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INHALT

PIE *ǵerh₂- 'become old' and PIE *ǵerhₓ- 'crush, grind': Why Both?[*]

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Abstract: In this paper, I argue for the necessity of reconstructing two distinct roots *ǵerh₂- 'become old, age' and *ǵerhₓ- 'crush, grind' for Proto-Indo-European (PIE). I investigate the averbo structure of both these roots and conclude that they diverge not only semantically, but also morphologically from each other – for instance, the 'oldness' root *ǵerh₂- builds a full-grade simple thematic present (cf. Ved. *járate* 'becomes old'), whereas the 'crush' root *ǵerhₓ- builds a *u*-present (cf. Ved. *jū́rva-* 'grind down, destroy') beside a root present or an *ó/é*-present (cf. Ved. *jurátam* 'destroy!, break down!'). In addition, I discuss some nominal forms (OCS *zrĭno* n. 'grain, seed', ON *kjarni* m. 'kernel', Lat. *glārea* f. 'gravel', etc.), whose etymology supports the reconstruction of two distinct roots PIE *ǵerh₂- and *ǵerhₓ-.

Keywords: PIE root *ǵerh₂- 'become old, age', PIE root *ǵerhₓ- 'crush, grind', PIE verbal morphology, PIE 'grain' lexeme.

1   One or two PIE roots?

Traditionally, forms like Ved. *járati** 'makes age', Gk. 3.sg.aor. ἐγήρᾱ 'became old', and Lat. *grānum* n. 'grain, seed (of wheat or another plant)' have been regarded as etymologically related to each other and traced back to a Proto-Indo-European (PIE) root reconstructed as *ǵerh₂- – for *ǵ°, cf. Arm. *cer, -oy* 'old (person)' (*EDAIL*: 339); for *°h₂-, cf. Gk. γέρας, -αος n. 'gift of honor' ⇐ *'aging, old age' (Stüber 2002: 84, 230) and γραῦς f. 'old woman' (Nikolaev 2003). Concerning the semantics of the PIE root *ǵerh₂-, however, no consensus has been reached, see (1).

(1)   Selection of meanings proposed for the PIE root *ǵerh₂-:

   i.   'morsch, reif werden, altern' (*IEW*: 390) – *IEW* further specifies that "die älteste Bed[eutung] scheint ‚reiben' […] gewesen zu sein, intr[ansitiv]-pass[iv] ‚aufgerieben werden, von Alter oder Krankheit'".

   ii.   'old, feeble' (Nussbaum 1976: 18).

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iii. 'zerreiben, aufreiben, morsch machen, alt machen' (*EWAia* I: 578).

iv. 'aufreiben, alt machen' (*LIV²*: 165; García Ramón 2018: 153 fn. 28).

v. 'become crushed/old; crush, make old' (Malzahn 2016: 227).

vi. 'grind; rot', '(make) ripen', and 'make/become worn out, decrepit' (Malzahn 2019: 228; 2021: 337 fn. 2).

vii. 'become old' (Lubotsky 1997: 145; 1998: 73, 81; Del Tomba 2024: 153).

A more cautious view was entertained by other scholars, who emphasized the semantic gap between lexemes with the meaning 'grain, seed' on the one hand (cf. Lat. *grānum* n., OHG *korn* n., etc.) and words referring to 'oldness' on the other hand (cf. Ved. *járati** 'makes age', Gk. 3.sg.aor. ἐγήρᾱ 'became old', Arm. *cer* 'old (person)', etc.) – see Vine (1981: 153); Barton (1982: 41 fn. 30); Harðarson (1993: 74 fn. 51); *EDLIL*: 271; and Zair (2013: 282, 283).

Still differently, other scholars insisted on the necessity of positing two distinct PIE roots. See, most recently, Steer (2015: 159–177, especially 167–169, 171, 174–176), who set up two roots *ǵerh₂- 'become old, age' ("altern") and *ǵerhₓ- 'crush, grind' ("reiben, auf-, zer-, abreiben") and assumed a formal collapse of both these roots in Indo-Iranian. The same view was briefly defended by Höfler (2017: 345 fn. 1055) and had been cautiously proposed already in *LIV²*: 165 fn. 1: "oder sind vielleicht zwei Wurzeln aufzusetzen: *ǵerh₂- ,alt werden' und *ǵerH- ,zerreiben, aufreiben', die im I[ndo-]Ir[anischen] zusammengefallen wären?".

In this paper, I argue for the necessity of reconstructing two distinct roots PIE *ǵerh₂- and *ǵerhₓ-. The paper is structured as follows: (i) section § 2 discusses those forms whose meaning refers to the action of aging and that are therefore more likely to belong to the PIE root *ǵerh₂-; (ii) section § 3 discusses those forms whose meaning does not refer to the action of aging and which thus seem to build a distinct group, potentially ascribable to a different root; (iii) section § 4 adduces further evidence supporting the reconstruction of two distinct PIE roots; (iv) section § 5 concludes.

2 Forms referring to the action of aging

In this section, I examine those forms which have been traditionally connected with the PIE root *ǵerh₂- and semantically refers to oldness or

to the action of aging. I divide the relevant items into present forms (§ 2.1), aorist forms (§ 2.2), perfect forms (§ 2.3), and verbal adjectives (§ 2.4). Finally, I summarize the main conclusions of this section (§ 2.5).

2.1 Present forms

2.1.1   Attestations

2.1.1.1 Gk. γηράω

The Greek present γηράω 'become old, age' (Plato, Xen.) clearly belongs to the 'oldness' root PIE *ǵerh₂-. However, both its late attestation date and its long root vowel suggest that this form was not inherited from PIE but was rather back-formed to the 3.sg.aor. ἐγήρᾱ 'became old' (§ 2.2 below) within the history of Greek – cf. Harðarson (1993: 74 fn. 52).

2.1.1.2 Gk. γηράσκω and YAv. zarəsa-*

Both Greek and Avestan attest to present formations in -σκ- and -s- (< *-sḱ-), respectively, whose meanings refer to the process of aging: cf. Gk. γηράσκω 'become old, age' (Hom.) and YAv. a-zarəsəṇt- 'not aging', an nt-participle that presupposes an unattested present stem YAv. zarəsa-* 'become old, age'.[1] All the same, the root vowels of these forms do not match, since Greek exhibits a long vowel -η-, whereas Avestan points to a – morphologically expected – zero grade *ǵr̥h₂- (Hintze 1994: 110).

This situation can be explained in two ways: (i) a PIE sḱé/ó-present *ǵr̥h₂-sḱé/ó- regularly yielded PGk. *garáskō or *grā́skō (= YAv. zarəsa-*), and PGk. *garáskō or *grā́skō was then reshaped as *gēráskō (> Gk. γηράσκω) due to the influence of the 3.sg.aor. ἐγήρᾱ 'became old'; (ii) Gk. γηράσκω 'become old, age' and YAv. zarəsa-* 'id.' represents two independent formations. Since the assumption of a Proto-Greek reshaping *garáskō / *grā́skō >> *gēráskō is hard to prove, the second option is preferable. This means that the sk-present Gk. γηράσκω 'become old, age' likely represents a back-formation with durative meaning to the terminative aorist Gk. ἐγήρᾱ 'became old'. In contrast, YAv. zarəsa-* 'become old, age' goes back to a present stem Pre-PIIr. *ǵr̥h₂-sḱé/ó-, in which the morpheme *-sḱé/ó- was added due to the fientive semantics of the underlying root *ǵerh₂- 'become old, age' – cf. Harðarson (1993: 73–74 with fn. 50, 54); LIV²: 165–166 with fn. 10.

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[1] Cf. GEW II: 304 and Klingenschmitt (apud Hintze 1994: 110) contra AIW: 225 and EWAia I: 578.

2.1.1.3 Ved. *júrya- ~ jī́rya-* and LKhot. *ysīrāre*

Beside a simple thematic present *jára-* (§ 2.1.1.5 below), the Vedic verbal root *jarⁱ-* shows a *ya*-present *júrya-* 'become old, weak' (*RV*) ~ *jī́rya-* 'id.' (*AV*). This *ya*-present finds a match in Iranian, cf. LKhot. 3.pl. *ysīrāre* 'become old' (Kulikov 2012: 538–541; Bailey 1979: 346).

Since fientive *ya*-presents are productive in Indo-Iranian (and especially in Vedic), Ved. *jū́/ī́rya-* and LKhot. *ysīrāre* likely represent innovations of the latter branch and are thus functionally comparable with the *sḱé/ó*-present Pre-PIIr. *ǵr̥h₂-sḱé/ó-* discussed in § 2.1.1.2 above – cf. Gotō (1987: 152) and *LIV²*: 165.[2] Accordingly, it is possible to set up a pre-form Pre-PIIr. *ǵŕ̥h₂-i̯e/o-* 'become old, age', with stress on the root like all other members of the Vedic present class IV (Macdonell 1916: 141, 178). As for the double outcome *-ū́r-* ~ *-ī́r-* in Vedic, there are two possible explanations: (i) a dialectally conditioned development Pre-PIIr. *CR̥hₓC-* > Ved. *CūRC-* (*RV*) ~ *CīRC-* (*AV*) took place;[3] (ii) *-ū-* in Ved. *júrya-* (*RV*) was analogically transferred from the present stem Ved. *júrva-* 'grind down, destroy' (*RV*), on which see § 3.1.1.1 below.[4] If (ii) is accepted, see § 3.4 below for a possible explanation of how, specifically, this inner-Rigvedic spread of *-ŭ-* may have taken place.

2.1.1.4 OCS *zĭrějǫ*

The Slavic verbs OCS 1.sg.pres. *zĭrějǫ* (inf. *zĭrěti*) 'ripen (intr.)', Russ. 1.sg.pres. *zréju* (inf. *zrét'*) 'id.', Slov. 1.sg.pres. *zrệjem* (inf. *zrẹti*) 'id.', etc. (*EDSIL*: 552–553) point to a verbal stem Pre-PSl. *ǵr̥h₂-éh₁-*, which was regularly extended with the morpheme *-i̯e/o-* in the present. In the suffixal sequence *-éh₁-*, the expected coloring by root final *°h₂-* was analogically undone for the sake of morphological transparency, cf. *LIV²*: 165 with fn. 6.

According to Harðarson (1998, especially 327–328, 334–336), formations in *-éh₁-(i̯e/o-)* were patientive if derived from transitive roots, but fientive if derived from intransitive roots. If this is correct, the Slavic items at hand are best explained under the assumption that PIE *ǵerh₂-*

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[2] For a different analysis of Ved. *júrya-*, see Steer (2015: 169–171), who cautiously takes it to be an inner-Indic derivative of the adjective Ved. *júrya-* 'old, aged'. The existence of the latter, however, is doubtful – see § 4.3 below. Moreover, Steer does not take the Iranian match LKhot. *ysīrāre* 'become old' into consideration (see also Steer 2015: 159–160).

[3] Cf. *AiGr* I: 28; Pinault (1987/88: 329–330); Kulikov (2012: 538). This would in turn imply the assumption of a parallel development Pre-PIIr. *CR̥hₓV-* > Ved. *CuRV-* (*RV*) ~ *CiRV-* (*AV*).

[4] Cf. Burrow (1957: 141–142); Clayton (2022: 36, 40).

had an intransitive function, with the meaning 'become old, age'. Consequently, *$ǵr̥h_2$-$éh_1$-(ie/o-) originally meant 'become old, age' (fientive) and underwent a trivial semantic development to 'ripen (intr.)' in the prehistory of Slavic. The creation of Pre-PSl. *$ǵr̥h_2$-$éh_1$-(ie/o-) can thus be compared with the creation of the $sḱé/ó$-fientive Pre-PIIr. *$ǵr̥h_2$-$sḱé/ó$- (§ 2.1.1.2 above) and of the ie/o-fientive Pre-PIIr. *$ǵŕ̥h_2$-ie/o- (§ 2.1.1.3 above).

2.1.1.5 Ved. *jára-*

Finally, a primary-looking present formation is the full-grade simple thematic present Ved. act. *járati** 'makes age' (3.pl. *járanti* in *RV* VI.24.7a; 2.du.impv. *járatam* in *RV* VII.67.10c) ~ mp. *járate** 'becomes old' (3.pl.inj. *jaranta* in *RV* X.31.7d), which belongs to the verbal root Ved. jar^i-.[5] For the intransitive function of mediopassive *jaranta*, see *RVTC* ad loc. – following Geldner (1951 III: 178) and Narten (1964: 121) *contra* Gotō (1987: 152) – and cf. *RV* X.31.7d: *áhāni pūrvī́r uṣáso jaranta* "the days, the many dawns, grow old" (Jamison & Brereton 2014: 1426).

By taking the factitive meaning of the Vedic active *járati** at face value, one might reconstruct a PIE present *$ǵérh_2$-e/o- 'make age' and assign the latter meaning to the PIE root *$ǵerh_2$- (so *LIV²*: 165). At this point, however, it becomes hard to explain both the intransitive function of the Greek aorist ἐγήρᾱ 'became old' (§ 2.2 below) and the resultative meaning of the Vedic perfect *jajā́ra* 'is old' (§ 2.3 below), which rather point to a subject-related verbal semantics. The latter is also supported by the high number of fientive formations which were created independently in several branches – cf. Gk. γηράσκω 'become old, age', Ved. *jū́/īrya-* 'become old, weak', OCS *zĭrějǫ* 'ripen (intr.)', etc. For these reasons, it is preferable to regard the mediopassive form Ved. *járate** 'becomes old' as preserving the original meaning of the PIE present *$ǵérh_2$-e/o-. The active *járati** 'makes age' can then be analyzed as a secondary factitive active, which ended up overlapping semantically with the causative Ved. *jaráya-* 'make age' (Jamison 1983: 154–155) – cf. Kümmel (2000: 197–198) and Steer (2015: 167–169), who instructively mentions the parallel of the Vedic mediopassive *várdhate* 'grows' beside the secondary factitive active *várdhati* 'strengthens' (see also *LIV²*: 228).

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[5] On these forms, see Gotō (1987: 151–152); Harðarson (1993: 73 fn. 46); *EWAia* I: 577; *LIV²*: 165–166.

Note, finally, that in Avestan the expected present stem *zara- (= Ved. *jára-*) was replaced by the present stem *zarəsa-* 'become old, age' (§ 2.1.1.2 above). The latter present stem preserved the original intransitive function in the active, due to the suffixation of the fientive morpheme -sa- < *-sḱé/ó-.

2.1.2   Reconstructing a full-grade simple thematic present

The forms discussed in § 2.1.1 above – especially Ved. *járate** 'becomes old' – enable to reconstruct a full-grade simple thematic present PIE *ǵérh₂-e/o-* 'become old'.

PIE *ǵérh₂-e/o-* was argued by Malzahn (2016: 227; 2021: 341) to be the thematized continuant of an original root present PIE *ǵérh₂- / *ǵr̥h₂-ˊ, whose weak stem would underlie the imperative dual Ved. *jurátam* (on which see § 3.1.1.2 below). Doubtlessly, secondary thematizations can never be excluded; all the more so because another full-grade simple thematic present famously reconstructed for PIE – namely, *u̯éǵʰ-e/o-* 'go / carry (by wagon)' – might have had an athematic ancestor in Pre-PIE as well: cf. the athematic forms Ved. 3.du.impv. *voḷhā̆m*, 3.sg.opt.mp. *uhī́ta*, and ptc.mp. *úhāna-* (all *RV* – *EWAia* II: 535) and see further *LIV²*: 661–662 fn. 2. Nevertheless, since Ved. *jurátam* is best separated from the 'oldness' root PIE *ǵerh₂- on semantic grounds (§ 3.1.1.2 below), in the case of PIE *ǵérh₂-e/o- there is no positive evidence pointing to an originally athematic root present. With respect to the non-punctual *Aktionsart* of PIE *ǵerh₂- 'become old, age', a morphologically unmarked formation like a full-grade simple thematic present would have been as suitable as a root present (cf. Barton 1982: 41; Sihler 1995: 448).

Moreover, one should recall that Jasanoff (1998)[6] proposed distinguishing two types of PIE full-grade simple thematic presents, namely, the *bʰér-e/o-* and the *péku̯-e/o-type. If one accepts this distinction, PIE *ǵérh₂-e/o- would belong to the *péku̯-e/o-type, as it does not exhibit a suppletive aorist stem (§ 2.2 below). According to Jasanoff (1998, especially 312–313), *péku̯-e/o-type presents – contrary to *bʰér-e/o-type presents – never go back to former athematic root presents.

Be that as it may, the most reasonable conclusion is that the reconstruction of an athematic ancestor for PIE *ǵérh₂-e/o- 'become old' is possible in theory but cannot be positively proved.

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[6] Cf. also Lundquist & Yates (2017: 2163). A different view seems to be expressed in Jasanoff (2022/23: 74–77), though without reference to Jasanoff (1998).

2.1.3   The extra-paradigmatic status of PIE *$ǵérh_2$-ont- / *$ǵr̥h_2$-n̥t-́ 'old'

The well-known equation Ved. *járant-* / *járat-* 'old' ~ Oss. *zærond* 'id.'
~ Gk. γέρων, -οντος 'old (person)' points to the reconstruction of a PIE
nt-stem *$ǵérh_2$ont- 'old'. Besides, Vedic attests to a weak stem *jurat-́*,
which most plausibly means 'old' (*EWAia* I: 576) and occurs twice in the
RV: cf. dat.sg. *jurat-é* in VII.68.6a (attribute of Cyávāna) and gen.pl. *ju-
rat-ā́m* in II.34.10d (unclear context)[7]. Most scholars claimed Ved.
járant- 'old' and Ved. *jurat-́* 'id.' to go back to an original amphikinetic
(AK) paradigm, namely, PIE *$ǵérh_2$-ont- / *$ǵr̥h_2$-n̥t-́.[8]

To be sure, the *nt*-stem PIE *$ǵérh_2$ont- could be alternatively analyzed
as an *nt*-participle of the type PIE *$b^hér$-o-nt- 'bearing', cf. Harðarson
(1993: 73 with fn. 47). Nevertheless, one would then expect PIE
*$ǵérh_2$ont- and its continuants to mean 'becoming old, aging' rather than
'old', since *nt*-participles typically have agentive semantics in Indo-
Iranian and Greek. In addition, if the reconstruction of an AK paradigm
PIE *$ǵérh_2$-ont- / *$ǵr̥h_2$-n̥t-́ is accepted, the *$b^héront$-type hypothesis be-
comes even less likely, as *nt*-participles to thematic presents never show
ablaut in their root morpheme.[9]

A different analysis was put forth by Steer (2015: 159, 168, 171–172):
he traced Ved. *jurat-́* 'old' back to the weak stem of a hysterokinetic (HK)
nt-participle PIE *$ǵr̥h_2$-ént- / *$ǵr̥h_2$-n̥t-́, which would have belonged to
a root aorist PIE *$ǵérh_2$- / *$ǵr̥h_2$-́. The latter assumption, however, is
circular, since the reconstruction of a root aorist for the PIE root *$ǵerh_2$-
is not independently supported. The available evidence rather points to an
s-aorist, cf. § 2.2.3 below.

Accordingly, it is preferable to analyze PIE *$ǵérh_2$-ont- / *$ǵr̥h_2$-n̥t-́ 'old'
as an extra-paradigmatic formation, which ought to be kept morphologi-
cally distinct from the full-grade simple thematic present PIE *$ǵérh_2$-e/o-.
As for the morphological analysis of PIE *$ǵérh_2$-ont- / *$ǵr̥h_2$-n̥t-́ 'old', the
possibilities in (2) are most promising.

(2)   Possible morphological analyses of PIE *$ǵérh_2$-ont- / *$ǵr̥h_2$-n̥t-́ 'old':

   i.   Individualizing derivative in *-nt- to the *$h_1reu̯d^hó$-type adjec-
        tive PIE *$ǵerh_2$-ó- 'old' > Arm. *cer* 'old (person)' and NPers.
        zar 'id.' – so Klingenschmitt (apud Schaffner 2001: 615–616);
        Oettinger (2001: 303); Melchert (2017: 219). The original seg-

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[7] Cf. *RVTC* ad loc.
[8] Cf. Nussbaum (1976: 18–19); Gotō (1987: 153 fn. 238); Pinault (1987/88: 334–335);
EWAia I: 576; *LIV*[2]: 165 fn. 2.
[9] See Jamison (1983: 154 fn. 100); Löwe (2014: 174–175).

mentation would have been *ǵérh₂o-nt-, and the AK inflection would have arisen after the reanalysis as *ǵérh₂-ont-.

ii. *nt*-stem Caland formation of the type Ved. *bṛh-ánt-* 'high' – so Nussbaum (1976: 18–19); Gotō (1987: 153 fn. 238); Rau (2009: 71–72).

iii. Prototypicalizing derivative to a hysterokinetic (HK) *t*-hypostasis *ǵṛh₂-ént-* 'old', in its turn derived from a postpositional locative *ǵṛh₂-én* 'in old age' – i.e., root noun PIE *ǵérh₂-* / *ǵṛh₂-́* '(act of) aging, old age', whose postpositional locative *ǵṛh₂-én* 'in old age' → HK *ǵṛh₂-ént-* / *ǵṛh₂-ṇt-́* 'being in old age, old' → AK *ǵérh₂-ont-* / *ǵṛh₂-ṇt-́* '(the) old (one)' (so Sergio Neri, p.c.).[10] The reconstruction of a root noun PIE *ǵérh₂-* / *ǵṛh₂-́* '(act of) aging, old age' may be independently supported by Ved. *a-júr-* 'not aging', see § 4.3 below.

In Indo-Aryan, the AK lexeme PIE *ǵérh₂-ont-* / *ǵṛh₂-ṇt-́* underwent a paradigmatic split, with both stems *ǵérh₂-ont-* (> Ved. *járant-* 'old') and *ǵṛh₂-ṇt-́* (> Ved. *jurat-́* 'old')[11] becoming independent lexemes. Only secondarily, Ved. *járant-* 'old' developed a weak stem *járat-* by analogy to the inflectional model of Ved. *bhárant-* / *bhárat-* 'bearing'.

2.2 Aorist forms

2.2.1 Attestations

The following discussion focuses on the aorist forms Ved. *jāriṣ-* 'became old' (3.pl.inj. *jāriṣ-ur* in *RV* I.125.7b and I.139.8b/c [2x] – Narten 1964: 121) and Gk. 3.sg. ἐγήρᾱ 'id.' (Hom.). As against the other aorist formations, ἐγήρᾱ is morphologically isolated in the synchrony of Greek. Despite this, ἐγήρᾱ served as base for the back-formation of (i) the presents Gk. γηράω 'become old, age' and γηράσκω 'id.' (§ 2.1.1.1, 2.1.1.2 above) as well as (ii) the verbal abstract Gk. γῆρας n. 'old age' (Hom.). In the meaning 'old age', Gk. γῆρας n. replaced the inherited *s*-stem γέρας n. (< PIE *ǵérh₂-s-*), which subsequently assumed a specialized meaning (viz., 'gift of honor') according to Kuryłowicz's "Fourth Law of Analogy" (Kuryłowicz 1945: 30–31; Hock 2021: 239–242) – cf. *GEW* I: 305; Stüber (2002: 84).

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[10] On the morphological pattern involved, see Neri (2017: 150–151 with fn. 211).

[11] With *u*-vowel either through the development PIE *CRh_xV-* > Ved. *CuRV-* (*RV*) or by analogy to the present stem Ved. *jūrva-* 'grind down, destroy' (§ 2.1.1.3 with fn. 3).

2.2.2 Morphological analysis – part 1

For the aorist forms Ved. *jāriṣ-* and Gk. ἐγήρᾱ the following analyses have been proposed.

2.2.2.1 Reconstructing a Narten root aorist

Peters (1980: 193–194 fn. 149, 314 fn. 259) traced Gk. ἐγήρᾱ back to a Narten root aorist PIE *$\acute{g}\acute{e}rh_2$- / *$\acute{g}\acute{e}rh_2$-. This view was shared by *EWAia* I: 578, Tremblay (2005: 651–652, 654, 661; 2012: 435), and Malzahn (2021, especially 342, 344), who further argued ἐγήρᾱ to have been re-analyzed as an imperfect in the prehistory of Greek.

Nevertheless, the existence of PIE Narten root aorists (on which see, most recently, Malzahn 2020) remains uncertain – cf. the explicit rejection by Harðarson (1993: 72–82) and Willi (2018: 490) and see further *LIV*²: 20–21, Jasanoff (2003: 144–214), and Lundquist & Yates (2017: 2165–2167), where no such category is reconstructed. In addition, if one starts from a Narten root aorist PIE 3.sg. *$\acute{g}\acute{e}rh_2$-t, the final long -ā of Gk. ἐγήρᾱ is unexpected. Peters (1980: 314 fn. 259) thus assumed a re-structuring of "ein im System eher isoliertes *$\acute{e}g\bar{e}r\breve{a}$"[12] and referred to Meister's (1921: 100, 102) hypothesis of a synchronic association with the imperfects of the type 3.sg. μετηύδᾱ 'addressed'. However, deeming Gk. ἐγήρᾱ to be an imperfect synchronically is unattractive, as this form clearly functions as the perfective counterpart to the present γηράσκω 'become old, age' and has a terminative rather than durative semantics in Homer, see (3).[13]

(3) Terminative semantics of Gk. ἐγήρᾱ, cf. *Il.* 17.194–197:

ὃ δ᾽ ἄμβροτα τεύχεα δῦνεν
Πηλεΐδεω Ἀχιλῆος, ἅ οἱ θεοὶ Οὐρανίωνες
πατρὶ φίλῳ ἔπορον· ὃ δ᾽ ἄρα ᾧ παιδὶ ὄπασσεν
γηράς· ἀλλ᾽ **οὐχ υἱὸς** ἐν ἔντεσι πατρὸς **ἐγήρα**.

"and he [*scil.* Hector] put on himself the immortal gear
of Achilles, Pēleus's son, that the heavenly gods
gave to his father; and he bequeathed it to his son,
when old: but **the son did not grow old** in his father's armor".[14]

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[12] Cf. also Malzahn (2021: 338).

[13] See further Barton (1982: 37–38, 39, 42, 43 fn. 33); Strunk (1985: 495 fn. 8); Harðarson (1993: 72–74 with fn. 44).

[14] The Greek text follows the edition by West (2000: 146). The English translation is based on Green (2015: 323).

2.2.2.2 Reconstructing a (non-Narten) root aorist

Alternatively, Gk. ἐγήρᾱ was regarded as the continuant of a (non-Narten) root aorist PIE *ǵérh₂- / *ǵṛh₂-́, which would have become sigmatic either at a very early stage in the prehistory of Greek (cf. *LIV*²: 165–166 with fn. 2, 8) or already in the proto-language (cf. Steer 2015: 168–169, 172, and especially 175).

All the same, the motivation for such an early sigmatization of the alleged root aorist PIE *ǵérh₂- / *ǵṛh₂-́ remains unclear. Moreover, the reconstruction of a root aorist for the PIE root *ǵerh₂- is unconvincing for several reasons. First, a root with non-punctual *Aktionsart* (cf. the meaning 'become old, age') would not be expected to build a morphologically unmarked aorist stem. Second, the alleged root aorist PIE *ǵérh₂- / *ǵṛh₂-́ is not supported by any unambiguous evidence, see (4).

(4) Lack of unambiguous evidence pointing to a root aorist PIE *ǵérh₂- / *ǵṛh₂-́:

    i.   Gk. ἐγήρᾱ can be derived from a PIE *s*-aorist, as per § 2.2.3 below.

    ii. The aorist participle Gk. γηρᾱ́ς, γηράντος 'having become old' (Hom.) is most easily derived from *gēráhans, *gēráhant- < PGk. *gērá-s-ans, *gērá-s-ant- ~ 3.sg.aor. *e-géra-s-e > ἐγήρᾱ – see Barton (1982: 43); Hackstein (2002: 102 fn. 1). Hence, Gk. γηρᾱ́ς does not have to go back to a reshaped root aorist participle PIE *ǵṛh₂-(é)nt- (so Steer 2015: 168).

    iii. Ved. *jurat-́* 'old' (*RV*) can continue the weak stem of an extra-paradigmatic *nt*-stem PIE *ǵérh₂-ont- / *ǵṛh₂-ṇt-́, cf. § 2.1.3 above. Consequently, it does not necessarily presuppose a root aorist participle PIE *ǵṛh₂-ént- / *ǵṛh₂-ṇt-́, *pace* Steer (2015: 168, 171–172).

    iv. The stem *jurá-* in the imperative dual Ved. *jurátam* is more likely to represent a class VI present belonging to a PIE root *ǵerhₓ-* 'crush, grind' rather than a thematized root aorist belonging to the 'oldness' root PIE *ǵerh₂-*, as I will argue in § 3.1.1.2 below.

2.2.2.3 Regarding Ved. *jāriṣ-* as an inner-Vedic creation

Whereas Narten (1964: 121), Gotō (1987: 152 fn. 233), Hintze (1994: 110), and *LIV*²: 165 fn. 7 deem Ved. *jāriṣ-* 'became old' to be back-formed to the intransitive *ya*-present Ved. *jū́rya-* 'become old, weak', Tremblay (2005: 651) regards Ved. *jāriṣ-* as an "Augenblicksbildung".

Both these hypotheses, however, neglect the perfect semantic and formal match between Ved. *jāriṣ-* and Gk. ἐγήρᾱ 'became old', which can only hardly be due to chance and will be discussed in detail in the following section (§ 2.2.3). Against the interpretation of Ved. *jāriṣ-* as a recent formation, see also Malzahn (2021: 342 with fn. 18).

2.2.3 Morphological analysis – part 2
2.2.3.1 Reconstructing an *s*-aorist

Ved. *jāriṣ-* 'became old' and Gk. ἐγήρᾱ 'id.' can be straightforwardly traced back to an *s*-aorist PIE *$\acute{g}\acute{e}rh_2$-s-* / *$\acute{g}\acute{e}rh_2$-s-* 'became old', see (5).

(5) Evidence pointing to an *s*-aorist PIE *$\acute{g}\acute{e}rh_2$-s-* / *$\acute{g}\acute{e}rh_2$-s-* 'became old':

    i. Aorist stem Ved. *jāriṣ-* < (intraparadigmatically generalized) strong stem PIE *$\acute{g}\acute{e}rh_2$-s-*.

    ii. 3.sg.aor. Gk. ἐγήρᾱ < Pre-Ion.-Att. *$eg\acute{e}rae$* < PGk. *e-$g\acute{e}ra$-s-e* < Pre-PGk. *$\acute{e}$-$g\bar{e}ra$-s-e-t* << *$\acute{e}$-$g\bar{e}ra$-s-t* < PIE 3.sg. *$\acute{g}\acute{e}rh_2$-s-t* (Barton 1982: 43). The regular vowel contraction Pre-Ion.-Att. *$-ae$* > Ion.-Att. *$-\bar{a}$* (Lejeune 1972: 234–235) makes Willi's (2018: 490) claim that Gk. ἐγήρᾱ is an Aeolic form unnecessary.

For the reconstruction of an *s*-aorist PIE *$\acute{g}\acute{e}rh_2$-s-* / *$\acute{g}\acute{e}rh_2$-s-*, see further Szemerényi (1980: 264); Barton (1982, especially 37–44); Strunk (1985: 495 with fn. 8); Harðarson (1993: 73, 75–76, 98, 153, 215–218); Hackstein (2002: 102 fn. 1, cautious); Willi (2018: 490 with fn. 200); and Malzahn (2016: 227), who posits a "(pre-)sigmatic aorist with Narten ablaut *$\acute{g}\bar{e}rh_2$-(s-)". From a morphological point of view, a marked aorist stem nicely befits the assumption that the PIE root *$\acute{g}erh_2$-* meant 'become old, age' and thus had non-punctual *Aktionsart*.

2.2.3.2 The special status of PGk. *e-$g\acute{e}ra$-s-e*

The derivation PIE 3.sg. *$\acute{g}\acute{e}rh_2$-s-t* >> PGk. *e-$g\acute{e}ra$-s-e* > Gk. ἐγήρᾱ (see (5.ii) above) was challenged by Ruijgh (1998: 225), Tremblay (2005: 651–652), and Malzahn (2021: 338). Specifically, these scholars objected that a Proto-Greek *s*-aorist in *$^{\circ}a$-s-e* > *$^{\circ}a$-h-e* should have been analogically reshaped as *$^{\circ}a$-s-e* – thus yielding a Greek form in °ασ(σ)ε – rather than undergoing *h*-loss and vowel contraction as assumed for ἐγήρᾱ. Admittedly, the analogical reshaping PGk. *$^{\circ}a$-h-e* >> *$^{\circ}a$-s-e* is typical for inherited root aorists to PIE roots with the structure *$C(C)eRh_{2/3}$-*, which had been secondarily sigmatized in Proto-Greek – cf. the root aorist PIE 3.sg. *$p\acute{e}rh_2$-t* > PGk. *$\acute{e}$-$pera$* >> (secondary sigmatization) *e-$p\acute{e}ra$-s-e* > *e-$p\acute{e}ra$-h-e* >> *e-$p\acute{e}ra$-s-e* > Gk. 3.sg. ἐπέρασ(σ)ε 'sold' (Harðarson

1993: 73, 216; *LIV²*: 474). Crucially for our case, however, *e-gḗra-s-e* was the sole Proto-Greek aorist ending in *°a-s-e* to exhibit a long vowel in its root morpheme, see (6). This is so because only PIE *s*-aorists – not also PIE root aorists (at least according to the traditional view) – could acquire a lengthened *ē*-grade in their root morpheme (cf. Willi 2018: 490–492).

(6) Structural opposition between PGk. *e-gḗra-s-e* and the other aorists in PGk. *°a-s-e* and *°o-s-e*:[15]

    i. Proto-Greek *s*-aorists with a long root vowel to PIE *C(C)eRh₂-* roots: *e-gḗra-s-e* (> Gk. ἐγήρᾱ 'became old').

    ii. Proto-Greek *s*-aorists with a short root vowel to PIE *C(C)eRh₂-* roots:

      a. With a short *e*-vowel: *e-géla-s-e* (> Gk. ἐγέλασ(σ)ε 'laughed'); *e-kéra-s-e* (> Gk. ἐκέρασ(σ)ε 'mixed'); *e-kréma-s-e* (> Gk. ἐκρέμασ(σ)ε 'hung (up)'); *e-péla-s-e* (> Gk. ἐπέλασσε 'came closer'); *e-péra-s-e* (> Gk. ἐπέρασ(σ)ε 'sold');

      b. With a short *a*-vowel: *e-dáma-s-e* (> Gk. ἐδάμασ(σ)ε 'subdued'); *e-tála-s-e* (> Gk. ἐτάλασσε 'endured').

    iii. Proto-Greek *s*-aorists with a long root vowel to PIE *C(C)eRh₃-* roots: none.

    iv. Proto-Greek *s*-aorists with a short root vowel to PIE *C(C)eRh₃-* roots: *e-kéro-s-e* (> *e-kóre-s-e* > Gk. ἐκόρεσε 'satiated'); *e-léu̯o-s-e* (> *e-lóu̯e-s-e* > Gk. ἐλόεσ(σ)ε 'washed'); *e-stéro-s-e* (> *e-stóre-s-e* > Gk. ἐστόρεσ(σ)ε 'spread').

Based on (6), I propose that *e-gḗra-s-e* – due to the aberrant *ē*-vowel in its root morpheme – was treated differently from the other *s*-aorists of Proto-Greek. Accordingly, PGk. *e-gḗra-s-e* did not undergo the analogical restitution of its suffixal *-s-* after the intervocalic lenition PGk. *-s-* > *-h-*. Therefore, the synchronically isolated 3.sg.aor. ἐγήρᾱ preserves the *lautgesetzlich* outcome of a final sequence (Pre-)PGk. *-ase#*.[16]

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    [15] The forms in (6) were collected on the base of Harðarson (1993: 213–225) and Willi (2018: 335–337).

    [16] For further attempts of explaining why PGk. *-s-* was not restituted in Gk. ἐγήρᾱ, see Barton (1982: 46–47); Harðarson (1993: 75–76); Willi (2018: 490).

2.3 Perfect forms

Vedic exhibits a resultative perfect, see the participle *jujurúṣ-* 'old' (*RV*) and the 3.sg. *jajā́ra* 'is old' (*AV*). The resultative value of these forms – which go back to a PIE perfect *$\acute{g}e$-$\acute{g}órh_2$-* / *$\acute{g}e$-$\acute{g}r̥h_2$-* – can be plausibly accounted for only under the assumption that the PIE root *$\acute{g}erh_2$-* originally meant 'become old, age': cf. Ved. *jujurúṣ-* '(having aged ⇒) old' and *jajā́ra* '(has aged ⇒) is old' and see further Kümmel (2000: 196–198) and Steer (2015: 169). In contrast, if one starts from an original semantics 'wear down, make age' (so, e.g., *LIV²*: 165), the resultative value of the Vedic perfect remains unexplained, as 'wear down, make age' is not a subject-related verbal action (cf. Kümmel 2000: 679).

2.4 Verbal adjectives

Verbal adjectives referring to oldness or to the consequences of aging are only attested in Indo-Iranian, cf. Ved. *jūrṇá-* 'rotten, feeble' (*RV*) ~ *jīrṇá-* 'rotten, old, feeble' (*AV*), YAv. *zarəta-* 'aged, old', Khot. *ysāḍa(ka)-* 'old', and Pashto *zoṛ* m. ~ *zaṛá* f. 'id.'.[17] Ved. *jūrṇá-* qualifies (among others) the substantives Ved. *tvác-* 'skin', *yugá-* 'yoke', and *viṣṭáp-* '(sea's) surface'[18] in the *RV* (*WRV*: 494; *EWAia* I: 577), whereas YAv. *zarəta-* refers to *nar-* 'man' in *Pursišnīhā* 23 (*AIW*: 1682; Jamaspasa & Humbach 1971: 37). The Indo-Iranian evidence thus allows to reconstruct two verbal adjectives PIE *$\acute{g}r̥h_2$-nó-* and *$\acute{g}r̥h_2$-tó-*. As for Ved. *jū/īrṇá-*, it shows either the dialectally conditioned outcome Ved. *CūRC-* (*RV*) ~ *CīRC-* (*AV*) < *$CR̥h_xC$-* or analogical *-ū-* in the *RV* (§ 2.1.1.3 above).

As the preceding sections have shown, PIE *$\acute{g}erh_2$* likely was a non-punctual fientive root. For roots with such a meaning, it is not unusual to find verbal adjectives with resultative semantics, cf., e.g., Ved. *várdhate* 'grows' ~ *vr̥ddhá-* '(fully) grown, big' (*EWAia* II: 520). Accordingly, the verbal adjectives Ved. *jū/īrṇá-* 'rotten, feeble, old', YAv. *zarəta-* 'aged, old', etc. are in keeping with the reconstruction of a PIE root *$\acute{g}erh_2$-* with the meaning 'become old, age'.

2.5. Local summary: semantics and morphology of PIE *$\acute{g}erh_2$-*

Based on the preceding discussion, I assign to the PIE root *$\acute{g}erh_2$-* an original meaning 'become old, age' – cf., among others, Barton (1982: 41), Harðarson (1993: 73–74), and Nikolaev (2003: 194) *contra IEW*: 390

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[17] On the Middle and New Iranian forms, see Bailey (1979: 348); Morgenstierne (2003: 103).

[18] For the translation of Ved. *viṣṭáp-* as '(sea's) surface' in *RV* I.46.3b, see Jamison & Brereton (2014: 157).

and *LIV²*: 165 (see (1) above). Accordingly, PIE *ǵerh₂- was a "gradual completion verb"[19] and had non-punctual (or durative) *Aktionsart* indicating the process of aging – on the latter point, see also Malzahn (2016: 227; 2019: 228 fn. 16; 2021: 343).

From a morphological point of view, I set up a full-grade simple thematic present PIE *ǵérh₂-e/o- 'become old'. This yielded the mediopassive present Ved. *járate** 'becomes old', to which a secondary transitive active *járati** 'makes age' was back-formed. As for the aorist, the Greco-Aryan equation Gk. 3.sg. ἐγήρᾱ 'became old' ~ Ved. *jāriṣ-* 'id.' points to an *s*-aorist PIE *ǵérh₂-s- / *ǵérh₂-s-. Besides, Ved. 3.sg. *jajā́ra* '(has aged ⇒) is old' supports the reconstruction of a resultative perfect PIE *ǵe-ǵórh₂- / *ǵe-ǵ́rh₂-́.

Finally, fientive formations with the meaning 'become old, age' were created in the prehistory of several branches: cf. Pre-PSl. *ǵ́rh₂-éh₁-(i̯e/o-) (>> OCS *zĭrĕjǫ* 'ripen (intr.)'), Pre-PIIr. *ǵ́rh₂-sḱé/ó- (> YAv. *zarəsa-** 'become old, age'), Pre-PIIr. *ǵ́rh₂-i̯e/o- (> Ved. *jū́/īrya-* 'become old, weak'), etc.

3 Forms not referring to the action of aging

In this section, I discuss those forms which have been traditionally connected with the PIE root *ǵerh₂-, although their meanings do not refer to oldness or to the action of aging. I divide the relevant items into present forms (§ 3.1), aorist forms (§ 3.2), perfect forms (§ 3.3), and verbal adjectives (§ 3.4). Finally, I summarize the main conclusions of this section (§ 3.5).

3.1 Present forms

3.1.1 Attestations

3.1.1.1 Ved. *jū́rva-*

In non-preverbed form and without preceding adverbs, the thematic present Ved. *jū́rva-* only occurs in *RV* I.191.9b. Otherwise, Ved. *jū́rva-* is preceded five times by the preverb *ni-* 'down', once (VI.6.6d) by the adverb *ní* 'id.', and once (VIII.60.7b) by the preverb *sam-* 'with, together'. Subjects of Ved. *jū́rva-* are, among others, Indra (II.11.10b, II.30.5b), Indra and Soma (VII.104.4a), Agni (IV.7.11c, X.187.3a, etc.) and *sū́rya-*

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[19] Cf. Bertinetto & Squartini (1995), who argued for the telic character of gradual completion verbs (especially p. 13, 15, 16–17). The latter was also defended by Civardi & Bertinetto (2015, especially 74–75), who label the verbs at hand as "degree verbs".

'sun' (I.191.9b). Its direct objects usually refer to negative entities: cf. *ámānuṣa-* 'the enemy of Manu, i.e., Vṛtra' (II.11.10b), *śátru-* 'enemy' (II.30.5b), *spṛ́dh-* 'rival' (VI.6.6d), *rákṣas-* 'demonic force' (VII.104.4d, X.187.3a), and *atasá-* 'brushwood' (VIII.60.7b).

Traditionally, Ved. *jūrva-* has been translated as 'wear down, verzehren', cf. *WRV*: 499 and Gotō (1987: 153). Nevertheless, the philological evidence rather suggests a meaning 'grind down, destroy', as convincingly argued by *EWAia* I: 597 ('aufreiben, austilgen') and implicitly assumed by Jamison & Brereton (2014: 414 et passim, 'grind down'). This is confirmed by the attestation in *RV* VII.104.4d, in which *ni-jūrva-* is associated with the verb *tarh-* 'crush, destroy' (pada 4b) and functions as antonym of the verb *vardh-* 'grow' (pada 4d), see (7).

(7)   Attestation of Ved. *ni-jū́rva-* 'grind down, destroy' in *RV* VII.104.4:

*índrāsomā vartáyataṃ divó **vadhám** sám pṛthivyā́ agháśaṃsāya* **tárhaṇam**

*út takṣataṃ svaryam párvatebhyo yéna **rákṣo vāvṛdhānáṃ** **nijū́rvathaḥ***

"Indra [and] Soma, make **the crushing weapon [of death]** roll from heaven and from earth toward the one who speaks evil.
Fashion a reverberating [weapon] up out of the mountains, with which **you grind down the demonic force that has been growing [strong]**" (after Jamison & Brereton 2014: 1016).

When the subjects of Ved. *jūrva-* are entities like Agni or *sū́rya-* 'sun', Ved. *jū́rva-* can assume the secondary meaning 'scorch, incinerate' (⇐ 'grind down, destroy') – cf. *RV* VIII.60.7b and I.191.9a–b and see García Ramón (2018: 154 with fn. 31).

The reference works regard Ved. *jū́rva-* 'grind down, destroy' as etymologically related to Ved. *jar^i-* 'make age' – cf. Gotō 1987: 153; *EWAia* I: 597; *LIV²*: 165. However, the semantic gap between these two verbs is hard to explain; the more so if one recalls that the original meaning of Ved. *jar^i-* actually was 'become old, age', as per § 2. In addition, Ved. *jū́rva-* and Ved. *jar^i-* morphologically diverge from each other. Whereas Ved. *jar^i-* builds a full-grade simple thematic present act. *járati** 'makes age' ~ mp. *járate** 'becomes old', Ved. *jū́rva-* is best analyzed as a thematized *u*-present going back to the weak stem of an ablauting paradigm PIE *$\acute{g}erh_x$-u- / *$\acute{g}r̥h_x$-u-́. Specifically: PIE *u*-present 3.sg. *$\acute{g}érh_x$-u-ti / 3.pl. *$\acute{g}r̥h_x$-u̯-énti >> (stress retraction in the weak stem by analogy to the

strong stem) Pre-PIIr. *ǵérhₓ-u-ti / *ǵr̥hₓ-u̯-enti > PIIr. 3.pl. *jŕ̥Hu-anti >> (resegmentation) *jŕ̥Hu̯a-nti, whence the thematized allomorph *jŕ̥Hu̯a- > Ved. júrva- (RV)[20] – cf. *mutatis mutandis LIV²*: 165 (s.v. *ǵerh₂-*) and Jasanoff (2022/23: 66).

García Ramón (2018, especially 153–154, 158, 175–176) proposed accounting for the semantic discrepancy between Ved. *jarⁱ-* 'become old / make age' and Ved. *júrva-* 'grind down, destroy' by means of the suffixal extension in *-u-* of the latter. In his view, the morpheme *-u-* functioned as a marker of *Aktionsart* – particularly, of semantic transitivity – and expressed a "strong affectedness of the grammatical direct object" (so García Ramón 2018: 171).

Alternatively, I argue Ved. *júrva-* 'grind down, destroy' to belong to a PIE root *ǵerhₓ-[21] which should be kept distinct from the 'oldness' root PIE *ǵerh₂-. The connection of *ǵerhₓ-* with the PIE 'grain' lexeme (§ 3.4 below) enables to reconstruct the original meaning of this root as 'crush, grind'. In Vedic, 'crush, grind' underwent a trivial semantic development to 'grind down, destroy' (cf. *júrva-*). Since Ved. *júrva-* points to a *u*-present PIE *ǵérhₓ-u- / *ǵr̥hₓ-u-́, the PIE root *ǵerhₓ-* 'crush, grind' ought to be kept not only semantically but also morphologically distinct from the formally similar (or even identical) root PIE *ǵerh₂-* 'become old, age'. As per § 2.1.2 above, in fact, the root *ǵerh₂-* rather built a full-grade simple thematic present (i.e., *ǵérh₂-e/o-*) in the proto-language. See further Zair (2013: 282) and Steer (2015: 169, 177).

3.1.1.2 Ved. 2.du.impv. *jurátam*

The 2.du.impv.-form *jurátam* occurs in *RV* I.182.3c, see (8). The *RV* hymn I.182 is addressed to the Aśvins, who are asked by the poet to destroy the non-sacrificers and to reward "the faithful sacrificers and poets" (Jamison & Brereton 2014: 385).

(8) *RV* I.182.3–4:

   3. *kím átra dasrā kr̥ṇuthaḥ kím āsāthe jáno yáḥ káś cid áhavir mahīyáte*
      *áti kramiṣṭam **jurátam paṇér ásum** jyótir víprāya kr̥ṇutam vacasyáve.*

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[20] With regular development PIE *Cr̥hₓu- > Ved. CūRv- (Burrow 1957: 141–142; Clayton 2022: 39–41, 43; see further Lubotsky 1997: 147).

[21] For the reconstruction of a full-grade I (i.e., *ǵerhₓ-*), see the discussion of OHG *kerno* m. 'kernel; grain, seed; wheat' and related forms in § 3.4 below.

4. *jambháyatam* abhíto rā́yataḥ śúno **hatám** mṛ́dho vidáthus tā́ny aśvinā

   vā́caṃ vā́caṃ jaritū́ ratnínīṃ kṛtam ubhā́ śáṃsaṃ nāsatyāvatam máma

3. "What are you doing here, wondrous ones; why are you sitting [by] some man, who, though offering no oblations, makes a great show of himself.
   Pass [him] by; *jurátam* **the life of the niggard**; make light for the eloquent poet.

4. **Crush** the baying hounds on every side; **smash** the scornful ones. You know [how to do] these things, o Aśvins.
   Make every speech of the singer adorned with treasure. Both of you, o Nāsatyas – help my laud" (after Jamison & Brereton 2014: 385).

Traditionally, Ved. *jurátam* has been glossed as 'lasset hinfällig werden' or 'macht altern' and claimed to belong to the verbal root Ved. *jarⁱ*- 'make age'.[22] Despite this, it is striking that *RV* I.182 makes no reference to oldness. Therefore, a contextually more suitable translation of the Vedic phrase *jurátam paṇér ásuṃ* (pada 3c) would be "destroy / break down the life of the Paṇi [i.e., of the impious enemy]!". This is further suggested by the fact that the 2.du.impv. Ved. *jurátam* is followed by the 2.du.impv.-forms Ved. *jambháyatam* 'smash!' (Jamison 1983: 93) and Ved. *hátam* 'slay!' in the pada 4a–b (see (8) above). Significantly, Jamison & Brereton (2014: 385) translate Ved. *jurátam* as 'wear away'. Another argument supporting the proposed separation of Ved. *jurátam* from Ved. *jarⁱ*- < PIE *ǵerh₂- is that the latter PIE root originally meant 'become old, age', and that the factitive semantics 'make age' of Ved. *jarⁱ*- arose only secondarily in the active *járati** (§ 2.1.1.5 above). Accordingly, a connection with Ved. *jarⁱ*- < PIE *ǵerh₂- would leave the transitive function of Ved. *jurátam* (with direct object *ásum* 'life' in *RV* I.182.3c) unexplained.

Based on the preceding considerations, I argue the 2.du.impv. Ved. *jurátam* 'destroy!, break down!' to belong to the PIE root *ǵerhₓ- 'crush, grind', whose reconstruction is independently supported by the (quasi-) synonym Ved. *jū́rva*- 'grind down, destroy' (§ 3.1.1.1 above). Morphologically, the 2.du.impv. Ved. *jurá-tam* points to a verbal stem Ved. *jurá-*

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[22] Cf. *WRV*: 493; Geldner (1951 I: 262); Gotō (1987: 152); *EWAia* I: 577; Tremblay (2005: 654); Steer (2015: 166, 179); Malzahn (2016: 227; 2019: 228–229); García Ramón (2018: 154 fn. 33).

'destroy, break down', which can be analyzed in two ways (cf. *mutatis mutandis* Gotō 1987: 152 with fn. 236): (i) as a thematized root aorist; (ii) as a zero-grade simple thematic present – so called *tudáti*-type.[23] The following arguments speak in favor of the latter option: first, in *RV* I.182.3–4 the imperative Ved. *jurá-tam* is semantically associated (as noted above) with two present imperatives, namely, Ved. *jambháya-tam* 'smash!' and Ved. *há-tam* 'slay!'; second, for a root with non-punctual *Aktionsart* like PIE *ǵerhₓ- 'crush, grind', one would not expect a morphologically unmarked aorist stem (i.e., a root aorist) but rather a morphologically unmarked present formation (e.g., a root present).[24]

At this junction, it is worth recalling that Vedic *tudáti*-presents belonging to roots with non-punctual *Aktionsart* frequently represent thematized continuants of originally athematic root presents – cf. Hill (2007: 6–7, 290–291, 301); Steer (2015: 166); and Malzahn (2016: 227–228, with refs.). Consequently, the present stem *jurá-* presupposed by Ved. *jurá-tam* 'destroy!, break down!' may go back to the thematized weak stem of a root present PIE *ǵérhₓ- / *ǵr̥hₓ-́ 'crush, grind'. As for the *u*-vowel of Ved. *jurá-*, it can be due either to the development PIE *CR̥hₓV- > Ved. *CuRV-* (*RV*) or to analogy with the cognate form Ved. *jūrva-* 'grind down, destroy' (§ 2.1.1.3 with fn. 3).[25]

3.1.2   PIE *ǵerhₓ- 'crush, grind' and *PIE *melh₂-* 'id.'

The above analysis leads to the reconstruction of two coexisting present formations for the PIE root *ǵerhₓ- 'crush, grind', namely, a *u*-present *ǵérhₓ-u- / *ǵr̥hₓ-u-́ and a root present *ǵérhₓ- / *ǵr̥hₓ-́. Notably, the existence of a *u*-present beside a root present is traditionally also assumed for the synonymous and structurally comparable root PIE *melh₂- 'crush, grind' – cf. PIE *mélh₂-u- / *ml̥h₂-u-́ (>> CLuw. *malḫu-* 'break', Toch. B *mely-*, A *malyw-* 'crush', Goth. *ga-malwjan* 'id.') beside PIE *mélh₂- / *ml̥h₂-́ (>> Arm. *malem* 'grind, crush', Umb. 3.sg.impv. *ku-maltu* 'should

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[23] Ved. *jurátam* is not treated in Hill (2007).

[24] Note that also Steer (2015: 166, 179) regards *jurá-* in the 2.du.impv. Ved. *jurátam* as a present stem. Steer, however, claims Ved. *jurá-* to be etymologically related to the PIE root *ǵerh₂- 'become old, age' and takes it to be back-formed to the adjective Ved. *a-júr-* 'not aging' (on which see § 4.3 below).

[25] As anticipated in § 2.1.2 above, a similar analysis of the 2.du.impv. Ved. *jurátam* was proposed by Malzahn (2016: 227). Malzahn, however, regards both the *tudáti*-present stem *jurá-* of Ved. *jurátam* and the full-grade simple thematic present stem *jára-* of Ved. *járati** 'makes age' as stemming from a root present PIE *ǵérh₂- / *ǵr̥h₂-, which would have belonged to the 'oldness' root PIE *ǵerh₂-.

crush!', MBritt. *malaff* 'grind', OCS *meljǫ* 'id.', etc.).[26] It is conceivable that this paradigmatic similarity is due to the analogical influence of one of these two roots on the other.

To be sure, whereas the reconstruction of a *u*-present for the PIE root *$melh_2$*- 'crush, grind' is beyond any doubts, the same is not true for the reconstruction of the root present PIE *$mélh_2$*- / *$ml̥h_2$-*. Due to the existence of some derivatives pointing to an old *o*-grade in the root (cf. Goth. *malan* 'grind' and Lith. *málti* 'id.')[27], Jasanoff (1994: 158; 1998: 304–305; 2003: 65–72, 89; 2022/23: 71 fn. 35) alternatively proposed to set up an acrostatic (AS) present PIE 3.sg. *$mólh_2$-e* / 3.pl. *$mélh_2$-r̥(s)* (with perfect endings), which he labelled as *molō*-type. Jasanoff (2003: 68–69, 88–89) further argued the 3.pl. *$mélh_2$-r̥(s)* to have been replaced by *$mélh_2$-n̥ti* (with the primary 3.pl.-ending) already in late PIE. Due to secondary stress mobility,[28] Late-PIE *$mélh_2$-n̥ti* would have shown the tendency to develop a zero-grade root allomorph *$ml̥h_2$-*, which could be eventually generalized within the paradigm. Building on Jasanoff (and other scholars), Kümmel (2004: 147–151, 154) reconstructed an AS *ó/é*-present PIE *$mólh_2$*- / *$mélh_2$*- as well, however with primary endings from the beginning. Whereas Kümmel (2004: 148–149) regards PIE *ó/é*-presents of this type as especially associated with iterative-durative verbal roots, Jasanoff (2003: 76–77) connects *molō*-presents with roots expressing motion or vigorous / violent activity (such as 'grind', 'strike', etc.).

Following Jasanoff and Kümmel, one may surmise that an *ó/é*-present PIE 3.sg. *$ǵórh_x$-ti* / 3.pl. *$ǵérh_x$-n̥ti* >> (secondary stress mobility) *$ǵr̥h_x$-énti* would have been reanalyzed as a thematic present with zero-graded root morpheme (i.e., *$ǵr̥h_x$-é/ó-*) and thus yielded the *tudáti*-present stem *jurá*- 'destroy, break down' attested in Ved. *jurá-tam*. Note that those scholars who reconstruct an *ó/é*-present PIE *$mólh_2$*- / *$mélh_2$*- assume a development of exactly this kind in order to explain the thematic present stem *$ml̥h_2$-é/ó-* presupposed by Arm. *malem* 'grind, crush', Umb. *ku-maltu* 'should crush!', and MBritt. *malaff* 'grind' (cf. Jasanoff 2003: 68–69, 71–72; Kümmel 2004: 150).

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[26] See Klingenschmitt (1982: 145–146); Melchert (1988: 215–216); Rix (1999: 517, 529 fn. 11, 12); *LIV²*: 432–433; Meiser (2003: 124); Schumacher (2004: 472); Zair (2012: 169–170); Ackermann (2014: 139); Sasseville in *eDiAna* #2815. On the *u*-present *$mélh_2$-u-* / *$ml̥h_2$-u-*, see also Jasanoff (2022/23: 66).

[27] Lat. *molō* 'grind' is formally ambiguous, as it can go back to a pre-form with both *o*- and *e*-grade in the root.

[28] Cf. also Yates (2022: 281–282).

3.2 Aorist forms?

Since Ved. *jurátam* 'destroy!, break down!' most likely represents a present imperative (§ 3.1.1.2 above), no aorist form belonging to the PIE root *ǵerhₓ- 'crush, grind' is attested. Despite this, the non-punctual *Aktionsart* of this root suggests the reconstruction of a morphologically marked aorist type, viz., a sigmatic aorist. This assumption is supported by the fact that the synonymous root PIE *melh₂- 'crush, grind' also built an *s*-aorist. The latter is directly continued in OIr. 3.sg. *milt, -melt* 'ground' (< Pre-PCelt. *mēl-s- < PIE *mélh₂-s-) and OCS 1.sg. *mlěxŭ** 'ground' (< Pre-PSl. *mēl-s- < PIE *mélh₂-s-), whereas it was replaced by the *u*-perfect *moluī* 'id.' in the prehistory of Latin.[29]

3.3 Perfect forms?

Since 'crush, grind' is not a subject-related verbal action, no (resultative) perfect is to be expected for the PIE root *ǵerhₓ-.

3.4 Verbal adjectives

The expected verbal adjectives belonging to the PIE root *ǵerhₓ- 'crush, grind' should be set up as *ǵr̥hₓ-tó- 'crushed, ground' and/or *ǵr̥hₓ-nó- 'id.'. Remarkably, several daughter languages point to the reconstruction of a neuter lexeme PIE *ǵŕ̥hₓ-no-, which led to Lat. *grānum* n. 'grain, seed (of wheat or another plant)', OIr. *grán* n. 'grain, seed', OCS *zr̀no* n. (a) 'id.', OHG *korn* n. 'grain, seed; wheat', etc.[30] With suffixal extensions, PIE *ǵŕ̥hₓ-no- is continued in OPr. *syrne* f. 'grain' (< *ǵr̥hₓ-n-iịeh₂-), Lith. *žìrnis* m. (1) 'pea' (< *ǵr̥hₓ-n-iịo-), and, possibly, Pashto *zə̀/úṛay* m. 'kernel, seed', beside which one finds the compound Pashto *zaṇ-γozay* m. 'edible pine-seed'.[31] The widespread meaning 'grain, seed' suggests that this was the original semantics of PIE *ǵŕ̥hₓ-no-. In Germanic, the secondary meaning 'wheat' arose through a metonymical development 'grain of wheat' ⇒ 'wheat' – cf. Lat. *grānum* n. 'grain, seed (of wheat or another plant)' > It. *grano* m. 'wheat, corn'. In Western Baltic, the

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[29] See, generally, *LIV²*: 432–433 and, specifically, Zair (2012: 168 fn. 158); Ackermann (2014: 138); Meiser (2003: 123–124, 130).

[30] See *LEW* I: 618–619; *DELL*: 281; *EDLIL*: 271; *EDSIL*: 553; *EDPC*: 166–167; *EWAhd* V: 701–704; *eDIL* s.v. *grán*.

[31] See *ALEW*: 1520–1521; *EDBIL*: 520; Morgenstierne (2003: 103, 34). The appurtenance of the Pashto items is unsure, as *-rn-* in the supposed pre-form PIr. *zarna-ka-* (← PIE *ǵr̥hₓ-no-, cf. Morgenstierne 2003: 103) ought to have yielded Pashto -ṇ- (as in *zaṇ-°*) rather than -ṛ- (as in *zə̀/úṛay*). Moreover, the root vocalism of *zə̀/úṛay* is unexpected. I am grateful to Martin Kümmel for the helpful discussion of the Pashto material.

original semantics 'grain, seed' was specialized to 'pea' (i.e., a specific kind of grain).

PIE *ǵr̥hₓ-no- n. 'grain, seed' is best analyzed as the lexicalized verbal adjective in *-nó- belonging to the PIE root *ǵerhₓ- 'crush, grind'. In particular, it is reasonable to surmise that the verbal adjective PIE *ǵr̥hₓ-nó- 'crushed, ground' underwent an early substantivization, which led it to assume neuter gender as well as the meaning '(prototypically) ground object' ⇒ 'grain, seed (of wheat or another plant)' – cf., semantically, Lith. grū́das m. (3) 'grain, seed' ← Lith. grū́sti 'crush, pound' (*ALEW*: 425; *EDBIL*: 190), and see further the PIE collocation [GROUND] + [BARLEY (GRAIN)] identified by Watkins (1978: 13).

At the same time, the verbal adjective PIE *ǵr̥hₓ-nó- 'crushed, ground' must have undergone a different substantivization as well, this time with insertion of the full-grade in the root morpheme and suffixal extension in *-n-. The resulting form *ǵérhₓ-no-n- m. ('ground object' ⇒) 'kernel, grain' was inherited in Germanic and yielded PGerm. *kernan- > ON *kjarni* m. 'kernel', OHG *kerno* m. 'kernel; grain, seed; wheat', etc. (*EWAhd* V: 488–489). Note that Pre-PGerm. *ǵérhₓ-no-n- represents the most secure piece of evidence for the reconstruction of the PIE root at hand as *ǵerhₓ-, with full-grade I – on the apparently divergent root structure presupposed by Goth. *ga-kroton** 'crush', see the discussion in § 4.6 below.

As for Indo-Aryan, the verbal adjective PIE *ǵr̥hₓ-nó- is not manifestly continued in Vedic, where no form *jūrṇá*- or *jīrṇá*- with semantics 'crushed, ground' occurs. Nevertheless, one cannot exclude that the Vedic continuant of PIE *ǵr̥hₓ-nó- 'crushed, ground' ended up coinciding in form and (at least partially) in meaning with the verbal adjective Ved. *jūrṇá*- 'rotten, feeble' ~ *jīrṇá*- 'rotten, old, feeble', which originally belonged to the distinct root PIE *ǵerh₂- 'become old, age' (§ 2.4 above). If the ŭ-vowel in the Rigvedic zero-grade forms of the 'oldness' root *jarⁱ*- was analogically transferred from the paradigm of *jū́rva*- 'grind down, destroy' (§ 2.1.1.3 with fn. 4), then precisely the collapse of PIE *ǵr̥hₓ-nó- and *ǵr̥h₂-nó- may have acted as the starting point for this analogical ŭ-spread in the *RV* (though not in the *AV*).

3.5 Local summary: semantics and morphology of PIE *ǵerhₓ-

Based on the preceding discussion, I reconstruct a PIE root *ǵerhₓ- with the meaning 'crush, grind'. This root had non-punctual (or durative) *Aktionsart* and should be kept distinct from the 'oldness' root PIE *ǵerh₂- 'become old, age'.

From a morphological point of view, PIE *ǵerhₓ- built two different present formations, which are continued in Ved. *jū́rva-* 'grind down, destroy' and Ved. *jurátam* 'destroy!, break down!', respectively. For PIE, I reconstruct either a *u*-present *ǵérhₓ-u-* / *ǵr̥hₓ-u-* beside a root present *ǵérhₓ-* / *ǵr̥hₓ-* or a *u*-present *ǵérhₓ-u-* / *ǵr̥hₓ-u-* beside an *ó/é*-present *ǵórhₓ-* / *ǵérhₓ-*. In either case, it is striking that PIE *ǵerhₓ- 'crush, grind' exhibits a paradigmatic parallelism with the synonymous and structurally comparable root PIE *melh₂- 'id.'.

Finally, the verbal adjective PIE *ǵr̥hₓ-nó- 'crushed, ground' underlies the 'grain' lexemes PIE *ǵr̥hₓ-no- n. (> Lat. *grānum* n. 'grain, seed (of wheat or another plant)', etc.) and Pre-PGerm. *ǵérhₓ-no-n-* m. (> OHG *kerno* m. 'kernel; grain, seed; wheat', etc.). Both these lexemes originally meant '(prototypically) ground object'.

4 Further evidence supporting the reconstruction of two different roots

4.1 Ved. jára- m. '(act of) aging, old age, consumption'

Ved. *jára-* m. '(act of) aging, old age, consumption'[32] is a verbal abstract of the type Ved. *ján-a-* m. 'being, man, people' : *janⁱ-* 'generate' (*AiGr* II.2: 65; Grestenberger 2023: 22) and thus virtually goes back to a PIE noun *ǵórh₂-o-* (type *tómos*). Beside Ved. *jára-* m., one finds the possessive compound Ved. *a-jára-* 'not aging' (⇐ '[having] no old age / consumption'), on which see *WRV*: 479, 20 and *EWAia* I: 577.[33]

Based on the synchronic meaning 'make age' of the verbal root Ved. *jarⁱ-*, the semantics '(act of) aging, old age, consumption' of Ved. *jára-* m. is hard to explain, as one would expect the latter to mean 'act of making old' or similar. This difficulty, however, disappears if one assigns to Ved. *jarⁱ-* an original meaning 'become old, age': then Ved. *jár-a-* '(act of) aging (⇒ old age, consumption)' can be viewed as a regular *tómos*-type abstract matching the verbal root Ved. *jarⁱ-*.

Beside the *tómos*-type abstract PIE *ǵórh₂-o-* '(act of) aging, old age' (> Ved. *jára-* m. 'id.'), there is also evidence for the reconstruction of a *h₁reudʰó-*-type adjective PIE *ǵerh₂-ó-* '(becoming) old, aging', continued, among others, in Arm. *cer* 'old (person)' (§ 1, § 2.1.3 above).

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[32] Only dat.sg. *járāya* in *RV* I.164.11a and II.34.10d (*WRV*: 479; *EWAia* I: 577).

[33] For a different (though tentative) analysis of the compound Ved. *a-jára-* 'not aging', see Steer (2015: 169–170).

4.2   Ved. *jarát- f. 'old age'

The Vedic compounds *jarád-aṣṭi-* 'reaching old age' (*RV* VII.37.7c and X.85.36b)[34] and *jarad-víṣ-* 'causing old age' (hapax in *RV* V.8.2d)[35] pre-suppose an unattested simplex Ved. **jarát-* 'old age'. The latter is best analyzed as a (concretized) *t*-stem abstract derived from the verbal root Ved. *jarⁱ-* – cf. the type Ved. *srav-át-* f. '((act of) flowing ⇒) river' : *srav-* 'flow', on which see *AiGr* II.2: 159–160; Nussbaum (2004; 2017: 261–262); Steer (2015: 127–129); and Ginevra (2022: 110). Since starting from an underlying semantics 'make age' would leave the meaning 'old age' of Ved. **jarát-* unexplained, Ved. **jarát-* '((act of) aging ⇒) old age' must have been derived at a time when the forerunner of Ved. *jarⁱ-* still meant 'become old, age' rather than 'make age'.

4.3   Ved. a-júr- 'not aging'

Ved. *a-júr-* 'not aging' is a hapax in *RV* VIII.1.2a, where the acc.sg. *ajúram* refers to Indra (*WRV*: 22; *EWAia* I: 577). On the one hand, Ved. *a-júr-* could be analyzed as a verbal governing compound based on the root Ved. *jarⁱ-*. On the other hand, Ved. *a-júr-* could be deemed to be an exocentric compound (§ 4.1 above on Ved. *a-jára-* 'not aging') with original semantics '[having] no aging / old age'. In the latter case, the second member Ved. *-júr-* would continue the weak stem of a mobile root noun PIE *$\acute{g}erh_2$- / *$\acute{g}r̥h_2$-* '(act of) aging, old age',[36] whose (primarily) abstract meaning would be expected according to Schindler (1972: 38). Under both analyses, the semantics 'not aging' of Ved. *a-júr-* can be plausibly explained only under the assumption that the underlying root PIE *$\acute{g}erh_2$- meant 'become old, age' rather than 'make age'.[37]

Beside Ved. *a-júr-*, in the *RV* there is a more frequently attested adjective Ved. *a-juryá-* 'not aging' (*WRV*: 22), whose origin is debated. Steer (2015: 169) takes Ved. *a-juryá-* 'not aging' to be a secondary enlargement in *-yá-* of Ved. *a-júr-* 'id.'. Differently, Nussbaum (1976: 19–20) argues Ved. *-juryá-* (once trisyllabic) to continue *-$\acute{g}r̥h_2$-i-i̯o- and thus to be a genitival derivative of an *i*-stem noun *$\acute{g}r̥h_2$-i-* 'oldness, old age'. Finally,

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[34] Cf. *AiGr* II.2: 160; *EWAia* I: 575; Scarlata (1999: 248–249).

[35] Cf. Scarlata (1999: 249).

[36] Yielding *-u-* in *-júr-* either through the development PIE *$CR̥h_xV$- > Ved. *CuRV-* (*RV*) or by analogy to the present stem Ved. *júrva-* 'grind down, destroy' (§ 2.1.1.3 with fn. 3). The root noun *$\acute{g}erh_2$- / *$\acute{g}r̥h_2$-* may also ultimately underlie the AK *nt*-stem PIE *$\acute{g}erh_2$-ont- / *$\acute{g}r̥h_2$-n̥t-* '(the) old (one)', as discussed in (2.iii) (§ 2.1.3 above).

[37] Cf. Steer (2015: 169–170), who also offers an alternative (though tentative) analysis of Ved. *a-júr-* 'not aging'.

the existence of a (substantivized?) adjective Ved. *jū́rya-* 'old, aged' – traditionally claimed to occur in *RV* VI.2.7c – is doubtful.[38]

4.4 Ved. *ni-jú́r-* f. '(act of) destroying, destruction'

A further piece of evidence is constituted by the compound Ved. *ni-jú́r-* f. (hapax in the *RV*), which describes a dangerous action performed by a wolf in II.29.6c. As per Gotō (1987: 153 fn. 237), *EWAia* I: 597, and Scarlata (1999: 165), the most plausible translation of Ved. *ni-jú́r-* is '(act of) destroying, destruction' (NHG 'Aufreiben'), see (9).

(9) *RV* II.29.6c–d:
  trā́dhvaṃ no devā **nijú́ro vŕ̥kasya** *trā́dhvaṃ kartā́d avapádo yajatrāḥ*
  "Rescue us, gods, **from the 'rubbing out' of the wolf**; rescue [us] from falling into the pit, you who are worthy of the sacrifice" (after Jamison & Brereton 2014: 443).

As noted by Scarlata (1999: 165), Ved. *ni-jú́r-* does not refer to oldness or aging. This makes it difficult to relate this compound to the word family of Ved. *jarⁱ-* < PIE *ǵerh₂- 'become old, age'. In contrast, tracing Ved. *ni-jú́r-* back to the PIE root *ǵerhₓ- 'crush, grind' smoothly explains its meaning '(act of) destroying, destruction' – cf. the meaning 'grind down, destroy' of the etymologically related forms Ved. *jurátam* and *jū́rva-*, and recall that the latter is frequently associated with the preverb *ni-* 'down' as well (§ 3.1.1.1 above). Since Ved. *ni-jú́r-* '(act of) destroying, destruction' is not an agentive formation, it is unlikely to represent a verbal governing compound. Instead, Ved. *ni-jú́r-* can be analyzed as an endocentric compound having a root noun *jú́r-* as its second member. This points to the reconstruction of a mobile root noun PIE *ǵérhₓ- / *ǵr̥hₓ-,[39] which would have regularly exhibited an abstract meaning '(act of) crushing, grinding (⇒ destroying)'.

4.5 Lat. *glā́rea* f. 'gravel' and MW *gro* f. 'sand, gravel'

Traditionally, Lat. *glā́rea* f. 'gravel' (Cato) has been regarded as etymologically related to Lat. *grā́num* n. 'grain, seed (of wheat or another plant)' and thus traced back to a pre-form in *-eiā- derived from a *ro*-adjective Pre-Lat. *glā-ro- 'crushed, ground' << (dissimilation) PIt.

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[38] Cf. *RVTC* ad VI.2.7 and Jamison & Brereton (2014: 775) *contra WRV*: 499, Geldner (1951 II: 94), and *EWAia* I: 577. On Ved. *jū́rya-* 'old, aged', see also Lubotsky (1997: 142 with fn. 10).

[39] Yielding *-u-* in *-jú́r-* either through the development PIE *CR̥hₓV- > Ved. *CuRV-* (*RV*) or by analogy to the related present stem Ved. *jū́rva-* 'grind down, destroy' (§ 2.1.1.3 with fn. 3).

grā-ro- 'id.' < PIE *$ǵr̥h_x$-ró- 'id.'.[40] More recently, Zair (2013) convincingly connected Lat. *glārea* f. 'gravel' with the Celtic (especially Brittonic) synonyms MW *gro* f. 'sand, gravel' and OCorn. *grou* f. 'id.' < PCelt. *grāu̯ā-* f. (*EDPC*: 167). In light of the exact semantic parallel provided by OHG *grioz* m. 'gravel' (← PGerm. *greu̯t-an-* 'crush, grind')[41], the appurtenance of both Lat. *glārea* f. 'gravel' and MW *gro* f. 'sand, gravel' to a PIE root with the meaning 'crush, grind' is most likely.

As for Latin, it is reasonable to start from an adjective PIE *$ǵr̥h_x$-ró- 'crushed, ground' (cf. PIE *$ǵr̥h_x$-nó- 'id.'), which was substantivized as *$ǵr̥h_x$-ro- ('ground object' ⇒) 'pebble' (cf. PIE *$ǵr̥h_x$-no- n. ('ground object' ⇒) 'grain') and regularly yielded Pre-Lat. *grāro-* 'id.'. The latter functioned as derivational base of a material formation Pre-Lat. *grār-ei̯ā-* f. 'material made of pebbles', which underwent dissimilation to Pre-Lat. *glār-ei̯ā-* and finally led to Lat. *glārea* f. 'gravel' – for the dissimilation Pre-Lat. *r…r* >> Lat. *l...r*, cf. the dissimilation Pre-Lat. *l...l* >> Lat. *l…r* in the adjectives in -*ālis* derived from bases containing an -*l*- (type Lat. *cōnsul-āris* 'consular').[42]

As for Celtic, I assume that an adjective PIE *$ǵr̥h_x$-u̯ó- 'crushed, ground' was substantivized as *$ǵ(é)rh_x$-u̯o- 'pebble', whose collective *$ǵr̥h_x$-u̯éh₂- 'gravel'[43] regularly led to PCelt. *grāu̯ā-* f. > MW *gro* f. 'sand, gravel', etc. (cf. Zair 2013: 284). Morphologically, the suffix *-u̯ó- presupposed by the Brittonic nouns nicely matches the suffix *-u- presupposed by the Vedic verb *júrva-* 'grind down, destroy' << PIE *$ǵérh_x$-u-* / *$ǵr̥h_x$-u̯- (§ 3.1.1.1 above) – for parallels, see Jasanoff (2022/23: 63–65).

Summing up, Lat. *glārea* f. 'gravel' and MW *gro* f. 'sand, gravel' offer further independent evidence for the reconstruction of a PIE root *$ǵerh_x$- with the meaning 'crush, grind'.

4.6 Goth. ga-kroton* 'crush'

The last form to be discussed here is the Gothic weak verb (class II) *ga-kroton** 'crush', that is only attested as 3.sg.pres.mp. *gakrotuda* (= *gakrotoda*) and renders Gk. συνθλασθήσεται 'will be crushed (together)' (*GED*: 141). Goth. *ga-kroton** is traditionally argued to continue

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[40] Cf. *LEW* I: 605–606; *IEW*: 391. More cautious are *DELL*: 276; *EDLIL*: 264.

[41] Cf. *EWAhd* IV: 635–636.

[42] Cf. *OHCGL*: 339 and see further Zair (2013: 280). Zair also discusses an alternative – though less compelling – etymology of Lat. *glārea* f. 'gravel' (pp. 282–285), which is adopted by Vine (2018: 181–182).

[43] Cf. the pattern PIE *u̯érdʰ-o-* n. 'word' → collective *u̯r̥dʰ-éh₂-* 'discourse' (Steer 2014, especially 334).

a present or an extension in *-*d*- belonging to the PIE root which also underlies Lat. *grānum* n. 'grain, seed (of wheat or another plant)', Lat. *glārea* f. 'gravel', etc. – cf. *IEW*: 391 ("*d*-Präs[ens]"); *LEW* I: 605; Zair (2013: 280, 282). Nevertheless, this analysis is morphologically difficult, since the value of the alleged *d*-extension remains unclear and *d*-presents are only marginally and insecurely reconstructed for PIE (cf. LIV^2: 19–20, 717). Moreover, Goth. *ga-kroton** cannot directly continue a hypothetical *d*-present *$ǵréh_{2/3}$-d-e/o-, as one would expect the latter to yield a strong verb Goth. ^{x}*ga-krotan*.

Building on Vine (1981: 153–154), I thus tentatively propose regarding Goth. *ga-kroton** 'crush' as denominal and deriving it from a substantival base Pre-PGerm. *$ǵreh_{2/3}$-do/eh₂- or *$ǵroh_x$-do/eh₂- with the meaning 'fragment, chip' or similar (⇐ 'crushed object'). The latter forms could be viewed as substantival derivatives of a *do*-adjective PIE *$ǵr̥h_x$-dó- 'crushed, ground' – cf. PIE *$spl̥h_x$-dó- 'split, ground' → *$spelh_x$-deh₂- 'split, ground object' > OHG *spelza* f. 'spelt', OS *spelta* f. 'id.', etc. (*EWAhd* VIII: 730–733). In any case, the reconstructed base Pre-PGerm. *$ǵreh_{2/3}$-do/eh₂- or *$ǵroh_x$-do/eh₂- does not prove the underlying 'crush' root to be *$ǵreh_x$- rather than *$ǵerh_x$- (§ 3.4 above), since the full-grade II Pre-PGerm. *$ǵrVh_x$-° may have arisen secondarily within the substantivization process (see, generally, Höfler 2017: 141–143).

5 Conclusions

The main results of the present paper can be summarized as follows.

i. I argue for the necessity of reconstructing two semantically and morphologically distinct roots *$ǵerh_2$- 'become old, age' and *$ǵerh_x$- 'crush, grind' for PIE.

ii. As for the root *$ǵerh_2$- 'become old, age', I set up the following averbo: (a) full-grade simple thematic present PIE *$ǵérh_2$-e/o- > Ved. mp. *járate** 'becomes old', to which a secondary transitive active *járati** 'makes age' was back-formed in Vedic; (b) *s*-aorist PIE *$ǵérh_2$-s- / *$ǵerh_2$-s- > Gk. 3.sg. ἐγήρᾱ 'became old', Ved. *jāriṣ-* 'id.'; (c) resultative perfect PIE *$ǵe$-$ǵórh_2$- / *$ǵe$-$ǵr̥h_2$- > Ved. *jajā́ra* 'is old'. A marked (i.e., sigmatic) aorist and an unmarked (i.e., full-grade simple thematic) present are morphologically expected for a PIE root with non-punctual *Aktionsart*. At a later stage, fientive presents with the (original) meaning 'become old' were created in the prehistory of several branches: cf. Ved. *jū́/ī́rya-* 'become old, weak', YAv. *zarəsa-** 'become old, age', OCS *zĭrějǫ* 'ripen (intr.)', etc.

iii. As for the root *$\acute{g}erh_x$- 'crush, grind', I reconstruct two present
stems. On the one hand, I posit a *u*-present PIE *$\acute{g}érh_x$-u- / *$\acute{g}r̥h_x$-u-,
which was secondarily thematized and led to the present stem Ved.
jū́rva- 'grind down, destroy'. On the other hand, I set up either a
coexisting root present *$\acute{g}érh_x$- / *$\acute{g}r̥h_x$- or a coexisting *ó*/*é*-present
*$\acute{g}órh_x$- / *$\acute{g}érh_x$-: in either case, I regard this present as the source
of the thematized present stem *jurá*- attested in the 2.du.impv. Ved.
jurátam 'destroy!, break down!'. The present formations recon-
structed for the PIE root *$\acute{g}erh_x$- 'crush, grind' find a parallel in the
present formations reconstructed for the synonymous and structur-
ally comparable root PIE *$melh_2$- 'id.'. Finally, the verbal adjective
PIE *$\acute{g}r̥h_x$-nó- 'crushed, ground' underlies both 'grain' lexemes PIE
*$\acute{g}r̥h_x$-no- n. (> Lat. *gránum* n. 'grain, seed (of wheat or another
plant)', etc.) and Pre-PGerm. *$\acute{g}érh_x$-no-n- m. (> OHG *kerno* m.
'kernel; grain, seed; wheat', etc.).

iv. The nominal derivatives Ved. *jára*- m. '(act of) aging, old age, con-
sumption', Ved. **jarát*- f. 'old age', and Ved. *a-júr*- 'not aging' can
be plausibly explained only under the assumption that the underly-
ing root PIE *$\acute{g}erh_2$- meant 'become old, age' rather than 'make
age'. On the other hand, the compound Ved. *ni-júr*- f. '(act of) de-
stroying, destruction', the nominal derivatives Lat. *glárea* f. 'gravel'
and MW *gro* f. 'sand, gravel' as well as – possibly – the weak verb
Goth. *ga-kroton** 'crush' provide further independent support for
the reconstruction of a PIE root *$\acute{g}erh_x$- 'crush, grind', which should
be kept distinct from the 'oldness' root PIE *$\acute{g}erh_2$-.

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