffixes from a number of superficially similar ones with disparate functions.[90] Even discounting differentiation through derivational behaviour and accent-ablaut patterns, the co-existence of homophonous but functionally distinct grammatical morphemes within a language is not inherently a problem to be solved, but a commonly observed phenomenon in attested languages[91] that one would expect to encounter in the course of reconstruction as well.

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89 Alternative proposals for a purely analogical origin of *-*ter*- and *-*tero*- can draw on such pre-existing pairs as models. Thus SHIELDS 1980, 177 proposes *-*m̥o*- : *-*tm̥o*- :: *-*ero*- : X, with X = *-*tero*-; presumably this scenario would require a second analogical process *-*ero*- : *-*tero*- :: *-*er* : X to explain *-*ter*. While this cannot be ruled out, it is unlikely that the athematic version of the *t*-extended suffix was created later than the thematic one, and there is no positive reason to believe that both *-*m̥o*- and *-*tm̥o*- preceded either *-*ter* or *-*tero*-.

90 I explicitly consider the agent suffix *-*ter*- (e.g. *deh_3- "to give" → *deh_3-*ter*- > Gk. δωτήρ "giver"), the kinship suffix *-*ter*- (e.g. *$mā$-*ter*- "mother", *ph_2-*ter*- "father", *$b^hrā$-*ter*- "brother"), and the implement suffix *-*tro*- (e.g. *peh_2- "to protect" → *peh_2-tro*- > Go. *fōdr* "scabbard") to be unrelated to *-*tero*-, whatever complex relations they may have stood in to each other.

91 Among numerous secure examples, consider simply the Modern English coexistence of verbal third sg. pres. *-s*, nominal pl. *-s*, and genitival clitic *'s* – all identical phonemically, but completely distinct in both origin and synchronic function.

2.3.3. The path from emphatic to comparative

As explained in the introduction, *-*(t)ero*-derivatives of category A might have functioned as either positives, emphatics, binary-contrastives, or comparatives depending on setting and context. And indeed, although *-*tero*- is productive in Indo-Iranian and Greek specifically as a comparative marker for PC adjectives, it still retains evidence of its other functions into historical times. But this by itself does not explain how and why *-*tero*- increasingly encroached on the domain of simple PC adjectives which, at the PNIE level, was largely assigned to *-*yes*- (with an optional nasal suffix which was generalized in some branches). The most likely explanation has both a semantic and a morphonological component.

Since the core semantic domain of SEC was positional adjectives and that of PRIM was PC adjectives, the existence of lexical items which could be read as belonging to either class is almost certainly part of the story. Consider, for example, the positional invariable[92] **nu* "now", the widely attested[93] adjectival *vṛddhi*-derivative of which is **new-o-* (see DARMS 1978, 395). As

92 In traditional terms perhaps most safely classified as a temporal adverb in the vein of Ved. *nú*, but its direct descendants include enclitic particles such as Hom. νυ, adversative conjunctions such as OCS *nъ*, sentence connectors such as Hitt. *nu*, and preverbs such as OIr. *nu-* / *no-*.

93 See *NIL* s.v. **neu̯-*, noting that the PIE antiquity of **new-o-* is assured by Anatolian forms (Hitt. *nēwa-* and Luw. *nāwa/i-*).

such, **new-o-* in the first instance means "(of the) present" (Germ. *jetzig*), denoting temporal position and still closely linked to its derivational base. At the same time, and as the attested meanings of the reflexes of **new-o-* indicate, it was interpretable as a PC along the lines of "new, fresh, young".[94] As such, **new-o-tero-* (whence Ved. *návatara-*,[95] Gk. νεώτερος, probably CArm. *nor*) could mean either "closer to the present" or "newer, fresher, younger". Along the same lines, the aforementioned Luw. *apara/i-* is attested both with a default temporal reading "later" and at least once with a PC reading "younger" (Karkamiš A15b § 15 per HAWKINS 2000, 131), although **-ero-* did not become a comparative suffix in Luwian the way **-tero-* did in Greek and Indo-Iranian. Of course, the same bridging of the gap between different semantic classes of adjective could have also happened with a spatial as opposed to a temporal term; for instance, **(s)up-ero-* renders the positional meaning "upper" by a literal reading (thus Lat. *superus*), but also the PC meaning "superior" by a metaphorical reading (thus Ved. *úpara-* in at least some contexts as per GELDNER 1951, I/282). As with the metanalysis proposed above, the precise identity of the pivot lexeme or lexemes is less important than the semantic plausibility

94 If Hitt. *nuntaraš*, discussed above, indeed reflects some form of **-tero-*derivative directly to the invariable, it indicates an alternative path leading from "present" via "presently" to "fast". That this seems not to have been replicated outside Anatolian could simply be ascribed to the inherent aleatoric factor in semantic change.

95 Notably, this root also forms a primary comparative *návyas-* in Vedic, which may be a remnant of an original differentiation – already lost in the earliest texts – between a positional and a PC reading.

of the development and the existence of viable candidates at an appropriate time-depth, of which there can be no doubt here. One fact arguing for **new-o-tero-* over e.g. **sup-ero-* is that both Greek and Indo-Iranian generalized only **-tero-* as the comparative for PC adjectives; this makes it all but certain that the original pivot also used this form of the suffix.

Given an opening to enter the class of PC adjectives, SEC was extended first and most consistently to complex PC adjectives by both Greek and Indo-Iranian for a simple reason: Morphological gradation was defective at the level of PNIE, and **-tero-* provided a suitable remedy. However, the further spread of **-tero-* into the domain of simple PC adjectives (having begun prehistorically and coming to completion in the post-classical stages) is explained in part by morphonological considerations. Due to their more complex behaviour in terms of accent and ablaut, athematic suffixes were generally liable to be replaced by thematic ones. In Indo-Aryan, this certainly applied to primary comparative, which was subject to difficult *samprasāraṇa*-ablaut. Meanwhile, in Greek, a considerable advantage of **-tero-* over **-yes-* consisted the strong tendency towards palatalization by yod in the prehistory of the branch.[96] Any root ending in a Proto-Greek obstruent was subject to palatalization when a full-grade allomorph of the primary comparative morpheme was added, resulting in significant variation

96 The complex and dialectally diverse Greek developments which all Proto-Greek stops underwent in position before yod are outlined in RIX 1992, 90–93; for more extensive treatments, see DIVER 1958, SHEETS 1976, and RISCH 1979.

between positive, comparative, and superlative forms of the same lexeme.[97] Thus positive **meǵ-h₂-s* > μέγας "great" but comparative **meǵ-yos-es* > Ion. μέζους nom. pl. m. "greater". Furthermore, since the conditioning approximant was lost in the relevant environments, and palatalized allophones all merged with pre-existing phonemes, the variation in consonantism would have been relatively opaque to learners of Greek. In Indo-Iranian, only velars were affected by yod (see e.g. BURROW [3]1973, 77–78 and the thorough analysis in LIPP 2009, I/99–264) and the results were frequently leveled out; but at the Proto-Indo-Iranian stage the effect would certainly have been felt in forms such as positive **h₁lr̥g^{wh}-u-* > **lag^{h}-u-* "light, easy" versus comparative **h₁leng^{wh}-yos-* > **lanǰ^{h}-yas-* "lighter, easier" (as well as superlative **lanǰ^{h}-ista-* "lightest, easiest").[98] By contrast, affixation with **-tero-* did not cause any such issues in either branch. It had an additional advantage of simplicity in suprasegmental terms: Within the inflectional paradigm of a given comparative, the fixed or "columnar" accentuation typical of thematic formations was more economical, and thus obviously easier to acquire, than the mobile accentuation (probably still accompanied by vowel alternations) of *s*-stems

97 It is noteworthy that **-is-on-*, a variant of the primary comparative with nasal suffix, also gained significant traction in Greek, as it did not cause palatalization of the preceding consonant; however, it still displayed more complex accentual behaviour than the thematic **-tero-*derivatives.

98 In Vedic, the comparative of *laghú-* is *lághīyas-* with both grade and consonantism of the root leveled in analogy to the positive; but Avestan, while not directly preserving the basic *u*-stem, has the pos. f. *rəuuī-* "quick" and spl. *rənǰišta-* "quickest".

such as those derived by *-*yes*-. In sum, while the morphonological complexity induced by branch-specific palatalizations could be dealt with in different ways – such as leveling in Indo-Iranian and substitution of *-*is-on*- for *-*yes*- in in Greek – expanding the remit of *-*tero*-formations was nevertheless an attractive and economical option, and was pursued until the competing morphological formations had been largely ousted in historical times.[99]

2.4. Conclusion

Looking at the earliest documented stages of each branch of the IE family, we see a notable diversity in the morphosyntax of comparison and gradation; even a single language may employ multiple strategies that each have plausible claim to antiquity. I have argued that this variegated look is best explained by positing a number of distinct morphosyntactic strategies at the levels of both PIE and PNIE.

The second major claim of this chapter pertains to the origins and development of one such strategy. Having first shown that the Anatolian evidence supports the PIE status of contrastive *-*ero*- (in Lyc. *ẽtri*-, Luw. *uppara*-, Hitt. *kattera*-) and probably *-*tero*- (in Hitt.

99 Judging by e.g. Ved. *purú*-, OAv. *pouru*- "plentiful" → *purutáma*- , OAv. *pourutəma*- "most plentiful", SEC began to compete with PRIM for PC adjectives already at the Indo-Iranian level. Both in Indo-Iranian and Greek, there are also cases of hypercharacterization ("Doppelgradation" as per SEILER 1950, 124–125) in which a SEC-form is built additively to an existing PRIM-form: Ved. *śrī*- "beautiful" → *śréṣṭha*- "most beautiful" → *śréṣṭhatama*- "id." as well as Gk. suppletive ἀμείνων "better" → ἀμεινότερος "id." and μέγιστος "greatest" → μεγιστότατος "id."

nuntaraš and congeners), I was able to explain both its origin in an archaic locatival morpheme and its further elaboration into the secondary comparative of Greek and Indo-Iranian. The semantic aspect of this development was further bolstered by typological parallels.

To complement the present study and increase our understanding of how and when this suppletive system developed, future research may focus on the different superlative morphemes and constructions. In particular, while there is a straightforward derivational relationship between the primary comparative *-*yes*- and primary superlative *-*is*-*to*-, the connection between the secondary comparative *-*tero*- and the secondary superlative *-*tm̥o*-, as well as between their antecedents *-*ero*- and *-*m̥o*-, remains to be elucidated.[100]

100 A full accounting should comport with the "Synthetic Superlative Generalization", which states that the existence of a synthetic comparative is typologically implied by that of a synthetic superlative (Bobaljik 2012, 67).

3. Renewal: The evaluative origins of a Baltic comparative suffix

3.1. Introduction

Evaluative morphology – taken to comprise at least diminutives, augmentatives, pejoratives, and amelioratives – has attracted significant attention in recent decades; See the overview in Grandi & Körtvélyessy 2015. It has been influentially characterized by Scalise 1988, 131–133 (with specific reference to Italian) as a third type of morphology, distinct from and situated between inflectional and derivational morphology; thus evaluative affixes generally attach after derivational affixes but before inflectional ones (e.g. It. *campana* "bell" → *campanile* "bell tower" → *campanilino* "small bell tower" with diminutive *-in-* and inflectional *-o* sg. m.), often triggering idiosyncratic morphonological adjustments (e.g. It. *balcone* "balcony" → *balconcino* "little balcony" with diminutive *-in-* and idiosyncratic intrusive *c*). This characterization has had to be modified in light of research (see e.g. Stump 1993 and Bauer 1997) showing evaluative morphology to be less marginal and some of its most notable traits to not be universal, but there continues to be significant interest in various aspects of its diachrony. As outlined by Mutz 2015, both the origin and the further development or exaptation of evaluative affixes have been studied with reference to a number of IE and non-IE languages. But so far the focus has understandably been on modern languages rather than their attested and reconstructed

antecedents; and especially the diachronic interaction between evaluative morphology and the morphology of comparison or gradation has received little attention, even though intersections between them had already been remarked upon in the earlier comparative-historical linguistics of various branches.[101] As a contribution towards filling this gap, this chapter deals with the origin of an East Baltic suffix which surfaces in Latvian (and closely related varieties) as the comparative morpheme but in Lithuanian as a suffix of attenuation or qualification ("rather X", "somewhat X"). Its most important cognate has sometimes been sought in the similarly innovative Brittonic comparative W *-ach*, Bret. *-och* or *-ach* < PBr. **-a/oχ*, a comparison beset by phonological difficulties.[102] Instead, a look at the closest formal matches of the East Baltic morpheme in other branches of IE (particularly in Greek and Latin) shows its evaluative heritage. In the following, the evidence will be presented and discussed with a view to clarifying the distant origins of an eccentric comparative suffix and exemplifying an unusual but perhaps not unparalleled developmental path.

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101 See, for instance, RAUN 1947 and GĀTERS 1954, with reference to earlier works but no systematic treatments.

102 The Brittonic forms necessitate a Pre-Br. cluster **-kC-* to account for the voiceless velar fricative; the most plausible reconstruction is still **-a/okko-* (see the remarks on Celtic in section 2.2.1), which places the formation at a considerable remove from the Latvian form and its Proto-Balto-Slavic antecedent. Setting aside the fluctuating initial vowel in Breton, either expressive gemination or a hypothetical inverse of the Latin *littera*-rule could account for a correspondence PBSl. **-V̄CV-* ~ Pre-Br. **-V̆CCV-*; the matter merits further study, as some connection to the general realm of evaluative **-V̆ko-*suffixes seems certain.

3.2. The Balto-Slavic evidence

Baltic is divided into an Eastern and an extinct Western branch. The former mainly comprises Lithuanian and Latvian (along with the closely related Latgalian), while the latter is primarily attested in the form of now-extinct Old Prussian.[103] In keeping with the relatively conservative character of Baltic in general, all of these languages form synthetic comparatives by means of specialized suffixes, reflecting the PNIE state of affairs. Notably, however, these suffixes differ significantly not just between East and West Baltic, but even between the Lithuanian on the one hand and Latvian-Latgalian on the other hand. Furthermore, none of the attested suffixes have an exact equivalent elsewhere in IE (although the primary comparative suffix is clearly continued by some of them, see below). The reconstruction of Proto-Baltic and Proto-Balto-Slavic gradation morphology is accordingly fraught, as is the Baltic contribution to the reconstruction of P(N)IE in this regard.[104] The relevant data (drawing on the standard

103 Different sources make reference to other Baltic languages, including the putatively West Baltic Curonian, Galindian, and Yotvingian as well as the East Baltic Selonian and Semigallian. Furthermore, Kurseniecki (German *Nehrungskurisch*) and Samogitian (Germ. *Schemaitisch*) are sometimes classified as distinct languages rather than as dialects of Latvian and Lithuanian, respectively. Owing variously to their extremely sparse attestation or to their very close kinship with Lithuanian or Latvian, however, these do not require separate attention with regard to the issue studied in this chapter. For an overview of Baltic tribes and dialects, see Eckert et al. 1994, 19–25 and Gelumbeckaitė 2018.

104 As emphasized by Petit 2021, however, the diversity of Baltic gradation morphology is not matched by its syntax; by and large, very similar constructions are used to express the standard of comparison.

grammars and handbooks, mainly ENDZELIN 1944, STANG 1966, ECKERT et al. 1994, FORSSMAN 2001, AMBRAZAS ET AL. 2006, NAU 2011) can be summed up as follows:[105]

Old Prussian forms comparative adjectives in *-ais-* (*urais-* "older") and comparative adverbs in *-ais* (e.g. *massais* "less"), *-is* (e.g. *tālis* "further") or *-s* (e.g. *toūls* "more"). All continue the primary comparative suffix, although the adjectival and one of the three adverbial formations require an additional element reminiscent of the vocalic "enlargements" of Slavic, Germanic, and (as argued in chapter 4) Greek.

Lithuanian forms masculine and feminine comparative adjectives in *-esn-* (e.g. *gerèsnis* m. / *gerèsnė* f. "better") and neuter comparative adjectives as well as comparative adverbs in OLith. *-iaũs*, later *-iaũ* (*geriaũs,* later *geriaũ* adv. "better"); the adverbial use of neuter forms is part of the common IE pattern noted above. The gendered adjectival comparative reflects the *e*-grade of the primary comparative plus a nasal suffix, taking the shape **-yes-ni-* at the PBalt. level. The neuter adjectival and adverbial comparative is obscure, though also connected to the superlative suffix *-iáusia-* in adjectives (e.g. *geriáusias* "best"), *-iáusiai* in adverbs (e.g. *geriáusiai* adv. "best").[106]

105 The focus here is on adjectives and adverbs. Participles do not, as a rule, form synthetic-morphological comparatives or superlatives in the Baltic languages, analytic formations being employed instead.

106 It is remarkable that, as a result, Lithuanian adverbial comparatives formally resemble adjectival superlatives more than they do non-neuter adjectival comparatives. Concerning etymology, see the remarks on Baltic in section 2.2.1.

Latvian forms comparative adjectives in *-āk-* (e.g. *labāks* m. / *labāka* f. "better") and comparative adverbs in *-āk*; the latter are in origin neuters of the former, per the pattern mentioned above.[107] There are also adverbial remnants of the primary comparative (e.g. *vaĩrs* adv. "more"). Latgalian has a suffix *-uok-* (also represented as *-ōk-* and in early sources as *-ok-*) which corresponds phonologically and functionally to Ltv. *-āk-* (e.g. *lobuoks* m. / *lobuoka* f. "better"). Given the exact match of these suffixes as well as the extremely close kinship and late divergence of Latvian and Latgalian, specific reference to the latter will be largely omitted in what follows. It is the origin of this Latvian suffix *-āk-* that interests us here. In considering the matter historically by looking for cognates of this suffix, it makes sense to first proceed from Latvian to its immediate relatives (the other Baltic languages and Slavic) and then outward to the rest of the IE family.

The phonologically regular[108] cognate of Ltv. *-āk-* is Lith. *-oka-*. It is generally[109] not a comparative suffix, but appears in several functions:

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107 This is an archaism, as synchronically Latvian and Latgalian lack the neuter in both nouns and adjectives; Lithuanian retains it, but in adjectives only.

108 The rare variant *-oku-* in older texts when forming a derivative from an *u*-stem is not to be connected with Slavic **-akъ*; see below.

109 Notwithstanding occasional such usages in eastern dialects (as per Fraenkel 1950, 30).

(1) ADJ → ADJ, deriving attenuative or approximative adjectives from adjectival bases, as in *saldùs* "sweet" → *saldókas* "sweet-ish, somewhat sweet", *lãbas* "good" → *labókas* "rather good". Thus Lith. *saldókas* corresponds semantically to Germ. *süßlich* ← *süß*, while its exact formal equivalent is Ltv. *salds* → *saldāks* "sweeter".[110]

(2) ADJ → N, deriving characterizing substantives from adjectives, as in *naujõkas* m. "newcomer"[111] ← *naũjas* "new", *trečiõkas* m. "third child; three-year old animal; third-grader" ← *trẽčias* "third"; although sometimes taken to be imitations of Slavic models, they are already found in the Old Lithuanian of the 16th and 17th centuries.

(3) N → N, non-productively deriving diminutive-pejoratives, as in *tėvõkas* m. "little father, *Väterchen*" ← *tévas* m. "father" (a case of endocentric derivation). There can be no doubt that Ltv. *-āk-* and Lith. *-oka-* are indeed cognate, given the perfect formal match and close linguistics kinship involved.

110 Thus SCHLEICHER 1856, 132 and LESKIEN 1891, 365. In some contexts, the most appropriate translation can in fact be "very X" or "a little too X", as with Engl. *rather* and other indistinct modifiers. In some nineteenth-century dialects, at least, the boundary between attenuative, elative, and comparative function appears to have been blurred; see FRAENKEL 1921, 25–26 as well as BARANOWSKI & SPECHT 1922, 184.

111 The accentual contrast between e.g. *naujókas* "rather new" versus *naujõkas* m. "newcomer" or *saldókas* "somewhat sweet" versus *saldõkas* m. "sweetie" is due to metatony (see STANG 1966, 164–167) and unconnected to the archaic IE process of substantivization by accent shift (as seen in Gk. γλαυκός "grey" versus γλαῦκος m. "fish of grey colour", Ved. *kṛṣṇá-* "black" versus *kṛ́ṣṇa-* m. "black antelope").

Latvian and Lithuanian thus point to a PEBalt. *-*āka*- < PBalt. *-*āka*-. No exactly corresponding suffix is attested in the small Old Prussian corpus, and at any rate the precise semantics of individual words or morphemes can often only be guessed at from limited context or the comparison with Latvian and Lithuanian.[112] But, as the comparison with Slavic will show, there is good reason not to regard *-*āka*- as an East Baltic innovation.

In Slavic, the branch most closely affiliated with Baltic, the clearest formal and functional analogue to the above is PSl. *-*akъ*.[113] The suffix generally serves to derive concrete substantives from adjectives or other substantives, much more rarely from verbs (e.g. **čьrpakъ* "bucket" ← **čьrpati* "to draw water"). Although not attested in the OCS canon, it is otherwise found widely and productively throughout Slavic: PSl. **novъ* "new" → **novakъ* m. "novice, newcomer" > CS *novakъ*, Bel. *навák*, OCz. *novák*, Serb. *nòvâk*; PSl. **junъ* "young" → **junakъ* m. "lad, hero" > CS *junakъ*, Ukr. *юнáк*, Pol. *jonak*, Mac. *јунак*; and so forth (*ÈSSJa*, s.v.). These derivatives tend to have an affective charge or valuation, which is often but not necessarily

112 Endzelin 1944, 70-73 lists the main suffixes containing *-k-*.

113 Word-final *ъ here is likely due to the general replacement in Slavic of the thematic nominative and accusative singular endings with those of the *u*-stems. The alternative hypothesis, equally, acceptable for present purposes, is a regular Slavic reduction of PIE *-*os*, whether directly to *-ъ (see *GCS* II, 28) or via *-*ə*, taking into account new evidence from the Old Novgorod dialect (Olander 2012). The essential point is that the suffix in question was almost certainly thematic originally, and therefore a deep connection to the aforementioned suffix variant *-oku-* in Lithuanian is improbable.

pejorative, and correspond exactly to the Lithuanian type 2 *-oka*-derivatives showcased above. It is also plausible that Proto-Slavic had proper diminutives in *-*akъ* corresponding to the unproductive Lithuanian forms of type 3; while this appears to be mainly a West Slavic phenomenon, occasional East Slavic forms such as Ukr. *брамáк* m. "fellow" ← *брам* m. "brother" also display derivation from substantival rather than only adjectival bases (Belić 1901, 155). With regard to the other branches of IE, Slavic shows an intriguing analogue to Greek, in particular: The exact functional match between PSl. **novakъ* and Gk. νέᾱξ deserves special emphasis, as it strongly suggests the antiquity of the formation.[114] The possible interpretations of this will be elaborated in section 3.4 below.

On the strength of the East Baltic and Slavic evidence, the Proto-Balto-Slavic shape of the suffix in question was *-*āka*-, with a functional profile close to the Lithuanian types 2 and 3. The default hypothesis on phonological and morphological grounds is that Balto-Slavic simply continues Late PNIE *-*āko*- (see section 3.4 on its deeper origins). A reconstruction with labiovelar *-*āk*^{w}*o*- is possible from the standpoint of historical phonology, but there is no other evidence for such a morpheme. The complicated proposal (see Hamp 1973 and Klingenschmitt 2005, 540–541) that PBSl. *-*āka*- may have been extracted from compounds of the shape

114 *GCS* IV, 326–329 suggests an at most indirect connection between the **novakъ*-type and Latin adjectives in *-āc*-, but does not mention the closer fit with Greek.

*X-eh_2-h_3k^w-[115] cannot be ruled out entirely, but has no formal advantages and has nothing to say about the Greek and Italic material presented below.[116]

As will be seen in sections 3.3 and 3.4, cognates give us every reason to believe that the older meaning of the suffix is indeed evaluative and characterizing rather than intensive or comparative. The requisite semantic development on the part of Latvian specifically is also supported by a typological parallel from an unrelated language family.[117] Among the Turkic languages, those that morphologically mark comparative function on the adjective at all (as opposed to expressing comparisons analytically by means of particles or even purely through case-marking the standard) generally use a suffix reconstructible as PTrk. *-*(I)rAK*.[118] However,

115 Supposed examples include e.g. PSl. **rákъ* m. "crab" < **wre-h_3k^w-o-* lit. "backwards facing" (rejecting the traditional connection with Lithuanian *ràkti* "dig, poke around") and **kakъ* "what (kind of)" < **k^w-eh_2-h_3k^w-o-* lit. "(of) what appearance, looking like what" (as opposed to traditional **k^weh_2-ko-*); see also Matasović 2014, 121. Among other issues, a semantic change from X-h_3k^w-o- meaning "facing X, turned to X" to "having the appearance of X, looking like X" is unlikely once the connection to **h_3ek^w-* itself (which links both meanings) became obscured by sound change already at the Proto-Balto-Slavic level.

116 Compare also Komárková & Blažek 2013, who appear to derive *-*okъ* (as in OCS *glъbokъ* "deep", *inokъ* "single") from compounds with **h_3ek^w-*, a suggestion rejected by Majer 2017a, 257. On **h_3ek^w-* giving rise to suffixoids based on use as second member of compounds, see *NIL*, s.v.

117 An recurring connection between attenuative, diminutive, and comparative markers cross-linguistically is pointed out in a "passing etymological observation" by Bobaljik 2012, 25 (with further reference to Benveniste 1948, 124–126). Pertinent statements regarding the Uralic family are also found in Györke 1934, 79–81 as well as Fuchs 1949, *passim*. An additional, especially intriguing case is found in the Samoyedic language Tundra Nenets, where the comparative morpheme *-rka* can attach to verbal forms and indicate something like the low intensity of an action: *n'ud'a* "small" → *n'ud'a-rka* "smaller", but *t'en'ewə-* "to know" → *t'en'ewə-rka-* "to know vaguely" (Nikolaeva 2014, 133).

118 By Turkologist convention (see e.g. Johanson & Csató 1998, xxi), a capital letter functions as cover symbol for different realizations of the same morphophoneme, in accordance with the sound harmony rules of a given language (thus front *e* versus back *a* as realizations of low *A* in Turkish and Kazakh, for instance).

this suffix does not occur only or even primarily as a comparative marker. Thus in Turkish, one finds this suffix non-productively both as a comparative-intensive (only *yeğ* "good" → *yeğrek* "better") and as a diminutive-attenuative (e.g. *acı* "bitter" → *acırak* "rather bitter", *boz* "grey" → *bozrak* "light grey").[119] In both Azerbaijani (SCHÖNIG 1998, 251) and Kazakh (MUHAMEDOWA 2015, 235) it appears optionally on adjectives in explicit comparative constructions, where the standard of comparison is in the ablative case, but outside that syntactic context it has attenuative function: Az. *yaχšï* "good" → *yaχšïraġ* "rather good", Kaz. *žaqsï* "good" → *žaqsïraq* "rather good". Examples from modern Turkic languages can be multiplied, although in Old Turkic (which is not directly ancestral to its modern relatives, but comprises the oldest attested varieties of the language family) there are no certain examples of attenuative usage. Finally, Stefan Georg (p.c.) points out that several South Siberian Turkic languages which lack reflexes of **-(I)rAK* as a bound morpheme do have phonologically similar and usually postpositional particle with attenuative as well as comparative function: thus Kha. *uzun* "long" and *uzun arax* "a bit longer" (ANDERSON 1998, 23), Tyv. *ulug* "big" and *ulug aarak* "somewhat big, bigger" (ANDERSON & HARRISON 1999, 33), etc. This probably indicates the origin of **-(I)rAK* as an unbound morpheme with evaluative function, both characteristics having been retained in the

119 LEWIS 2000, 54 considers the latter meaning secondary (presumably on the basis of Old Turkic usage), but does not argue for this.

geographic margins. The fact that OTrk. *-rAk* is occasionally positioned after inflectional morphemes strongly suggests that it retained particle status in at least some contexts.[120]

It appears that another shift from evaluative to comparative morphology may be underway within Turkic: The Kaz. suffix *-LAw*, which forms attenuatives to a subset of mostly PC adjectives, also appears to be competing with *-(I)rAK* in the optional marking of comparative degree.[121] Thus *salqïn* "cool" → *salqïndaw* "somewhat cool" or "(a little) cooler", *käri* "old" → *kärilew* "somewhat old" or "(a little) older", and so on. Should *-LAw* eventually replace *-rAk*, this would constitute an especially close parallel to the developments in East Baltic linking Ltv. *-āk-* to Lith. *-oka-*; and even as matters currently stand, it corroborates the hypothesis that Lithuanian is semantically conservative in this case and retains the original meaning of at least PBalt. **-āka-* in the face of Latvian innovation.[122]

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120 See Erdal 1991, I.65 and Erdal 2004, 150. Compare also Bang 1918, 20–24, who derives **-(I)rAK* ultimately from a stem **ar-* / **jïr-* "distant", whence verbal **ara-* / **jïra-* "to be or become distant" which was ultimately nominalized again to **araq* / **jïraq* "distant". Employed adverbially in the meaning "by far", this would presumably have been used to intensify adjectives, and the frequent occurrence of this element in comparisons would have led to its reinterpretation as an optional comparative marker. The questionable alternation **a-* / **jï-* aside, this etymology would imply that the widespread attenuative usage of **-(I)rAK* arose secondarily out of the older intensive and comparative function, rather than vice versa as in Baltic.

121 Thus Janhunen 2018, 55. Other sources on Kazakh (including Muhamedova 2015, 237–238 as referenced by Janhunen, but also e.g. Kirchner 1998, and Menges 1959) do not explicitly indicate competition between *-(I)rAK* and *-LAw*. Kara 2002, 33 considers both to be intensifiers, but indicates possible comparative usage only for the former.

122 It is not obvious why a new, competing comparative formation arose in Latvian and Kazakh at all, and especially why in Latvian it succeeded in replacing the more conservative one. Regarding the progressive ouster of the primary by the secondary comparative within the history of Greek and Indo-Iranian, one can

3.3. Cognates in Greek, Italic, and beyond

In scanning the IE family for cognates of the Latvian comparative, it must be kept in mind that the complex of velar suffixes in the family remains imperfectly understood and understudied.[123] Some reasons for this are clear: the inability to consistently[124] distinguish velars from either labiovelars in *satəm* languages or palatovelars in *centum* languages (with Anatolian occupying a special position, as shown by MELCHERT 1987); the absence of a substantial body of simple *k*-stems reconstructible for the protolanguage; and the proliferation and semantic near-vacuity of *k*-suffixes within the later history of certain branches, especially Middle Indo-Aryan and Celtic. Furthermore, the often evaluative semantics of **-k-*, **-ko-*, and their many conglomerates seems to have favoured a greater frequency of irregular expressive gemination, which renders perfect equations across branches even rarer.

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point to morphonological economy (such as simpler accentual patterns or the avoidance of palatalization-induced allomorphy) as a plausible formal factor, as explained in section 2.3.3 above. It is not obvious whether and how that is true in these more recent cases, or which other factors (including sociolinguistic ones) might play a role.

123 Apart from the relevant sections of *BrGr* II/1 and HIRT 1927 as well as works dealing primarily with individual languages or branches, the only attempt at a survey (EWALD 1924) is short, very outdated, and of questionable quality to begin with (see VENDRYES 1926). SANDOZ 1973 contains an important but very brief study taking a broad IE perspective.

124 Disregarding, that is, limited phenomena such as the rounding effect of labiovelars on a following syllabic liquid reflected in Armenian, or the palatalization of labiovelars before front vowel or yod reflected in Albanian.

Therefore, rather than presenting a panorama of velar formation across all branches, the following survey aims only to identify possible continuants of *-*āk*- and *-*āk(o)*-. The focus is on Greek (section 3.3.1) and Italic (section 3.3.2), as these branches preserve the vast majority of directly relevant material; the other major subgroups will be touched on afterwards (3.3.3). Observations on other velar suffixes in a given branch are presented if they illuminate the broader connections of *-*āk*- and *-*āko*-. Both thematic and athematic variants are deemed relevant; see the discussion in section 3.4 below on the nature of their relationship.

3.3.1. Greek

Athematic PGk. *-*āk*- is continued by -ᾱκ-, Ion. -ηκ-. The quantity of the stem vowel in Greek is not always known with certainty (see the discussion of -κ-suffixes in CHANTRAINE 1979, 376–383). Outside metrical contexts – in which vowel quantity can be determined from the weight assigned to an open syllable – long ᾱ is mainly proven by Ionic attestations with η where other dialects have α; on the other hand, ᾰ is proven when the vowel of the preceding syllable bears circumflex accent. When neither of these criteria obtain, it is a judgment call whether to class a word as a derivative in -ᾱκ- or one in -ᾰκ-, especially since the suffixes overlap when it comes

to designations of concrete objects. The items presented here are chosen largely in accordance with the judgment of Buck & Petersen 1945, 614–620 with regard to stem vowel quantity.[125]

The lists are divided by derivational pattern. Greek words in -ᾱκ- are almost exclusively concrete substantives (excepting only adjective βλᾰ́ξ "soft"); some are derivationally obscure, but the majority are derived denominally, with deverbal derivation plausible only a couple of cases. In semantic terms, the evidence can be divided into four groups (with some overlap): names of animals and plants; names of tools and implements; generally pejorative or humorous epithets applied primarily to human beings; and a small remainder that does not fit into the aforementioned categories. There is no evidence for thematic *-*āko*- in Greek.

N ← N (exocentric) (11x)[126]

βώμᾱξ m. (Agath.+) "one who lurks around altars" ← βωμός m. "platform, altar"

κόνδᾱξ m. (*Cod.Just.*) "game with unpointed dart" ← κόνδος m. "horn"[127]

125 The curious persistence of -ᾱκ- over -ηκ- in Attic may be attributed in part to borrowing from other dialects (especially Doric), in part to the influence of a few old words (such as ἱέρᾱξ, νέᾱξ, and οἴᾱξ) in which the Attic reversion of η to ᾱ in position after ε, ι, ρ took place; see also Björck 1950.

126 In several cases, the nominal base coexists with a verb that is unlikely for formal reasons to be the source of the derivative; thus οἰδέω "I swell" besides οἶδος m. "swelling", στομφόω and στομφάζω "I brag" besides στόμφος m. "bombast", χλευάζω "I mock" besides χλεύη f. "jest", and ψοφέω "I sound" besides ψόφος m. "noise". The two cases I consider genuinely ambiguous between deverbal and desubstantival derivation are listed separately below.

127 Attested in the Hesychean gloss κόνδοι · κεραῖαι "horns". Probably further connected to κοντός "pole" with (initially Pamphylic, later general) ντ > νδ; see *GrGr* I, 210.

οἶδᾱξ m. (POLL.+) = φήληξ m. “wild fig” ← οἶδος m. “swelling”

στόμφᾱξ m. (AR.) “ranter” ← στόμφος m. “bombast”[128]

στώᾱξ m. (HERM.IAMB. *apud* ATH.) “Stoic” (dim.-pej.) ← στοά f. “roofed colonade”[129]

στύππᾱξ m. (AR.) “oakum dealer” ← στύππη f. “oakum”[130]

σύρφᾱξ m. (AR.+) “rabble” ← σύρφη · φρύγανα f. “firewood” (HESYCH.)[131]

φόρτᾱξ m. (*Com.Adesp.*) “carrier” ← φόρτος m. “load”[132]

χλεύᾱξ m. (POLL.) “mocker” ← χλεύη f. “jest”

ψίλᾱξ m. (PAUS.) “winged (one)” (of Dionysus) ← Dor. ψίλον = πτίλον nt. “soft feathers”

128 Besides στόμφος one also finds synonymous στομφός. A further connection between these and στέμβω “I shake about” is tempting, since a change from aspirated to voiced stop after nasal can occur in Greek (see *GrGr* I, 333 for examples).

129 Att. στοά besides inscriptional στοιά and στωϊά points to *στωϝιά; fluctuation between o and ω is also found in other derivations, such as στοϊκός versus στωικός, both m. “Stoic”. While an exocentric derivation στωά *vel sim.* → στώᾱξ is plausible and has better parallels, an endocentric alternative στωικός *vel sim.* → στώᾱξ cannot be ruled out.

130 στύππᾱξ is the Aristophanian nickname for a dealer in oakum, otherwise termed στυππειοπώλης. The normal word for “oakum” is στυππεῖον, but the obviously more basic στύππη is attested once, and furthermore found indirectly in Latin *stuppa* (also *stūpa*).

131 Compare also συρφετός m. “sweepings”. Ultimately from σύρω “I drag”, apparently with a φ-extension. Root extensions are a thorny issue that has received little attention in recent scholarship (the most significant treatments still being PERSSON 1891 and PERSSON 1912); but whatever their ultimate explanation, the many cases in Greek and beyond of root variants with unexplained final labial justify a connection between σύρω and the nominal forms cited above. (*LIV*^{2} is unwarranted in setting up a separate root *$swerb^{h}$- based solely on συρφετός and PGmc. **swerba*- “to rub off”, without accounting for the otherwise isolated σύρω.)

132 In principle, φόρτᾱξ could be deverbal from φορτόω or φορτίζω, both meaning “I load”. But the verbs themselves presuppose φόρτος (found already in Homer), and would anyway be more compatible with a meaning “given to loading”. As a deverbal -ᾱξ-derivative meaning “prone to bearing” → “person or thing which bears”, one would rather expect unattested *φέρᾱξ ← φέρω “I bear”. Compare also the pejorative φορτικός “suited for carrying; burdensome; vulgar”.

ψόφᾱξ m. (*CIG* 3827s, 1st c. AD) “noisy fellow” ← ψόφος m. “noise”

N ← N (endocentric) (9x)

θύννᾱξ m. (ERIPH.) “tuna” ← θύννος m. “tuna”[133]

κέρκᾱξ · ἱέρᾱξ (HESYCH.) “falcon” ← κίρκος m. “a kind of hawk”[134]

μίμᾱξ m. (*An.Par.*) “actor” (dim.-pej.) ← μῖμος m. “actor”

μύρμᾱξ m. (THEOCR.) = μύρμηξ m. “ant” ← μύρμος m. “ant”[135]

οἴσᾱξ f. (*Gp.*) “osier” ← οἶσος m. “osier”

πήλᾱξ (*EM*) “clay” ← πηλός m. “clay”[136]

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133 Deemed a diminutive by *LSJ*, but this is not clear from context. The semantics of -ᾱξ is often evaluative in some way, but rarely diminutive in the narrow sense. Here θύννᾱξ may just be a humorous or popular alternative name for tuna, or else the designation of some particular variety of tuna or tuna-like fish (compare Engl. *tuna* and *tunny*). Note also that λάβρᾱξ “bass” (see below) occurs in the next line of the fragment and in the same case.

134 The minor difference in vocalism could easily be dialectal.

135 Although μύρμος (LYC.) is the only candidate for a derivational base within Greek, it is a relatively late hapax, and the many difficulties with reconstructing and tracing the IE word for “ant” advise caution. The various cognates overall point to a root **merw-* or **mewr-* “ant”, sometimes with further metathesis (Ved. *vamrá-*) or dissimilation (Lat. *formīca*), appearing in a variety of guises with different suffixes; only Greek indicates **-āk-*, however. There is also a Hesychean gloss βόρμᾱξ · μύρμηξ notably irregular in its initial (see *GrGr* I, 207 on β for ϝ < **w*) and root vocalism. A definitive account of these and other anomalies has not yet been rendered.

136 Note that πήλᾱξ is only attested in the context of a Byzantine etymology for πηλακίζω, which presumably had an original concrete meaning along the lines of “I tread in mud” or “I bespatter with mud”, but is only attested (generally with preverb προ-) in metaphorical usage as “I treat with contumely”. It is possible that πηλακίζω was instead formed directly to πηλός with a suffix -ακίζω extracted from semantically adjacent verbs such as σκορακίζω “I treat contemptuosly”, φενᾱκίζω “I trick” (see φένᾱξ), etc. as suggested in *DELG*[2], s.v. If πήλᾱξ is authentic, its nuance vis-à-vis πηλός is impossible to determine.

πόρπᾱξ m. (Soph.+) “shield handle” ← πόρπη f. “clasp”[137]

ῥύᾱξ m. (Th.+) “torrent” ← ῥοή f. “river, stream”[138]

σμῑ́λᾱξ m. (Sophron.) “knife” ← σμῑ́λη f. “knife”[139]

N ← N (unclear) (4x)

θυμέλᾱξ m. (Hdn.) “?” ← θυμέλη f. “sacrificial hearth”[140]

κνώδᾱξ m. (Ph.+) “pin” ← †κνώδη f. or †κνώδος m. *vel sim.* “bite(?)”[141]

πάλλᾱξ m./f. (Ael.Dion.+) “youth” ← †πάλλη f. or †πάλλος m. *vel sim.* “?”[142]

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137 The Doric technical term πόρπᾱξ denotes an apparently detachable loop or ring inside the shield by which it could be held; πόρπη generally signifies a brooch or similar implement for fastening clothes. They are ultimately from πείρω “I pierce”, perhaps via dissimilatory ρ-loss in a reduplicated †πόρ-πρ-ᾱ; and while the two nouns could in principle be independently formed from the verb, their shared irregularity suggests a derivational relationship between them. Compare other technical terms from different domains on this list, especially the nautical κεροίᾱξ, οἴᾱξ, and ὀρθίαξ, as well as the more general κνώδᾱξ and πάσσᾱξ.

138 The root is the well-attested **srew-* “to flow” whence Gk. ῥέω, Ved. *srávati*, etc. The zero-grade of the -ᾱξ-derivative could be due to an unattested base †ῥυή or, if the original derivation was ῥοή → †ῥόᾱξ, by analogy to more common forms such as ῥύσις f. “flow”, ῥυτός adj. “flowing”, and the aorist stem of verb.

139 It is not clear what semantic nuance distinguishes σμῑ́λᾱξ (found only in Sophronius of Jerusalem, 5th/6th c.) from its obvious derivational base, which itself has no clear etymology. The suffix might simply have been imported from the handful of other designations in -ᾱξ of tools or instruments.

140 No meaning can be deduced from context, but the shape of the word is sufficiently distinctive that derivation from θυμέλη seems certain.

141 The connection between κνώδᾱξ and κνώδαλον “wild creature; brute” might consist in common derivation from a root meaning “bite”, with potential verbal cognates meaning “to pinch” *vel sim.* in Germanic and Baltic (*GEW*, s.v.). The pin as an object whose function is to pierce and hold might well have been metaphorically designated “biting thing”.

142 Certainly connected to παλλακή f. “concubine” (often a young slave) and more distantly to the hapax πάλλᾱς, gen. -αντος m. “young boy” as well as Παλλάς, -άδος probably meaning “virgin” (as epithet of Athena);

στρατύλλᾱξ m. (Cic.) “toy captain(?)” ← †στράτυλλος m. “?”[143]

N ← ADJ (8x)

ἱέρᾱξ m. (Hom.+) “falcon” ← ἱερός “holy; powerful, strong; fast”[144]

λάβρᾱξ m. (Alc.+) “bass” ← λάβρος “fierce, voracious”[145]

λείᾱξ m. (*EM*) “beardless boy” ← λεῖος “smooth”[146]

νέᾱξ m. (Nicoph.+) “young man” ← νεός “young”

ὀρθίᾱξ m. (Epich.) “lower part of a mast” ← ὄρθιος “upright”

πλούταξ m. (Eup.) “rich fool” ← πλοῦτος m. “wealth”

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compare also the Myc. anthroponym *qa-ra*$_2$ /kwallans/ < */kwalyans/ (*DMic*. II, s.v.) and Lat. *paelex* “concubine”, which may be the result of borrowing a Greek dialectal form †παιλαξ (compare Cypr. and El. αἶλος for ἄλλος “other”). Whatever the exact derivational base, the use of an evaluative-expressive suffix in the lexical field of concubinage is unsurprising, while λείᾱξ and νέᾱξ furnish two other examples of mildly pejorative -ᾱξ-words designating a young person.

143 Given its sole attestation as a humorous epithet used by a non-native speaker in the relatively informal context of a letter to a close confidant, στρατύλλᾱξ permits no general conclusions. The inferred derivational base is attested once as the PN Στράτυλλος (Fick 1894, 255). The ultimate connection is obviously with στρατός m. “army” and its derivatives.

144 On ἱέρᾱξ (with long initial and Hom. variant ἴρηξ) and ἱερός (with short initial and Dor. variant ἰαρός), see Ramat 1962; on ἰάομαι “I heal” and other related forms, see García Ramón 1986.

145 See Thompson 1947, s.v. for discussion of the ichthyonym. Bass (or some varieties thereof) being rather large and powerful predatory fish no doubt motivated the choice of name. In at least one Byzantine text the word is applied as an epithet to human beings.

146 An apparent variant is preserved in Hesychius’ λίᾱξ · παῖς ἀρχιγένειος “boy with first beard”; despite its different meaning, this also plausibly derives from “smooth” since first visible beard growth tends to be fine and downy (hence also terms such as Germ. *Flaumbart* and *Milchbart*).

χαύνᾱξ m. (HESYCH.) “braggard” ← χαῦνος “conceited”[147]

ψῑ́λᾱξ m. (AR.) “?” ← ψῑλός “bare”[148]

N ← V (2x)

φένᾱξ m. (AR.+) “impostor” =[?] Φαίνᾱξ PN (THEOGNOST.) ← φαίνω “I cause to appear”[149]

χάσκᾱξ m. (EUST.) “gaper” ← χάσκω “I yawn”

N ← N (exocentric) or N ← V (2x)

βόᾱξ m. (AR.+) “a grunting fish sacred to Hermes” ← βοή f. “shout” or βοάω “I shout”

φλύᾱξ m. (POLL.+) “jester” ← φλύος m. “silly talk” or φλύω “I babble”[150]

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147 The Hesychean gloss is χαυνάκων · χαυνοποιῶν οἱ δέ χαυνολόγων.

148 Since the only attestation is a single-word fragment (no. 891 in HALL & GELDART 1906, II), its meaning and derivation are up for speculation. Certainly the range of potentially denigratory meanings proper to ψῑλός (including “hairless”, “simple”, and “unarmed”) would easily lend itself to a Comedic nickname. The only obvious alternative would be to assume a short root vowel instead and assign a meaning “winged”, as in the Doric word transmitted by Pausanias; but without context to license it, this seems unnecessary.

149 I am inclined to grant with CHANTRAINE 1967, 20–22 (following a suggestion by PRELLWITZ 1905, s.v.) that φένᾱξ is a popular variant of φαίνᾱξ, displaying incipient confusion between αι and ε (see also *GrGr* I, 194–196). If so, an “impostor” would figuratively be “one who has (only) appearance”. Φαίνᾱξ is attested only as a name (perhaps including Myc. *pa-na-ki* = Φαίνακι dat. sg. as per see VENTRIS & CHADWICK 1959, 422 as well as *DMic*. II s.v.) The main issue is the lack of other evidence of the required phonetic fluctuation as early as the 5th c. BCE, let alone in the remarkably “pure” Classical Attic of Aristophanes (for which see WILLI 2003, 232–269). Note also the clearly derived φενᾱκίζω (AR.+) “I trick”.

150 There is also the notably adjectival Hesychean gloss φλύᾱξ · μέθυσος “drunk with wine”. The semantic range of φλύω (see *DELG*[2], s.v.) encompasses “I bubble” and “I vomit”, but it is the notion of idle chatter which is clearly central to derived φλύᾱξ.

I omit from discussion a few words which lack any plausible derivational base or etymological connection in attested Greek.[151] The adjective βλᾰ́ξ (HERACLIT.+) "soft; dull; stupid" < *$m̥lh_2$-*k*- (cf. μαλακός adj. "weak" < *$melh_2$-*ek*- as well as Ved. *mlātá*- "soft", OIr. *mláith* "tender") is a unique case in several respects. It has clearly adjectival character as well as remarkably solid attestation compared to most terms treated here. Its cognates point to primary derivation from a well-attested verbal root *$melh_2$- "to grind" (see *LIV*^{2}, s.v.) which, however, is not attested as such in Greek. Although a tantalizing instance of the pattern ADJ ← V prominent in Latin (see section 3.3.2), it is impossible to draw any conclusion for Greek on so slender a basis.

Evidently -āκ- functioned overwhelmingly as a denominal rather than as a deverbal suffix. Aside from the aforementioned βλᾰ́ξ, only the extremely late χάσκᾱξ and the phonologically problematic φένᾱξ are most likely deverbal; the few other instances of plausible deverbal derivation could equally be from substantival bases. To the extent that the limited material permits conclusions, V → N derivation with -āκ- may have produced

151 Among these are the substantives βᾰ́ρᾱξ m. (EPIL.), πᾰ́ρᾱξ m. (*Test.Epict.*) "cake" (vacillation between initial β and π suggests a foreign origin); βλᾰ́ξ m. (EROT.) "name of a fish" (unclear relationship with adjectival homonym); δώρᾱξ · σπλήν (HESYCH.) "milt, spleen"; νάρθᾱξ m. (HDN.) = νάρθηξ m. (HES.+) "giant fennel" (cf. Hesychean νάθρᾱξ · νάρθηξ, presumably by metathesis); θώρᾱξ (Ion. θώρηξ, Aeol. θόρρᾱξ) m. (HOM.+) "corslet"; κεροΐᾱξ m. (LUC.) "rope belonging to sailyard"; κόρδᾱξ m. (AR.+) "a dance of the old Comedy" (another solid candidate for foreign origin, as per NEHRING 1925, 185–187); οἴᾱξ m. (HOM.+) "handle of rudder; ring of yoke"; and πάσσᾱξ m. (AR.) "peg" (together with πάσσαλος m. "id." suggesting the existence of †πάσσος *vel sim.*).

designations of entities characterized by the action or state indicated by the base verb (as in Latin). Among the clearly identifiable nominal bases, substantives outweigh adjectives and belong to either the first or second declension in all certain instances. However, the function of the suffix is clearest and most consistent in ADJ → N derivation (corresponding to Lithuanian type 2): To an adjectival base denoting a PC, -ᾱκ- forms a substantive designating an entity (usually animate) which has that property to a striking degree and is therefore characterized by it. A pejorative nuance may readily develop, since almost any trait can be possessed in excess.[152] The semantic function of -ᾱκ- in N → N derivation is less clear and uniform, as one finds both endocentric and exocentric derivatives (as well as a handful of unclear cases). Endocentric N → N derivatives in -ᾱκ- (corresponding roughly to Lithuanian type 3) either designate – with or without evaluative function – a member of some subtype of the entity indicated by the derivational base or else are simply alternative terms, perhaps of a popular or folksy nature, for the same entity; examples include θύννᾱξ, μίμᾱξ, and σμῑ́λᾱξ. Meanwhile, exocentric N → N derivatives in -ᾱκ- denote an entity closely or characteristically associated

152 Compare the nasal suffix *-*ōn*- as familiar from Latin and Greek personal names (*Catō*, *Nasō*, Στράβων) as well as Greek comparatives of type μείζων "greater"; the use of the same morpheme in characterizing-pejorative and comparative formations is no coincidence. See also PRIETO 2015, 28–29 on pejorative usage of augmentatives.

with the entity or property indicated by the base substantive, which again can easily lead to a pejorative nuance; examples include βώμᾱξ, στύππᾱξ, and φόρτᾱξ.

Concerning semantics, it bears emphasizing again that many entries from the above list are attested primarily or solely in comic plays (especially those of Aristophanes) and in glosses from ancient and medieval dictionaries. This accords with what is known from the comparison of the Latin lexicon with that of Romance or the Sanskrit lexicon with that of the Prakrits and Apabhraṃśas: Words and grammatical morphemes with evaluative nuance (especially diminutives and pejoratives) are overrepresented in informal and popular registers and underrepresented in most literary genres and official documents that make up the bulk of many ancient corpora. Apparently unrelated, the relatively large number of names for animals, plants, and tools or technical items (both with and without etymologies) is also striking; especially as a similar state of affairs obtains at least in Latin, and to a much more limited extent in Indo-Aryan.[153] At any rate, the Greek evidence is unambiguous in its support of a productive and in the main denominal suffix *-*āk*- with evaluative function, corresponding

153 As perusal of the relevant entries in *EDG* shows, some scholars take this vocabulary to be in part of non-IE origin. It is certainly possible that inherited *-*āk*-, as employed primarily in forms like νέᾱξ to begin with, may have been boosted within certain subcategories of the lexicon by influx of non-IE technical terms employing a phonologically similar or identical morpheme, the exact properties and distribution of which may be beyond recovery at this point. But this is purely speculative without the ability to identify and characterize a donor language (see MEISSNER 2013 and DECKER 2016 for recent critical evaluations of "Pre-Greek" and "Pelasgian") on specific formal or historical grounds.

very closely to Lithuanian type 2; it will thus provide a good point of departure for explaining the deeper origin of the Balto-Slavic forms.

3.3.2. Italic

We turn first to the other branch with a productive and clearly identifiable reflex of the same morpheme. Athematic PIt. *-*āk*- occurs plentifully as -*āc*- from Old Latin onwards, while the Sabellic languages furnish at best a handful of inconclusive examples.[154] Note that in Latin, unlike in Sabellic and indeed Greek, it is trivial to distinguish the reflexes of *-*āk*- from those of *-*ak*-, since the former is reflected by -*āx*, gen. -*ācis* while the latter undergoes phonologically regular weakening to -*ex*, gen. -*icis* (thus merging with reflexes of *-*ek*-). By contrast, Sabellic forms must be taken with a grain of salt as regards vowel quantity, which is generally not marked in their writing systems. Once again I list words by derivational pattern.

ADJ ← V (30x)

audāx (PL.+) "daring" ← *audeō* "I dare" (itself from *avidus* "desirous")

154 For the Sabellic evidence, see HEIDERMANNS 1999, 289–291 and the relevant entries in *WOU*. The Latin evidence is summarized by LEUMANN 1977, 376 and the adjectival component discussed by DE NIGRI MORES 1972. On the various Latin suffixes with -*k*-, ERNOUT 1946, 133–163 is invaluable. The Italic picture overall is interpreted by WEISS 2010, 62–68.

†*bibāx* (NIGID. *apud* GEL. in cognomen *Bibāculus*) “given to drinking” ← *bibō* “I drink”

capāx (LUCR.+) “capacious” ← *capiō* “I take”

contumāx (CIC.+) “proud” ← †*contumeō* (cf. unprefixed *tumeō* “I swell”)

crepāx (MAEC. *apud* SEN.) “noisy” ← *crepō* “I clatter”

currāx (GAIUS+) “agile” ← *currō* “I run”

edāx (TER.+) “gluttonous” ← *edō* “I eat”

efficāx (HOR.+) “effective” ← *efficiō* “to make”

emāx (CATO+) “addicted to buying” ← *emō* “I buy”

fallāx (LUCIL.+) “misleading” ← *fallō* “I deceive”[155]

ferritrībāx (PL.) “iron-galled” ← (*ferrum* “iron” +) Greek τρίβω “I rub”

loquāx (PL.+) “talkative” ← *loquor* “to talk”

mordāx (PL.+) “snappish” ← *mordeō* “to bite”

olāx (MART. CAP.) “odorous” ← *oleō* “to give off a smell”

perspicāx (TER.+) “keenly observant” ← *perspiciō* “I scrutinize”

pervicāx (TER.+) “persistent” ← *pervincō* “I prevail”[156]

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155 Already in Plautus we find *fallācia* “deceit”, which derivationally presupposes *fallāx*.

156 The derivational base can be identified neither the present stem *vinc-* (since the nasal infix is omitted) nor the perfect stem *vīc-* (as the root vowel is short). This suggests that this root may have formed an unattested subjunctive stem †*vĭc-* which served as the derivational base; see *tagāx* immediately below.

rapāx (PL.+) “greedy” ← *rapiō* “I carry off”

salāx (VAR.+) “lascivious” ← *saliō* “to mount”

sequāx (LUCR.+) “pliable” ← *sequor* “I follow”

†*sōlāx* in *sōlācium* (CIC .+) “solace” ← *sōlor* “I comfort”[157]

spernāx (SIL.) “disdainful” ← *spernō* “I spurn”

sternāx (VERG.+) “liable to throw off its rider” ← *sternō* “to lay out”

tagāx (LUCIL.+) “light-fingered” ← *tangō* “I touch”[158]

tenāx (PL.+) “holding fast” ← *teneō* “I hold”[159]

trahāx (PL.) “grabbing” ← *trahō* “I drag”

vendāx (CATO) “addicted to selling” ← *vendō* “I sell”

vigilāx (PROP.+) “watchful” ← *vigilō* “I stay awake”

vīvāx (AFRAN.) “long-lived” ← *vīvō* “I live”

vomāx (SID.) “given to vomiting” ← *vomō* “to discharge”

vorāx (ACC.) “ravenous” ← *vorō* “I devour”

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157 Inference to †*sōlax* is licensed since *-ācium* is not a productive suffix; compare e.g. *pervicācia* (ENN.) “resolve” ← *pervicāx* (see above). Note that an unattested substantive †*sōla* might have served as derivational basis instead of *sōlor*, but this possibility is yet more speculative.

158 The derivational base here was probably bare root, as also preserved in the archaic subjunctive *tagam* (PAC.); on the latter type, see BERTOCCI 2006.

159 Also *abstināx*, *obstināx*, *pertināx*, *retināx* with predictable meanings.

ADJ ← N (4x)

dĭcāx (PL.+) “given to mocking” ← †*dĭx* or †*dĭca* “act of speaking(?)”[160]

linguāx (GEL.) “talkative” ← *lingua* f. “tongue”

mendāx (PL.+) “prone to tell falsehoods” ← *menda* f. “fault” or *mendum* nt. “id.”

săgāx (ENN.+) “perceptive” ← †*săga* “(keen) perception” (cf. *sāgiō* “I perceive keenly”)[161]

N ← N (exocentric) (3x)

aureāx m. (PAUL.) “charioteer” ← *aureae* (PAUL.) for *ōreae* f. pl. “mouthpiece of bridle”

līmāx m. / f. (PL.+) “snail” ← *līmus* m. “slime”[162]

†*nīdāx* m. (> OFr. *nies* m. “nestling” > Fr. *niais* m. “young fool”) ← *nīdus* m. “nest”

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160 Generally a derivation from either *dīcō* “I speak” or *dĭcō* “I dedicate” has been assumed. The short root vowel of *dĭcāx* suggests the latter, but this is semantically implausible. Derivation from *dīcō* would better account for the meaning (“given to speaking” easily shades into “having a quick tongue” and hence “given to mocking”), but is formally unsatisfactory. Instead, *dĭcāx* must be derived either from the root noun †*dĭx* – preserved as the second element of *iūdex* (for †*iūdix* after *auspex* m. “bird-seer”, *opifex* m. “maker”, etc. per NIEDERMANN 1991, 154) and in the legal formula *dĭcis causā* “for the sake of form” (if not from Greek δίκης ἕνεκα) – or else from an unattested substantive †*dĭca*. The second option merits consideration mainly because there are no other examples of *-āc*-derivatives from root nouns.

161 Zero-grade of the root here is likely to be original, since there is no obvious motivation for its secondary development; this suggests an unattested substantive of the *fuga*-type may have been the derivational base; see WEISS 2010, 68.

162 Possibly instead borrowed from Gk. λείμαξ (HESYCH.) “snail” with analogical lengthening of the suffix vowel. Notably, PSl. **slimakъ* m. “snail” > Cz. *slimák*, Russ. (dial.) *слимáк*, etc. at least suggests IE pedigree of the formation.

N ← N (endocentric) (1x)

fo/urnāx f. (CAT.+) “furnace” ← *fo/urnus* m. “oven”

ADJ ← N or ADJ ← V (11x)

fugāx (PL.+) “prone to run away, fugitive” ← *fuga* f. “flight” or *fugiō* “I flee”[163]

fūrāx (PL.+) “given to stealing” ← *fūr* m. “thief” or *fūror* “I steal”

līmāx (PL. *apud* VAR.) “?” ← *līma* f. “file” or *līmō* “to polish”[164]

mināx (Lucr.+) “threatening” ← *minae* f. pl. “threats” or *minor* “I threaten”

morāx “dilatory”(VAR. *apud* NON.) ← *mora* f. “delay” or *moror* “I delay”

nugāx (CAEL.+) “bungling” ← *nugae* f. pl. “trifles” or *nugor* “I trifle”

procāx (PL.+) “impudent” ← *procus* m. “suitor” or *procō* “I urge”

pugnāx “combative” (CIC.+) ← *pugna* f. “fight” or *pugnō* “I fight”

sonāx (APUL.) “resounding” ← *sonus* m. “sound” or *sonō* “to make a sound”

163 For semantic reasons, *fugō* “I put to flight” cannot be the direct derivational base, although its stem vowel *-ā-* accords better with a derivative in *-āx*. Note that Gk. φυγή f. (HOM.+) “flight” suggests that *fuga* is inherited, which increases the likelihood of *fugāx* being desubstantival.

164 See DE NIGRI MORES 1972, 284–285; possibly means “given to rubbing”, said of prostitutes. Presumably unconnected to its homonym meaning “snail” (see above).

vērāx “truthful” (PL.+) ← *vērum* nt. “truth” or *vērō* “I speak the truth”[165]

So much for Latin as regards direct evidence of athematic *-*āk*-, having omitted onomastic material such as *Āiāx*[166] as well as a handful of problematic items that add nothing of import to the discussion.[167] We have seen that in Latin the suffix mainly forms adjectives, generally denoting personal characteristics and formed to verbal bases. To be more precise: The adjective denotes a capacity or propensity to perform the action denoted by the verb, with frequently though not necessarily pejorative connotation, when either the action itself is viewed negatively (as with e.g. *fallāx*) or the propensity may easily be deemed excessive (as with e.g. *loquāx*); when neither is the case, the adjective may well be positively charged (as with e.g. *efficāx*). However, we also find several desubstantival adjectives and substantives, of which

165 Derivation from *vērus* “true” is conceivable; but as it would be the only such case in Latin and there are two unobjectionable alternative options, it merits no further consideration.

166 *Āiāx* for Gk. Αἴᾶς has been attributed to the influence of a hypothetical †*aiāx* ← *aiō* “I say” (MIGLIORINI 1930) or more generally the class of nouns in *-āx*; but this is highly speculative and not the only possibility. Thus e.g. KELLER 1891, 29 suggests influence of Αἰακός / *Aiacus*; SCHWERING 1912 instead posits an Oscan intermediary; and TSOPANAKIS 1979 appears to regard the Latin form of the name as more archaic and due to a tradition independent of the Greek.

167 Thus *catāx* (LUCIL.+) “lame” (perhaps a remodeled borrowing of Gk. κατᾰγείς “shattered”, as per KELLER 1891, 135–136); *pellāx* (VERG.) “wily” (connection to *pellō* “I strike” or *pelliciō* “I attract” unclear at best); *vatrāx* (LUCIL. *apud* NON.) “having a deformity of the feet” (surely belongs with *vatius* “bow-legged” and *vatia* m. “bow-legged man”, but with unexplained intrusive *r*). Note that *mustāx* (PLIN.) “a kind of laurel” on semantic grounds has to be a back-formation to *mustāceus* m. “cake made with must and baked on laurel leaves” ← *mustum* nt. “must”. ERNOUT 1946, 149 mentions a “*merāx* (gloss.)”, presumably connected to *merācus* “undiluted” and hence *merus* “pure”, but such a word is listed in neither the *OLD* nor the *TLL*.

five appear in the Old Latin of Plautus, Ennius, or Cato the Elder and are therefore as venerable as any of the deverbal derivatives. These could very well be instances of an archaic pattern, seeing as Greek, at any rate, clearly favors an originally denominal *-*āk*-. Crucially, a more sizeable group of Latin derivatives may be regarded as either deverbal or desubstantival, since the corpus provides a plausible derivational base of either kind.

It thus appears that the clear preponderance of deverbal -*āc*- is due to a late development within the prehistory of Latin. Coexistence of (for example) *pugnāx* ← *pugna* besides *pugnō* ← *pugna* led to a reinterpreted relationship *pugnāx* ← *pugnō* and a productive deverbal pathway, initially and mainly applied to verbs of the first conjugation. The original function of -*āc*- in Latin would thus have been to form desubstantival nouns with exocentric evaluative semantics, easily but not necessarily veering into the pejorative, as frequently seen with IE *-*k*-suffixes. This accords broadly with what can be gleaned from the Greek and Balto-Slavic, although it does not precisely match any of the three Lithuanian types (since type 3 is endocentric). A striking parallel with Greek is the outsized importance of comedy, and therefore of humorous and popular language, in the corpus of relevant forms, especially as regards first attestation; the role of Aristophanes in Greek is here filled more or less by Plautus. This underlines the affective character that *-*āk*- either developed or more likely preserved in both languages.

Meanwhile, of the five potentially relevant words in the Sabellic corpus, four – Umbr. **huntak**[168] and **tuplak**,[169] Osc. **malaks**,[170] and SPic. **aúḍaqum/aúraqum**[171] – are insufficiently transparent semantically or morphologically to permit any conclusions. The fifth – Umbr. *curnaco* (acc. sg.), *curnase* (abl. sg.) – is clearly derived from the widespread, presumably onomatopoeic root **ḱor-* designating corvines.[172] Sabellic thus adds little to the picture of Italic **-āk-* gleaned from Latin data; see the relevant entries in *WOU* for more details and literature.

Thematic **-āko-* plays a very limited role in the Italic languages, almost none in Sabellic specifically.[173] The few instances in Latin of adjectives in *-ācus* are attested no earlier than the

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168 This need not be a true **-āk-*derivative, but could alternatively represent **hunta** (nom./acc. pl. nt. or acc. sg. f.) plus a clitic particle **-k**. Although the exact meaning is indeterminate from context, the etymon is probably **dʰeǵʰom-* "earth"; see Weiss 2010, 69–75.

169 Suggestions for the meaning range from "fork" to "two-fold cloth". Instead of an actual **-āk-*derivative from a stem **duplo-* (> Lat. *duplus* "double"), this may be a compound of "two" and the verbal root **pleḱ-* "to weave" (cf. Lat. *duplex*, Gk. δίπλαξ).

170 The root may plausibly be linked either to Osc. *mal(l)o-*, Lat. *malus* "bad" (suggesting a meaning "villain") or to PGmc. **smala-* "small" (suggesting a meaning "child", as in Lat. *parvulus* m. "child" ← *parvus* "small"). In either case, it would be a Sabellic example of the νέᾱξ-type.

171 Although this genitive plural looks strikingly like Lat. *audāx* "brave", both the meaning and exact reading are uncertain, the context is unhelpfully fragmentary, and Sabellic *d* (or *r*) instead of expected *f* < **dʰ* would at any rate point to a loan.

172 Note that Gk. κόραξ m. "raven" is probably from **ḱor-n̥-k-* or **ḱor-h₂-k-* on account of the short suffix vowel. The Umbrian form may actually reflect an **-eh₂-*feminine **ḱor-n-eh₂-* that was fitted with **-k-* just like the corresponding **-ih₂-*feminine **ḱor-n-ih₂-* in Lat. *cornīx* f. "crow"; compare also It. *cornacchio* m. "carrion crow" < **cornācula* (which, however, does not by itself license inference to †*cornāx* given the independent productivity of *-culus* etc. as a diminutive suffix).

173 The Umbr. abl. pl. **Tesenakes** / *Tesenocir* "Tesenacan Gate" may well continue **-āko-*, but does not illuminate matters in the absence of a convincing etymology.

1st century BCE, and could be the result of late thematization. They actually appear more conservative – from the Greek point of view – than their athematic counterparts, in that they are derived denominally as opposed to deverbally, albeit with little identifiable modification of meaning: *ēbriācus* (LABER.) "intoxicated" ← *ēbrius* "drunk", *merācus* (CIC.+) "undiluted" ← *merus* "pure".[174] It is not clear why a late, inner-Latin thematization of *-āc-* should result in a suffix with entirely different derivational behaviour. Much more plausible is a scenario in which inherited **-āko-* was retained in Latin, but only in popular speech registers at the margins of literacy. While the language of comedy, in particular, drew upon and imitated (for humorous effect) sociolects from the margins, it can only have transmitted a fraction of their peculiarities, including those of word-formation (for which see COOPER 1895). Meanwhile, the suggestion (due to SCHULZE 1904, 284 and followed by LEUMANN 1977, 338 and ADAMS 2013, 565) that the suffix is a loan from Celtic is purely speculative and can be neither refuted nor proven.[175]

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174 Note that Lat. *opācus* "shady" is difficult, but probably does not belong with PIE **-āko* in any case. The traditional comparison with Ved. *ápāka-* "behind, distant" or PSl. **opakъ* "the other way round, backwards" (**apo-h_3k^w-o-* "turned away") would lead one to expect †*apōcus* "turned away (from the sun)"; KLINGENSCHMITT 2005, 540–541 and *LIPP* 2014, s.v. **áp* attempt to salvage the connection by either qualitative metathesis or by dissimilation from an alternative †*opōcus* (< ***opo-h_3k^w-o-*, itself connected to the **op* of PAnat. **op-ero-* > Lyc. *epri-* adj. "later" etc.). Regardless, a plausible alternative etymology with inherited suffixal **-āko-* instead of a compound with **h_3ek^w-* does not suggest itself.

175 There is some evidence of *-āko-* in Continental Celtic (see section 3.3.3 below), and indeed in Latin toponyms as well as anthroponyms of Northern Italy, where Gaulish influence would have been most pronounced (SCHULZE 1904, 11–25). But this hardly precludes its independent, if somewhat marginal, existence in Italic;

There are also a few feminine substantives in *-āca*, of which most are plant names based on attested substantives: *verbēnāca* f. (PLIN.) "vervain" ← *verbēna* f. "leafy aromatic branch or twig", *portulāca* f. (CELS.+) "purslain" ← *portula* f. "a small gate". The exact derivational base is not always clear: *pastināca* f. (CELS.+) "carrot or similar vegetables" ← *pastinum* nt. "two-pronged dibble" or *pastinō* "I prepare ground by digging and leveling". Curiously, *lingulāca* f. (PL.+) appears to have primarily designated a plant (VAR.) with tongue-shaped leaves, perhaps spearwort; but also a kind of fish (PLIN.) shaped like a tongue, perhaps a sole. Plautus does use it to refer to a female gossip, but context shows it to be a pun on the ichthyonym: "*ea lingulaca est nobis, nam numquam tacet*" (*Cas.* 498). One therefore does not need to separate the latter usage from the former (by positing for a distinct derivational chain *lingua* f. "tongue" → *lingula* f. "little tongue" → *lingulāca* f. "a gossip" or even *lingua* f. "tongue" → *lingulus*[176] "talkative" → †*lingulācus* → *lingulāca* f. "a gossip"). It seems that *-āca* acquired a certain propensity for extension in the lexical field of phytonyms, with rare and perhaps paronomastic usages in other domains. Here again one finds a striking parallel to Greek, where **-āk-* came to feature in various names for plants and animals (including fish).

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and there is nothing about the semantics or attestations of *ēbriācus* and *merācus* marks them as Latin-Celtic hybrids.

176 Of questionable authenticity, and perhaps rather from *lingo* "I lick" (cf. *TLL*, s.v.); but could in principle be a non-diminutive desubstantival adjective of type *nūbilus* "overcast" ← *nūbis* f. "cloud".

Thus, while Sabellic data is sparse at best and Lat. *-ācus* etc. shed little light on **-āko-* beyond indicating an adjective-forming function, we have seen that the Latin athematic formation is richly attested and sharply defined. Originally (and in a handful of attested cases) probably denominal, it subsequently became highly productive as a deverbal suffix, especially in the facetious language of early comedy (on the basis of triplets such as *pugna* – *pugnāx* – *pugnō*).

3.3.3. Other branches

The other branches of the family have relatively little to contribute to the study of **-āk-* and **-āko-*. Unambiguous evidence for the athematic suffix may be limited to OIr. *éola*, pl. *éolig* "skilled" and a handful Middle Irish concrete substantives. Celtic also furnishes most instances of the thematic suffix outside Greek and Italic, albeit with significant caveats.[177] On the Insular Celtic side, the phonologically least ambiguous reflex of **-āko-* is MW *-awc* > W *-og*, which shows a range of derivational behaviours, most frequently forming desubstantival adjectives or substantives; thus *barf* f. "beard" → *barfawc* "bearded", *gwaredd* m. "tenderness" → *gwareddawc* "tender", but also *draen* m. / f. "thorn" → *draenawc* m. "hedgehog". With deadjectival

177 The main Celtic velar suffixes have been studied in depth by Russell 1988 and Russell 1990. Concerning specifically the Brittonic comparative suffix, see also the remarks in section 2.2.1 and 3.1.

adjectives, the semantic nuance is often subtle or cannot be established at all on the basis of the early texts at least (e.g. *gwyllt* “natural” → *gwylltawc* “id.”, *du* “black” → *duog* “id.”). Specifically characterizing and even pejorative derivatives exist (e.g. *gwlad* f. “country” → *gwladog* “rustic”, *gwerin* m. / f. “people” → *gwerinawc* “common”), but are not common. Deverbal derivation is also rare (e.g. *ystyn* “to extend” → *ystynnawc* “stretching”). Reflexes in the other Brittonic languages and even more so in Old Irish often do not distinguish between *-*āko*- and other *-*Vko*- suffixes, and are therefore of less utility.[178] Determining the status[179] and properties[180] of *-*āko*- in Continental Celtic is even more difficult. In Gaulish, at least, both indigenous and Latin personal names could be further suffixed with *-*āko*- to form patronymics and perhaps hypocoristics (e.g. *Magius* → *Magiacus*, *Nonius* → *Noniacus*) as well as toponyms (e.g. *Abudius* → *Abudiacum*). The suffix in general appears to have formed desubstantival adjectives and substantives with varying nuances. Although this is a slender

178 Thus OIr. *-ach* may reflect not just *-*āko*- but also *-*ŭko*- or *-*ĭko*-; see *VGK* II, 31 as well as de Bernardo Stempel 1999, 311–313. Disambiguation is sometimes possible through cognates; thus OIr. *marc* m. “horse” → *marcach* m. “knight” corresponds exactly to MW *march* m. → *marchawc* m. in form and meaning, therefore most likely reflecting *-*āko*-.

179 Since none of the Continental Celtic scripts mark vowel length with any regularity, and metrical considerations are not applicable given the nature of the corpus, *-āko*- cannot be directly distinguished from *-ako*- in Celtiberian, Gaulish, and Lepontic. At best, the absence of syncope in (Gallo-)Romance reflexes of Celtic toponyms with this suffix indicates a long and probably stressed vowel in at least some cases.

180 As the corpus is overwhelmingly onomastic, the semantic nuance of derivations is often impossible to determine. Moreover, there are many cases in which the derivational base cannot be identified with confidence and indeed may not be Celtic or even IE.

evidentiary basis, most branches have even less to offer. Early Indo-Iranian data for *-*āko*-, despite the later proliferation[181] of velar suffixes and especially *-*ko*-, is mostly limited to a few concrete substantives in Indo-Aryan (see *AiGr* II/2, 266–267 as well as EDGERTON 1911, 109). As these are heterogeneous and often etymologically obscure, they permit few generalizations; examples include *pínāka*- m. / nt. "rod" (cf. Gk. πίνᾰξ m. "plank") and *taṭāka*- m. / nt. "pond". While the suffix remained uncommon in later periods, it notably acquired a deverbal function much like that of Latin -*āx*, forming agent nouns with a connotation of frequent or habitual action, often with pejorative nuance: *jalp*- "to talk" → *jalpāka*- "prattler", *kuṭṭ*- "to split" > *kuṭṭāka*- m. "brawler", in reference to an inanimate object perhaps also *pat*$^{(i)}$- "to fly" → *patākă*- m. / f. "flag". This bolsters the claim that the corresponding Latin pattern is innovative, and presents an interesting example of "convergent evolution" that may merit further study in a different context. As for the remaining branches, it appears that Anatolian,[182] Tocharian,[183]

181 See JAMISON 2009 for a sociolinguistic approach to this remarkable expansion in both Middle Iranian and Middle Indic; on the semantic development of PIIr. *-*ka*-, see most recently GRESTENBERGER 2023.

182 Neither athematic nor thematic velar suffixes seem to have played a significant role in the prehistory of this branch (see *passim* KRONASSER 1962–1966, STARKE 1990, RIEKEN 1999 as well as the major dictionaries and glossaries). Relatives of the morpheme in question may be contained in a handful of words, such as Hitt. *antaka*- of uncertain meaning (perhaps "inner chamber" per *HED*, s.v. or "loins" per MELCHERT 2003), though the occurrence of a form *antakitti* with a Hurrian dative ending suggests foreign origin in any case.

183 Velar suffixes of any kind rarely occur in the native Tocharian vocabulary, with the notable exception of TB diminutives in -*śkV* (e.g. *kuntiśke* m. ← *kunti* f. "pot") and less frequently -*ṣkV* (e.g. *yäkwaṣke* from *yakwe* m. "horse") or -*kkV* (e.g. *appakke* from *āppo* m. "father"), for which see ADAMS 2015, 181–182. These formations are also well-represented in the relatively small corpus of properly Tocharian personal names, where they may represent hypocoristics. There are also various obvious loan words reflecting the Middle Indo-Aryan

Germanic,[184] Armenian,[185] and Albanian[186] do not show any unambiguous native reflexes of *-*āko*- (nor, as already indicated, of *-*āk*).

3.4. Origin and function of *-*āk*- and *-*āko*-

Given the rarity of PIE *$\bar{a}$ of non-laryngeal origin, it seems safe to begin by analysing *-*āk*- as ultimately from *-*eh*$_2$-*k*-, which would imply that a derived adjective-abstract of type *$w\bar{e}rH$-*eh*$_2$- "truth" (> OCS *věra* f. "belief") served as base for a *-*k*-derivative of the type seen in *sen-o- "old" → *sen-e-k- "old man" (> Lat. *senex* m. "id.").[187] With bases expressing property-

proliferation of *-ka*- and related suffixes (e.g. A *aśśuk*, B *aṃśūk* m. "garment" from Skt. *aṃśuka*- nt. "id.", B *mañcāk* "couch" from Skt. *mañcaka*- m. / nt. "id."); see Isebaert 1980 on the Indo-Iranian component of the Tocharian lexicon as well as *DTB* and *DTA* in general.

184 Compare the extensive treatments of nominal derivation in Kluge 1926 and Krahe & Meid 1967, 44–229 as well as (for Gothic specifically) Casaretto 2004. The Go. hapax *ainoho* nom. sg. f. < *-*āk-ā* "only" is almost certainly a proleptic scribal error for †*ainaho* < *-*ok-ā* , given its m. equivalent *ainaha* (Lehmann 1986, s.v. *ainaha*).

185 The CArm. suffix *-ak*, which generally forms diminutives to substantives (e.g. *cov* "sea" → *covak* "lake") and attenuatives to adjectives (e.g. *kapowt* "blue" → *kapowtak* "blueish"), is regarded as a loan from Middle Iranian; see Olsen 1999, 42–44.

186 Most instances of velar suffixes in Albanian are part of the vast foreign component of the lexicon (see Camaj 1966, Demiraj 1997, Matzinger 2016). Thus the evaluative suffixes *-ak* and *-ac-ak* are certainly of Slavic origin, although also applied to non-Slavic bases: thus *burr(ë)* m. "man, husband" adj. "brave" besides *burrak* m. "fine fellow" and *burracak* m. "little man" adj. "puny".

187 See Nussbaum 2014, 275–276. Since *-*eh*$_2$- also formed feminines and collectives, in principle the semantics of *-*eh*$_2$-*k*- could be based on one of these other functions instead; but the actually attested forms listed in this chapter are best explained by an adjective-abstract in *-*eh*$_2$- as part of the original derivational chain. This does not imply that for every *X-*eh*$_2$-*k*- there actually existed a *X-*eh*$_2$-, as the compound suffix (once established in a few salient cases) could easily be deployed directly to semantically appropriate roots, even when no adjective-abstract in *-*eh*$_2$- happened to be current to that root. The same holds *mutatis mutandis* for *-*eh*$_2$-*ko*-.

concepts, this derivative designated an individual entity instantiating the property in question, with the evaluative-characterizing[188] shade found in many *-*k*-formations across different branches; thus e.g. **new*-*o*- "new" → ***new*-eh_2- "newness, novelty" → **new*-eh_2-*k*- "new one, newcomer, novice" (> Gk. νέᾱξ m. "id."). Once *-eh_2-*k*- was established in this way around a nucleus of PC adjectives and their corresponding *-eh_2-abstracts, its range of application could be extended to include semantically appropriate substantival bases, giving rise to both endocentric (e.g. Gk. μῖμος m. "actor" → μίμᾱξ m. "actor" as dim.-pej.) and exocentric (e.g. Gk. στύππη f. "oakum" → στύππᾱξ m. "oakum dealer") derivations. Greek preserves this state of affairs well for the most part, while Latin made two significant changes. First, the pattern was extended to verbal bases due to a reanalysis of e.g. Lat. *pugnāx* "combative" as derived from *pugnō* "I fight" instead of diachronically accurate *pugna* f. "fight"; despite a couple of plausible examples in Greek, this was development was probably *einzelsprachlich*.[189] Second, *-*āk*-derivatives were employed adjectivally, a phenomenon presumably originating in predicative

188 Since adjective-abstracts are cross-linguistically prone to being reinterpreted contextually as concretes (e.g. Engl. *novelty* meaning "the quality of being novel" and "a novel entity", Germ. *Güte* f. meaning both "the trait of being benevolent" and "a benevolent act"), there would have been some functional overlap between *-eh_2- and *-eh_2-*k*-derivatives in designating individuals. This may well have led to the evaluative nuance of *-eh_2-*k*- becoming increasingly prominent in order to sharpen the distinction from *-eh_2-. Thus e.g. **new*-eh_2-*k*- "newcomer" (with strong evaluative force) would eventually have co-existed with ***new*-eh_2- capable of carrying a more neutral version of that meaning as well as its more fundamental adjective-abstract meaning.

189 Compare also the occasional deverbal use of reflexes of thematic *-*āko*- in the guise of PSl. *-*akъ* (section 3.2) as well as MW -*awc* and Skt. -*āka*- (section 3.3.3).

usage of such substantives but eventually rising to general dominance.[190] Note that Latin does preserve as archaisms a few desubstantival adjectives (e.g. *dĭcāx* "given to mocking" and *săgāx* "perceptive") as well as substantives (e.g. endocentric *fo/urnāx* f. "oven" ← *fo/urnus* m. "furnace" and exocentric *līmāx* m. / f. "snail" ← *līmus* m. "slime").

So much for athematic *-*āk*-. The further chronological and semantic relationship between it and thematic *-*āko*- (> PBSl. *-*āka*-) can be conceived of in two ways. The first option (illustrated by figure 3.1 below) is to project into the proto-language a thematic suffix *-*ko*- with exocentric semantics (as in e.g. Lat. *cīvicus* adj. "civic" ← *cīvis* m. / f. "citizen"), distinct at least synchronically from the characterizing athematic *-*k*-. Since a function common to other exocentric suffixes is to express "X-like" for a given base "X" (e.g. genitival *-*yo*- in Ved. *nárya*- adj. "manly" ← *nár*- m. "man"), a base **$new\text{-}eh_2$- could give rise to an adjectival *$new\text{-}eh_2\text{-}ko$- "like a new one, new-ish", from the likes of which *$\text{-}eh_2\text{-}ko$- > *-*āko*- was then extracted. This proposal is attractive inasmuch it accounts for the main Baltic and Slavic evidence for *-*āko*- and dispenses with the need to explain the function of thematization in *-*āko*- versus *-*āk*-. However, it strains belief that e.g. νέᾱξ and *novakъ* should have their origins in entirely

190 Thus a construction such as *Gaius edāx est* "Gaius is a glutton" would have been easily reinterpreted as "Gaius is gluttonous" in the absence of inflectional distinction between substantive and adjective. Compare the substantival use of PC adjectives in Latin, especially with reference to persons: *bonus* adj. "good" or m. "good man", *mortālis* adj. "mortal" or m./f. "mortal being" (as also Vedic *mártya*-), and so on; see HOFMANN & SZANTYR 1965, 152–153.

different derivations. Given this, and the large number of other reconstructible suffix pairings resulting from thematization, the problem of explaining the relationship between specifically characterizing *-*k*- and specifically genitival *-*ko*- would simply be moved deeper into prehistory.[191]

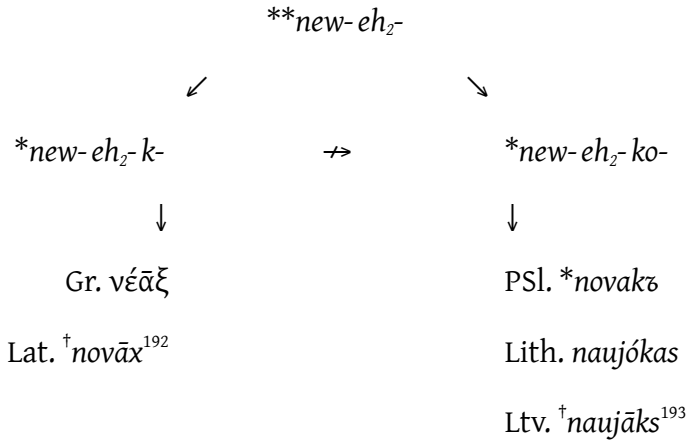

Figure 3.1

The second option (illustrated by figure 3.2 below) is to explain *-*āko*- directly as the thematization of *-*āk*-. But mere "functionless thematization", leading (at least in the first

191 It is worth bearing in mind that not every pair of suffixes *-X- and *-Xo- must be internally related, as Alan Nussbaum (p.c.) emphasizes. Thus the Gk. *-*t*-stem ἀγνώς, gen. ἀγνῶτος (Hom.+) "unknown" is synonymous with Lat. *ignōtus* and Ved. *ájñāta*- as well as the rare ἄγνωτος (Soph.+); yet the *-*t*- and *-*to*- concerned are known to be different entities as far back as comparative reconstruction can take us.

192 The form is used only for purposes of illustration. The innovative deverbal pattern of derivation has become so dominant in Latin that one would not expect a PNIE substantive *new-eh₂-k- > *newāk- > PIt. *nowāk- to have survived.

193 The expected Ltv. cognate of Lith. *naũjas* "new" has been replaced by *jaûns* (corresponding to Lith. *jáunas* "young") already in the earliest attestations; see *LEW* I, s.v. Interestingly, OPr. *nauns* "new" represents a contamination of the expected cognates of both words.

instance) to a pair of isofunctional suffixes distinguished only by thematic versus athematic inflection, is not satisfactory as an explanation. Rather, denominal *-*o*- derivatives largely fall into two broad categories, i.e. genitivals (*X-*o*- meaning "of X") and possessives (*X-*o* meaning "having X"); see e.g. RAU 2009, 129–130 and WEISS 2020, 29. The former require *vṛddhi* of the root, as in the classic example *dyew- / *dyu- "sky" → *deyw-o- "god" (lit. "of the sky") > Lat. *deus*, Ved. *déva*- "id.", and can therefore be ruled out here. Meanwhile, the latter may not seem to lend themselves semantically to a derivation "entity/person characterized by X" → "X-like, X-ish". Indeed, the usual derivational base for a possessive would be an abstract substantive rather than a concrete one of the *-*āk*-type argued for above.[194] However, there is reason to assume that possessive derivatives from concretes could have – or develop – an appropriate meaning: thus *so/eǵ^{h}- "victor, stalwart" (> Ved. *sā́h*- m. "id.") → *so/eǵ^{h}-o- "steadfast" (> Gk. ὀχός "id.", Gaul. *sego*° in PN) and with a different possessive suffix Ved. *nár*- m. "man" → *nr̥-vánt*- "manly"; see NUSSBAUM 1998, 527. This would provide a more satisfactory interpretation of the putative relationship between athematic and thematic suffix.[195] (In more

194 See extensively HÖFLER 2017 for possessives (initially adjectival but subject to secondary substantivization) derived specifically from *s*-stem abstracts by means of *-*ó*-.

195 Compare also the distinction between e.g. the athematic possessive "Hoffmann suffix" *-*Hen*- and the thematic "Herrschersuffix" *-*Hn-o*- (for which see PINAULT 2000), or between *-h_3k^w- and *-h_3k^w-o- (ultimately from *h_3ek^w- "eye", see *NIL*, s.v.). In these cases, too, the original relationships are sometimes obscured by secondary adjectivizations and substantivizations (thus e.g. Ved. *pratīc*- in *pratīcīná*- "facing" < *proti-h_3k^w- versus *prátīka*- "surface, appearance" < *proti-h_3k^w-o-).

general semantic terms, too, the derivation of an evaluative, perhaps attenuative adjective "like a newcomer, new-ish" from an evaluative substantive "newcomer" is hardly surprising.)

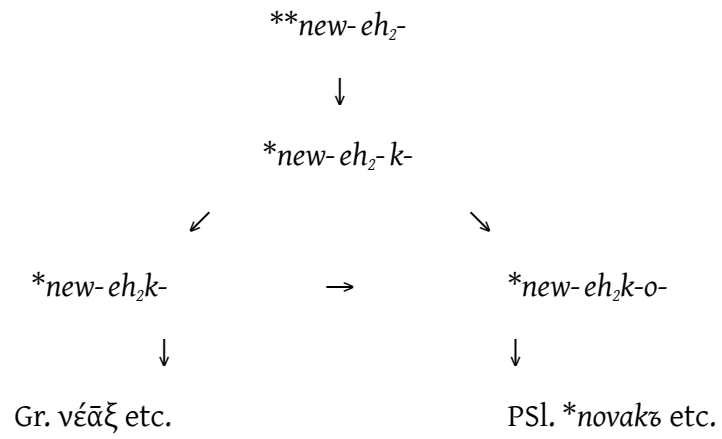

Figure 3.2

Whichever explanation for (*-*eh*$_2$*ko*- >) *-*āko*- is ultimately preferred, the corresponding developments can and should be attributed to PNIE, seeing as both *-*āk*- and *-*āko*- are reflected in at least two NIE ranches each. The resulting suffix then achieved independent productivity and thrived in Balto-Slavic even as its athematic progenitor did not.[196] Similarly, *-*āk*- remained marginal at best outside Greek and Italic. Yet the cumulative evidence of the branches illuminates the relationship between the Latvian comparative -*āk*- and its numerous evaluative congeners.

196 The fact that Balto-Slavic clearly shows evidence of both adjectival and substantival *-*āka*- means that any plausible scenario – whether starting from a primarily substantival or adjectival formation – must allow for shifts in one direction or the other.

3.5. Conclusion

I have shown that the Latvian comparative in *-āk-* is to be derived from a PBSl. **-āka-* suffix with evaluative function. Comparison with the Greek and Latin evidence for athematic **-āk-* has further illuminated its prehistory, and provided evidence (bolstered by typological parallels) for the late development of a synthetic comparative morpheme out of a PNIE morpheme **-eh₂-k-* which formed substantival epithets from nominal bases (most likely beginning with a core of PC adjectives and then extended to substantives). Thematic **-eh₂-ko-*, in origin probably a thematization of **-eh₂-k-*, derived corresponding adjectives. The suffix **-eh₂-k-* itself was a conglomerate of the **-eh₂-* (specifically in adjective-abstract function) and **-k-* (ubiquitous in PNIE suffixes with evaluative and individualizing force).

Related issues to be addressed by future research include the relationship between **-āk(o)-* and the broader range of **-(V)k(o)-* derivatives across IE.[197] This will require mapping the distribution of velar suffixes in IE in greater detail than has been attempted before, and taking into account philological data concerning the antiquity and provenance of individual

197 For an especially striking pair, see Gk. μεῖραξ (AR.+) f. "lass" and Ved. *maryaká-* m. "little man" (← *márya-* "young man, hero, groom"). Compare also the familiar triplet of Gk. νέᾱξ – CS *novakъ* – Lith. *naujõkas* with forms such as Skt. *navaka-* (< **-ako-*) "new, young", Lat. **novīc-* (< **-īk-*) in *novīcius* m. (PL.+) "newcomer", and Russ. *новúк* m. (< **-īko-*) "novice". Note that these forms have unequal claims to antiquity even within their respective branches.

forms. In addition to potentially illuminating the functions of thematization in velar suffixes, doing so would no doubt shed light on intriguing cases of homoplasy among related morphemes: For instance, the innovative deverbal use of *-āc-* in Latin finds parallels in occasional deverbal uses of PSl. **-akъ* and MW *-awc* (see sections 3.2 and 3.3.3, respectively) as well as Sanskrit and Old Iranian *-aka-* < **-oko-* (e.g. Skt. *nind-* "to mock" → *nindaka-* m. "mocker", YAv. *rap-* "to support" → *rapaka-* "supportive").[198] One might add the sporadic development of contrastive or even comparative nuance of velar suffixes in derivations such as Ved. *ádhi* adv. "on, over, from" → *ádhika-* "additional, superfluous", later also "superior".[199]

198 See *AiGr* II/2, 145–149. Notably this formation is very rare in Vedic but increasingly common in the transition from the language of the Upaniṣads to Classical and Epic Sanskrit; there are few Old Iranian examples.

199 This particular form is even found as a parameter marker in analytic comparisons such as Epic Skt. *rūpeṇa ádhikā* "superior in beauty, more beautiful" (Kulikov 2021, 399).

4. Remodeling: Adverbial influence on comparatives in Greek and beyond

4.1. Introduction

Several branches of IE sometimes display an unetymological long vowel as part of their otherwise transparent gradation morphology.[200] In Greek, there are secondary comparatives in -ώ-τερος and superlatives in -ώ-τατος of type σοφώτερος "wiser" and σοφώτατος "wisest" (as opposed to expected †σοφότερος and †σοφότατος). In Germanic, we find comparatives in *-*ōz*- and superlatives in *-*ōs*-*ta*- of type Go. *swinþōza* "stronger" and *swinþōsts* "strongest" (as opposed to the more archaic *-*iz*- and *-*is*-*ta*- in *spediza* "later" and *spedists* "latest").[201] Slavic has comparatives in *-*ějьš*- of type OCS *novějьš*- "newer" (as opposed to simple *-*jьš*- in *boljьš*- "greater"), while Baltic has comparatives in -*ais*- of type OPr. *uraisin* acc. sg. m. "older" (as opposed to -*is*- in *tālis* adv. "further").

In Greek, the problematic vowel could theoretically be the result of lengthening (analogical, expressive, or otherwise) of the expected short vowel. But positing an irregular

200 I do not propose to deal here with the long vowels of Vedic comparatives of the type *náva*- "new" → *návīyas*- "newer" nor with the Greek fluctuation between -ῑ̂ον- and -ίον-. They are probably distinct in origin from the phenomena analyzed in this chapter; see also Kuiper 1965, 302–305 as well as Dieu 2011, 586–590.

201 The superlatives of Greek and Germanic pattern with comparatives in the relevant ways and therefore demand little additional comment in this study. It is uncertain whether there was a dedicated superlative morpheme in PIE, since not all languages that preserve the comparative have a superlative, and those that do differ in employing either *-*mo*- or *-*to*-, with some showing reflexes of both.

development of this type without strong evidence amounts to little, and more importantly is of no help whatsoever in Germanic and Balto-Slavic, where there are no variants with corresponding short vowel. The source of the long vowels, as has long been hypothesized but never argued at length from a unified perspective, must for each branch be sought in the desinences of certain adverbs representing lexicalized case forms. Comparative adverbs could at some stage be formed by the addition of comparative morphemes to existing adverbs, a process likely innovated separately by different branches.[202] The adverbial desinences contained in such comparative adverbs were then introduced into the adjectival gradation paradigm. To show how this came about in Greek specifically, I will first summarize the relevant facts concerning gradation of both adjectives and adverbs and then compare them to Indo-Iranian, which is likely to preserve the PNIE state of affairs in many respects. This will permit a unified picture of the development of adjectival and adverbial gradation morphology in these two branches.

202 By "comparative adverb" I refer in this context only to comparatives formed from adverbs and used adverbially, a category rarely given separate treatment in the traditional handbooks which consider gradation primarily a characteristic of adjectives (see DOETJES 2008 for technical accounts of the arguably special relation between gradability and adjectives). The other sense of the term, namely adverbs used in the formation of analytic comparatives, such as Engl. *more* in *more reliable* or It. *più* in *più forte* "stronger", will not figure into this discussion.

4.2. The Greek facts

Disregarding sporadic contaminations, Greek has three types of comparative formation, of which only one is attested in Mycenaean. The first and most archaic of these forms *s*-stems deradically by means of a PGk. suffix *-*(ī)yos*-, continuing the *o*-grade of the PIE primary comparative. In Mycenaean it occurs with four roots and has no attested competitors (Bartoněk 2003, 303–304).[203] In the dialects of the first millennium BCE, it survives only in relics; thus Myc. *me-zo-a*$_2$ /medᶻoha/ nom.-acc. pl. nt. < **meǵ-yos-h*$_2$ "greater" corresponds exactly to Ion. μέζω, but the equivalent Att. form μείζονα is of the type discussed below.[204] Setting aside the length of the suffix-initial vowel (as with its Indo-Iranian congener), this morpheme continues the PIE primary comparative faithfully, and is not directly relevant to the present issue.

The second type forms *n*-stems deradically by means of a complex PGk. suffix *-*ǐ̄s-on-*.[205] It represents the zero-grade of the primary comparative with a nasal suffix, a sequence also

203 Although there is thus no Mycenaean evidence for the nasal-suffixed comparative, this does not prove it to be a post-Mycenaean innovation. The independent testimony of Germanic and Lithuanian (as well as arguably Albanian) strongly suggests it existed already in PNIE; see section 2.2.1 above.

204 Whether the Greek forms cited here continue the plain root **meǵ-* or the common extended variant **meǵ-h*$_2$- with deletion of the laryngeal before yod per Pinault's Law (Pinault 1982) is a matter of debate; see *NIL*, s.v. as well as Verhasselt 2014, 13–14.

205 See Rix 1992, 168 and (differently) Seiler 1950, 14–15 on the vowel-initial versus glide-initial allomorphs of the Greek primary comparative, as evidenced by e.g. παχίων versus πάσσων to παχύς "thick".

attested in PGmc. comparatives of type *bat-iz-an- "better" > Go. batiza, OE betera, etc. The nasal suffix itself is probably identical in origin to the "individualizing" morpheme in substantivizations of type Gk. Στράβων PN (← στραβός "squinting"), Lat. Catō PN (← catus "cunning").[206] Examples include ἡδίων to ἡδύς "sweet" and κακίων from κακός "bad". Restricted from the beginning to PC adjectives consisting of a root and one suffix, it is on the wane in Greek from the earliest records, under pressure from the formation discussed immediately below.[207]

The third and most productive type is formed from the stem, rather than the root, by means of a thematic suffix -τερο- cognate with PIIr. *-tara-. and various "contrastive" formations from adpositions and other indeclinables (type Ved. ántara- "inner" < *en-tero- ← *en "in") throughout NIE.[208] This secondary comparative is the locus of the Greek problem mentioned above, namely the rhythmically governed alternation in quantity of the thematic vowel preceding[209] the suffix; thus σοφός "wise" → σοφώτερος (∪ – ∪ ∪) "wiser" not †σοφότερος

206 Arguably to be distinguished from the possessive type Γνάθων PN (← γνάθος m. "cheek"), Nāsō PN (← nāsus m. "nose") built to substantival bases; see SCHAFFNER 2005, 187–205 for observations on function and ablaut.

207 On the primary comparative in Greek, see especially SEILER 1950. On its origins and its place in the Caland system, compare RAU 2014. Concerning variations in root grade and suffix shape, see RIX 1992, 167–168 and *GrGr* I, 538–539.

208 On the origins of the secondary comparative and its relationship to *-ero-, see section 2.3 above.

209 Note that secondary comparatives can – in some sense – have two thematic vowels, as the thematic suffix *-tero- may be added to an already thematic stem. (The few cases of apparent substitution are best explained as analogical; thus e.g. παλαιός "old" → παλαίτερος "older" beside regular παλαιότερος is analogical to παλαί

(⏑ ⏑ ⏑ ⏑), but μῑκρός “small” → μῑκρότερος “smaller” (– ⏑ ⏑ ⏑) not †μῑκρώτερος (– – ⏑ ⏑). If the syllable preceding the thematic vowel is long by nature or by position, the thematic vowel appears lengthened.[210] Avoiding sequences of three or more short syllables makes sense as a re-organizing principle once variants with lengthened thematic vowel had arisen. However, it is less credible as the original cause of such variants, especially since non-thematic vowels are generally not lengthened in the same context; thus βαρύς “heavy” → βαρύτερος (⏑ ⏑ ⏑ ⏑) not †βαρῡ́τερος (⏑ – ⏑ ⏑), γλυκύς “sweet” → γλυκύτερος (⏑ ⏑ ⏑ ⏑) not †γλυκῡ́τερος (Güntert 1910, 33). Certain highly lexicalized items, especially continuing the older non-comparative functions of -τερος, are similarly exempt; thus πότερος (⏑ ⏑ ⏑) and ὁπότερος (⏑ ⏑ ⏑ ⏑) “which of two” not †πώτερος (– ⏑ ⏑) and †ὁπώτερος (⏑ – ⏑ ⏑).[211]

With regard to adverb formation, Greek shows a proliferation of both case-forms and specialized adverbial formants, some inherited and some innovated.[212] Of particular interest here is the most common type of deadjectival adverb, namely adverbial use of the nominative-

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adv. “long ago”.) It is the quantity of the first thematic vowel, forming part of the derivational base, that is at issue here.

210 For exceptions to this rule, both real and apparent (as in the case of *στενϝός > στενός “narrow” → στενοτέρος, but Ion. στεινός → στεινοτέρος), see Güntert 1910, 52–53.

211 Note ἄμφω “both” → ἀμφοτερός “both of two” instead of †ἀμφωτερός with preserved length. On the surface this suggests that the rule indeed applied to some “contrastive” forms. However, as long as ἄμφω was still felt to be an inflectional dual, it was trivial to extract a base ἀμφο- to which ἀμφοτερός could then be formed, with no need to appeal to a rule governing quantity sequences.

212 For a list and brief discussion of all types, see *GrGr* I, 617–633.

accusative neuter (singular or plural) on the one hand[213] and suffixation of -ως on the other hand. The distribution of these in Greek, although not entirely without exceptions, aligns with evidence from other IE languages (especially Vedic) to show that the use of the nominative-accusative neuter is the more archaic and widely applicable. It is widely found with both athematic and thematic adjectives, while -ως is mostly limited to thematic adjectives.[214]

The existence of comparative adverbs is sometimes ignored in the handbooks, no doubt in part because gradation is generally treated as a defining characteristic of adjectives. As will be seen, their formation employs only processes involved in either the formation of adverbs from adjectives more generally or in the formation of comparative adjectives from positive ones. It will nevertheless be worthwhile to make the Greek facts explicit, and to arrange adjectival and adverbial gradation together in one paradigm. Adverbs in Greek are assigned comparatives according to two different patterns, depending on their own derivational status. The closed class of local adverbs not derived from adjectives employs the suffixes -τέρω and

213 See, for instance, Benveniste 1935, 93–94. The adverbial use of accusative nouns rather than adjectives is found in many IE languages; consider Gk. χάριν "for the sake of", Ved. *náktam* "at night", and so on. The characteristic Lat. adverbial ending *-tim* was also extracted from original accusatives of deverbal *ti*-abstracts, such as *statim* "steadily; immediately" (as recognized already by Bopp 1832, 24). See also Leumann 1950, 165–168 for related issues of Homeric interpretation.

214 Thus athematic ἡδύς → adv. ἡδύ and thematic σοφός → adv. σοφόν represent the older type. Among thematics this was largely supplanted by the σοφῶς-type already in pre-historic Greek, while among athematics the type ἡδέως did not achieve the same prominence and is infrequent in Homer, suggesting gradual and incomplete spread from the thematic to the athematic class.

-τάτω; thus ἄνω “above” → ἀνωτέρω and ἀνωτάτω, ἔνδον “inside” → ἐνδοτέρω and ἐνδοτάτω, ἐγγύς “near” → ἐγγυτέρω and ἐγγυτάτω.[215] Some of these have adjectival pendants in -τερος and more rarely -τατος, but defective with regard to the positive; thus ἐνδότερος “inner” and ἐνδότατος “innermost” without a corresponding positive †ἔνδος. This type is interesting in its own right, since its defectiveness strongly suggests that the secondary comparative suffixes could attach directly to an existing adverb to form an adverbial comparative, to which adjectival comparatives were then formed in turn. Meanwhile, the larger, open class of deadjectival adverbs uses the nominative-accusative neuter of the corresponding comparative and superlative adjectives as their gradation forms. This pattern is doubtless inherited (*BrGr* II/2, 688–695), but the strong tendency to use a singular form for the adverbial comparative and a plural form for the adverbial superlative is a Greek innovation not shared by the other branches.[216]

The gradation of adjectives and deadjectival adverbs in Greek can therefore be summarized as follows:

215 Occasionally -τερον and -τατα intrude from the other main class, as in ἀνώτερον and ἐγγύτατα (Kühner & Blass 1890, 578–579).

216 This tendency may be related to the phenomenon of “intensive plurals” in emotive contexts noted by Havers 1926, 40–45; further afield, Součková & Buba 2008 suggest a link between plurality and degree in their analysis of Hausa pluractionals. A semantic explanation along these lines was proposed by Löfstedt 1928, 64, adducing a parallel in the Latin use of the plural for emphasis in phrases like *mira sunt* instead of *mirum est*, *miris modis* instead of *miro modo*. This would obviate an analogical explanation as sketched by Wackernagel 1916, 88, but the question merits further study.

	adj.		adv.
pos.	ἡδύς “sweet”	→	ἡδύ (ἡδέως)
	↓		
cpt.	ἡδίων	→	ἥδιον
spl.	ἥδιστος	→	ἥδιστα

Table 4.1

	adj.		adv.
pos.	μῑκρός “small”	→	μῑκρῶς (μῑκρόν)
	↓		
cpt.	μῑκρότερος	→	μῑκρότερον
spl.	μῑκρότατος	→	μῑκρότατα

Table 4.2

	adj.		adv.
pos.	σοφός “wise”	→	σοφῶς (σοφόν)
	↓		
cpt.	σοφώτερος	→	σοφώτερον
spl.	σοφώτατος	→	σοφώτατα

Table 4.3

This fluctuation between -ω- and -o- is synchronically governed mostly by rhythm, as explained above, but its origin remains to be elucidated. To see how the apparently unetymological -ω- of these gradation forms can be connected to the adverbial -ως, a closer look at the latter is required.

The derivation of comparative adverb from comparative adjective rather than from positive adverb is typologically common, though (as will be seen below) not universal. In Greek, as in other languages, it is borne out most obviously by the suppletive gradation paradigms. For instance:

	adj.		adv.
pos.	κακός "bad"	→	κακῶς (κακόν)
	↓		
cpt.	χείρων	→	χεῖρον
spl.	χείριστος	→	χείριστα

Table 4.4

The above presents a simplified picture.[217] However, it sufficiently illustrates the fact that comparative adverbs tend to inherit suppletion from the corresponding adjectives. Otherwise,

217 Variants include non-suppletive κακίων and κακώτερος as well as post-Classical Gk. χειρόνως for χεῖρον and χειρίστως for χείριστα. Homeric has ἐλέγχιστος instead of χείριστος (with no superlative adverb corresponding to either). For a thorough discussion of the gradation paradigm of "bad" in Greek, see DIEU 2011, 403–455.

one should find e.g. a comparative adverb †κακωτερῶς formed to κακῶς and standing beside the comparative adjective χείρων.[218]

Given the positive-grade pattern σοφός → σοφῶς as well as the aforementioned type ἀνωτέρω, one expects to find a corresponding comparative-grade pattern σοφώτερος → †σοφωτερῶς and μῑκρότερος → †μῑκροτερῶς. Indeed forms of this type are occasionally found as early as Thucydides, but with recessive accentuation; see table 4.5 below. This corroborates their derivation from the comparative adjective rather than from the positive adverb, since in the latter case one would expect the final circumflex characteristic of deadjectival positive adverbs to be simply copied into the new comparative adverb (giving †σοφωτερῶς and †σοφωτατῶς). The formation itself is of little historical interest otherwise, on account of its sporadic occurrence in various periods (indicative of an *Augenblicksbildung* or spontaneous neologism).

218 The main counterexample is the Basque pattern of *txar* "bad" with a suppletive adverb *gaiz-ki* "badly" and a corresponding comparative adverb *gaiz-ki-ago*. The suppletion inherited by this comparative adverb indicates a structure [[[ADJECTIVE] ADVERB] COMPARATIVE] rather than the far more common [[[ADJECTIVE] COMPARATIVE] ADVERB] (BOBALJIK 2012, 116–123).

	adj.		adv.
pos.	σοφός	→	σοφῶς
	↓		
cpt.	σοφώτερος	→	σοφωτέρως
spl.	σοφώτατος	→	σοφωτάτως

Table 4.5

Note that adverbs of this kind are also formed to words employing -τερος in its more archaic "contrastive" function, e.g. ἕτερος "one or the other of two" → ἑτέρως "in one or the other way" and ὁπότερος "which of two" → ὁποτέρως "in which of two ways" (beside ὁπότερον "whether"). One variety of this is found already in Homer, where allatival ἀμφοτέρωσε "to both sides" (Θ 223, Λ 6, Μ 287) is found beside the corresponding adverb of manner ἀμφοτερόν "in both ways" (e.g. Γ 179, Ξ 505).

The form and origin of the deadjectival adverb itself merits comment. Its characteristic ending -ως must historically be segmented into a case ending -ω and a presumably adverbializing -ς.[219] But alternations such ἐγγύς "near" ~ ἐγγύθεν "from nearby" (not

219 *BrGr* II/2, 737–738 adduces other putative instances of adverbial *-*s* in IE. Note that the lack of a sibilant in Greek local adverbs like ἄνω may testify to their origin as directives, which were felt sufficiently distinct from adjective-derived adverbs to escape being marked by -ς. They acquired locatival nuance only in historical times, with early attestations generally indicating direction ("upwards", "downwards") rather than location ("above", "below"). Considering the semantic proximity of e.g. "the level above" and "the upper level", such shifts in meaning are plausible; and indeed the reverse change can also be observed in Greek, since ποῖ "whither?" and ποι "somewhither" combine locatival form with directive function (*GrGr* I, 549).

†ἐγγύςθεν) indicate that -ς functions on the same level as the transparently derivational -θεν, though it does not have as distinct a semantic function. It is possible that some of the analogical processes detailed below occurred before the mandatory characterization of deadjectival adverbs by -ς, but this is not presupposed. Especially given independent and very common occurrence of -ς as an exponent of case, speakers would find it easy to disregard in perceiving or creating derivational pathways.

Accentuation aside for the moment, the obviously thematic case ending continued in adverbial -ω(ς) could be either ablative (PIE *-*o*-*h*$_2$*Vd* > *-*ōd* > PGk. *-*ō*) or instrumental (PIE *-*o*-*h*$_1$ > PGk. *-*ō*). Neither case ending was productive in the Greek of the first millennium, and the Mycenaean data is partly obscured by the deficiencies of Linear B.[220] However, there are numerous nominal and especially pronominal relic forms in the dialects. Already at the PIE level, the ablative had a distinct form only in the thematic singular, its function otherwise fulfilled by the genitive in the singular and the dative in the plural. Early in the separate history of Greek even the thematic ablative merged fully with the genitive, taking on the exponents of the latter. The ablative survives in a very few nouns used adverbially, such Delph. ϝοικω = οἴκοθεν "from home", but also in several pronominal adverbs in -ω designating "place

220 Thus the Myc. singular case ending transliterated as -*o* may stand for the thematic ablative or instrumental (-ω), but also the thematic nominative (-ος), accusative (-ον), dative (-ωι or -ῳ), and possibly locative (-οι) as well as the athematic genitive (-ος); see Bernabé & Luján 2020, 212–223.

whence", such as Lac. τουτω and Locr. hοπō (Buck 1998, 103).[221] The instrumental, on the other hand, remained a clearly identifiable Mycenaean case at least in the plural, where its exponent is *-pi* /-p^{h}i(s)/.[222] The clearly related marker -φι(ν), attested most robustly in Homer, has a much broader distribution, being indifferent to number and fulfilling functions otherwise assigned not just to the instrumental but also to several other oblique cases.[223] Despite the general merger of instrumental with dative and locative, post-Mycenaean Greek still retains a handful of distinct instrumental singular forms; these include the first member of πονωπόνηρος "oppressed by toil" (lit. "toilsome with toil"), the invariable ὧδε "thus", and Hom. ἁμαρτή "together" with *e*-grade of the instrumental ending and – according to Aristarchus – notably oxytone accentuation (*GrGr* I, 550).

Both ablative and instrumental are used to form adverbs in various IE languages (see *BrGr* II/2, 697–703 and 712–720), and both are notably productive as such in Vedic. In principle, either could have been the source of -ω(ς) as a marker of specifically deadjectival adverbs. One important point in favour of the ablative is the consistently circumflex accentuation of the adverbial desinence when it bears the accent at all. While the instrumental should have

221 These must be distinguished from the more widespread local adverbs in -ω designating "place whither" and secondarily "place where", such as the aforementioned ἄνω, κάτω, etc.

222 On case ending *-*b*^{h}*is* versus adverbial suffix *-*b*^{h}*i* in PNIE, see Jasanoff 2009a.

223 The synchronic status of Hom. -φι(ν) as a genuine case-marker is argued by Goldstein 2020.

resulted oxytone †-ώς, the complex ablative ending would have been accented on the thematic vowel, with the resulting contour remaining even after loss of intervocalic laryngeals and subsequent contraction, resulting in attested -ῶς.[224] On the other hand, the instrumental is a better fit semantically, especially in its more basic comitative function, which is borne out especially by the great number of adverbial instrumentals in Vedic. All this does not rule out a polygenetic scenario, with instrumental and ablative contributing different adverbs, followed by secondary homogenization of the accent. HAJNAL 1995, 272–275 goes further in arguing that a principled distinction between instrumental and ablative cannot be maintained for post-Mycenaean Greek, and instead speaks of a "separative ablative/instrumental" as the source of the aforementioned dialectal relics. Since the separative sense of the ablative can be reconstructed for PIE while the separative instrumental is a Greek innovation, there would remain at least terminological grounds to favour the ablative. However, it seems likely that in Proto-Greek (as in Indo-Iranian) both ablative and instrumental formed adverbs productively. While there must have been nuances influencing the choice of case in some contexts, there would have been considerable overlap in adverbial function from the beginning. (Consider as a general parallel the semantic proximity of "he acted with kindness" and "he acted out of

224 The laryngeal itself is multiply justified by the disyllabic scansion of certain Vedic ablatives, by the OAv. spelling *-āaṯ*, by the trimoric final vowel of PGmc. adverbs such as **galeikō̄* "similarly", and the necessity of reconciling OLat. *-ōd* with PBalt. **-ād*; see JASANOFF 2017a, 142.

kindness", both of which may be adequately paraphrased as "he acted kindly".) As the case exponents in question merged phonologically, the pitch contour of the ablative was generalized, an additional marker -ϛ was added, and -ωϛ became productive in its familiar function.

4.3. The Indo-Iranian facts

Vedic provides the most extensive evidence for Indo-Iranian gradation morphology, and as such is probably the best guide to the state of affairs that obtained in PNIE.[225] Both primary and secondary comparative are productive, and appear in mostly complementary distribution. The primary comparative *-(ī)yas-*, with an increasingly common variant *-(ī)yāṁs-* and primary superlative *-iṣṭha-*, is limited to deradical adjectives with at most one suffix, which it replaces; thus *tavás-* "strong" → *távīyas-* "stronger", *táviṣṭha-* "strongest". The secondary comparative *-tara-*, with superlative *-tama-*, is predominantly formed to morphologically complex stems, to which it simply attaches; thus *bhágavat-* "bounteous" → *bhágavattara-* "more bounteous", *bhágavattama-* "most bounteous".

225 Iranian evidence is more limited, especially due to the relatively small corpus of Avestan hymns and Old Persian inscriptions. Where available it confirms the basic picture, contradicting Vedic only in points of detail; compare e.g. OAv. *vahiiō*, YAv. *vaŋ́hō*, Ved. *vásyas-* "better".

Like Greek, Vedic has a number of specialized adverbial suffixes attaching to words or stems, such as *-thā* for adverbs of manner (*pū́rva-* "former" → *pū́rvathā* "formerly") or *-trā* for local adverbs (*devá-* "god" → *devatrā́* "among the gods"). Also as in Greek, other derived adverbs commonly are case forms of nouns, pronouns, and adjectives. Any case can appear thus in adverbial function, although datives and genitives are rare while accusatives are very common (MacDonell 1916, 210–211). The most productive way of deriving an adverb from a positive adjective, corresponding to the addition of the suffix *-ly* in Modern English derivations such as *quick* → *quickly*, is to use its nominative-accusative singular neuter; thus *laghú-* "light" → *laghú* "lightly", *náva-* "new" → *návam* "anew", and so on (Delbrück 1888, 184–188). The antiquity of this derivational pattern is assured by the abundance of corresponding adverbial forms across the branches, beyond Indo-Iranian and Greek.[226]

Crucially, there are two main competing patterns in the derivation of comparative adverbs. The first and more archaic one, as in Greek, sees comparative and superlative adverbs derived from comparative and superlative adjectives the same way positive adverbs are derived from positive adjectives (via the nominative-accusative singular neuter). This pattern can be

226 Since this includes Hittite (as per Hoffner & Melchert 2008, 292), the pattern can be reconstructed for PIE proper rather than just PNIE. As noted below, it is also the main method of deriving adverbs from comparative adjectives in Germanic and Slavic; thus e.g. Gothic has the adjective *háuhs* "high" and the adverb *háuhaba* but the comparative adverb *háuhis*, which is the neuter of the comparative adjective without nasal suffix (see Fulk 2018, 238–240).

seen with both primary and secondary comparatives. With primary comparatives, the derivational pathway runs from positive adjective to comparative adjective, and from adjective to adverb on each level. In cases where the adjective has zero-grade of the root in the positive, but full grade in the comparative form, the corresponding adverb shows the same distribution, confirming that the comparative adverb is not derived directly from the positive adverb, but from the comparative adjective.[227] Thus *urú-* "wide" forms an adverb *urú*, a comparative adjective *várīyas-*, and a comparative adverb *várīyas*; similarly *bṛhánt-* "lofty" forms an adverb *bṛhát*, a superlative adjective *bárhiṣṭha*, and a superlative adverb *bárhiṣṭham*.

	adj.		adv.
pos.	*náva-* "new"	→	*návam*
	↓		
cpt.	*návyas-*	→	*návyas*
spl.	*náviṣṭha-*	→	*náviṣṭham*

Table 4.6

With secondary comparatives, the situation is different: Since *-tara-* and *-tama-* are added to the stem rather than the root (entailing identity of root vocalism between positive and

227 Speakers might eventually internalize a derivational pathway of type *urú* → *várīyas*, especially given the existence of corresponding adjectival *urú-* → *várīyas-*. However, since *várīyas* is an inflectional form of *várīyas-* as well as functionally its adverbial derivative, it stands to reason that the association between the two is far closer than that between the formally dissimilar and not inflectionally linked *urú* and *várīyas*.

comparative adjective), it becomes as trivial to derive the comparative adverb from the positive adverb as from the comparative adjective.

	adj.		adv.
pos.	*bhágavat-* "abundant"	→	*bhágavat*
	↓		↓
cpt.	*bhágavattara-*	→	*bhágavattaram*
spl.	*bhágavattama-*	→	*bhágavattamam*

Table 4.7

The other, more innovative "mixed" pattern instead sees the comparative adverb derived unambiguously from the positive adverb rather than the comparative adjective:

	adj.		adv.
pos.	*laghú-* "light"	→	*laghú*
	↓		↓
cpt.	*lághīyas-*		*laghutáram*
spl.	*lághiṣṭha-*		*laghutámam*

Table 4.8

This pattern has morphologically simple adjectives (synchronically analysable as consisting of a lexical root with at most one derivational suffix) forming primary comparatives even as the

corresponding comparative adverbs are sometimes derived using *-tarăm* and *-tamăm*.[228] The latter are no longer interpreted as a case form of the secondary comparative, but as suffixes forming comparative adverbs directly. The emergence of this pattern was favoured by the general spread of secondary comparatives and superlatives (see section 2.2.3 above). There is no evidence of suppletion being inherited from positive to comparative adverb.

Comparing these schemes, it becomes clear that the secondary comparative pattern, while structurally identical to the primary comparative one, allowed *-taram* and *-tamam* to be extracted as derivational suffixes in their own right, forming comparative adverbs from existing positive adverbs. These spread even more successfully than their adjectival counterparts, leading to the "mixed" pattern in which the archaic primary comparative obtains in the adjective, but has been replaced by a derivative of the secondary comparative in the adverb. This constituted a reorientation of the derivational pathways from the "horizontal" (positive adjective → positive adverb, comparative adjective → comparative adverb) to the "vertical" (positive adverb → comparative adverb).

228 In the Rigveda, there is only a single instance with long vowel in the final syllable (8.33.19: *saṃtarā́ṃ pādukáu hara*). In the later language, this variant increasingly predominates, and is synchronically interpreted as an accusative feminine; see Renou 1984, 156–157. Whatever its diachronic analysis, it is clearly an innovation and does not require further comment here.

4.4. Explaining the eccentric Greek pattern

Based on comparative and internal evidence that both the long-vowel variant of the secondary comparative and the adverb marker -ως are Greek innovations, the following gradation paradigm can be reconstructed for thematic adjectives and derived adverbs in pre-historic Greek:

	adj.		adv.
pos.	σοφός	→	σοφόν
	↓		↓
cpt.	†σοφότερος	→	†σοφότερον
spl.	†σοφότατος	→	†σοφότατα

Table 4.9

Here the adverbs can be regarded as derived from adjectives of the appropriate gradation level, but it is also straightforward to derive the comparative adverb from the positive adverb. This changes with the introduction and proliferation of -ως for the derivation of adverbs from (mainly thematic) adjectives. To a learner, the unambiguously adverbial forms in -ως will stand out more than the inherently more multi-functional case forms, which would facilitate the acquisition of a lexical category ADVERB; it is unsurprising that those forms would come to be

treated as the standard type of adverb, and spread accordingly at the expense of other type. Thus the typical paradigm acquired by a learner shifts to look as follows:

	adj.		adv.
pos.	σοφός	→	σοφῶς
	↓		
cpt.	†σοφότερος	→	†σοφότερον
spl.	†σοφότατος	→	†σοφότατα

Table 4.10

This stage sees the connection between positive and comparative adverb more remote than before, and more remote than that between positive and comparative adjective of the same type. Consider that, since the positive grade of adjectives and adverbs is both frequent in discourse and semantically more basic[229] than the corresponding comparative, it will tend to be acquired first by learners of the language. A learner having acquired an adjective σοφός would have little trouble with †σοφότερος, given exposure to a language as rich in derivational morphology as Greek. However, correctly interpreting and internalizing †σοφότερον as the adverbial comparative to σοφῶς would be more problematic, especially given the now

229 In the sense that understanding the meaning of a phrase such as "this book is bigger" requires understanding the meaning of "this book is big", but not vice versa. This intuition is supported by the analysis of gradable expressions as a set of properties ordered by strength, with degree modification of any kind being the selection of a property from that set; see Neeleman, van de Koot & Doetjes 2004, 27–28. Words such as Modern Engl. *rather* (< OE *hraþor* adv. "faster" ← *hraþe* adv. "fast") which are synchronically defective and still pattern as comparatives would, however, require a separate analysis from that perspective.

decreased frequency of adverbial accusatives in positive grade (increasingly supplanted by the σοφῶς-type). One would expect two types of mistake to be common in the attempts of learners of Ancient Greek (whether L1 or L2) to form comparative adverbs: The addition of the conveniently unambiguous -ως to the comparative adjective, or vowel lengthening of the "correct" form to more closely resemble the positive adverb. Forms such as σοφοτέρως and σοφοτάτως do occur, though their sporadic attestation suggests that they were indeed *Augenblicksbildungen* rather than an established part of the derivational inventory.[230] Meanwhile, the variant with lengthened vowel graduated to become the default formation. It had the practical advantage over †σοφότερον of being efficiently distinguishable from its adjectival counterpart while being more strongly linked to the positive adverb in -ως which was its semantic basis. Thus, in abstract terms, the "vertical" pathway was re-established by vowel lengthening in the comparative adverb while obscuring the "horizontal" pathway from comparative adjective to comparative adverb:

230 The same is obviously true of occasional forms such as βελτιόνως adv. "better" and καλλιόνως adv. "more beautifully" built to primary comparatives; see KÜHNER & BLASS 1890, 577.

	adj.		adv.
pos.	σοφός	→	σοφῶς
	↓		↓
cpt.	†σοφότερος		σοφώτερον
spl.	†σοφότατος		σοφώτατα

Table 4.11

Note that this pattern of derivation corresponds to that of the "mixed" paradigm of Vedic (see table 4.8 above), though the formal discrepancy between comparative adjective and adverb is less stark. Unlike Indo-Aryan, Greek repaired the "horizontal" pathway (which was still present in the primary comparative paradigm) by analogically introducing the long vowel into the comparative adjective. Such a significant effect of adverbial on adjectival morphology may be counter-intuitive, given that adverbs constitute a less cohesive and well-defined category both in IE and cross-linguistically.[231] Adverbs are also far more likely to be derived from adjectives than vice versa, another tendency reflected by the relative emphasis placed in traditional grammar. However, one corpus analysis of English child speech shows that while the type frequency of adverbs is about one third that of adjectives, their token frequency is three times

231 See for instance Givón 1984, 80–81 as well as Cuzzolin, Putzu & Ramat 2006, 3–4, who also cite this assessment: "Il semble que l'on ait mis dans les grammaires sous la rubrique 'adverbes' tous les mots dont on ne savait que faire" (Pottier 1962, 53).

that of adjectives (Li & Fang 2011, 101).[232] In other words, while children know fewer adverbs than adjectives, they use them more frequently. If this distribution is not an outlier, then influence of the type and direction required here could be the result of learners assimilating a less common formation to a more common one.[233] This leads back to the actually attested paradigm of σοφός, in which the comparative adverb is straightforwardly derived from the comparative adjective:

	adj.		adv.
pos.	σοφός	→	σοφῶς
	↓		
cpt.	σοφώτερος	→	σοφώτερον
spl.	σοφώτατος	→	σοφώτατα

Table 4.12

The exigencies of rhythm then incentivized a redistribution of long and short vowel variants in both adjectival and adverbial comparatives, so as to generally avoid sequences of three or more short syllables. This incentive would have been particularly strong in the context of morae-

232 Note that this count does not distinguish between different types of adverbs. An even more pertinent data point would be the type and token frequency of modal adverbs in *-ly*, the Modern English category which roughly corresponds to Greek adverbs in -ως as regards productivity and semantics. A separate count for specifically comparative adjectives and adverbs may also be useful.

233 Along broadly similar lines, consider the ongoing replacement of adjectival with adverbial gradation forms in Molisean varieties of Croatian (under the influence of local Italian dialects); see Breu 1999 and Breu 2009.

based Greek poetry, where extended sequences of shorts were the least usable and therefore led to the phenomenon of metrical lengthening (Kühner & Blass 1890, 169–171). However, suitability for poetic contexts was not the deciding factor in the reorganization of long and short comparative forms. Even setting aside special properties of literary prose, such as Demosthenes' avoidance of more than two light syllables in sequence (codified as Blass's Law), pairs such as στρατιώτης versus ἱππότης, ἱερωσύνη versus δουλοσύνη, ἑτέρωθεν versus πόθεν suggest a similar aversion in common speech (Devine & Stephens 1994, 104–105).[234] The distribution of -ίτερος and -ίστερος among secondary comparatives of *i*-stems corroborates this as well (Moorhouse 1952). As noted above, the rule was never consistently applied to the stem-forming -υ- vowel of *u*-stem adjectives or to highly lexicalized "contrastive" forms like ὁπότερος, and appears to have become laxer over time.

234 A rule to this effect was proposed for prehistoric Greek by Saussure 1884 and reformulated as a violable constraint by Steriade 2018. While something of this nature surely underlies the observed distribution of short versus long vowels, the latter are more likely to be have been introduced morphologically than by a spontaneous phonological process. Furthermore, since lengthening cannot account for the parallel situation in Germanic and Slavic, a morphological solution that can also be applied to those branches has considerably greater explanatory power overall.

4.5. Parallel developments in Germanic, Slavic, and Baltic

As mentioned above, three other branches have a distinction between what may be termed a "simple" and an "extended" reflex of the primary comparative. The situation in each case is structurally reminiscent of the Greek dichotomy of short-vowel and long-vowel secondary comparatives, although the morphological material is clearly distinct. The suggestion that the extended Germanic, Slavic, and Baltic formations are built to adverbial bases accordingly goes back to the early days of the discipline.[235] I do not propose to retrace all the arguments here, but instead present the basic facts and how they might fit together in light of the analysis presented in this chapter.

4.5.1. Germanic

In Germanic, the zero-grade *-*is*- of the primary comparative was generalized and gave rise to *-*iz*- under Verner's Law. However, the only pure reflexes of this formation are found in the adverbial domain; thus Go. *mais*, OHG *mêr*, etc. "more" < *-*ma-iz* < PIE *-*meh*$_2$*-is* and Go. *mins*, OHG

235 MAHLOW 1879 was the first to put forward a version of this, most prominently criticized early on by STREITBERG 1890 and again STREITBERG 1892; see also *BrGr* II/1, 560–561 as well as KURYŁOWICZ 1964, 233.

min, etc. "less" < **minn-iz* < Pre-Gmc. **min-u-is*.[236] Here, too, the nominative-accusative singular neuter of the adjective is the source of the adverb, before all adjectival comparatives received a nasal suffix at a later stage.[237] Corresponding to the above comparative adverbs, we therefore find the comparative adjectives OHG *mêro* etc. < PIE **meh$_2$-is-on-* and OHG *minniro* etc. < Pre-Gmc. **min-u-is-on-*.[238] The suffix **-on-* > **-an-* is reminiscent of that found on most Greek primary comparatives, and formally identical to the suffix marking definite adjectives in Germanic, though their ultimate connection is of no immediate concern.[239] Meanwhile, the corresponding Germanic superlatives are formed by **-is-ta-* < PIE **-is-to-*, with obvious Greek

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236 As **minuis* is an unusual formation reconstructed solely on the basis of Germanic, it is here labelled "Pre-Germanic" rather than "PIE"; see *EWA*, s.v. *min*.

237 Concerning the apparent adjectival counterexample OHG *baz* "better", Osthoff 1910, 286–288 argues that the lack of *i*-umlaut rules out an unextended comparative **bat-iz* and prefers to posit a neuter abstract **bat-az* in adverbial function. This etymology is adopted by Lehmann 1986 and others, but an analogical explanation is more plausible: PGmc. **batiz* adv. "better" > PWGmc. **bati* lost its final **i* on the way to Old High German by analogy to heavy stems such as PGmc. **wirsiz* adv. "worse" > OHG *wirs*, preventing the application of *i*-umlaut (see *EWA*, s.v. *baz*). Incidentally, a pre-form **bat-jez* with *e*-grade of the suffix would have the same result, and merits consideration because of Go. *framis* adv. "farther" < **fram-jez* (instead of †*frams* < ***fram-iz*).

238 Gothic *maiza* and *minnira* are not cited here because East Germanic, unlike West Germanic, analogically replaced the expected *n*-stem nom. sg. m. †*-o* < **-ō̄* with *-a*; see Jasanoff 2002, 43–44.

239 In other words, Old Germanic comparatives of any type inflect exclusively as definite adjectives. It is possible that the definite declension developed first and then became obligatory in the comparative for semantic reasons, although notably the Germanic superlative (which transparently continues the PNIE primary superlative) retains indefinite as well as definite inflection. Another possibility is that comparative and definite declension continue different uses of the same individualizing PIE suffix, whether or not primary comparatives with nasal suffix as such were a feature of the protolanguage; or else the definite declension in fact arose out of the inflection of comparatives, as per Trutmann 1972, 36–41. The standard account of the origins of Germanic definite declension as first laid out by Osthoff 1876 neither relies on nor rules out any connection with comparatives.

and Indo-Iranian parallels. Besides this, we find the extended type with comparative -*ōz*- and corresponding superlative *-*ōs*-*ta*-. The distribution of *-*iz*- versus *-*ōz*- is probably best preserved by Gothic, where only *a*-/*ō*-stem adjectives can take -*ōz*- while all other adjectives take -*iz*-. Within the class of *a*-/*ō*-stem adjectives, each consistently uses either -*ōz*- or -*iz*- with no alternation, but it is unclear what determined the assignment of one suffix rather than another to a given adjective. In the North and West Germanic languages, the reflexes of *-*ōz*- predominate at the expense of the reflexes of *-*iz*-, which survived only at the margins and did not retain productivity.[240]

There are two main ways of productively forming adverbs in Germanic. One is to use the nominative-accusative singular neuter, which predominates in the comparative and superlative grades but is also found in the positive grade (as with Go. *filu* "much" < **felu* to **felu*- or Go. *leitil* "little" < **lītilą* to **lītila*-). As noted above, the nasal suffix of the comparative is ignored in this process; thus adverbial **langis* to adjectival **langizō̄* "longer". The other way is to use a variety of suffixes, some of which are exclusive to this branch (such as Go. -*ba* in *sunjaba* "truly" to *sunja*, *harduba* "grievously" to *hardu*). By far the most common of these is a

240 Since the latter languages shared *i*-umlaut, which was not active in Gothic, it is plausible the allomorph *-*iz*- was avoided to minimize variation of stem vocalism. One may compare Greek, where the eventual dominance of secondary comparatives can be partly attributed to the avoidance of allomorphies caused by the complex palatalization processes which the primary comparative suffix induced in that branch.

suffix *-ō̄ ~ *-ē̄ that almost certainly reflects an ablauting case-ending otherwise lost to the Germanic nominal system.[241] As with Greek -ω(ς), the obvious candidates are the ablative and instrumental, but the trimoric character of *-ō̄ shows it to be a product of contraction across a laryngeal and therefore the reflex of the thematic ablative singular ending.

With these preliminaries out of the way, we turn to the Proto-Germanic gradation paradigm, well preserved in the older languages and therefore uncontroversial:

	adj.		adv.
pos.	**langaz* "long"	→	**langō̄* (**langą*)
	↓		
cpt.	**langizō̄*[242]	→	**langiz*
spl.	**langistaz*	→	**langist*

Table 4.13

241 <ō̄>, <ē̄> denote the trimoric or "hyperlong" vowels of Germanic, for which see e.g. Stiles 1988 and Jasanoff 2017a, 16–19. There is still a minority, represented by Boutkan 1995 and Yoshida 2012 among others, that does not reconstruct such vowels for Proto-Germanic; but the presentation given here aligns with recent works of reference, such as Ringe 2017, 91–93 and Fulk 2018, 84–87.

242 Note that the final *-ō̄ of adjectival comparatives has a different origin (*-ō̄ < *-ō < *-ōn < *-*on-s*) than that of adverbial positives (*-ō̄ < *-*o-h₂Vd*); see again Jasanoff 2002.

	adj.		adv.
pos.	*armaz “poor”	→	*armō̄ (*armą)
	↓		
cpt.	*armōzō̄	→	*armōz
spl.	*armōstaz	→	*armōst

Table 4.14

The more archaic, unextended variant (table 4.13) requires little comment. Yet the specifically Germanic extended variant (table 4.14) with its characteristic long vowel has no clear antecendent in PNIE even as it structurally resembles the Greek (as well as Slavic and Baltic) forms treated in this chapter. The most economical solution, as already seen in outline by Mahlow, is that the comparative morpheme *-*iz*- (with generalized zero-grade) was suffixed to positive adverbs in *-ō̄ in such a way that e.g. **arma*- “poor”→ *armō̄ “poorly” → *armō-(j)iz[243] > *armōz “more poorly” (competing at this stage with *armiz, the nominative-accusative singular neuter of the as yet unextended comparative *armiz-). The comparative adverbs of this type could then have influenced the corresponding comparative adjectives, again much as in Greek and by the same mechanisms. Note that in non-final syllables, the distinction between bimoric

243 The intervocalic glide is neither provable nor crucial to the scenario, but accords well with PGmc. phonology.

and trimoric vowels appears to have been neutralized in favour of the former; therefore *-ō̄ + *-*iz*- resulted in *-*ōjiz*- > *-*ōz*-.[244]

The basic plausibility of adding a comparative suffix to a semantically suitable adverb of whatever formal origin is evident, not least because of the obvious parallels found in Indo-Iranian and Greek. However, in the case of Germanic (and potentially Slavic and Baltic) this process apparently involved the primary rather than the secondary comparative suffix. Since *-*yes*- and its allomorphs were originally used in primary derivation – being added to semantically appropriate roots rather than to characterized stems, let alone to case-forms – the creation of a form like **armōjiz* entails a change in derivational restrictions in the pre-history of the branches concerned. Such changes clearly did occur in the development of gradation morphology in all branches, since (as argued in chapter 2) gradation in PIE and later PNIE was heterogeneous, with the choice of gradation strategy based on morphological and semantic considerations. In each branch, this complex and unintuitive system shifted in different ways, usually towards the generalization of one strategy and one set of morphological exponents. Within the attested history Greek and Indo-Iranian, the secondary comparative

244 Thus the medial vowel in **armōzō̄* and **armōz* as well as **armōstaz* and **armōst* (see 4.14) may have been originally trimoric. A similar sequence of developments gave rise to the second singular present subjunctive active **salbōs* < **salbōjis* (but probably via *-*ōji*- > *-*ō̄*- followed by the merger of *ō̄ with *ō in non-final syllable); see COWGILL 1959.

won out, with a much wider purview than in the proto-language; in the prehistory of Latin, Insular Celtic, Germanic, and Balto-Slavic, the use of the primary comparative was similarly extended beyond its original domain of application; in Armenian and Albanian, only analytic gradation strategies survived into the historical period. Seen in this wider context, the Proto-Germanic use of the primary comparative in deriving an adverbial comparative directly from a positive adverb is entirely plausible, even though almost certainly non-canonical from the perspective of PNIE.

The scenario advocated here is thus not only in accordance with the findings of historical phonology, but also plausible from a morphological point of view. It furthermore aligns with *a*-/*ō*-stems being the original locus of the extended comparatives, as suggested by the distribution in Gothic. If it is rejected, then the Germanic extended comparatives remain much harder to explain than their Greek analogues, for which irregular lengthening of the thematic vowel followed by secondary redistribution could be invoked at least in principle. But if it is accepted, both Greek and Germanic can be seen as parallel examples of the introduction of old case exponents into gradation paradigms: When certain case-forms of adjectives were – due to frequent use in adverbial function – reinterpreted as derived adverbs, they became

prone to gradation and could thus serve as the pivot.[245] Whether this explanation can also be made fruitful for yet another branch will be considered next.

4.5.2. Slavic

Setting aside the absence of an inherited superlative formation, the Proto-Slavic situation (generally maintained by OCS) superficially resembles that of Germanic, in that an extended variant *-*ějьš*- (e.g. **novъ* "new" → **novějь* "newer") of the primary comparative has become productive at the expense of the shorter formation *-*jьš*- (e.g. **vysokъ* "high" → **vyšьjь* "higher") which is found only with a few lexemes.[246] The distribution of the variants in historical times is clearer than in Germanic: In general, the unextended form occurs with adjectives showing root suppletion as well as those with *-*(V)ko*-suffixes in the positive that were dropped in the comparative.[247] These cases aside, the extended form is already dominant in the earliest texts. Also as in Germanic, the nominative-accusative singular neuter of an

245 The reinterpretation of a given case morpheme as an adverbial suffix would have been particularly favoured when that case was falling out of use owing to other developments; this certainly applies to the ablative (and instrumental) in the prehistory of both Greek and Germanic.

246 In OCS the unextended **vyšьjь*-type comparative always takes the definite form in the nominative singular masculine, while the extended **novějь*-type need not; and in general, definite comparatives outnumber indefinite ones in the older Slavic texts (a tendency carried to the extreme in Germanic, as mentioned above).

247 On the "neo-Caland" system of such suffixes in Slavic, see MAJER 2017a, 231–235.

adjective can be used adverbially; this is the predominant formation in the comparative grade, while in the positive grade an adverbial suffix *-*ě* is sometimes found.[248]

	adj.		adv.
pos.	*bolgъ “good”	→	*bolgo (*boldzě)
	↓		
cpt.	*bol’ьjь	→	*bol’e

Table 4.15

	adj.		adv.
pos.	*novъ “new”	→	*novo (*nově)
	↓		
cpt.	*novějь	→	*nověje

Table 4.16

There are complicating phonological factors, however. The adverb-forming morpheme *-ě* induces the effects of the second regressive palatalization of velars (*k* > *c*, *g* > *dz*, *x* > *s* in OCS), and therefore must go back to a Pre-Sl. diphthong *-*ay*, continuing the PIE thematic locative singular *-*oy*: thus e.g. OCS *gorьkъ* “bitter” → *gorьcě* “bitterly”. However, the comparative morpheme *-*ějьš*- induces the first regressive palatalization of velars (*k* > *č*, *g* > *ž*,

248 The distribution and characteristics of these two types of deadjectival adverb are explained by *GCS* II, 676–680.

*x > *š* in OCS), indicating that its initial goes back to a Pre-Sl. *$\bar{\varepsilon}$ from PIE *$\bar{e}$ or *eh_1: thus e.g. OCS *mъnogъ* pos. adj. "much" → *mъnožajь* cpt. adj. "more". To differentiate between the two types of jat, especially in reconstructed forms, Slavicist convention is to use subscript numerals, with *$ě_1$ < *$\bar{\varepsilon}$ and *$ě_2$ < *ay; the two do not differ in their outcomes, but in the effect they had on preceding velar consonants (see e.g. Carlton 1991, 117–119 and Shevelov 1964, 164–180). As indicated by the dialectally diverse outcomes of the second palatalization, it must have occurred during and after the breakup of Slavic linguistic unity.[249] The relevant effects can only be observed with forms whose stem ends in a velar, but among these there is no evidence of first palatalization in adverbs nor of second palatalization in comparatives. Therefore, if the extended comparative was indeed originally adverbial, formed by adding the neuter primary comparative suffix to adverbs in *-*ě*, there are only two possibilities: Either Slavic did at one point have adverbs in instrumental *-$ě_1$ < PIE *-eh_1 which were pre-historically assimilated to or replaced by the well-attested type in locative *-$ě_2$ < PIE *-oy; or the extended comparatives were in fact based on locative adverbs originally, but later remodeled to display primary instead of secondary palatalization.

249 See Collins 2018, 1462 for a chart of these dialectal developments. One of numerous archaic features of the medieval Old Novgorod dialect is that it generally does not display the effects of this palatalization, although it is likely that there already existed allophones with palatal coarticulation. At any rate, adverbs of the type discussed here appear in at least some Old Novgorod varieties with unchanged stem-final consonant, as in *dolgě* adv. "long" (Zaliznyak 2004, 218).

The former scenario (i.e. replacement) is plausible in principle, especially given the aforementioned widespread adverbial use of the instrumental case in IE generally; and while it lacks positive evidence in the form of relics retaining the effects first palatalization, the difference would not be discernible anyway with the majority of adverbs in *-*ě* that do not have a stem-final velar (such as **dobrъ* "good" → **dobrě* "well" or **zъlъ* "bad" → **zъlě* "badly"). Meanwhile, the latter scenario (i.e. remodeling) requires a complicated and speculative sequence of developments in order to juggle the difference in palatalization outcomes between adverbs and comparatives, the absence of evidence for adverbs with first palatalization, and the absence of evidence for extended comparatives with second palatalization.

Take as an example the comparative adverb **daleče* "farther", formally the nominative-accusative singular neuter of a comparative **dalečь* (not directly attested) to the positive adjective **dalekъ* "far". The positive adverb in this instance was **dal'e*, formally the nominative-accusative singular neuter of a positive adjective **dal'ь* (not directly attested). Given this material, an alternative positive adverb ***dalecě*$_2$ could have been formed spontaneously to the suffixed positive adjective **dalekъ* while the adverbial use of the locative (as seen in e.g. *gorьcě* "bitterly" above) was still productive. This would give the following paradigm:

	adj.		adv.
pos.	**dalekъ*	→	**dal'e*, ***dalečě*$_2$
	↓		
cpt.	**dalečь*	→	**daleče*

Table 4.17

It is possible, though not provable, that this distribution permitted the creation of a new and more marked comparative adverb ***dalečě*$_2$*je* consisting of the positive adverb and the comparative suffix with nominative-accusative singular neuter ending. As seen with the Vedic, Greek, and Germanic cases above, the comparative adverb is sometimes derived from, or at any rate influenced by, the corresponding positive adverb rather than the comparative adjective; the establishment of such a "vertical" pathway in Slavic would thus have precedents. But even granting this, it is difficult to motivate a further contamination **daleče* × ***dalečě*$_2$*je* = ***dalečě*$_2$*je* which – following the merger of jats – would presumably[250] have resulted in the reconstructible **dalečěje* (> OCS *dalečaje* etc.), whence the extended comparative suffix could then have been extracted and spread. Furthermore, this already speculative and chronologically constrained scenario would not by itself account for the distribution of extended versus unextended

250 As there appear to be no definite instances of the sequence ***čě*$_2$ anywhere in Slavic, its further phonological development cannot be established with certainty. However, **ě*$_1$ and **ě*$_2$ had identical outcomes in every actually attested environment (see again SHEVELOV 1964, 176 and CARLTON 1991, 118). On the further development of merged **ě*, see COLLINS 2018, 1479–1480.

comparatives. On balance, if the origins of Slavic extended comparatives lie in case-form adverbs being drawn into the gradation paradigm, then it is much more economical to simply posit a lost class of adverbialized instrumentals – comporting well with the evidence from other IE branches – than to operate with contamination, leveling, and spread.

4.5.3. Baltic

Turning finally to Baltic, the branch of IE most closely affiliated with Slavic: On the Lithuanian side, the comparatives in *-esni-* are reminiscent not of Slavic but of Germanic and Greek, as the suffix certainly contain a reflex of the primary comparative followed by a nasal suffix; while on the Latvian side, the comparatives in *-āka-* (see section 3.2 above) are an innovation in the Balto-Slavic context. However, the small Old Prussian corpus does furnish an adverbial primary comparative in *tāl(i)s* "further" as well as suffix *-ais-* that may represent an enlargement of Baltic adverbial **-ay* (as continued in Lith. *geraĩ*, Ltv. *labi*, OPr. *labbai* "well") with an allomorph of the primary comparative.[251] It appears in the cpt. adv. *massais* "less" (cognate with the Lith. adv. *mažaĩ* "little") as well as several comparative adjectives such as the acc. sg. *uraisin* "older" and the nom. pl. *maldaisei* "younger" (though used in the sense of "disciple" as a translation of

251 As the fate of **-is* and **-yVs* in Old Prussian final syllables is uncertain (in part due to probably dialectal variation among the sources), we cannot be sure of the suffix grade in each instance; see ENDZELIN 1944, 46.

Germ. *Jünger*).[252] Taken at face value, this constitutes Baltic evidence for the addition of a comparative morpheme to an adverbially employed case-form.[253] Furthermore, the OPr. adverbial suffix *-ai* is probably be etymologically identical to its functional equivalent in OCS *-ě*, seeing as both can be regularly derived from the PIE them. loc. sg. ending **-oy* (FORSSMAN 2003, 119). The only other source of OCS *ě* – namely Pre-Sl. **ɛ̄* < PIE **ē* or **eh₁* – gave OPr. *ī* or *ē* (STANG 1966, 44–45) and can therefore be ruled out as the origin of both the adverbial ending and the extended comparative of Old Prussian. It appears, then, that Old Prussian followed the same path as Germanic, whether independently or as a result or prehistoric contact.

4.6. Conclusion

In this chapter, I have elucidated different derivational relationships between adverbial and adjectival gradation forms in Greek and Indo-Iranian. This includes evidence for different types of comparative adverb derivation in Vedic. I showed that the gradation of adverbs influenced that of adjectives in the prehistory of Greek, leading to the analogical introduction of adverbial -ω into the adjective paradigm. A similar case was made concerning the eccentric long-vowel

252 However, see SCHMALSTIEG 1972 for an alternative derivation of *massais*-type.

253 Thus in essence BEZZENBERGER 1903, 171 and TRAUTMANN 1910, 248. ENDZELĪN 1944, 107 dismisses this interpretation explicitly for lack of parallels in other languages, but the Indo-Iranian, Greek, and especially Germanic facts (as argued above) show that this objection does not stand.

comparatives of Germanic as well as (more tentatively) Slavic and Baltic, based not on etymological identity but structural parallelism of those forms with the Greek ones. Whether a similar analysis can satisfactorily explain other IE anomalies in this area, such as the unetymological long *ī in the Indo-Aryan comparatives of type Ved. *návīyās-* "newer" (beside *návyas-*), remains a question for further research. More generally, I suggest that future morphological work on adjective formation and gradation may benefit from closer engagement with the corresponding phenomena in adverbs.

5. Final conclusions and directions for future research

As the conclusions from each study are presented separately above, I confine myself here to a summary of the most important results. Chapter 2 argued that PIE and PNIE gradation morphology were defective with respect to morphologically complex or opaque property-concept adjectives and that the secondary comparative of Greek and Indo-Iranian can ultimately be traced to a locatival marker. Chapter 3 explained the origin of the Latvian comparative marker *-āk-* using primarily Greek and Latin data, thereby proving a pathway from evaluative to comparative. Chapter 4 furnished a structurally unifying explanation of the long vowels in the etymologically distinct comparative formations of several branches, demonstrating that adverbial comparatives are apt to influence adjectival comparatives.

One obvious task for further research would be a comprehensive mapping of all function of **-(t)ero-* across branches, in order to gain a still more thorough understanding of how locatival, emphatic, binary-contrastive, and comparative usages arose out of and influenced each other. This should then be expanded on by a similar treatment of **-(t)m̥o-* and its relationship to **-(t)ero-*, culminating in a detailed explanation of the development of the secondary superlative. To complement the analysis of the Latvian comparative, a closer look at the Proto-Brittonic formation in **-a/okko-* is also warranted, with the aim of settling the long-

standing question of precisely how and what remove the two relate to each other. More ambitiously, a thorough study of velar suffixes (starting with *-*k*- and *-*ko*-) across branches may illuminate as much about the semantics of nominal derivation in Indo-European as about the pathways to and from evaluative morphology in general. Finally, I suggest that a fresh look at the often neglected category of adverbial comparatives, both in Indo-European and in other families, may provide new insight into the derivational relationships between adjectives and adverbs obtaining both in the comparative degree and more generally.

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