*$g^{\mu}es$-, *$(z)g^{\mu}es$- or *$(s)g^{\mu}esh_2$-? The PIE root for 'extinguish/go out'

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§1. A morphological revolution has occurred in Indo-European studies in the years since our honorand and I were fledgling Indo-Europeanists at Harvard in the 1960's.[1] Almost nothing in PIE morphology looks the same as it did forty years ago; the discovery of new ablaut patterns, new derivational processes, and new grammatical categories has rendered obsolete such formerly canonical works as Kurylowicz's *L'apophonie en indo-européen* (1956), the structuralist classic that in our student days seemed to represent the last word in sophisticated IE scholarship. Perhaps the single most important development of the past decades, underlying all the others, has been the *rediscovery of philology* — the renewed realization, partly lost during the theory-driven disputes that accompanied the mid-century "laryngeal wars" — that the evidence of actual forms in actual texts can sometimes tell us much more than the cleverest theorizing.

The achievements of late twentieth-century *Indogermanistik*, as well as some of its shortcomings, are clearly seen in the impressive *Lexikon der indogermanischen Verben* (*LIV*), published in 1997 under the general editorship of Helmut Rix (second edition 2001; see bibliography). *LIV* sets out to do for PIE what Whitney's *Roots of the Sanskrit Language* (1885) does for Sanskrit: to give for each verbal root in the language an account of its primary *averbo* — present(s), aorist, perfect, causative, and so on. This is a remarkable goal, not only because such a task could never have been attempted forty years ago (the factual knowledge did not exist), but also because no one working within the structuralist tradition of the period would even have *thought* to attempt it. The fact that *LIV* is a "first" makes its many successes — hundreds of lucid and sensible articles — all the more admirable. It is incontrovertibly a major resource, comparable in many ways to Pokorny's *Indogermanisches Etymologisches Wörterbuch* (1959), which it partly

[1] I am grateful to Alan Nussbaum, Martin Peters, and Jeremy Rau for discussion of the ideas in this paper. All errors are of course my own.

replaces. Yet the quality of the work, taken as a whole, is uneven. Many articles fall short of the standard set by the stronger parts, underscoring the fact that for many PIE verbs the business of sorting out the inherited repertoire of stem-forms is still an ongoing concern. A case in point is the well-attested root meaning 'extinguish' (trans.) or 'go out' (intrans.), long familiar to Indo-Europeanists as **(z)g^{u}es-* (Pokorny, etc.), but now listed in *LIV*, in an article signed by Reiner Lipp (541-3), as **(s)g^{u}esh$_2$-*.

§2. Let us begin with the form of the root itself. The **-h$_2$-* that *LIV* adds to the standard reconstruction is unnecessary. None of the forms cited to justify the laryngeal — the Greek aorist ἔσβη (supposedly < **e-sg^{u}eha* < **e-sg^{u}esh$_2$-t*) and present ζείναμεν· σβέννυμεν (Hesych.), the Vedic aorist *dāsīt* 'despaired' (for **jāsīt*), and the Tocharian A preterite 3 pl. mid. *kaksānt* 'quenched' (supposedly < **-g^{u}sh$_2$-*) — are decisive. In Greek, as shown by García Ramón (1982: 112 ff.), the presents **g^{u}es-na-* (i.e., ζείνα–) and **zg^{u}es-nu-* (σβέννυ–) are parallel nasal stems built to the transitive aorist **(z)g^{u}es-s-*; neither has any claim to IE antiquity. ἔσβη, as will emerge in §§10-11, is not an anomalous contracted root aorist, but a normal intransitive aorist in –η–. Ved. *dāsīt*, if it belongs here etymologically, is an "improved" version of earlier **jās(-s)-t*, showing the same morphological renewal as in *āsīt* 'was' for earlier **ās-t*. Toch. A *kaksā-* < **kakäsā-* is a regular class II (causative) preterite, with the stem-final *-ā-* common to all such forms, whether historically *seṭ* or not.[2]

The *real* problem with the traditional formula **(z)g^{u}es-* (or **(s)g^{u}es-*),[3] of course, is the status of the initial sibilant. Here *LIV* does nothing to resolve the puzzlement of the standard etymological dictionaries (cf., e.g., Chantraine, *DELG* 992; Frisk, *GEW* 686, Pokorny, *IEW* 479 f.), which either implicitly treat the **z-* as a case of "*s*-mobile" or ponder taking it from a reduced preverb akin to Gk. ἐξ. Neither is a viable option. The phenomenon of *s*-mobile is basically confined to roots beginning with a voiceless stop

[2] *-ā-* [-a-] may fairly be called the "general" preterital stem vowel in Tocharian; while of laryngeal origin, it has been so widely propagated that it is of no diagnostic value whatever. The lack of palatalization in *kaksānt* marks it as a recent, or recently remade form. Toch. A *kākso*, cited as a past participle by *LIV*, is ill-formed; if genuine, it would imply a root **kās-*.

[3] Since the PIE phoneme /s/ was unmarked for voice, the notations **(z)g^{u}-* and **(s)g^{u}-* are completely equivalent.

(cf. **spek̂-* beside **pek̂-* 'look', **steg-* beside **teg-* 'cover', etc.); a few cases have been claimed before a voiced aspirate (*LIV* gives only **(s)dherbh-* 'grow stiff'),[4] but not a single instance, other than **(z)g^{u}es-* itself, can be cited before a plain voiced consonant. A development of **(e)ks-g^{u}es-* (*vel sim.*) to **zg^{u}es-* would be unparalleled and, if anything, even more improbable than *s*-mobile. Whatever the source of the **z-*, however, it is confined to Greek. The Indo-Iranian, Balto-Slavic, Tocharian, and Germanic cognates of σβέννυμι have simple **g^{u}-*: cf. Ved. *jas-* 'be exhausted' (pres. *jása-*, *jasya-*), Lith. *gèsti* 'grow dim' (OLith. pres. 3 p. *gę́sa*), OCS *u-gasnǫti*/*u-gasiti* 'die out/put out', Toch. *käs-* 'extinguish/be extinguished' (B pres. mid. *keṣtär*), Go. *fra-qistnan* (denom.) 'perish'. Indeed, if García Ramón (*op. cit.*, 106 ff.) is correct in taking Hesychian ζείναμεν as an Arcadian form (*recte* *ζήναμεν) with ζ- [d^{z}-] < *g^{u}-, the cluster **zg^{u}-* is not even pan-Greek. The replacement of **g^{u}es-* by **zg^{u}es-* was a post-IE, and probably a post-Common Greek event.

§3. The problem of how PIE **g^{u}es-* became Gk. **zg^{u}es-* is best approached indirectly. The clearest fact about the behavior of the root **g^{u}es-* in the parent language — a fact missed, ironically, by *LIV* — is that it made an *s*-aorist.[5] The aorist stem **g^{u}ĕs-s-* is directly attested in Greek (ἔσβεσ(σ)α) and perhaps Ved. *dāsīt*. As we shall see in §6, traces of such a stem are also preserved in Balto-Slavic. The decisive evidence, however, comes from Tocharian.

The conservative treatment of the PIE *s*-aorist in Tocharian is well known. In the active, the Tocharian "*s*-preterite" is conspicuously *non*-sigmatic outside the 3 sg. — a morphological peculiarity that also characterizes the formal counterpart of the *s*-aorist in

[4] Roots given as "?**(s)bheng-*" 'shine' and "**(s)g^{u}hh$_2$el-*" 'stumble' are also listed, but here the onsets are simply the *LIV* notational substitute for "classical" (and likewise unsatisfactory) **(s)ph-* and **(s)k^{u}h-*.

[5] *LIV*'s decision to set up a root aorist rather than an *s*-aorist is driven by the editors' apparent commitment to taking ἔσβη from **e-g^{u}esh$_2$-t* (cf. §12 below). Of the other forms cited in support of a root aorist, Ved. *jásamāna-*, *dásamāna-*, and *dasat* are better referred to a thematic present (cf. §7); OCS *u-gasъ* is simply the productively formed aorist to *u-gasnǫti*; and Toch. B *ksetär* points positively to an *s*-aorist (cf. §§4-5).

Hittite.[6] The unexpected agreement between Tocharian and Anatolian in this detail lies at the heart of the "*h₂e*-conjugation" theory of the *s*-aorist presented in Jasanoff (2003: 174-214). According to this theory, the PIE *s*-aorist was originally a specially inflected type of root aorist in which the 3 sg. active form, for reasons now lost within the prehistory of PIE, was built from a suppletive sigmatic stem with "Narten" (**ē* : **e*) ablaut.[7] Such sigmatic 3 sg. forms first became established in diathetically bivalent verbs of the type **nek̂-* 'destroy/perish' and **neiH-* 'lead/turn', where the **-s-* of the 3 sg. active provided a means of enhancing the saliency of the active/transitive : middle/intransitive distinction. The locus of the *s*-aorist was in 3 sg. pairs like **nḗk̂-s-t* (for theoretically expected non-suppletive, non-sigmatic ***nók̂-e*) 'destroyed' vs. **nók̂-o* 'perished' (cf. Toch. A *ñakäs* : *nakät* (< **nók̂-*[*t*]*o*) 'id.'), and **nḗiH-s-t* (for theoretically expected non-suppletive, non-sigmatic ***nóiH-e*) 'led' vs. **nóiH-o* 'turned (intrans.)' (cf. Hitt. *naiš* : *nēa*[*t*] 'id.').

§4. The Toch. A pattern *ñakäs* (< **nḗk̂-s-t*) 'destroyed' : *nakät* (< **nók̂-*[*t*]*o*) 'perished', with *-s-* wholly absent from the middle, is a synchronically irregular archaism. In "normal" verbs the middle forms of the *s*-preterite are sigmatic in both Tocharian languages; cf., e.g., A act. *prakäs* : mid. *pärk**s**āt*, B act. *preksa* : mid. *park**s**ate* (: A *prak-*/B *prek-* 'ask'). Krause and Thomas (1960: 247) list a total of four non-causative verbs with preterites of the irregular *ñakäs* : *nakät* type: *päk-* 'make ripe, cook/grow ripe' (= PIE **pek^{u}-* 'id.'), *tsäk-* 'burn (tr.)/burn (intr.)' (= PIE **dheg^{u}h-* 'id.'), *täm-* 'engender/be born'

[6] The Hittite category corresponding to the *s*-aorist is the preterite of the *ḫi*-conjugation. Compare the Toch. B *s*-preterite of *prek-* 'ask' and the Hittite preterite of the *ḫi*-verb *dā-* 'take':

prek-wa 'I asked'	*prek-am*	*dā-ḫḫun* 'I took'	*dā-wen*
prek-asta	*prek-as*	*dā-tta*	*dā-tten*
*prek-**s**-a* < **-s-(a)t*	*prek-ar*	*dā-**š*** < **-s-t*	*dā-ir*

The parallel was first pointed out by Watkins (1962: 61 ff.).

[7] The central claim of the *h₂e*-conjugation theory is that PIE had grammatically active presents and aorists which took endings similar to those of the perfect and middle (1 sg. **-h₂e*, 2 sg. **-th₂e*, 3 sg. **-e*, etc. — hence the term "*h₂e*-conjugation"). The ancestor of the *s*-aorist, the "presigmatic" aorist, was precisely such a formation. The introduction of forms with **-s-*, probably of desiderative origin, into the presigmatic aorist was a gradual process, never completed in Anatolian or Tocharian.

(no IE etymology), and *näk-* itself (= PIE **neḱ-*).[8] All are transitive in the active and intransitive in the middle. Of the three with good IE etymologies, two, *päk-* and *tsäk-*, have well-established *s*-aorists elsewhere in the family (cf. Ved. subj. *pákṣa-*, Gk. ἔπεψα, Lat. *coxī* < **pĕ́kʷ-s-*; Ved. *ádhāk*, OCS *žaxъ* < **dhĕ́gʷh-s-*).[9] The one exception is *näk-*, where there is no *s*-aorist outside Tocharian — no doubt because the transitive functions of the primary verb **neḱ-* were transfered to the iterative-causative **noḱ-éi̯e/o-* in the "inner" IE languages (cf. Ved. *nāśáya-*, Lat. *noceō*).[10]

The verbs *näk-*, *päk-*, *tsäk-*, and *täm-* have other features in common as well. All make intransitive subjunctives of class III (3 sg. A *nkatär*, *pkatär*, *tskatär*, *cmatär*, B *nketär*, *pketär*, *tsketär*, *cmetär* < **-otor*), with sparsely attested transitive counterparts of class I (B inf. *naktsi*, *tsaktsi*).[11] In addition, *näk-*, *päk-*, and *tsäk-* make transitive *s*-presents (3 sg. A *nkäṣ*, *pkäṣ*, *tskäṣ*; B *nakṣäṃ*, *pakṣäṃ*, *tsakṣäṃ*), which historically continue PIE *s*-aorist subjunctives (**néḱ-se/o-*, **pékʷ-se/o-*, **dhégʷh-se/o-*).[12] The roots corresponding to the oldest *s*-aorists in Tocharian thus present a distinctive morphological "profile." Accidental gaps aside, such roots typically have 1) a transitive active class III (*s*-) preterite (e.g., A *ñakäs*); 2) an irregularly *s*-less middle preterite (A *nakät*); 3) a transitive active class I subjunctive (B *naktsi*); 4) an intransitive middle class III subjunctive (A *nkatär*); and 5) a transitive active class VIII (*s*-) present (A *nkäṣ*). Using this information, we can add two further roots to the Tocharian *s*-aorist "core." One of these is *näm-* 'bend (tr.)/

[8] Omitted from this list is *lyuk-* 'shine' (= PIE **leuk-*), which likewise has a preterite of the *ñakäs* : *nakät* type (A *lyokäs* : *l*[*y*]*okät*, B *lyauksa* : *lauk*[*sa*]*te*), but which, as a causative, patterns aberrantly.

[9] *LIV* surprisingly denies an *s*-aorist to **pekʷ-* while setting one up for the parallel **dhegʷh-*.

[10] I use the terms "Inner IE" and "inner IE languages" to refer to the IE branches that remained after the departure of Anatolian and Tocharian from the rest of the family. Inner IE, in my view, was a proper subgroup of IE, characterized, *inter alia*, by common innovations in the form of the *s*-aorist and the inventory of simple thematic presents. Cf. note 19.

[11] The origin of the class I/III subjunctive complex, which is intimately linked to the origin of the *s*-aorist, is discussed in Jasanoff (2003: 199-203). The transitive forms are mistakenly assigned to class III by Krause and Thomas.

[12] Cf. Jasanoff (2003: 180 ff.).

bend, bow (intr.)', with an *s*-present, a class I/III subjunctive, and an *s*-preterite (though without an attested middle) in both languages.[13] The other is *käs-*.

§5. Despite some confusion in the handbooks, the descriptive facts in the case of *käs-* are clear. The key *s*-preterite forms, both active/transitive and middle/intransitive, are found in Toch. B (e.g., 2 sg. act. *kesasta* 'you quenched',[14] 3 pl. mid. *kessante* 'were extinguished'). There are no quotable finite forms of the preterite in Toch. A, and hence no attested *s*-less intransitive middle **kasät* < **g^{u}ós-*[*t*]*o* parallel to *nakät*, *tamät*, etc. But just as the Toch. B counterpart of A *nakät* is *neksate*, with the regular sigmatic element *-sa-* mechanically inserted into the inherited *o*-grade form **nekte* (= A *nakät*), so B *kessa*[*n*]*te* shows the mechanical insertion of *-sa-* into **kes*[*än*]*te* (= A **kasä*[*n*]*t*).[15] The preterite of *käs-* was thus clearly of the same archaic type as the preterites of *näk-*, *päk-*, *tsäk-*, and *täm-*.

The remaining forms confirm the *s*-aorist profile. The regular intransitive class III subjunctive of *käs-* is attested in both languages (cf. A abstract *ksalune*, B 3 pl. *ksentär*); its transitive counterpart appears in B inf. *kastsi* 'to quench' (class I). The present, though wrongly assigned to the simple thematic type (class II) by Krause and Thomas (199), is in fact the structurally expected class VIII present in **-se/o-*, disguised only slightly by the tendency of the *-s-* of the suffix to merge with the *-s-* of the root.[16] The original stem was thus the inherited *s*-aorist subjunctive **g^{u}és-se/o-*, parallel to **nék̂-se/o-*, **pék^{u}-se/o-*, etc. In Toch. A this gave *käṣ-/käs-* followed by the thematic endings, with simplification of the geminate *-ṣṣ-/-ss-* and analogical (but quasi-regular) depalatalization of the initial consonant. In Toch. B the vocalism of the *s*-preterite, where **-ē-* and **-o-* merged as *-e-* (cf. *kesasta* (act.) < **g^{u}ēs-*, *kessante* (mid.) < **g^{u}os-*), was

[13] It is precisely because of the lack of an intransitive *s*-less middle in Toch. A (**namät* < **nóm*[*t*]*o*) that *näm-* was not included with *näk-*, *päk-*, *tsäk-*, and *täm-* in our original inventory. The gap is surely accidental. A cognate *s*-aorist appears in Vedic Sanskrit (3 pl. subj. *naṃsante*, post-Rigvedic 3 sg. indic. *anān*).

[14] Wrongly glossed as intransitive ('erloschst') by *LIV*. The passage is given by Adams (1999, *s.v.*).

[15] This is the regular pattern; cf. further B *teṃtsate*, (1 sg.) *tseksamai*, *lauksate* (cf. note 8) beside A *tamät*, *tsakät*, *lyokät*.

[16] The mistaken assignment to class II is repeated in *LIV*, where the forms are tentatively traced to an underlying perfect.

imported into the present, yielding the attested forms 3 sg. *keṣäṃ*, mid. *keṣtär*, ptcp. *keṣṣeñca*, etc. A near-exact parallel can be seen in A *prak-*, B *prek-* 'ask', where the vocalism of the present (A 1 sg. *praksam*, B 3 sg. *prekṣäṃ*) copies that of the preterite (3 sg. A *prakäs*, B *preksa* < **-ē-*) and class I subjunctive (B 3 sg. *prekäṃ* < **-o-*).

§6. Taken together, the robust presence of the *s*-aorist ἔσβεσ(σ)α in Greek and the "embeddedness" of the *s*-preterite **kes-(s-)* in Tocharian establish the PIE antiquity of the aorist **g^{u}ĕ́s-s-*. Further evidence for the *s*-aorist, though indirect, comes from Balto-Slavic. In Slavic, the most remarkable fact about the root **g^{u}es-* is that all the attested forms have *a-* (< **ō-*) vocalism: cf. pres. *u-gasnǫ*, inf. *-gasnǫti*, aor. *-gasъ* 'die out' (perfective); *u-gašǫ*, inf. *-gasati* (+ aor. *-axъ*) 'id.' (imperfective); causative *u-gašǫ*, inf. *-gasiti* (+ aor. *-ixъ*) 'put out'. *LIV* (crediting Vaillant 1966: 252 f. and Rasmussen 1990: 189) sees the locus of this vowel in *-gasiti*, presupposing a PIE lengthened-grade iterative-causative of the type **sy̯ṓp-i̯e/o-* (or **sy̯ōp-éi̯e/o-*) 'put to sleep' (cf. Lat. *sōpiō*, *-īre* 'id.', ON *søfa* 'kill').[17] This is probably correct. But *why* should the root **g^{u}es-* have formed a lengthened-grade iterative-causative? The substitution of **-ō-* for "regular" **-o-* in an iterative-causative is normally linked to the presence of a long vowel elsewhere in the extended paradigm — either because the root was of the "Narten" type (cf., e.g., OIr. *sáidid* 'sets, fixes', OCS *saditi* 'plant' < **sōd-éi̯e/o-*; Arm. *utem* 'eat' < **h_{l}ōd-éi̯e/o-*), or for some phonological reason, such as the presence of a root-internal laryngeal (cf. OCS *laziti* 'climb' (iter.) < ?**loh$_{\text{l}}$ĝh-éi̯e/o-* (so *LIV* 400), non-iter. pres. *lězǫ* < ?**leh$_{\text{l}}$ĝh-*). The root **g^{u}es-* belonged to neither category; its iterative-causative should therefore have been **g^{u}os-éi̯e/o-*.

What **g^{u}es- did* do, of course, was form an *s*-aorist. The active *s*-aorist of **g^{u}es-*, in its classical (i.e., "Inner IE") shape, would have had *ē*-vocalism and **-s-* throughout the paradigm: **g^{u}és-s-ṃ*, **g^{u}és-s-s*, **g^{u}és-s-t*, . . . 3 pl. **g^{u}és-s-n̥t*. Such forms, had they received the normal *s*-aorist treatment in Slavic, would have surfaced as **žasъ*, **žese*, **žese*, . . . 3 pl. **žasę*, with the distinctive inner-Slavic replacement of the 2, 3 sg. of the historical

[17] It is immaterial for our present purposes whether the original form of the suffix in the "*sōpiō*-type" was **-éi̯e/o-* (i.e., the "normal" iterative-causative suffix), or **-i̯e/o-* (so *LIV*, following Klingenschmitt 1978). The Slavic forms, whether by inheritance or suffix substitution, presuppose **-éi̯e/o-*.

s-aorist by non-lengthened-grade imperfect-based forms. There were obvious reasons, however, for the *s*-aorist of **g^{u}es-* *not* to show the normal treatment. Following the early pre-Slavic simplification of **-ss-* to **-s-*, the inherited *s*-aorist paradigm would have given **g$^{(u)}$ésm̥*, **g$^{(u)}$és(s)*, **g$^{(u)}$ést*, . . . 3 pl. **g$^{(u)}$ésn̥t* (*vel sim.*) — no longer a synchronic *s*-aorist at all to the ear of a native speaker, but a long-vowel "root aorist" of the pre-Slavic type **sḗdm̥*, **sḗ(d)s*, **sḗ(d)st*, . . . 3 pl. **sḗdn̥t* 'sat' or **lḗzm̥*, **lḗ(z)s*, **lḗst*, . . . 3 pl. **lḗzn̥t* 'climbed' (> OCS *sědъ*, *sěde*, *sěde*, . . . ; *lězъ*, *lěze*, *lěze*, . . .). The latter forms, as we have seen, were associated with the long-vowel iterative-causatives **sōdīti* (> *saditi*) and **lōzīti* (> *laziti*). At some point following the separation of Slavic from Baltic, the pattern must have been generalized: pairs of the type **sēd-* : **sōdīti*, **lēz-* : **lōzīti*, etc. induced the replacement of the inherited iterative-causative **gosīti* (< **g^{u}os-éi̯e/o-*) by **gōsīti* (> *(u-)gasiti*). The aorist **gēs-* itself was subsequently lost in Slavic; a possible Baltic reflex may underlie Latv. pret. *dzèsu* (beside *dzesu*) 'I extinguished'.[18]

§7. As with many roots, it is easier to reconstruct the aorist of **g^{u}es-* than its present. The Greek nasal present σβέννυμι (< *σβέσ–ν–) is an innovation on the basis of the *s*-aorist ἔσβεσ(σ)α (cf. §2); the relationship between the two simply imitates that of pres. ἔννυμι 'put on' (< *ϝέσ–ν–; cf. Arm. *z-genum* 'id.') to aor. ἔσ(σ)αι. The productively formed intransitive nasal presents of Baltic and Slavic — OLith. *gę́sa* (mod. Lith. *gę̃sta*) and OCS *u-gasnǫti* — are likewise (*pace LIV*) clearly unoriginal. The best window into the PIE situation is afforded by Vedic Sanskrit. Here the root *jas-* (*das-*) makes two weakly attested present stems — *jása-* (pres. ptcp. mid. *jásamāna-* 'despairing, exhausted'; also *dásamāna-*) and *jásya-* (2 pl. impv. *ní jasyata* 'despair'; also *dásyati*). The presence side by side of *jása-*/**g^{u}és-e/o-* and *jásya-*/**g^{u}és-i̯e/o-* recalls the two presents of PIE **pek^{u}-* 'cook' — **pék^{u}-e/o-* in Ved. *pácati* (transitive), Lat. *coquō*, OCS *pekǫ*, etc.; and **pék^{u}-i̯e/o-* in Ved. *pácyate* ('ripens', intransitive) and Gk. πέσσω. The roots **g^{u}es-* and **pek^{u}-* have been seen together before: they belong to a morphological "family" that also includes **dheg^{u}h-*

[18] Cf *LIV* 543, note 17 and the references there cited. The Baltic lengthened-grade *ē*-preterites, of which Latv. *dzèsu* (as if = Lith. pret. **gẽ̃siau*, 3 p. **gẽ̃sė*) is a typical example, have not unreasonably been thought to rest on an inherited basis of lengthened-grade *s*-aorists. The present corresponding to *dzèsu*, however, is *dzešu* (as if = Lith. **gesiù*, 3 p. **gẽ̃sia*), and the pattern *e*-grade present in **-i̯a-* : *ē*-grade preterite in **-ē-* is so common in Baltic that *dzèsu* need not be old.

'burn', *$ne\hat{k}$- 'destroy / perish' and *nem- 'bend, bow' (cf. §§4-5). Of the latter three items, *$dheg^{\mu}h$- is represented in Vedic by a transitive thematic present *dáhati* (= YAv. *dažaiti*, Lith. *degù*, Alb. *djeg*); *$ne\hat{k}$- is represented by an *in*transitive *i̯e*/*o*-present *náśyati* (= YAv. *nasiieiti*); and *nem- is represented by a thematic present *námati*, *-te* (= YAv. *nəmaite*) which is transitive in the active and intransitive in the middle. The obvious inference is that the simple thematic stems were originally transitive, and that the stems in *-*i̯e*/*o*- were intransitive. In some cases the intransitive sense was taken over by the simple thematic middle, as in *jásamāna*- or (presumably) *námate*; in others the *i̯e*/*o*-present was extended into the transitive sphere, as in Gk. πέσσω. But for the late protolanguage the simplest assumption is that *g^{μ}és-*e*/*o*- meant 'extinguish' and *g^{μ}és-*i̯e*/*o*- meant 'go out'.[19]

Reflexes of *g^{μ}és-*e*/*o*- and *g^{μ}és-*i̯e*/*o*- are found in other IE branches as well, though not always in their original value. OCS *u-gašǫ* 'die out' continues the sense of, and presumably goes back to, PIE *g^{μ}és-*i̯e*/*o*-, with the regular Slavic generalization of *-a*-. Latv. *dzešu*, by contrast, maintains the *e*-grade of *g^{μ}és-*i̯e*/*o*- but has taken on the transitive meaning of *g^{μ}és-*e*/*o*- (cf. πέσσω). Transitive *g^{μ}és-*e*/*o*- itself may survive in Doric 2 pl. impv. σβῆτε 'put out!' (Sophron, 5th c.), if this is a dialectal contraction of *σβέ[h]ετε < **(z)*g^{μ}és-*e*-*te* (cf. Schwyzer 1939: 743, note 1).[20]

§8. With the core components of the *$g^{\mu}es$- *averbo* thus resolved,[21] we can return to the question set aside in §3 — the origin of the specifically Greek root shape *$zg^{\mu}es$-. Neither of the Greek forms discussed thus far — the present σβέννυμι (+ σβῆτε?) nor the *s*-aorist ἔσβεσ(σ)α — sheds any light on the problem. σβέννυμι, together with its intransitive partner σβέννυμαι, was formed within Greek by adding a nasal suffix to the full-grade root-form *$g^{\mu}es$-; later, for reasons yet to be discovered, but unconnected with the form of the suffix itself, *$g^{\mu}es$-*nu*- was altered to *$zg^{\mu}es$-*nu*- (*$g^{\mu}es$-*na*- remained un-

[19] It is important to say "late" protolanguage in this context , because under the view of the thematic conjugation adopted in Jasanoff (2003: 224 ff.), *g^{μ}és-*e*/*o*- would have been a "type II" thematic present, only created in the Inner IE period.

[20] The idea is also endorsed by Schmidt (1968: 86, note 52).

[21] No special discussion is needed of the perfect, which was formed in the regular way (stem *$g^{\mu}eg^{\mu}$ós- / *$g^{\mu}eg^{\mu}$s-´) and retains its original stative value in *ní jajāsa* 'is over' (AV, quoted in *LIV*). 2 du. impv. *jajastám* (RV), despite having taken on transitive meaning, is probably a perfect as well.

changed; cf. §2). So too in the *s*-aorist, which was purely transitive in Greek: **g^{μ}es-s-* was remade to **zg$^{\mu}$es-s-*, but clearly not for any reason related to the structure of the *s*-aorist as such. The cluster **zg$^{\mu}$-* must therefore have originated somewhere other than in these two formations. Inevitably, our attention is drawn to the main tense + voice combination that the present in -νυ- and the *s*-aorist leave uncovered — the intransitive aorist, represented in Greek by the paradigm ἔσβην, ἔσβης, ἔσβη, . . . ἔσβεν.

As we saw in §5, the oldest intransitive 3 sg. aorist of **g^{μ}es-* — contrasting with the transitive sigmatic 3 sg. **g^{μ}és-s-t* — was **g^{μ}ós-o*, an archaic root formation still partly preserved in Toch. B *kes*[*sa*]*nte*. Such forms did not generally survive into the "classical" IE languages, being either radically remade (e.g., as thematic or normal root aorists), or replaced altogether. In Greek the prevailing tendency was for *all* middle aorists with an oppositional intransitive sense to be replaced by aorists in -η- (whence later, in part, -ϑη-). Much has been written about the origin of this formation, which is generally agreed to contain the "stative" suffix **-ē-* (< **-eh_1-*) of Lat. *maneō*, *-ēre* 'remain', Lith. *minėti* 'remember', OCS *pri-lьpěti* 'stick to', Hitt. *dannatte(š)zi* 'is/becomes empty', and similar forms.[22] This is alone sufficient reason to be skeptical of attempts to explain the final vowel of ἔσβη as something *other* than stative **-ē-* — attempts like the root aorist-based theory of *LIV* (ἔσβη < **e-sg$^{\mu}$eha* < **e-sg$^{\mu}$esh$_2$-t*; cf. §2), or Risch's proposed derivation of 2 sg. ἔσβης from the *s*-aorist (< **e-zg$^{\mu}$ēs-s-s*), with subsequent reanalysis and generalization of the stem (ἔ)σβη– (1937: 209).[23] But it is unclear how the only intuitively attractive point of departure — a combination of the root **(z)g$^{\mu}$es-* with the suffix **-ē-* — could have led to σβη-.

§9. Like all *ē*-stative formations, the η-aorist was characterized by zero grade of the root.[24] Let us first consider, then, how the potential input sequences **g^{μ}s-ē-* and **zg$^{\mu}$s-ē-* would have been treated in Greek. In the case of **g^{μ}s-ē-* the voiced stop would have

[22] It is irrelevant for our present purposes that the original behavior of this morpheme ranks among the most controversial topics in IE comparative grammar.

[23] Frisk (*GEW* 685; seconded by Chantraine, *DELG* 992) favors a vague analogy: "Dazu trat als Neuerung ἔσβην, σβῆναι (nach ἔστην, ἐκάην, ἐάγην usw.). . ." It is hard to see how this would have worked in detail.

[24] This is only one of the objections to starting from full-grade **σβέ[h]η–*, as briefly proposed by Wilhelm Schulze in 1909 (see Schulze 1966: 547, note 2).

been devoiced before the *-*s*-, giving *$k^{\mu}s$-$\bar{e}$- > *ψη–. Initial *$zg^{\mu}s$-$\bar{e}$- would have yielded a voiceless cluster as well, though here, given the involvement of three consonants, the final result is harder to predict with certainty (*$sk^{\mu}s$- > *ψ–? *σπ–?). In neither case would an initial voiced σβ- or *zg^{μ}- have been the phonologically regular output of the zero-grade root. Yet it is notable that just such a development has repeatedly been claimed — first by Mahlow (1926: 433 f.) and, following him, Schwyzer (1939: 743, note 1); then by Schmidt (1968: 86, note 51, and 1976). According to Schmidt's fuller 1976 account, the pre-Greek intransitive aorist *$g^{\mu}s\bar{e}$- first gave *$bs\bar{e}$-, which then underwent metathesis to *$sb\bar{e}$-; from *$sb\bar{e}$- the new cluster *sb- spread dialectally to other forms of the root *$g^{\mu}es$-, replacing *g^{μ}- (or the reflex of *g^{μ}- — *b-, *d-, etc.) wherever it occurred.[25] The present stem *$g^{\mu}es$-*nu*- (or *des-*nu*-) was in this way remodeled to *$sbes$-*nu*- in pre-Attic-Ionic (cf. σβέννυμι). In the Arcadian dialect, where these developments were resisted, the parallel present *$g^{\mu}es$-*na*- (*$d^{r}es$-*na*-) was retained unchanged (cf. ζείναμεν).

The cardinal virtue of this scenario — and it is a very attractive feature indeed — is that it explains the structure of the intransitive aorist ἔσβη *and* the apparent replacement of *g^{μ}- by *zg^{μ}- in a single stroke. But it achieves this at the unacceptable price of assuming a pre-metathesis cluster *$g^{\mu}s$-/*bs- that could never have existed within the proper history of Greek. The Greek voicing assimilation rule — the rule governing routine alternations like ἄγω 'lead' vs. fut. ἄξω (< *ag-s-), or οἶδα 'I know' vs. 2 sg. οἶσθα (< *$(u̯)oid$-*tha*) — was an inheritance from PIE. The zero grade of the root *$g^{\mu}es$- was "always," so to speak, *$k^{\mu}s$-; a surface *$g^{\mu}s$- or *bs- could only have arisen through analogical restoration of the voiced stop under the influence of the full-grade forms. Instances of such restoration are known, a familiar example being associated with Lachmann's Law in Latin (cf. Jasanoff 2004).[26] In the case of σβη-, however, it is beyond belief that pre-Greek speakers would have overriden their voicing assimilation rule to create a nonce cluster *$g^{\mu}s$- or *bs-, only to eliminate it almost immediately through the

[25] Schmidt also cites the late-attested thematic aorist ἔσβετο (< *$g^{\mu}s$-*é*/*ó*-; 44) and the privative adjective ἄσβεστος for *ἄσβετος (< *$n̥$-$g^{\mu}s$-*e*-*to*-; 45-7) as further zero-grade forms.

[26] Note, however, that in the case of Lachmann's Law the restored voiced + voiceless clusters (as, e.g., in *ag-*tos* 'driven') had been rendered phonotactically admissible through the operation of a prior syncope rule, and that the sound law that operated on the restored cluster (*ag-t- → *$āk$-t-, etc.) was precisely the kind of change that might have been phonetically expected in that environment.

operation of an ad hoc metathesis rule. It is no wonder that the Mahlow-Schmidt account of ἔσβη and the cluster σβ-/*zg^{μ}- has never been widely accepted, and that *LIV* ignores it entirely.

§10. It would be premature, however, to close the book permanently on the metathesis approach. It is true enough that the zero grade of the root *$g^{\mu}es$- would have been realized phonetically as [k^{μ}s-], not [g^{μ}s-], and that such a sequence could never have been metathesized to [zg^{μ}-] by Neogrammarian sound change. But not all metathesis *is* Neogrammarian sound change. The annals of linguistic history are full of cases where what looks like a phonetic change — including a change in the order of elements — is sensitive to or triggered by morphological factors. In a recent paper on Latin (Jasanoff 2006), I pointed out that the verb *pandō* 'spread out', which goes back to **padnō* (from still earlier **patnō*), owes its *-nd-* not to a regular metathesis rule, but to a morphological change that aligned *pandō* with *tangō* 'touch', *scindō* 'split', *tendō* 'stretch', and other presents containing a nasal + stop cluster. Many instances of this kind of "morphological metathesis" are attested in Germanic. The Old Saxon strong verb *gi-fregnan* 'learn by asking' had a regular preterite *gi-fragn*, but also a metathesized preterite *gi-frang* — the latter altered to agree with the common preterites of the type *sang* 'sang', *swang* 'swung', *band* 'bound', etc. Early Germanic cases of the type **brukanaz* 'broken', with **-ru-* substituted for "correct" **-ur-* (< **-r̥-*) under the influence of pres. **brekana*^{N}, pret. *brak*, etc., are legion.

It is worth reflecting on how changes like these happen. The locus of innovation, as in almost all primary change, is the first language learner, who must construct a mental grammar and lexicon on the basis of the imperfect, incomplete, and often acoustically degraded information that constitutes his/her primary linguistic data. Errors are frequent, and those that go uncorrected — as some inevitably do — become innovations that may in principle spread to other speakers.[27] As the child's grammatical and lexical knowledge grow, so does his/her ability to make predictions based on the emergent but

[27] On the crucial distinction between primary change, which is rooted in the language acquisition process, and sociolinguistic diffusion, which is governed by non-linguistic factors, see the admirably clear statement by Hale (2003: 344 f.)

still imperfectly acquired system. A learner of English will predict *mouses* as the plural of *mouse* and *goed* as the past of *go*; such cases are traditionally classified as "proportional analogy" because the basis for the incorrect prediction can be expressed as a quasi-algebraic proportion *(house* : *houses* :: *mouse* : *X*, etc.). Not all wrong predictions, however, are translatable into proportional terms. A more advanced learner of English, hearing an unfamiliar Latinate adjective in [-ər] preceded by a voiceless velar and a lateral, may guess that the word fleetingly heard was *nucular* rather than *nuclear*. Here we speak of "contamination" (with words like *particular*, *secular*, etc.) rather than analogy, yet the basic mechanism — making a wrong prediction on the basis of a perceived synchronic pattern — is the same. In the cases of morphological metathesis discussed above, **padnō* was remade to *pandō*, and *-fragn* to *-frang*, because speakers had principled expectations for what a Latin present and an Old Saxon preterite, respectively, *ought* to look like, and were prepared, at least for a time, to stand by their predictions in the face of evidence to the contrary. The change of **burkanaz* to **brukanaz* was comparable, except that here the error that produced the metathesized form was partly prompted by the acoustic phonetic similarity, and hence confusability, of *-rV-* and *-Vr-* sequences.

§11. Let us now return to the intransitive aorist of **gᵘ̯es-*. The stem [kᵘ̯s-ē-], representing underlying /gᵘ̯s-ē-/, would have presented obvious difficulties for the language learner. First of all, it contained an opaque segment: while all the "normal" forms of the root began with voiced **gᵘ̯-*, the initial stop in [kᵘ̯s-ē-] was voiceless. Second, it was too short: the root component, which in ordinary inflected forms took up one or more syllables, was reflected in the stem [kᵘ̯s-ē-] by a hard-to-parse, non-syllabic stop + sibilant cluster. A third factor was the crosslinguistic susceptibility of sibilant clusters to metathesis — a well-documented tendency that Blevins and Garrett (2004: *9*) attribute to the perceptual effect known as "auditory-stream decoupling."[28] The position of [kᵘ̯s-ē-] in

[28] "While there is still much work to be done on the acoustics and perception of sibilant noise, a number of studies suggest that, in consonant clusters containing sibilants, the sibilant noise somehow distracts the listener, leading to high confusion rates with respect to the linear order of segments. . . Specifically, there is a tendency to decouple sibilant noise from the rest of the speech stream, and this decoupling can result in dramatic misperceptions" (Blevins and Garrett, *ibid.*). The authors elsewhere provide (*31*) a useful table of stop + sibilant and sibilant + stop metatheses.

early Greek would thus have been highly unstable. Young speakers had trouble processing the form they heard; they were unsure, at some level, of the order of elements in the cluster, and they "expected" a [g^{u}-] that was phonotactically debarred from occurring before a sibilant but licensed after it. The result was the sporadic *one-step voicing-cum-metathesis of [$k^{u}s$-$\bar{e}$-] to [zg^{u}-$\bar{e}$-]* — a "morphological" speech error that, being more transparent than the form it replaced, lent itself to imitation by other speakers. Eventually, initial *$*zg^{u}$-* began to encroach on *$*g^{u}$-* in the historical full-grade forms as well. For the phonological change of *$*zg^{u}$-* to σβ- before front as well as back vowels, cf. García Ramón (1982: 102-4).[29]

§12. We can now take stock. *LIV* presents our verb as "*$*(s)g^{u}esh_2$-*," a root of the same morphological type as *$*leik^{u}$-* 'leave', *$*i̯eug$-* 'join', and *$*ĥleu$-* 'hear', with an active root aorist (allegedly seen in ἔσβη < *$*e$-*$sg^{u}esh_2$-*t*) and a nasal present (in σβέννυμι and Arcadian ζείναμεν < *$*sg^{u}es$-*nh_2-*). This account, as we have seen, is fundamentally flawed. In fact, *$*g^{u}es$-* (*sic recte*) was a bivalent root of the type *$*pek^{u}$-* 'cook/ripen', *$*dheg^{u}h$-* 'burn (tr.)/burn (intr.)', and *$*neĥ$-* 'destroy/perish', with a transitive *s*-aorist, a transitive thematic present (in the "inner" languages), and associated intransitive forms. The fit with the data is better under this interpretation than under the *LIV* account — so much better, in fact, that one wonders whether the editors of *LIV* would have pressed their "*$*(s)g^{u}esh_2$-*" theory at all if they had seen a way to avoid positing a contraction, and hence an active root aorist, for ἔσβη.

ἔσβη is admittedly a difficult form, and time alone will tell whether the metathesis-based explanation proposed here is correct. But there is also a methodological point to be made. In Anglo-Saxon jurisprudence there is a maxim, "Hard cases make bad law." The meaning is plain: the labored solutions that we contrive to difficult problems cannot be allowed to set the parameters for the solutions we find to simpler ones. In dealing with the facts and forms that have engaged us here, ἔσβη should be the place to finish, not the place to start.

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[29] A potential counterexample to García Ramón's rule, as Alan Nussbaum (p.c.) points out to me, is σθένος 'strength', if this goes back to *$*zghu̯enos$* (so Seebold 1983: 32). On the other hand, the clusters *$*zg^{u}$-* and *$*zghu̯$-* are not quite parallel, and the treatment of *$*zghu̯$-* could principle have been influenced by the maintenance of the sequence *$*seghu$-* or *$*zghu$-* (with syllabic *$*-u$-*) in related forms. Cf. Nussbaum (1998: 525 ff.).

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