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CONDITIONED DEVOICING OF MEDIAE IN PHRYGIAN

1. Introduction

1.1. There appears to be still no generally accepted answer to the question of whether any shift of Proto-Indo-European (PIE) mediae to Phrygian tenuis is to be countenanced, let alone whether there is any definable regularity governing such a shift. Although Innocente (1995: 214) considered that Lejeune's (1979) work had "portato ad abbandonare definitivamente la teoria che il frigio avesse subito una rotazione consonantica analogica a quella dell'armenio, dimostrando, su base etimologica, che le sonore rimangono immutate e che non si possono addurre esempi certi di sorde derivate da sonore", signs of doubt continued to manifest themselves well after 1979. Thus Neumann (1988: 4f.), while generally agreeing with Lejeune, finds that there are nevertheless some isolated, perhaps unreliable examples of such a shift. Polomé/Winter include in their anthology Neroznak's (1992) somewhat inadequate summary of Phrygian historical phonology with its provisions for devoicing of mediae. Duridanov (1993: esp. 67) has unshakable faith in an Armenian style sound shift and even dates it to c. 1000 BCE. Brixhe (1994: 171), like Gusmani (1.3. below), considers that any evidence purportedly supporting devoiced mediae can be ascribed to random orthographic variation. Orel (1997) is against any general shift but finds (p. 382) two inexplicable examples of devoiced mediae beside another two that conform to a rule (2.1. below). Lubotsky (1998: 420 fn. 22) regards such a shift as "a serious possibility" and repeats two well known examples.

1.2. Perhaps some of the uncertainty still surrounding the question arises from a major methodological deficiency in Lejeune's (1979) study, namely his confining his enquiry to the Old Phrygian period, a procedure that, for the following reasons, must be regarded as unjustified.

First, the material of both corpora is known to be limited in certain respects that are different for each. Thus there are several items of New Phrygian age with respectable etymologies containing /z/ ζ (*ζεμελως*, *ζελκια*, *αζην*, etc., Jāhukyan 1977: 209f.; Brixhe 1982: 241-245; Orel 1997: 381, 470), but none at

all from the older period. Similarly, the older period has a number of items spelt with the sign $\hat{\text{A}}$ which appear to have no counterparts in New Phrygian. Consequently the apparent absence of examples of devoiced mediae in Old Phrygian is no guarantee that they will not be found in New Phrygian.

Secondly, there is material containing stops that is common both phonologically and semantically to both periods of the language, such as *matar*, *edaes*, *vanakt-*, *batan*, *mekas*, *eneparkes* (cf. Brixhe 1993: 330f.), as well as *βεκος*, accepting Herodotus (2:2) record of the word as Old Phrygian. Had a consonant shift taken place in the intervening period it would surely have affected at least one of these words. The fact that they have not been affected suggests very strongly that this part of the phonology of the language is the same for both periods (cf. Brixhe 1983: 111).

It follows from these considerations that the question of the PIE mediae in Phrygian cannot be decided by looking at the data for only one period.

Finally, neither of the epigraphic Phrygian corpora has been completely elucidated so it is premature to conclude that material attesting devoiced mediae will never be found.

1.3. Lejeune (1979: 220 fn. 5) reports the judgment of Gusmani: “Si può solo dire che il frigio mostra qui di conoscere quel fenomeno di alternanze Tenuis/Media che é diffuso in territorio balcanico e micrasiatico.” It seems not to have occurred to anyone that there might be some discernible factor or principle conditioning these “alternanze”. An attempt to delineate such a factor or principle is the subject of the present contribution.

2. Conditions for devoicing of PIE mediae

2.1. The first serious attempt to discover some principle governing the apparent split of PIE mediae into mediae and tenues in Phrygian appears to be Orel's (1997: 382) rule **gn-* > *kn-* based on two examples, viz. (with some slight modifications):

(1) *κναικο*, *κναικαν* (116/W*-57)¹ (gen., acc.sg., resp.) ‘wife’ = Gk. *γυναικός*, *γυναικα* ‘id.’ < centum **g^wn-* < PIE **g₂n-*,² first noted by Brixhe/Neumann

¹ New Phrygian inscriptions are here identified by means of the traditional numbering system used by Ramsay, Calder, Haas, and others (see Lubotsky 1998: 413 fn. 2) except that these numbers are accompanied wherever possible by the numbers assigned to the inscriptions by Orel (1997), placed after a slash, in order to facilitate reference to that very usable, though naturally somewhat imperfect book. Old Phrygian inscriptions are numbered according to the system of Brixhe/Lejeune (1984) and Orel's (1997) continuation of it. Glosses are identified merely by reference to discussions of them in the literature.

² On **g₂*: as explained in Woodhouse (1998a with literature) I reconstruct PIE with two series of tectal stops which I call prevelars (*k₁*, *g₁*, etc.) and backvelars (*k₂*, *g₂*,

(1985: 174 f.)³ who suggested that there may have been neutralization of the voicing feature on the stop in this environment. If this were so it would be something of a puzzle that (a) the neutralized product should be heard as voiceless if, as these authors expect, the stop should be voiced⁴ and (b) the effect seems to be only demonstrable for PIE mediae.

An alternative view is that there was a tendency to weaken the voicing of *n* in the vicinity of certain stops, a view that is compatible with Lubotsky's (1997: 121) suggestion that **nt* yielded the voiceless geminate nasal [n̥n̥]⁵ in Phrygian.⁶ Weakening of the enunciation of *n* may be arguable for some other languages of Asia Minor as well, cf. the nonwriting of **n* before obstruent in Hieroglyphic Luvian.⁷

If the suggested etymology of *κναικο*, *κναικαν* is acceptable, then this word also attests early delabialization of the labiovelar media before *n*.

etc.). The prevelars develop into palatals and pure velars in the satem languages and into pure velars in the centum languages, while the backvelars become pure velars in the satem languages and pure velars and labiovelars in the centum languages. Thus pure velars have more than one origin in both these types of IE languages. The symbols *k*, *g*, etc., can be used to indicate these pure velars or as cover symbols when the precise series of the tectal need not or cannot be specified. The superficial treatment by Watkins (1997: 39) ignores the possibilities of delabialization in the *o*-grade and analogical levelling. The minuteness of the residue of uncertainty left by this bitectal reconstruction contrasts strongly with the abundant cases of Gutturalwechsel produced by the traditional tritectal theory. A further reduction to a single tectal series is no doubt possible (Speirs 1978, after all, reduces the entire PIE occlusive inventory to a single series of three labiovelars) but the assumption of two series – the two series indicated above – seems best warranted by the data.

³ Orel (1997: 382) shrewdly added *κνα* = Gk. *γνη* from Herzfeld's sketch of the Persepolis clay tablet, which was published by Haas (1966: 176), but the text is so fragmentary it is impossible to say whether this form is really recorded here.

⁴ Haas's apparently contrary example of word-initial media retained due to contiguous apical nasal, viz. "*gnaie*" (P-04) (see Lejeune 1979: 223), which was based on the now discredited theory of universal devoicing of mediae in Phrygian, is of course a ghost: Haas's *g* is now read *l* (Brixhe/Lejeune 1984: 237; Woudhuizen 1993: 13).

⁵ Lubotsky writes [n̥n̥], using the correct IPA symbols for voicelessness. Unfortunately these symbols are also commonly used in IE comparative linguistics to denote vocalic/syllabic resonants (instead of, e.g., IPA [ɲ]) and will continue to be so used here. Thus here *n̥* = vocalic/syllabic *n*; *n̥̥* = voiceless *n*.

⁶ The "Brygian" ethnic name *Δόλογοι* (Herodotus 6, 34; Stephanus Byzantius), spelt *Dolongae* by Pliny, may attest the weakened voicing of **ng* at an early date, but derivation from PIE **dlong^hos* 'long' does not appear to fit any current theory (pace Duridanov 1993: 65), since the claim by Bajun/Orel (1988: 176f.) that asperae (for this term see fn. 19 below) were devoiced in Phrygian has been sensibly withdrawn by Orel (1997: 377).

⁷ The same principle is also observable in Mycenaean Linear B, the Cyprian syllabary and Old Persian cuneiform.

(2) *κνονμαν(ει)*, etc. (passim, e.g. 3/W*-13) ‘grave’, in a commonly accepted meaning justified in reasonable detail by Haas (1966: 76):⁸ cf. Gk. *γνώμα* ‘means of knowing, sign, mark, token; judgment, opinion’, an equation first noted, according to Lubotsky (1998: 414 fn. 4), by Meister in 1905.

The value of this word as an example of Orel’s rule is undermined in two ways: first by Orel’s (1997: 61, 437) own alternative etymology, which was apparently hit upon simultaneously – and preferred – by Lubotsky (1998: 414 fn. 4), viz. Gk. *κνῶμα* ‘scratching’;⁹ and secondly by the fact that it comes under

⁸ I think Haas is right though I would justify the choice on statistical grounds. Thus *κνονμαν* is by far the commonest item for which protection is sought and therefore for most Phrygians must have represented the grave in general plus appurtenances, i.e. the burial in its entirety. I’m not sure exactly what distinctions Haas intends when he contrasts “Grab” (*κνονμαν*) with “Denkmal” (*μανκα*) and “Stele” (*τιαμα*) for an ordinary civil burial: presumably the intention in each case is to protect the person’s memory from injury in the most unambiguous way possible and the existence of variation in the item(s) for which protection is sought may indicate some idiolectal differences in the connotation of these items as representing the entire burial including the body, etc., of the deceased. Nor is *κνονμανει* ... *ἄωρῳ* ‘early grave’ an absolutely watertight demonstration since in Russian, e.g., *do groba* survives in the meaning ‘to the grave; until death’, but the usual meaning of *grob* is ‘coffin’. Cf., further, the Russian expression (*slezu prolit*) *nad rannej urnoj* ‘(to shed a tear) over the early grave’ in Pushkin’s “Evgenij Onegin” (6:22:9) which is placed by Vinogradov et al. (1956-1961, 4: 727 s.v. *urna*) under the metaphorical submeaning “simvol mogily, mesta pogrebenija praxa kogo-nibud’” (‘symbol of the grave, of the place of burial of somebody’s remains’) under sense no. 1. “sosud, obyčno v vide vazy, upotrebljavšijsja kak ukrašenie na mogil’nom pamjatnike” (‘vessel, usually in the form of a vase, used as decoration on the grave monument’); yet *urna* also has such prosaic meanings as ‘ballot-box’, ‘litter receptacle’, ‘refuse bin’.

⁹ It may, however, be noted that Lubotsky’s preference on the basis of semantics is shaky given the possibility of semantic shifts in this area, cf. again Russian *grob* = ‘coffin’ despite derivation from a root meaning basically ‘rake, shovel, row (a boat)’ (cf. *grebu gresti* ‘rake, row’, *sgrebu sgresti* ‘rake together; shovel off [snow from a roof, etc.]’) and further Russian *mogila* ‘grave’, including the pit into which the coffin is to be lowered, originally meaning ‘hill, mound’ (Vasmer 1986-1987, 2: 634 s.v.). Similarly misplaced is Orel’s insistence, evidently on the basis of etymology, that the meaning of *κνονμαν* must be ‘(inscribed) tombstone’ (obviously both ‘mark’ and ‘scratch’ point to a semantic development to ‘writing’). Equally groundless is Neumann’s (1986: 81f.) assertion that since *μαιμαρηαν* (31/S*-09) represents the idea of ‘memorial’ it is impossible for *μανκα* ‘monument’ to derive from the root **men-* with a similar meaning: cf. English *monument* which is not usually thought of as deriving from a root **men-* ‘rise high’, though many monuments in fact do just that, yet there is nothing incongruous about an English sentence that talks about erecting a monument in memory of or to commemorate some person or event. In fact, given the synonymy of English *views* and *thoughts*, it is likely that some of Pokorny’s (1959: 726-729) *men-* roots, in particular nos. 1. ‘emporragen’, 3. ‘denken; geistig erregt sein’, and (as Pokorny himself suggests) 5. ‘bleiben, sinnend)

the umbrella of the first of our new set of factors conditioning media devoicing in Phrygian (2.2.1. below). We retain it among our examples with due reserve if only because it does not contradict any part of our hypothesis.

Two more items need to be assessed in relation to Orel's rule. We shall come back to these when we have classified and considered the evidence that will enable us to incorporate this rule into a more general rule of media devoicing in Phrygian (see 2.2.5.1. below).

2.2. New factors conditioning media devoicing in Phrygian are listed, with the evidence, below. Apparent counterexamples that contribute to refinement of the conditions are also discussed. Other seeming counterexamples are dealt with in section 4.

2.2.1. Factor no. 1: the presence of *m* anywhere in the same word whether contiguous or not with the consonant to be devoiced. The devoicing process probably postdated the change of final **-m* > *-n*. Examples:

(3) OPhr. *mekas* (M-05) 'great' < **meg₁h₂s*¹⁰. Orel (1997: 27f., 382, 444) suggests devoicing by laryngeal but no other examples are cited; the word may also mean 'the elder' when coupled with anthroponyms, e.g. *apelan mekas* (M-05), *iman ... mekas* (P-03, P-04c); the several occurrences of the word on ceramics (G-111, G-147, G-239) speak against Brixhe's (1993: 331) assertion that the word denotes a monument or part of one.

(4) *τετικμενος* (passim, e.g. 2/W*-12; for the precise form of the participle cf. Lubotsky 1989a: esp. 81f., 85-87) 'cursed' – the best etymologies so far proposed contain at least one PIE media, viz. (a) Gk. *στίζω, στίγμα*- 'stab; mark' (Haas 1966: 88; "should be accepted, *faute de mieux*" – Orel 1997: 59) or (b) OIr. *tongid* 'swear' (Pokorny 1959: 1055) or (c) Gk. *δείκνυμι* 'point out, show' (Diakonoff/Neroznak 1985: 137). The proposal that **g* is devoiced in Phrygian in the cluster **gm* may seem strange to some when precisely the opposite happens in Greek (e.g. *πέπλεγμαι* for **πέπλεκμαι*), which is generally regarded as the language most closely related to Phrygian; but that closely related languages can differ sharply in their treatment of consonants, particularly in their phonotactics, is illustrated by Ukrainian vs. all other Slavic languages: most Slavic languages, like Greek, cannot in general tolerate differences in voicing

stillstehen' share a common origin anyway. A similar array of meanings is found with derivatives of the Arabic root *nzr*, e.g. 'see, look, compare, debate, wait; view, prospect, head, foremost rank; etc.'. (For more on the etymology of *κνονυμην* and the often discussed possibility of its relation to *keneman* see Appendix.)

¹⁰ Phrygian, like Greek, distinguishes three laryngeals in most positions: *-μεν-* (suffix of medio-passive participle) < **-mh₁n-*, *anar* 'man' < **h₂nēr*, *πατερης* 'parents' < **ph₂ter-*, *onoman* 'name' < **h₃/h₁nh₃m₁*, etc. (cf. Dressler 1968: 47; Beekes 1987: 2; 1988: 105; Neumann 1988: 11; see also fn. 36 below).

between adjacent obstruents, whereas Ukrainian, like Phrygian, can, e.g. *ž* and *k* in Ukr. *dužka* ‘handle; bracket’ (Andersen 1969: 157f.). Similar considerations apply to the next example.

(5) *γεγαριτμενος* (e.g. 33/C*-05) ‘devoted to, at the mercy of’, which Haas (1966: 209) reconstructs appropriately enough as **g^heg^harid-* though his reasons, as Lubotsky (1989b: 148) points out, are inappropriate. Lubotsky’s (ibid.) own attachment of the verb to Gk. *χάριτ-* ‘grace, glory, favour’ is a great improvement (and is followed closely, though perhaps rather ineptly, by Orel 1997: 252, 431) but its proposer has been excessively influenced by the form of the Phrygian participle. The corresponding Greek verb, as Lubotsky also mentions, is not ***χαρίσσω* but *χαρίζω* which, as is well known, goes back to **-δjω* or **-γjω* (Schwyzer 1939: 734, 735) and the Greek perf. mid. participle *κεχαρισμένος* focusses our choice on **-δjω* (Schwyzer 1939: 773). Hence the corresponding Phrygian verbal stem, if formed on the basis of an “old ... innovation common to both languages” (Lubotsky 1989b: 149), is basically not ***γ-αριτ-* but **γ-αριδ-*, i.e. Proto-Graeco-Phrygian (if there was such a thing) **g^harid-*,¹¹ and only in forms containing *μ*-suffixes will the stem have been changed to the attested *-αριτ-*.

(6) *κιμερος*. *νοῦς* if comparison with Alb. *zëmërë* ‘heart, etc.’ < **g₂emero-* (Haas 1966: 209) is appropriate; the labiality of **g^w-* < **g₂-* can have been lost early by dissimilation against the *m*. Georgiev (1981: 130), however, compares Skt. *cāyati* ‘watch, take care’; Diakonoff/Neroznak (1985: 116) compare Eng. *whim* (and Skt. *cāmati* ‘gulp’ on the basis of the semantic development of Gk. *φρήν* ‘diaphragm’ → ‘midriff’ → ‘heart’ → ‘mind’ → ‘reason’ → ‘soul’ and cf. Eng. *stomach* noun vs. *stomach* verb ‘swallow, tolerate’); cf. also Orel’s (1999) derivation from **κύμερον* ‘steer’.

2.2.1.1. Useful potential counterexamples are as follows.

(i) *Δίνδυμος* name of a mountain, which Pokorny (1959: 289) enters under **edont-* ‘tooth’. Assuming the word really is Phrygian (cf. Zgusta 1984: 162), i.e. that the loss of the initial vowel (< **h_l*) can be explained (see fn. 10 above), Pokorny’s treatment suggests a compound, and the unshifted **d* in the first element **dent-* suggests a late compound, one formed after the period of the conditioned media shift. The second element must contain **d^h-* in view of its *m*: **d^hūmos* ‘smoke, vapour’ is semantically appropriate.

(ii) If the first part of *δεκμονταη/ις* (9/W*-20 and 31/S*-09) contains **dek₁m* ‘ten’ (thus Orel 1997: 74, 422f.) then the nonshifting of the initial **d-* to ***t-* can be attributed to the fact that the /m/ in the word remained vocalic

¹¹ For the tectal cf. Skt. *hāryanti* ‘rejoice’, GAv. *zara-* if it means ‘goal, striving’ (Mayrhofer 1992-2001, 2: 804 s.v. *HAR*²); Brixhe (1982: 245) explains the lack of palatalization in the reduplicating syllable **g₁^he-* as due to analogical levelling.

throughout the period when the conditioned media shift was in progress. Thus we conclude that only the consonantal allophones of /m/ were capable of provoking the shift.¹²

The above etymological interpretation can be justified combinatorily as follows. Haas (1966: 103-105) is probably right to connect *δεκμονταις* in 9/W*-20 with ‘remembrance’ – better ‘length of remembrance’ if we accept the restoration published by Calder (1911: 169) of the last part of the Greek text accompanying this inscription, viz. *μν[ή|μη]ς ἀ[ιδ]ιότατον (ε)ἵνεκα* (literally ‘for the eternal sake of remembrance’ or ‘for the sake of remembrance eternally’). Consequently the second part of *δεκμονταις* is probably **wétos* ‘year’, or rather the zero-grade adjectival stem **-utés*, yielding the adjectival stem **dek₁mutés*, a compound formed no doubt posterior to the period of the conditioned media shift and subject to resolution of the internal hiatus by contraction of the offending vocalic elements to *-mu-*. In addition, the word was transferred to the first declension (much as in Attic *τριακοντούτης*, gen.sg. *τριακοντούτου* ‘thirty-year-old’) and doubtless substantivized, so yielding the attested dat./abl.pl. *δεκμονταν/ις* with the meaning ‘decades’.

This presumably ablative pl. form is governed in 9/W*-20 (and perhaps in 31/S*-09 as well) by the preconsonantal form *ε* of the preposition/preverb **eg₁^hs* ‘out of, through’ which, unlike the prevocalic form *εγ₁*,¹³ seems not to be attested elsewhere in Phrygian (on *εγδαε* in 18/W*-23 see 5.4. below). The resultant phrase ‘through the decades’ may have been a fixed expression meaning ‘for a very long time’.

2.2.2. Factor no. 2: the presence of word-initial or intervocalic consonantal **w* in the same word at the time of the shift (on *οβεγνω* see 2.2.5.1. below). Examples:

(7) *οοβιτετου* (2/W*-12) (3rd sg. imperat.) ‘let him see/find’ < **widerōd* (Georgiev 1981: 131; cf. also Diakonoff/Neroznak 1985: 142; accepted without comment also by Orel 1997: 59f., 468) for the meaning cf. Skt. *vindāti* ‘find one’s way, find, etc.’ belonging to the same root as Skt. perf. *veda* ‘know’, Gk. aor. *εἶδον* ‘see’ (cf. Mayrhofer 1992-2001, 2: 579f. s.v. *VED*). Haas (1966: 209) compares Lat. *vidētō* ‘id.’, though the vocalism of Gk. 3rd sg. aor. imperat.

¹² For a difference in the opposite sense between the effect of a vowel and that of its consonantal counterpart, cf. Turkish /i/, which conditions fronting of vowels in suffixes, while Turkish /y/ does not; thus *olsa idim* ‘if I were/became’ contracts to *olsaydım* (Attaoullah 1946: 113).

¹³ This is probably to be seen in *εγεδου* ‘perform, carry out’ (32/C*-04, etc.), perhaps also in *εγερε(τ)* (71/W*-38), and possibly in *egeset(i?)* ‘remove, take out (?)’ (P-04). This **eg-* certainly cannot have anything to do Gk. *ἄγω*, Skt. *ájati*, PIE **h₂eg₁-* ‘drive’ (pace Orel 1997: 250, 296, 426). For a similar dichotomy of forms cf. the cognates Gk. *ἐκ* : *ἐξ*, Lat. *ē* : *ex*.

**idētō* (reconstructible on the basis of the 2nd pl. *īdēte*) ‘let him see’ (cf. the late 3rd sg. perf. imperat. *idētō* ‘let him know’) would be more appropriate.

(8) *Tioç* (e.g. 32/C*-04) (gen.sg.), *Tie/η* (e.g. 2/W*-12, 6/W*-17) (dat.sg.), *Tiav* (e.g. 99/W*-51) (acc.sg.) theonym corresponding to ‘Zeus’ (Richard Meister in “Xenia Nicolaitana”, p. 166ff., reported by Calder 1956: xxix, thence by Heubeck 1987: 79f., and thence also somewhat unsatisfactorily by Lubotsky 1989a: 84f.; better statement in Lubotsky 1998: 420 fn. 22; apparently proposed independently by Haas 1966: 86; followed by Orel 1977: 58, 463), cf. Gk. gen. sg. *Διός* ‘Zeus’, Skt. gen.sg. *divás* ‘sky’, etc. (Haas 1966: 209; Georgiev 1981: 131). For the nominative Lubotsky writes “Tiyes” (cf. M-04), which is almost certainly unconnected with *Tioç*; Orel writes “Tis”. Perhaps better would be **Tius*.¹⁴ The intervocalic **w* was lost before endings beginning with *o* (cf. Lubotsky 1997: 126) and in some forms where **w* figured as the second element of a stem-final diphthong.¹⁵ It disappeared in other forms by analogy. There is thus no need for Witczak’s “Bithynian” solution (reported by Lubotsky 1997: 128 fn. 30). Note that NPhr. dat.pl. *δεωç* ‘gods’ is not affected because it is cognate with Greek *θεοῖς* < **d^hh₁sōis* (Lubotsky 1988: 15; 1998: 419 and 415 fn. 9 for the “decisive argument against derivation of OPhr. *devos* from **deiwo-*” due to the lack of monophthongization in Old Phrygian; pace Brixhe 1983: 123 where a protoform with vanished medial **w* is proposed).¹⁶

2.2.2.1. Devoicing did not occur if **w* was adjacent to the media. No doubt this was because it was vocalic if it came before the media, cf.:

(i) the river name *Γενδῖς* < **g₂^heud-* (cf. Neumann 1988: 20);

and was subject to syncope (or absorption if a putative **gw* shared the fate of **g^w* > *b*) if it followed the media (cf. also 2.2.4. below) cf.:

¹⁴ Possibly confirmation of this is to be found in the fourth century bowl inscription G-183, which consists of the two words *imeneia* and *tiveia*. Brixhe/Lejeune (1984: 157) connect the latter with the Paphlagonian anthroponym *Tiβ(ε)ιοç* and suggest that the former derives from the NPhr. anthroponym *Iuav*, gen. *Iuevoç*. But in fact nothing seems to prevent *tiveia* from being a similar derivative from our **Tius*, a possible rationale for this suggestion being that this is a dedicatory formula in which both words are possessive adjectives (probably fem.sg.) specifying that this possession of *Iuav*, the dedicator, is also/now a possession of the god **Tius* as well.

¹⁵ Cf. acc.sg. Skt. *dyām* ‘sky’, *gām* ‘bull; cow’, Gk. (rare) *Ζήν* ‘Zeus’: nom.sg. *dyáus*, *Zeús*.

¹⁶ As Diakonoff/Neroznak (1985: 140) point out, Georgiev’s (1981: 130) *ντν(ρ)* ‘water’ is a fabrication based on Plato’s remark in *Crat.* 410a. For *οττα* ‘curse; harm’ Georgiev (1981: 131) appears to be alone in suggesting a tenuous comparison with SerboCroat *uditi* ‘to harm’ – contrast the *-*t*- etymologies proposed by Haas (1966: 67, 87, 129), Diakonoff/Neroznak (1985: 108) and Orel (1997: 250).

(ii) the theonym *Δοιας* < *doi- < *dwoi- (Pokorny 1959: 229).¹⁷

This last change was part of the general elimination of *w when immediately following a stop¹⁸ – a process that appears to have lasted into the historical period of Phrygian (pace Orel 1997: 375, whose examples are nearly all Old Phrygian), cf. OPhr. *tvemes* (M-01d), with *w- retained following an originally voiceless stop.

2.2.3. Factor no. 3: the presence of the reflex of PIE labial aspera¹⁹ *b^h in the same word. Examples:

¹⁷ Polomé (1986: 186) notes that an expectation of initial **T- in this item can be countered by Haas's (1966: 162) suggestion that "the cluster *dw may have remained unshifted". But just as shifting promoted by *n* only occurs – somewhat surprisingly – when the *n* is adjacent to the target consonant, so Haas's suggestion is more likely to represent the same sort of prejudice that finds it difficult to accept devoicing in *κναικο* than a sober assessment of the facts. Polomé goes on to describe Bonfante's derivation of NPhr. *τοῦ* from PIE *duwō as "hardly cogent" but whether or not it is correct, it is phonologically unimpeachable, thus *duwō > (influence of *w) *tuwō > (syncope of *w before *ō) *tuō > *tuū > *tū = *τοῦ*.

¹⁸ Not *s or resonants, apparently, cf. 2.2.5.1. below on *sw-; and Brixhe (1983: 127) and Lubotsky (1997: 127f.) on *-rw in nom.sg. *ορῶν*, gen.sg. *ορῶντος* 'father'.

¹⁹ The term *aspera* replaces the fashionable "media aspirata". Since in Germanic and Armenian and to some extent in Phrygian the mediae are devoiced and the asperae are not, it is difficult to accept that the more strongly voiced asperae of pre-Germanic, pre-Armenian and pre-Phrygian had very much in common with the weakly voiced aspirates of Indic and pre-Greek. The Sanskrit-inspired term "mediae aspiratae" is thus inappropriate to characterize these consonants in PIE and it is therefore high time it was abandoned along with those other unhelpful ideas that were adopted with inadequate justification from Sanskrit grammar and subsequently found to have impeded the progress of Indo-European studies (on these see Mayrhofer 1983). While the reconstruction of the asperae as voiced aspirates is permissible for Greek, Italic and Indo-Iranian it is not so for Germanic and Armenian. For a number of reasons, including typological ones, I have proposed that these sounds be characterized as implosives and that they arose from a partial shift of the mediae during the PIE period (Woodhouse 1995; 1997). This is in harmony with the fact that PIE roots containing two asperae are common, yet in the only two languages in which aspirates are assured, viz. Sanskrit and Greek, one of the asperae in these roots regularly loses its aspiration in surface forms. It is true that Malayo-Polynesian comparative linguistics, in which actual implosives in some languages are found to correlate with partly voiced aspirated stops in others (Blust 1980: 147), could form the basis of an alternative hypothesis in which ancestral clusters of regular voiced stops with laryngeal are seen as the forerunners of the asperae, but I am not convinced that such a hypothesis would be particularly useful for Indo-European. For the time being, for the sake of simplicity and readability, I continue to use the aspirate symbolism. Alternatives worth considering would be the use of symbols like *b^b, *d^d, *g₁^g, *g₂^g or *b^H, *d^H, etc. (Actually a lot of diacritic problems could be eliminated if we could notate PIE with vowels *a aa e ee o oo*, stops *k g x, c j q, t dz*,

(9) *βεκος* (e.g. 33/C*-05) ‘bread’ whether < **b^hh₁gos* n. ‘baked’ (Panagl in Panagl/Kowal 1983: 186f.) or < **b^heg-* ‘break’ (Pokorny 1959: 114: “hat unerklärtes *k*”). For the semantics cf. Slovene, SCr. *kruh* ‘bread’, Cz. *kruch* ‘piece, chunk’, *kruchánek* ‘loaf of bread’, Russ. *krušit’* ‘shatter, destroy’; for a similar shift of meaning cf. also New Gk. *φέτα* ‘slice’ > ‘a kind of cheese’.

(10) *Βρύκης, Βρυκεῖς, Βρυκήοι, Βρύκαι* ‘Phryx’ < **b^hrug-* > Gk. *Φρύγες*, Macedonian(?) *Βρίγες* (Haas 1966: 19, 233), this last sometimes silently emended to *Βρύγες* (cf. Neumann 1988: 5f. fn. 8; Mallory 1997: 419) or equated with *Βρύγοι* (Chantraine 1968-1980: 1230 s.v. *Φρύγία*). Although the variants *Βρύκης*, etc., are not found until Stephanus Byzantius (fifth century CE?) some of them probably most nearly represent the Phrygians’ own form of their name in historical times (pace Brixhe 1993: 323). Evidently the first Greek acquaintance with the Phrygians took place before the Phrygians’ name for themselves had undergone the characteristic shifts, the first Macedonian contact preceding only the devoicing of the medial consonant (see Haas 1966: 19, 233; Duridanov 1993: 66f.).

(11) *Βαταν* (e.g. 33/C*-05), acc. of *Βας*, a deity = Mycenaean deity **Φας*, **Φαδος* (attested, in dat.sg., as *pa-de*, *pa-de-i*) as suggested, according to Lubotsky (1997: 124 fn. 12), by Witczak, whose “Bithynian” solution is, however, once again unnecessary (see 2.2.2. above, s.v. *Τιος*).

2.2.4. Factor no. 4: the presence of the reflex of PIE apical aspera **d^h* in the same word. Examples:

(12) *δαδιτι* (9/W*-20) (dat.sg.) ‘wife’ = Gk. *τηθίδι* (dat.sg.) ‘aunt’ (**d^hēd^hidi*) (Haas 1966: 209; accepted Frisk 1960-1970, 2: 891 s.v. *τήθη*; “in-certain” – Chantraine 1968-1980: 1113 s.v. *τήθη*); for the semantics cf. Russ. *baba* ‘(peasant’s) wife; (child’s) grandmother’; Alb. *motër* ‘sister’ = PIE **māt-r-* ‘mother’. Against Orel’s (1997: 75, 424 s.v. *do-*; and also Lubotsky’s 1989a: 79) interpretation of the word as a verb – which is certainly not “identical” with Skt. *dādāti* and Gk. *δίδωσι* (or indeed with either) since the latter are not identical with each other to begin with – is this: if the last Phrygian word in 9/W*-20 is indeed *ου(ε)κρα* ‘mother-in-law’, i.e. the wife’s mother, the mother-in-law of the grave-builder, then it seems odd that the mother-in-law should be given her proper designation but not the wife herself.

It also seems possible that in (18/W*-23) we have in *δαδον* a related form (gen.sg. ‘grandfather’?) rather than an anthroponym (2.2.6. below).

(13) *τιδρεγρονν* (e.g. 33/C*-05) ‘unsound, rotten’ if < **d(w)is-d^hreg^h-ro-*. For the prefix see Haas (1966: 209), Panagl (in Panagl/Kowal 1983: 187), the

p b v, resonants *i r l n u m*, fricative *s*, laryngeals *y h w* (*f*?), a total of twenty-eight [twenty-nine?] phonemes [*q* denotes an aspirated palatal stop in the current romanization of Mandarin].)

*w in the cluster *dw being lost before the devoicing, as we have seen (2.2.2.1. and fn. 17 above), and the *s being presumably lost in the cluster *sdr. The root is more problematic. Haas's (1966: 84) proposal of PIE *d^hreg₂^h- > Gk. *τρέφω* is acceded to by Panagl (loc. cit.) on the basis of Myc. *to-ro-qa* 'oil', a connection approved by Chadwick/Baumbach (1963: 251 s.v.) and later again by Baumbach (1968: 242 s.v.), but disregarded by both Frisk (1960-1970, 2: 927 s.v.) and, more significantly, Chantraine (1968-1980: 1135 s.v.), since the latter would obviously have had sufficient opportunity to mention it had he thought it worthwhile. Baumbach (loc. cit.) also mentions Doria's alternative equation of *to-ro-qa* with *τροπή* 'twist' (which strikes me as superior). An alternative root for *τιδρεγρον* is therefore PIE *d^hereg₁^h- 'firm, hold firm', cf., e.g., Av. *dərəzra*- 'firm',²⁰ etc. (Pokorny 1959: 254).

2.2.4.1. There is of course an alternative analysis of *τιδρεγρον*. This I believe can be shown to be untenable or at least unlikely. The facts are as follows. Already prior to Panagl's contribution Brixhe (1978a: 10f.) had suggested that the syllable *τι* was a separate word occurring consistently before the predicative participle or adjective in the apodosis of the curse formula, even though the precise significance of this particle appears not to have been satisfactorily determined. The idea that *τι* is a variant of *ετι*, already firmly rejected by Brixhe (1978a: 12f.) but promoted again by Heubeck (1987: 71f.), has finally been laid to rest by Lubotsky's brilliant (1989a: 79-82) demonstration that the commonly accepted and apparently fairly frequent (cf. Heubeck 1987: 72) "preverb" *ετι* of the apodosis is a fiction. More fruitful have been the suggestions that *τι* represents a strengthening particle based on the deictic *to- (Brixhe 1978a: 13f.) and that it once ended in a consonant, probably *-t or *-d, reflected in the frequent gemination of the initial consonant of the following

²⁰ The presence of an apparently alternative root *d^hereg₂^h- (e.g. Av. *dražaitē* 'hold, guide', etc.), listed by Pokorny (1959: 254), for which there are of course no forms with labialized velars, is, paradoxically, to be explained by this self-same Avestan word in terms of the Kortlandt/Meillet bitectal theory as improved and given proper typological backing by Woodhouse (1998a); i.e. it is precisely in words with an *r*-suffix that further fronting of the prevelar would have been inhibited, thus leading to a split between forms reflecting the usual assibilative development of the prevelar and those with an apparent backvelar. It is no more than a curiosity (and certainly not material for Stempel's discredited charge of "einander widersprechende Analogien" – see Woodhouse 1998a: 48) that the prevelar was levelled back into the Avestan word with *r*-suffix and generally flourished everywhere while the newly developed apparent backvelar survives only in Iranian and Slavic. Pokorny's inability or refusal to see this is but another unfortunate result of the inadequate tritectal theory.

word (Haas 1966: 88; Lubotsky 1989a: 87; Orel 1997: 58f., 461f. s.v. *tid*, where, incidentally, “C*-03” is a misprint for C*-05).

Indeed it seems to me one can go further and identify **tit/d* as a fossilized instrumental of **to-*, cf. Hittite *ap-it*, instr. of *apa-* ‘that one, he/she/it’ (Friedrich 1974: 67), with ablative/causative/resultative meaning: ‘because of this/that/it’, i.e. ‘because of the damage done to the grave, etc.’, or more simply ‘for this, for this act’.

It must be said, however, that while the presence of this particle is well established in the case of the participles *τετικμενος* and *γεγαριτμενος* by the gemination of their initials, it is not so well established in the case of the adjective (*τι*)*δρεγγουν*, as Lubotsky (1998: 420 fn. 22) now seems to admit with his suggestion that *τι* in *τι(τ) τετικμενος*, etc. be connected with Gk. *δια*, which Chantraine (1968-1980: 276 s.v.) regards as related to **dwis-* anyway. Clearly I am unable to join Lubotsky in this idea (since the vocalism and the gemination, as well as the rationale for the putative shift of the initial consonant of his *τι* all remain unexplained), though it does represent an advance over Lubotsky’s earlier view (1989a: 87) which included splitting *τιδρεγγουν* into *τιδ* and *ρεγγουν*.

This last idea was unconvincing because in all other instances the final consonant of the particle is either assimilated to the initial of the following word or dropped, and assimilation of stop to resonant is quite normal in Phrygian, cf., e.g., *αδ(δ)ακετ* > *αδακεν*, *αδδακεμ* before *με*, *μανκα* respectively (5/W*-16, 35/C*-07). Syntactically, too, the presence of *τι*, as I have interpreted it, makes sense in combination with the participles, since these refer directly to the person being cursed. It does not make sense with the adjective, which refers only to the bread. Cf.

‘may he be cursed/punished for this’

beside

‘may his bread be rotten’.

The addition of “for this” to the second phrase would introduce a jarring note in English (for this what? – for this meal?) and probably in Phrygian as well. Consequently I consider – now apparently with Lubotsky – that the case for splitting *τιδρεγγουν* into two words *τιδ* and *ρεγγουν* (why then not ***τιρρεγγουν*?) or *τι* and *δρεγγουν* has not been made.

2.2.5. Factor no. 5, a composite factor: the presence of the apical nasal *n* adjacent to the affected consonant together with some kind of reinforcement.

The two reinforcements observed so far, neither of which is capable of imposing voicelessness by itself, are:

(a) (onset) word boundary adjacent to the affected consonant (Orel's rule, 2.1. above) and

(b) the presence of the reflex of a PIE tectal aspera in the same word; example:

(14) ζετνα 'door, gate' (πόλη), cf. OE *geat* 'door, opening', Eng. *gate* < *g₁^hed(n)- (Pokorny 1959: 423 with the entirely superfluous suggested emendation of πόλη to πύγη 'mud').

2.2.5.1. This last (ζετνα) is also the first of the two additional examples mentioned above (2.1.) as requiring consideration in relation to Orel's rule. The other is the apparent counterexample:

(i) ονεγνω 'self-begotten' < *swe-g₁no- (Haas 1966: 53) in which the onset was still voiceless (*w̥) at the time of the conditioned media shift and so unable to effect any shift by itself or offer any reinforcement for this purpose to the *n* adjacent to the media.²¹

The inability of a tectal aspera to induce the shift by itself is shown by:

(ii) the river name Γενδης (2.2.2.1. above).²²

The inability of noncontiguous *n* to effect the shift is shown by:

(iii) αζενα, αζην, αζενον 'beard(ed)' (cf. Gk. γένυς 'chin, jaw', Lith. žándas 'jaw', Jahukyan 1977: 210; Brixhe 1982: 243);

(iv) benagonos (*g₂...g₁..., Lejeune 1979: 224) anthroponym?;

(v) (possibly) bonok (*g₂-?) anthroponym? (Lubotsky 1988: 12), 'wife'? (Woudhuizen 1993: 6).

The initial *b* in *benagonos* (and possibly also in *bonok*) testifies in addition to the impotence of adjacent word boundary by itself as an imposer of voicelessness.

2.2.6. Factor no. 6 (tentative): There is one further possible factor conditioning the devoicing of PIE mediae to be considered, namely the presence of consonantal *l* in the same word. The examples are κολταη (30/S*-08) and κολταμανει (18/W*-23), both of which may be from the same root.

²¹ Unless of course the word means 'self-killing' (*swe-g₂^hno-), in which case it ceases to be relevant.

²² This item has *g₂^h-. It would be possible to argue that the sonority of the prevelar would be slightly greater than that of the backvelar, hence devoicing in ζετνα and not in Γενδης, but it seems more probable that the difference would be too slight and that the effect of the nasal in ζετνα is crucial. In the absence of further evidence it is of course impossible to be certain.

The first word, *κολταη*, represents a disputed reading in a short, incomplete inscription. Where Haas (1961: 81; 1966: 118) reads *αυτω α(υ)τα* (so too Brixhe 1993: 330), Orel (1997: 328), acting on a suggestion of Calder's (1956: 39), reads *ακ κολταη*. Haas believes (almost certainly wrongly, cf. Lubotsky 1997: 127 on NPhr. *ονεβαν*) that the text contains a curse formula. Since there is so little to go on we must pin our hopes for an interpretation on the second form, *κολταμανει*, which of course contains *m*.

For *κολταμανει* (18/W*-23) Orel (1997: 84, 86, 438) has no interpretation. In fact despite much hard work and several ingenious suggestions by Haas (1966: 98-103; 1969: 84-87) and Orel (1997: 79-86) there is still some way to go before this longish inscription can be said to be well understood.

In particular Orel's decision to regard *δακαρ* as a 3rd singular of the perfect is distinctly unsatisfactory given that *r* is the constant marker of the 3rd plural of the perfect active in Sanskrit, Hittite, Tocharian and no doubt in Latin *fecere* as well, beside *fecerunt*. This last may contain a sigmatic desinence but more probably represents the inherited 3rd plural form analogically extended by a synchronically clearer plural ending (cf. also Beekes 1995: 238), just as Haas (1966: 112) has suggested for the apparently additional Phrygian 3rd pl. perf. *δακαρεν* (98/Dd*-01).

Questionable too are Orel's interpretation of *ματαρ* as a dative and his involvement of "the inexorable Mother", who is otherwise unheard of in New Phrygian epigraphy.

Haas's interpretation is much better thought through, even though he has nothing to say about the sequence ---οι with which the inscription opens. Moreover it is not certain that Haas's (1969: 86f.) segmentations and interpretations *μιμογα δις* 'Mimoga junior' and *κολτα μανει* 'sweet doll' are correct.

It appears not to have been suggested to date that *μιμογαδισ* may stand for **Μιμογαδος*, the genitive of *Μιμογας* – cf. for the divergent spelling *λεγκις* for **λεγκιος* and *κνουμεν* for *κνουμα[v]* in the same inscription and *κακιν* (14/S*-05) for regular *κακουν* (for older [?] and rarer *κακον*, e.g. 3/W*-13). *Μιμογας* would thus be a nominative.

I further perceive the possibility that the opening five letters of the text may be [τοι] οι,²³ i.e. [τοι] *ιοι 'those who (have built this tomb, etc., [are] ...)'. The difference between this suggested structure (i.e. the order *τοι ιοι) and that found in the curse formula opening with ιος (νι) and followed by an apodosis which sometimes begins with τος, etc. (Brixhe 1978a: 15f.) is probably due to its being in a declarative sentence, a type for which we possess far fewer data than for the conditional sentence. Evidence for the relative ι- following an ante-

²³ Not [σοι] οι: Orel (1997: 138f., 147), correctly, I think, ascribes a purely demonstrative, not a correlative, function to his reading of a pronoun σοι at the beginning of B-01. On the correlative in Phrygian see especially Brixhe (1978a: 15-21).

cedent is provided by *μανκαν ιαν εσταες* ‘stele (?) which (so and so) erected for (his) brother’ (31/S*-09, Neumann 1986: 80).

The portion of the inscription of interest to us here may now be read as follows:

- 1: [τοι] ρι κνουμα ετι δε αδα²⁴.μανκα-
- 2: ν μιμογαδισ ακενικου οκαυγοει
- 3: μιδακας δαδου λευκιωι δακαρ
- 4: λευκις μιμογας κε ε ματαρ ευγεζα-
- 5: ρνια(ει)κο τα τιαμα κνουμεν-τ ανε-
- 6: στας [for *ανεσταες?] ται κολταμανει ιος ...

The two phrases *μιμογαδισ ακενικου οκαυγοει* and *μιδακας δαδου λευκιωι* in lines 2-3 may indicate asyndetically the two people the tomb was built for, viz. Okauge(s?) (‘Eyegleam’) son/daughter(?) of Mimogas the Akenikos (cf. OPhr. *aken-anogavos* in M-01a) and Leukios son of Grandfather²⁵ (or Elder?) Midaka.

Our next step relies on the rules deduced by Brixhe (1978b: 1f.) and Lubotsky (1989b: 150f.; 1997: 122) for the syntax of the conjunctive particle *κε*. These allow the words following *δακαρ*, i.e. *Leuki(o)s* and *Mimogas*, to be either the names of two people joined by ‘and’ or parts of the name of one person joined to something else by ‘and’. This something else may be the preceding clause if the composite name stands at the head of its clause or it can be another anthroponym, provided it is likewise followed by *κε*.

In fact the idea that *Leuki(o)s* and *Mimogas* constitute a composite name is ruled out, first, because our hypothesis about the structure of the opening of the inscription has already placed the group in the tail of the clause without copula beginning [τοι] in which the clause **ιοι ... δακαρ* is embedded and, secondly, because there is no other name plus *κε* anywhere further along in the inscription, let alone suitably placed after the *Leuki(o)s* and *Mimogas* group (there is no chance of emending *κο* following *ματαρ ευγεζαρνιαει* to *κε* because *ε* in this inscription is large and rectangular, while *ο* is small and circular). We therefore have no choice but to interpret *Leuki(o)s* and *Mimogas* as the names of the two people who built the tomb.

²⁴ With *ετι δε αδα μανκα* cf. *αι ν(ι) αδα τεαμας* (14/S*-05) and *αι νι α|--* (43/W*-33). This *αδα* looks suspiciously like Gk. *ἤδη*, which according to Frisk (1960-1970, 1: 622) consists of *ἦ* ‘fürwahr’ and *δή* ‘eben’, which suggests some fitting meanings for the Phrygian particle, such as ‘indeed’, ‘especially’, ‘also’, ‘even more so’, ‘worse still’, etc.

²⁵ I.e. taking NPhr. **δαδος* as the masculine equivalent of Gk. *τήθη* ‘grandmother’ and cognate with Slavic **dědъ* ‘grandfather’ < PIE **d^hēd^hos* (cf. Chantraine 1968-1980: 1113 s.v. *τήθη*).

Mimogas may perhaps be (in apposition with) the mother of/from Eugexarnia (lines 4-5), but alternatively, and perhaps more likely, if $\varepsilon A \varepsilon i \kappa o$ means ‘it is/was A who (did such and such)’, we have a new sentence (partly following Haas): ‘It was Mother Eugexarnia who added ($\alpha \nu \varepsilon [\sigma] \tau \alpha (\varepsilon) \varsigma$) the *tiamā* to this (= - τ) tomb ...’, the *tiamā* being apparently a neuter plural signifying perhaps some object(s) dedicated to the god *Tius (2.2.2. above).

At this point in 18/W*-23 we come upon $\tau \alpha i \kappa \omicron \lambda \tau \alpha \mu \alpha \nu \epsilon i$, evidently a (rare?) feminine with the suffix * $m\eta$.²⁶ Feminine compound adjectival forms with this suffix (declined exactly like the masculine agent nouns with the same suffix) occur in the Vedas. From this fact Macdonell (1910: 206) concludes that such forms were once equally masculine or feminine so there need be nothing surprising about the morphosyntax of $\kappa \omicron \lambda \tau \alpha \mu \alpha \nu \epsilon i$.

Orel renders the phrase as a locative, “on $\kappa \omicron \lambda \tau \alpha \mu \alpha \nu$ ”, but it could just as easily be an original dative ‘for/on behalf of this family / this group of offspring / this generation’ (cf. $\beta \rho \alpha \tau \epsilon \rho \epsilon$ in $\iota \alpha \nu \varepsilon \sigma \tau \alpha \varepsilon \varsigma \beta \rho \alpha \tau \epsilon \rho \epsilon$, see above). If this is accepted then the presence of m in the word (2.2.1. above) makes possible the reconstruction * $g_2 o l t h_2 m \eta$ and connection with the root * $g_2 e l t h_2$ - (Pokorny 1959: 358 s.v. *gel-t-*), cf. Skt. *jathāra*- ‘belly, body, uterus, lap’, Goth. *kilpei* ‘womb’, Eng. *child*. The o -grade of the Phrygian protoform virtually guarantees a delabialized initial, quite apart from the evident delabialization in the Germanic words. The aspirate of the Skt. word can be explained by the root-final laryngeal reconstructed on the basis of $\kappa \omicron \lambda \tau \alpha \mu \alpha \nu$ (for the theory cf. recently Elbourne 2000: 3-7) despite Mayrhofer’s (1992-2001, 1: 565 s.v.) misgivings, which are not always well motivated (Woodhouse 2003a). (Connection with SerboCroat *glōta* ‘family; crowd’ may authorize reconstruction of the initial as * g_l with satem assibilation inhibited in the sequence * $g_l l o$ -, but may also be unwise.)

Orel proposes that $\kappa \omicron \lambda \tau \alpha \eta$ indicates the monument or some part of it, yet ‘for the child’ seems to suit his context just as well. If this is in fact the correct translation then $\kappa \omicron \lambda \tau \alpha \eta$ is related to $\kappa \omicron \lambda \tau \alpha \mu \alpha \nu$, so its voiceless initial could be due to analogy with this latter word. On the other hand if our etymology of the two words is acceptable, then the devoicing of the initial media is just as likely to be due to the effect of the consonantal resonant l .

2.2.6.1. If consonantal l is accepted as a devoicer of PIE mediae then, as in the case of $\delta \epsilon \kappa \mu \omicron \nu \tau \alpha i / \eta \varsigma$ (2.2.1.1. above), the vocalic allophone can be seen to be without effect in

²⁶ The feminine demonstrative cautions against the segmentation ** $\kappa \omicron \lambda \tau \alpha \mu \alpha \nu \epsilon i \omicron \varsigma$ even though the distinctly aoristic appearance of the verb $\varepsilon \gamma \delta \alpha \varepsilon \varsigma$ seems to speak against the idea that $\iota \omicron \varsigma$ here initiates a curse formula (see 5.4. below for further discussion of this clause).

(i) NPhr. *γελαρος* ‘sister-in-law’ which was derived from **g_l/h₂-* (rather than **g_lelh₂-*) by Woodhouse (1998a: 53) in order to account for the lack of assibilative palatalization of the initial consonant (possibly the resulting *e*-vocalism is a last vestige of the forward contact point of the prevelar).

Fick’s widely accepted emendation of *γελαρος* to **γελαφος* (cf. Haas 1966: 161) is unnecessary and not particularly insightful (though it does not necessarily compromise our analysis – see 2.2.6.2. below). If Eichner-Kühn’s (1976: 30f.) specification of the original form as **g_l/h₂-i-* is correct then it is likely that the competing forms in **w* and **r* point to a protoform **g_l/h₂-wer(-o)-* derived from this original by means of the suffix **-wer-* of **swek_l-wer-* ‘father-in-law’, **deh₂i-wer-* ‘brother-in-law’ (protoforms as in Mayrhofer 1992-2001, 1: 744 s.v. *devár-*). The **l* of the root then assisted in the dissimilative loss of either **w* or **r* of the suffix, depending on the language (cf., e.g., dissimilative loss of suffixal **w* in **swek_l-wer-* > **swek_ler* > Lat. *socer* ‘father-in-law’), followed in some instances by contraction, etc. In this way Proto-Phrygian **g_l/h₂-er-o-*, with neither **w* nor consonantal **l*, was already in place prior to the conditioned devoicing of the mediae.

2.2.6.2. A protoform **g_l/h₂-ew-o-* suiting Fick’s emendation (2.2.6.1. above) and not forcing devoicing of the initial mediae is tolerable on the basis that the devoicing effect of the actuating consonants does not extend over more than one syllable peak.

This tighter formulation of the condition is true for all the data supporting the conditioned media shift reviewed above, although some discussion is required with regard to *τετικμενος* (2.2.1. above) and *κολταμανει* (2.2.6. above).

The compliance of *τετικμενος* is secured simply by insisting on the comparison with Gk. *σίζω* or OIr. *tongid* and rejecting any connection with Gk. *δείκνυμι*.

The compliance of *κολταμανει* is secured by accepting *l* as an actuating consonant, but not simply for the obvious reason that the *μ* in the word then falls out of consideration. Acceptance of *l* means also acceptance of the evidence provided by **g_l/h₂-ew/r-o-* that the laryngeal remained consonantal until the period of the conditioned media shift was over, since otherwise the */l/* would not have remained vocalic. This same laryngeal must therefore also have remained consonantal in the protoform **g₂olth₂m_l* of *κολταμαν* so that the intersyllabic node nearest to the target consonant was **lth₂m*, i.e. it contained both *l* and *m*.

Thus we reach the useful, if paradoxical, conclusion that *l* and *m* can be regarded as acting in concert to produce devoicing of the **g₂* just the other side of the syllable peak in **g₂olth₂m_l* only if it is accepted that *l* is capable of achieving the same feat by itself (as in *κολταη* if this is a genuine word).

We note further that in terms of our hypothesis a reconstruction $*g_l/h_2w-o-$ for $*\gamma\epsilon\lambda\alpha\mathcal{F}o\varsigma$ is not possible because the $*w$ would then be in the next inter-syllabic node from the target consonant and as a consequence the g_l would have to devoice. Given therefore the need to reconstruct as a minimum $*g_l/h_2ew-o-$, it need hardly be emphasized that differential dissimilation from $*g_l/h_2wer-o- > *g_l/h_2er-o-$, as proposed above (2.2.6.1.) is the superior solution.

Incidentally, retention of consonantal laryngeals until after the conditioned media shift agrees with preliminary indications that vowel quality remained unaffected by laryngeals until after an initial phase in the palatalization of tectals by front vowels had been completed (see now Woodhouse 2005).

3. Discussion

3.1. Summarizing the above, we see that devoicing of PIE mediae in Phrygian is the result of voicing dissimilation in which weakly voiced consonants lose voicing in the presence of more strongly voiced (or more sonorous) consonants in the same word. Apart from certain chronological considerations, this statement is sufficient specification wherever the actuating consonants are the labial resonants m , $*w$, the anterior asperae $*b^h$, $*d^h$ and possibly the anterior resonant l .

The apical nasal n and the tectal asperae do not have sufficient sonority to achieve dissimilative devoicing of mediae in their vicinity without some assistance, either that of each other or, in the case of the nasal, that of word boundary adjacent to the stop. In any case, the apical nasal must itself be adjacent to the affected consonant.

Thus the mediae in *podas* (G-02) ‘feet’ and *dokseš* (Üyücek/W-11) ‘has given(?)’ derive regularly from PIE $*d$.

A relative chronology is given in section 6.2. at the end of the paper.

3.2. The hierarchy of voiced consonants causing the shift is essentially a straightforward articulatory one, i.e. the most effective consonants are those that make the greatest use of the oral cavity as a resonator. (That r was not involved in the shift is probably to be explained by the supposition that this consonant was retroflex as in Vedic [cf. Whitney 1889: 47] and thus employed a smaller portion of the oral cavity than $*d^h$, l and n .)

That the nasal n was less effective in this respect than the aspera $*d^h$ is somewhat surprising, although additional Phrygian support has already been cited (2.1. above) for the suggestion that n was in general relatively weakly pronounced in some parts of Asia Minor at the time of the shift. Alternatively (or in addition) this peculiarity may indicate that the asperae were in general

characterized by stronger voicing than the corresponding nasals, which in turn would suggest that the asperae at the time of the shift were either voiced spirants or implosives.

OPhr. *vrekun* might tip the balance of probabilities in favour of implosives since, if it is true that the initial *v*- remained sufficiently audible for the Greeks to transcribe it with β in the Hesychius gloss $\beta\rho\epsilon\kappa\upsilon\nu$, etc. (cf. Lubotsky 1988: 13; Orel 1997: 29, 469),²⁷ it may be considered unlikely that *vr*- would have remained distinct from *br*- in OPhr. *brateraiš* (Üyücek/W-11) if OPhr. *b* was also a continuant. Similarly the palatalization products of spirant *g*_l- (cf. Jāhukyan 1977: 209-212; Brixhe 1982: 241-246) may not have easily been kept distinct from OPhr. *y*. Although separately these arguments may not be very strong, together they may be considered as having some weight even if not quite decisive.

On the other hand if the asperae were spirants at the time of the partial media shift, the rule can be more simply stated in terms of anterior voiced continuants – for whatever that may be worth.

If the examples of **d^h* and *l* as actuator are to be eliminated, this might swing the judgment in favour of implosives again since the apical nasal would then be weaker in its effect only in comparison with the group of labial consonants. But until decisive evidence is found against the inclusion of apical consonants among the conditioners of the shift they – or at least **d^h* – should clearly be left in.

²⁷ Of the etymologies offered by Orel (loc. cit.) our analysis makes possible PIE **wreg₂-* ‘pursue, oppress’ (tectal specified on the basis of Lith. *vérgas* ‘slave’ with its acute pointing to PIE media rather than aspera, cf. the options offered by Pokorny 1959: 1181; on the question of Skt. *vrájati* ‘stride’ see Mayrhofer 1956-1980, 3: 276f. s.v.; 1992-2001, 2: 594 s.v. *VRĀJ*). Orel’s PIE **wreg_l^h-* ‘break’ appears to be nonexistent and his PIE **wrek-* ‘say, announce’ not universally accepted. For **wreg_l^h-* Orel directs the reader to Pokorny (1959: 1181f.), where, excluding the Armenian example (cf. s.v. *րհյյում* in Frisk 1960-1970, 2: 653; Chantraine 1968-1980: 972), one finds **wreh_lg_l-* ‘break, strike’, of which OPhr. *vrekun* could happily represent the zero grade. To be sure, Pokorny (1959: 1180f.) also lists **wreh₂g_l^h-* ‘strike, pierce’ (inexplicably broken up into two separate roots) but this (> Phr. **vrag-*) is phonologically unappealing. For **wrek-* Orel’s source is Pokorny (1959: 1162f.) whose connection here of Slav. **rěk-* ‘speak’ and Baltic (circumflex) **rēk-* with Germanic **wrōh/g-* is disputed by Lehmann (1986: 411 s.v. W 96. **wrohs*) who sides with Fraenkel (1962-1965: 716f. s.v. *rēkti*) and Vasmer (1986-1987, 3: 465f. s.v. *rekú, rečěš*), but Fraenkel and Vasmer’s connection of the Baltic-Slavic words with Skt. *racayati* is in turn questioned by Mayrhofer (1992-2001, 3: 424 s.v. *RAC*). A direct comparison of our Phrygian word with Slav. **rěk-* (if < **wrek₂-*) is of course possible since the long vowels in the Baltic and Germanic and some of the Slavic words may simply be due to affectivity.

3.3. The mechanism of the shift was probably a process of increasing polarization. In the vicinity of the more strongly voiced consonants the less strongly voiced were perceived as voiceless or nearly so and became increasingly more weakly voiced with each succeeding generation.²⁸

This mechanism is similar to the one I have proposed for devoicing of the PIE mediae in Germanic, Armenian and Messapic on the typological basis that plain voiced stops frequently have weak voicing in systems containing (voiced) implosives (Woodhouse 1995; 1996a: 37f.; 1997; 1998b: 218f.; 1998c; 2003c: 218, table 1, where “VIIIb D’/” should read “VIIIb D’n”).

Phrygian differs from the above languages in allowing devoicing only within the confines of a phonological word containing an actuating consonant or combination. Possibly the range of action of the actuating consonants can be defined more narrowly as extending over not more than one syllable peak. This latter restriction is obeyed by all the evidence brought above if *l* is included as an actuator; if *l* is excluded then *κολταμανει* becomes the only exception (2.2.6.2. above).

4. Additional apparent counterexamples

4.1. Apparent counterexamples involving *m*

4.1.1. Orel’s (1997: 250, 431) preferred etymological connection of NPhr. *γεγρ(ε)μενα/ον* ‘written’ with Gk. *γράφω*, *γεγραμμένος* ‘write’ is untenable: the proposed **g* would have to devoice, if not against the *m* of the participle then certainly against the medial **b^h* of the root. Instead (with Frisk 1960-1970, 2: 1120 if not Chantraine 1968-1980: 1277), the scorned Gk. *χρίω* ‘anoint, paint, etc.’ (PIE **g^hrei(s)-*) is semantically (cf. Russian *pisat’* ‘paint, write’) and phonologically an exact cognate (tectal not further specifiable since all satem cognates have *r* immediately following it, Pokorny 1959: 457).

4.1.2. There is no proof that the anthroponym **Μορδίας* deduced by Neumann (1988: 14) and allegedly representing PIE **mrd-* is any more a direct Phrygian inheritance from Indo-European than *Midas* is (cf. *ibid.*: 17), nor any reason why it should be. Neumann himself has repeatedly warned against overreliance on IE etymology when interpreting little known IE languages (cf. Neumann 1971: 156f.; 1987: 89f.; 1997: 27f.). An equally possible alternative would nevertheless be to derive **Μορδίας* from a PIE **morHd^hy-V-* (cf.

²⁸ For a slightly different acoustic argument relating to diachronic interactions of consonants in the same word see Faber (1986). For Egyptian transcriptional evidence casting doubt on Professor Faber’s explanation see, however, Woodhouse (2003b: 283-285 and fn. 28).

Pokorny 1959: 738) with development as in Gk. *τόλμα*, *πόρνη* (Beekes 1969: 239-241; 1988: 72), the rationale for the loss of the laryngeal in such cases seemingly now being given by, or discernible from, Hackstein (2002: 2f., 5f., etc.) as **CH.CC* > **C.CC*, i.e. the laryngeal is lost from the consonant clusters in members of the paradigms having the structure **tolh₂mn-V-*, **porh₂nh₂-V-*. Note, however, that *H* is not lost in the sequence *CC.HC*, e.g. in **g₂olth₂mḡ* (2.2.6. and 2.2.6.2. above).

4.1.3. OPhr. (acc.sg.) *duman* (B-01), NPhr. (dat. sg.) *δουμε* (48/W*-34; not the old reading ***δουμω* – Lubotsky 1997: 118, 125). Neumann (1999: 349f.; 2002) believes that this word is (a) the source of Gk. *δοῦμος* ‘religious association (of women)’, (b) cognate with Gk. *δόμος* ‘house; chamber’ and (c) native Phrygian. According to our analysis it cannot be both cognate with Gk. *δόμος* and native Phrygian. This impossibility is in keeping with the chief weakness of Neumann’s (1999: 350) analysis, which is that the proffered demonstration of **o > u* in Phrygian is inadequate since the examples involve either closed syllables (*κακουν*) or long *ō* (for *γλουρος* cf. Gk. *χλωρός*; for *μουνρου*/ν cf. Gk. *μωρός*) or are inconclusive (where is the proof of a connection between the Phrygian anthroponym *Νουμαδοας* and Gk. *νομάς*, *νομάδος*?).

A possible explanation for Phr. *duma-* is that it originated as a loan from Greek at a time when, despite the structural similarity of the vocalic systems of the two languages, Greek /o/ was so much closer than Phrygian /o/ that it tended to be perceived by Phrygian speakers as /u/. Phrygian /u/, however, was perceived by Greeks as /u/, hence *δοῦμος* was later borrowed back into Greek in that form with its new semantics. It is perhaps something of a morphological curiosity that Gk. *δόμος* should be borrowed as Phr. *duma-* and that Phr. *duma-* should be taken back again as *δοῦμος* but perhaps the Phrygian word was influenced in more ways than one by Gk. *δῶμα* ‘house, chamber’, misinterpreted as an *ā*-stem, and vice versa.

This explanation makes better sense of all the evidence that Neumann (1999) presents in favour of a relationship between the Phrygian and the Greek words and at the same time leaves room for Fauth’s (1989) contention that Phr. *duma-* turns up in the titles of certain officials of Mycenaean times. Since Neumann (1999: 349) believes the basic meaning of *δοῦμος* was indeed ‘house’ or ‘chamber’ his objection to Fauth’s proposal on the ground that Mycenaean *du-ma* “scheint ... eher im wirtschaftlichen als im religiösen Bereich zu liegen” (Neumann 1999: 352) is patently spurious – as is his quibble (ibid.) over the precise form of the partly concealed Mycenaean stem, given the morphological discrepancy between Gk. *δοῦμος* and Phr. *duman*, *δουμε*. The real significance of Neumann’s objections to Fauth’s equation is that the Old Phrygian evidence for the sequence *oNV*, cf. (from Brixhe/Lejeune 1984, 1: 283-286) *°agomoi* (W-

08), *benagonos* (G-116), *bonok* (W-01a), ^o*monokaua* (M-01c), *onoman* (W-01b), and for *oN* in closed syllables, cf. *a^hion* (T-02b), *kuryanayon* (W-01c), *natimeyonna* (W-05a), means that the hypothetical Phrygian raising of (short) **o > u* in open syllables required by Neumann's hypothesis must have occurred during the Old Phrygian period, whereas Fauth requires it to have occurred centuries earlier. The explanation of Phr. *duma-* as a Greek loan given here does not suffer from this disability²⁹ and so is superior on several counts.

Other explanations are of course possible. To begin with, Fauth's (1989: 196) semantic objection to Haas's etymology is also spurious: the development is not from 'Erdhaufe' to 'Grashaufe' to 'Volkshaufe' but from the basic idea of 'putting (together)' out to the various specialized meanings, cf. English *gathering*, a word that can mean anything from a puckering in a piece of cloth to an assembly of people meeting for a common purpose. To suggest that either of these specialized meanings was the starting point for the other would be patently absurd. So it is with Fauth's argument. Consequently Haas's **d^hoh₁-mos* is no more objectionable than Gk. *δόμος* as the source of Phr. *duma-* or *gather* as the source of *gathering*. (Better of course might be consonant stem **d^hoh₁m < *d^hh₁om* by laryngeal metathesis, cf. Gk. *χθον-* < **χθoμ-*, etc., Schwyzler 1939: 492.)

Another possibility, given the religious aspect of the Phrygian word, is common inheritance with NPhr. *δεως* 'gods', i.e. **d^hoh₁s-mos* with the same transfer to the *ā*-stems. The older connection with Goth. *domjan*, OE *dēman* 'judge' (cf., e.g., Fauth 1989: 196f.) is another alternative since this is the probable source of Russian *duma* 'thought, idea' and 'legislative assembly', a semantic combination that prompts the further suggestion of a relationship with the prototype of Gk. *θῆμός* 'mind, spirit, thought'.

All in all though, Lubotsky's pronouncement that the "origin of the term **duma-* cannot be determined" (1997: 125) is probably still the one nearest the mark.

4.2. Apparent counterexamples involving **w*

4.2.1. OPhr. *lavagtaei* (M-01a) is exceptional either because it is a loan (Kowal in Panagl/Kowal 1983: 193; Neumann 1988: 16) or because it is a compound *lav-ag-*, or both, and therefore will have been formed and/or borrowed after the shift had taken place.

4.2.2. The word *βέδν* meaning 'water' in the Orphic Fragments, but 'air' in the fifth century poet Philyllius is very likely not Phrygian at all: Duridanov (1993: 65) reports Dečev's view that this was probably "also" the Thracian

²⁹ It is beyond the scope of the present paper to investigate whether other scholars' concerns regarding Fauth's idea have the same basis as Neumann's.

word for ‘water’; cf. also Neumann (1988: 20) on the tendency of the Greeks to apply *Φρύγες*, *Φρυγία* to anything from Asia Minor.

4.3. Apparent counterexamples involving **b^h* (or *l*)

4.3.1. According to Blažek (2002: 205), the debate between Schmitt (1963) and Heitsch (1968) over whether the part of the Hesychius *βαγαιος* gloss referring to Zeus really belongs with *βαγαιος* or with *βαλαιος*, was settled in Heitsch’s favour by the appropriate segmentation and interpretation of OPhr. *bagun* (G-136) in the late 1970s (cf. Neroznak 1978: 104; Lejeune 1979: 223f.) because this word “speaks for the native origin of the form with -g- ... the Phrygian root **bag-* is probably unborrowed, but its primary semantic motivation remains indeterminate” (Blažek 2002: 205).

Apart from the final remark on the semantics, this is a curious judgment. To begin with, the occurrence of a word in a text does not prove its native, unborrowed origin. Secondly, it is not clear in what way *bagun* and *βαγαῖος* support each other. Did the Phrygian deity have related names of differing structure in different dialects, like the Semitic Elohim and Allah? Or did the Phrygians have two deities with similar names? – Surely in this latter case the two names would not support each other at all. – Or again, is *βαγαῖος* an epithet made from **bago-* (cf. *ὁδαῖος* to *ὁδός*, *σκοταῖος* to *σκότος*, Schwyzler 1939: 467)? If so an epithet of whom? Zeus? I.e. was *βαγαῖος* *Ζεύς* (or **Tius*? – 2.2.2. above) an alternative way of referring to **Bagos*?

But perhaps the epithet really was *βαλαῖος*. Schmitt, after all, does demonstrate on the basis of Bithynian-Paphlagonian inscriptional *ΔΙΙ ΒΑΛΗΩ* the existence of an epithet of Zeus essentially equivalent to *βαλαιος* – for the slightly divergent vocalism (*η* : *αι*) cf. Brixhe/Neumann’s (1985: 175) tentative identification of NPhr. *εκατηας* with the gen. of *Ἐκαταία*. Given this fact, Schmitt’s inability to find a suitable etymology should not be allowed to weigh too heavily in the balance in deciding which of the two forms is the correct one.³⁰

On the other hand the question of the etymology is of the greatest importance in trying to determine whether this item, in whichever reading, is a counterexample to our hypothesis.

If *βαγαῖος* is taken to be the correct reading and *bagun* is held somehow to support it – in short if *bagun* is taken to be a divine name based on PIE **b^hag-* ‘eat(?), distribute(?)’ or **b^hāg-* ‘tree with edible nuts: beech; oak’, then, in

³⁰ Schmitt’s (1963) attempt to do this, however, is quite inconclusive and really reduces to fiddling with the meaning of the suffix. Thus *βαγαῖος* said to have the “unsuitable” meaning “zum Anteil, zum Glück gehörig” (p. 41) while *βαλαῖος* has the “suitable” meanings “der mit Kraft begabte”, “der von Glanz umgebene” (p. 46). Whether “der mit Glück begabte” in the sense of “der über das Glück verfügende, der das Glück verteilende” would be possible or suitable is not entered into.

accordance with our analysis, it is either not native or its phonological development, i.e. the expected devoicing of its medial consonant, has been disturbed in some way. That this disturbance was not simply a matter of the word being a theonym is suggested by the two theonyms (gen.) *Τιος* and (acc.) *Βαταν* (2.2.2. and 2.2.3. above).

The inscription containing *bagun* is tentatively dated to the sixth century BCE (Brixhe/Lejeune 1984, 1: 124) which, given the absorption of Phrygia (as part of Lydia) into the Persian Empire of Cyrus II c. 550 BCE, makes it, I think, quite possible for the Old Persian form *baga-* ‘god’ of the ‘eat’ root to have been adopted and naturalized by the Phrygians or to have influenced their native form by the required date.³¹

Alternatively, given that the Phrygian name *Midas* derives from Hitt. *Mita* (Neumann 1988: 17), apparently with Phrygian voicing of the nongeminated medial consonant, it seems possible that the Lydian theonym *Baki-* ‘Bacchus’ (Blažek 2002: 205), given further the rarity and uncertainty of Lydian *g* (Gusmani 1964: 72), may also have had the necessary effect on Phr. *bagun*, provided of course that we can assume the existence of *Baki-* in Lydian well over a century before its first datable occurrence c. 400 BCE in inscr. no. 1 (Gusmani 1980: 16).

One way or the other we seem to have sufficient data casting doubt on the ability of Phr. *bag-* to offer a serious challenge to our hypothesis of media devoicing.

This still leaves the possibility of an independent theonym or divine epithet *βαλαῖος*. Of the two etymological suggestions of Dečev’s entertained by Schmitt (1963: 46) PIE **belo-* ‘strength’ can be ruled out immediately on the grounds of vocalism,³² as Schmitt himself was aware but unwilling to concede. Schmitt’s discussion of the other item, Skt. *bhāla-* ‘splendour, lustre; forehead, brow’, is largely vitiated by reliance on the old connection with PIE **b^hel-*.³³

³¹ It may well have been around this time that the Iranian form of the word also had its impact on Slav. *bogъ* ‘god’ (Woodhouse 1996a: 32f. and fn. 10; 1996b). In a recent study Schlerath (2001: 286f.) decided on semantic and cultural grounds that the Slavic word must be an Iranian loan. Holst (2003: 168) comes to the same conclusion on phonological grounds and is probably right though some aspects of his study are disturbing, in particular, the fact that extra-Balto-Slavic evidence supporting Holst’s claim that Winter’s law of acuting in Balto-Slavic only operated on originally accented syllables seems to be either inadequate or totally lacking. Instead the study seems to show that Winter’s law usually manifests itself in tonic syllables in historical Baltic and Slavic. Rasmussen (1992), in a much more formidable study than Holst’s, comes to an almost diametrically opposed view.

³² Unless the /l/ is held to have been vocalic, in which case, as with *γελαιος*, it still presents no problem for our analysis.

³³ Even this may be phonologically more and semantically less problematic than Schmitt suggests. After all, the reasons for the useful-looking *a*-vocalism of Gk.

instead of PIE **b^heh₂-* ‘shine, illuminate, clarify, speak’ (Mayrhofer 1992-2001, 3: 368 s.v.; 2: 260 s.v. *BHĀ*), which means, among other things, that the late attestation of *bhāla-* becomes relatively meaningless. From **b^heh₂-* by means of the suffix **-leh₂-*, which forms substantivized verbal adjectives denoting entities embodying or facilitating, or produced by, the action of the associated root,³⁴ can be unimpeachably derived pre-Phr. **b^hā-lā-* ‘light, glory, splendour’, the direct source of **bālā-y-o-s* ‘possessor of light, glory, splendour’. In this word the original **b^h-* would not of course be subject to devoicing even if it is agreed that *l* is efficacious in this respect.

Thus the reading of the gloss as *βαλαῖος* offers as little challenge as *βαγαῖος* to our hypothesis of conditioned media devoicing in Phrygian.

5. Miscellaneous

5.1. *ατω* (inscr. 49) does not belong here at all because the word, like the entire inscription itself, is without any doubt (bad) Greek (cf. Dressler 1968: 45; Neumann 1987: 91f.; pace Haas 1966: 209).

5.2. There is no necessity to derive the “Brygian” anthroponym *Τορκο(υ)ς* from PIE **(s)torg-u(-o-)s* (pace Duridanov 1993: 64); the name can just as easily be based on PIE **terk₂-*/**tork₂-* ‘turn’.

5.3. The antiquity of the “Brygian” river name *Erginos* < **h₁rg₂inos* cannot be gauged from the fact that it exhibits unshifted *g* (pace Duridanov 1993: 67).

5.4. It will no doubt be urged against the conclusion reached near the end of 2.2.1.1. above, that, on the contrary, PIE **eg_l^hs* has more than once been reconstructed for the preconsonantal *εγ* of *εγδαες* in 18/W*-23, the relevant section of the inscription being readable, partly with Haas (1969: 84-87), as: *ιος μουκρα*/[*ιο*]ν *λατομειον εγδαες μουρσα* | *αι νι κος* ... (see 2.2.6. above for the earlier sections of this inscription).

φαλός ‘white’, Arm. *bal* ‘pale’ and the equally useful-looking lengthened vowel of Slav. *běl-* ‘white’ appear to be unknown and therefore not transferable to any putative Phrygian word without further ado. On the other hand the ‘wetlands’ words based on this root no doubt indicate that it once meant, or was capable of meaning, more than just ‘white’; cf. also NHG *blank* meaning both ‘shining’ and ‘white’.

³⁴ Cf. Gk. *σπρέβλη* used of various machines employing turning and twisting, e.g. ‘winch’ : *σπρέφω* ‘turn, twist’, *ζεύγλη* ‘loop attached to yoke through which the animals’ heads are put’ : *ζεύγνυμι* ‘yoke’, *τρώγλη* ‘hole produced by gnawing’ : *τρώγω* ‘gnaw’, *αἴγλη* ‘splendour’ : (source verb unknown; cf. also Chantraine 1968-1980: 30 s.v.; Frisk 1960-1970, 1: 32 s.v.) (Schwyzer 1939: 483).

First it must be emphasized that the beginning of the malediction of 18/W*-23 is marked by the words *αι νι κος* ... (at the end of the section just quoted) which mean ‘if ever anyone ...’ with *αι* ‘if’ homonymic to *αι* ‘or’, cf. *αι κος* ‘if anyone’ in 64/C*-18 (Brixhe 1978a: 18f.; 1978b: 22) and most probably in 72/C*-19 as well. It thus differs from the commoner opening with *ιος νι* or plain *ιος* ‘who(so)ever’ (cf. Brixhe 1978a: 15f.). Consequently the *ιος* clause is not part of the malediction here.

Orel (1997: 84, 86) recognizes this fact and interprets *εγδαες* as an aorist indicative of **eg_l^hs* + **deh₃-* ‘offer, give out’; but, given the unexplained, though noted, lack of augment together with the improbable root vowel, Orel’s suggestion is unconvincing.³⁵

Haas (1966: 102; 1969: 87) interprets *εγδαες* as ‘exciderit’, i.e. as a future (or subjunctive?) of **eg_l^hs* + **d^heh₁-* ‘do away with’, which more or less takes care of the vocalism and explains the partial structural similarity to the OPhr. aorist *edaes* and the lack of augment; but of course is still unconvincing because, apart from the fact that the clause is not the protasis of a Phrygian malediction, this is not the kind of verb otherwise found in such protases.

Although Diakonoff/Neroznak (1985: 109) manage without PIE **eg_l^hs*, their interpretation of “the unreliable reading of O. Haas” of *εγδαες* (the reading is actually due to G. Maresch, see Haas 1966: 101) as < **g^{wh}d^(h)ey-* ‘destroy’ < **d^hg₂^hey-* likewise inspires little confidence since, apart from the difficult vocalism (one expects a root with *h₂* or *eh₁*), we seem once again to be contemplating the protasis of a malediction.

In view of the semantic divergence between these derivations it is not impertinent to suggest that *εγδαες*, an aorist, may be connected with the phonologically exact equivalent Gk. *φθάνω*, (aor. 1) *ἔφθασα*, (aor. 2) *ἔφθην* ‘anticipate, precede’, which, following Chantraine (1968-1980: 1197), we can reconstruct with the root **d^hg₂^heh₂-* ‘come first, arrive at first, reach first’.

Since *λατομειον* is essentially a Greek word meaning ‘tomb’ (as well as ‘stone quarry’) it seems that this sentence states that someone other than the two people the tomb was originally intended for was buried there first. Possibly *μουκρα[ι]ον* is used of the tomb to mean ‘freshly dug’ or ‘freshly built’ or ‘awaiting occupancy’, in which case there are a several possible supporting IE etymologies (some of which may be related), viz. **mewk₁-* ‘scratch’, e.g. Lat. *mucrō* ‘sharp point, spear, sword’ (Pokorny 1959: 745), **mũk-* (only centum, hence tectal not further specifiable) ‘heap’, e.g. the Hesychius gloss *μύκων* · *σωρός θημών*, OHG. *mũ-werf* ‘mole (burrowing animal)’ (ibid. 752), and (if necessary with devoicing by the initial *m-*) **mewg₂-*/**mewk₂-* ‘slippery’, e.g.

³⁵ Orel reads *μουκραν* = **μικραν* ‘small’ for *μουκρα[ι]ον* and regards *ιος μουκρα[ι]ον* *λατομειον* as a parenthetical explanation, viz. “that is, a small stone slab”, which is surely an odd explanation to find embedded in a funerary inscription.

Latv. *mukls*, *muklains* ‘boggy’, Lat. *mūcor* ‘(fungal) mould’ (ibid. 1959: 744f.) (Eng. *mould* ‘earth, soil’ has, however, a different origin), and perhaps even **mewg-* (only centum again) ‘lie in wait’, e.g. OHG. *muhhōn* ‘lie in wait’, MHG *mocken* ‘lie hidden’ (ibid. 743f.). Perhaps *μουκρα*[ι]ον is thus a derivative of a substantive **μουκρα/o-* meaning, e.g., *‘damp, freshly dug soil’.

Finally, *μουρσα* is presumably an anthroponym perhaps related to Pisidian names like (masc.) *Μορσις*, *Μορσιανος*, (fem.) *Μορσανδα* (Zgusta 1964: 139) and is thus the name of the first person buried in the tomb.

Thus the entire phrase *ιος μουκρα*[ι]ον *λατομειον* *εγδαεξ* *μουρσα* either depends loosely on the correlative [τοι] reconstructed at the beginning of the inscription or stands alone and means ‘(the person) who first came into the newly made tomb (is/was) Mursa’.

6. Conclusion

6.1. To sum up: in pre-Phrygian the PIE mediae became less strongly voiced than the corresponding asperae because the latter were or became implosives. Later, when the reflexes of the asperae were either still implosives or had developed to spirants, the partly devoiced mediae became fully devoiced in the following situations:

- (1) when the target consonant was in the same word as the reflex of at least one of the following PIE anterior voiced consonants: (non-final) **m*, **w*, **b^h*, **d^h*, and possibly **l*;
- (2) when the target consonant was adjacent to the apical nasal **n* within the same word and, at the same time:
 - (a) was also adjacent to word boundary or
 - (b) was also in the same word as the reflex of a PIE tectal aspera **g^h*.

Note (i) that nothing in condition (2) overrides condition (1), i.e. proximity of a PIE media to *n* does not inhibit devoicing by a more sonorous consonant; (ii) that only consonantal (not vocalic) allophones of resonants were capable of inducing devoicing, and (iii) that the phrase “in the same word as” in both the above formulations should probably be replaced by “in the same word as and within one intersyllabic node of”.

For discussion see section 3. above.

6.2. The relative chronology of the changes dealt with above is given below. For convenience additional processes deduced from my companion study of palatalization of tectals in Phrygian (see Woodhouse 2005: 228) are added in

square brackets (some of the details presented here are theoretical constructs based on symmetry and are not supported by actual data).

- [1. $K_2 > K^o$]
- [2. $uK^o > uK_l (/uK^o)$]
3. $K_l > K$
- [4. before e/i : $K > c j j^h$]
5. $K^o > K^w / K$
6. [before e/i : $K > k \acute{g} \acute{g}^h > k \acute{g} j^h$
otherwise: $K > k g \acute{g}^h$]
7. $K^w > [k^w] b g^h$
 $sw- > (s)\acute{w}-$ (voiceless w)
 $dw > d$
 $-m > -n$
8. $D^h > 'D$ ($'D = 'b 'd ['j 'g$), i.e. formation of implosives (or spirants)
[$eH > eh_l, ah_2, oh_3$, etc.]
9. $D > D / T$ ($D = b d [j \acute{g}] g$; $T = p t [c k] k$) as per 6.1. above
10. $\acute{m} > am$; $\acute{m}V > mV$
 $\acute{l} > el$ after reflexes of PIE prevelars
[$\acute{n} > a$ before consonants, otherwise an]
- [11.] $'D > D$
 $H > e a o$
[$c j > s z$]
[$k \acute{g} > \uparrow *z$]
- [12.] $\acute{w}- > w-$
[$k^w > k$]

Appendix. More on the etymology of *κνουμεν* and *keneman*

If *κνουμεν* = *γνῶμα* the original meaning may have been ‘memorial’. Those who have difficulty reconciling the notion of ‘knowing’ (cf. PIE $*g_1neh_3-$ / $*g_1enh_3-$) and ‘thinking, remembering, memorial’ (cf. PIE $*men-$) may compare Eng. *can* ‘be able, be capable, be possible, be permitted’ : Alb. *mund-* ‘id.’; NHG *Kunst* ‘art; craft’ : Lith. *mėnas* ‘art; proficiency, craftsmanship’; Gk. *γνῶμα* (also *γνώμη*) ‘means of knowing, mark, token; judgment, opinion’ : Russ. *mnenie* ‘opinion’, Eng. *mind* ‘way of thinking, judgment, opinion’. They may also consider that some of the emotional content normally reserved for the $*men-$ family can be seen in Russian *znamja* ‘banner, standard, flag’, which is phonologically also = Gk. *γνῶμα*.

While Lubotsky (1998: 414 fn. 4) may be right to rule out Brixhe/Neumann's (1985: 172) "croisement entre le phrygien *keneman* et le grec κένωμα" as the etymology of κινουμαν, the alleged hapax NPhr. κινουμαν (9/W*-20) itself may well be the product of some such contamination if the ι is not merely, as Orel (1997: 73) believes, an accidental scratch.

Regarding the possibility of a more direct phonological connection between κινουμαν and *keneman*, it must be said that the latter is not directly relatable to either κνῦμα (loss of *u/w surrounded by resonants *n*, *m* is not proved) or γνῶμα since, if Phrygian is comparable to Greek in this regard and if Sihler (1988: 554), following de Saussure, is right in saying that θάνατος represents an analogical reworking of the *e*-grade, such a connection would require an unusual levelling from ***kenoman*. The alleged form κονομα[discerned by Haas (1966: 111) in the tiny remains of the allegedly Greek portion of 30/S*-08 may indicate the expected levelling or the alternative zero grade, cf. OPhr. *onoman* 'name' < **h₁(e)nh₃mḡ*³⁶ (cf. Neumann 1988: 11). The only other instance of apparent levelling in both directions in this kind of structure seems to be Gk. βάραθρον/βέρεθρον 'gulf, cleft, pit'. Chantraine (1968-1980: 164 s.v. βάραθρον) proposes that the *α*-version continues the zero grade, the *ε*-version the *e*-grade of the root **g₂erH* in Lat. *vorāre* 'devour' but Mayrhofer (1992-2001, 1: 469f. s.v. *GAR*¹²) reconstructs the root of the latter as < **g₂erh₃* on the basis of Gk. βιβρώσκω 'eat, devour', βρωτός 'edible', which would lead us to expect ***βόροθρον* not βάραθρον.³⁷ The example must therefore be regarded as unreliable so that there is in effect no support for a putative development *keneman* < ***kenoman*.

Finally, as Mayrhofer (1992-2001, 1: 446 s.v. *KHAN*¹-) saw, the etymological connection with Indo-Iranian **k(h)an(i)*- 'dig' proposed by Haas (1966: 76) for both κινουμαν and *keneman* really only works for one of the two. Naturally I agree with Mayrhofer's choice of *keneman*.

³⁶ This is preferable to Beekes's (1987: 1f.) ***h₃nh₃mḡ* since Beekes's argument that the first syllable of OPruss. gen.sg. *emnes* is zero grade is not binding: the form can easily represent the *e*-grade seen in acc.sg. *emnen*, cf. Gk. ἐννομα- in PN such as Ἐννομακρατίδας (Liddell/Scott 1940 s.v. ὄνομα).

³⁷ For a recent analysis of some of the voluminous literature on this topic see Rico (2000); cf. also Mayrhofer (1986: 129) and Hoenigswald (1988: 207f.). Lindeman's (1989: 283f.) reservations about Hoenigswald's desire to locate the differences in PIE are well taken but many of Lindeman's objections to advances in this field seem to be based on the assumption that the laryngeals were necessarily fricatives; these objections can easily be laid to rest if the sounds in question are regarded as approximants, cf. the voiced velar approximant (< PIE *-s) that in Sanskrit underlies the sandhi -as (or -ah) > -ō in context before any voiced initial.

Postscript. Approximately two years after the above was written the very able paper of Alexander Lubotsky (2004), “The Phrygian Zeus and the problem of the ‘Lautverschiebung’”, *HS* 117:229-237, has come into my hand. Although Professor Lubotsky does not mention the conditioning factor of “supervoiced” consonants, he considers some of the same data as I have and contributes in addition: (1) a supporting example of devoicing in the presence of *l* (viz. *lakedo* in W-01b and B-03 “cf. Gk. *λαβεῖν?*”) and (2) an example of an initial media devoiced by noncontiguous *n* (viz. *κενα* in 35/C*-07 < **g₁enh₁os-*) which may require a rethink of the conditions as they pertain to *n*.

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References

- Andersen, Henning, 1969, Indo-European voicing sandhi in Ukrainian, *Scando-Slavica* 15: 157-169.
- Attaoullah, Fuad A., 1946, *Turkish grammar self-taught*, London: E. Marlborough.
- Bammesberger, Alfred (ed.), 1988, *Die Laryngaltheorie und die Rekonstruktion des indogermanischen Laut- und Formensystems*, Heidelberg: Carl Winter.
- Bajun, Lilia S. and Orel, Vladimir È., 1988, Jazyk frigijskix nadpisej kak istoričeskij istočnik, I, *Vestnik drevnej istorii* 1988, 1: 173-200.
- Baumbach, Lydia, 1968, *Studies in Mycenaean inscriptions and dialect 1953-1964* (Incunabula graeca 20), Rome: Edizioni dell’Ateneo.
- Beekes, Robert Stephen Paul, 1969, *The development of the Proto-Indo-European laryngeals in Greek* (Janua linguarum, Series practica 42), The Hague / Paris: Mouton.
- , 1987, The PIE words for ‘name’ and ‘me’, *Sprache* 33: 1-12.
- , 1988, Laryngeal developments: a survey, in Bammesberger (ed.), pp. 59-105.
- , 1995, *Comparative Indo-European linguistics: an introduction*, tr. UvA Vertalers / Paul Gabriner, Amsterdam / Philadelphia: John Benjamins.
- Blažek, Václav, 2002, The ‘beech’-argument – state of the art, *HS* 115: 190-217.
- Blust, Robert, 1980, More on the origins of glottalic consonants, *Lingua* 52: 125-156.
- Brixhe, Claude, 1978a, Études neo-phrygiennes, *Verbum* 1/1: 1-22.

-
- , 1978b, Études neo-phrygiennes II, *Verbum* 1/2: 3-21.
- , 1982, Palatalisations en grec et en phrygien, *BSL* 77: 209-249.
- , 1983, Épigraphie et grammaire du phrygien, in *Le lingue indoeuropee di frammentaria attestazione: Die indogermanischen Restsprachen: Atti del Convegno della Società Italiana di Glottologia e della Indogermanische Gesellschaft, Udine, 22-24 settembre 1981*, ed. Eduardo Vineis, Pisa: Giardini. Pp. 109-133.
- , 1993, Du paléo- au néo-phrygien, *Comptes rendus des seances de l'Académie des Inscriptions et Belles-Lettres* 2: 323-344.
- , 1994, Le phrygien, in *Langues indo-européennes*, ed. Françoise Bader, Paris: CNRS Editions. Pp. 165-178.
- Brixhe, Claude and Lejeune, Michel, 1984, *Corpus des inscriptions paléo-phrygiennes*, 2 vols. (Institut Français d'Études Anatoliennes, Mémoire 45), Paris: Editions Recherche sur les Civilisations.
- Brixhe, Claude and Neumann, Günter, 1985, Découverte du plus long texte néophrygien: l'inscription de Gezler Köyü, *Kadmos* 24: 161-184.
- Calder, William M., 1911, Corpus inscriptionum neo-phrygiarum I, *JHS* 31: 161-215.
- , 1956, *Monumenta Asiae Minoris antiqua*, 7: *Monuments from Eastern Phrygia* (Publications of The American Society for Archaeological Research in Asia Minor), Manchester: Manchester University Press in association with the Society.
- Chadwick, John and Baumbach, Lydia, 1963, The Mycenaean Greek vocabulary, *Glotta* 51: 157-271.
- Chantraine, Pierre, 1968-1980, *Dictionnaire étymologique de la langue grecque: histoire des mots*, 4 vols., Paris: Klincksieck.
- Diakonoff, Igor M. and Neroznak, Vladimir P., 1985, *Phrygian*, Delmar, New York: Caravan Books.
- Dressler, Wolfgang, 1968, Review of Haas 1966, *Sprache* 14: 40-49.
- Duridanov, Ivan, 1993, Brygischer Spuren im thrakischen Sprachgebiet, *Orpheus* 3: 63-68.
- Eichner-Kühn, Ingrid, 1976, Vier altindische Wörter, *MSS* 34: 21-37.
- Elbourne, Paul, 2000, Plain voiceless stop plus laryngeal in Indo-European, *HS* 113: 2-28.
- Faber, Alice, 1986, On the actuation of sound change: a Semitic case study, *Diachronica* 3: 163-184.
- Fauth, Wolfgang, 1989, Mykenisch *du-ma*, phrygisch *dum-*, *HS* 102: 187-206.
- Fraenkel, Ernst, 1962-1965, *Litauisches etymologisches Wörterbuch*, 2 vols. (one pag.), Heidelberg / Göttingen: Carl Winter / Vandenhoeck & Ruprecht.
- Friedrich, Johannes, 1974, *Hethitisches Elementarbuch*, 1, 3rd ed., Heidelberg: Carl Winter.

- Frisk, Hjalmar, 1960-1970, *Griechisches etymologisches Wörterbuch*, 2 vols., Heidelberg: Carl Winter.
- Georgiev, Vladimir I., 1981, *Introduction to the history of the Indo-European languages*, 3rd ed., Sofia: Publishing House of the Bulgarian Academy of Sciences.
- Gusmani, Roberto, 1964, *Lydisches Wörterbuch mit grammatischer Skizze und Inschriftensammlung*, Heidelberg: Carl Winter.
- , 1980, *Lydisches Wörterbuch mit grammatischer Skizze und Inschriftensammlung. Ergänzungsband*, Lfg. 1, Heidelberg: Carl Winter.
- Gusmani, Roberto et al. (eds.), 1997, *Frigi e frigio: Atti del 1° Simposio internazionale, Roma, 16-17 ottobre 1995*, Roma: Consiglio Nazionale delle Ricerche.
- Haas, Otto, 1961, Phrygische Inschriften. Berichtigte Lesungen – verbesserte Deutungen, *Sprache* 7: 77-92.
- , 1966, *Die phrygischen Sprachdenkmäler* (Linguistique Balkanique 10), Sofia: Académie Bulgare des Sciences.
- , 1969, Neue phrygische Sprachdenkmäler, *KZ* 83: 70-87.
- Hackstein, Olav, 2002, Uridg. *CH.CC > *C.CC, *HS* 115: 1-22.
- Heitsch, Ernst, 1968, *βayaῖος*, *Glotta* 46: 74-75.
- Heubeck, Alfred, 1987, Phrygiaka I-III, *KZ* 100: 70-85.
- Hoenigswald, Henry M., 1988, A note on semivowel behaviour and its implications for the laryngeals, in Bammesberger 1988: 199-211.
- Holst, Jan Henrik, 2003, Eine Ausnahme des Winterschen Gesetzes, *HS* 116: 149-173.
- Innocente, Lucia, 1995, Stato degli studi frigi, in *Atti del II congresso internazionale di hittitologia*, ed. Onofrio Carruba, Pavia: Iuculano. Pp. 213-224.
- Žahukyan = Džaukjan, Gevorg Beglarovič, 1977, O refleksax indoevropskix zadnejazyčnyx v frigijskom jazyke, *Kwartalnik neofilologiczny* 24: 207-216.
- Lehmann, Winfred P., 1986, *A Gothic etymological dictionary*, Leiden: E. J. Brill.
- Lejeune, Michel, 1979, Regards sur les sonores i.e. en vieux phrygien, in *Flori-legium anaticum: mélanges offerts à Emmanuel Laroche*, Paris: Éditions de Boccard.
- Liddell, Henry George and Scott, Robert, 1940, *A Greek-English lexicon*, 9th ed. by Sir Henry Stuart Jones and Roderick McKenzie, Oxford: Clarendon [reissued 1968 with Supplement].
- Lindeman, Fredrik Otto, 1989, Review of Bammesberger 1988, *HS* 102: 268-297.
- Lubotsky, Alexander, 1988, The Old Phrygian Areyastis inscription, *Kadmos* 27: 9-26.
- , 1989a, New Phrygian *ετι* and *τι*, *Kadmos* 28: 79-88.

-
- , 1989b, The syntax of the New Phrygian inscription No. 88, *Kadmos* 28: 146-155.
 - , 1997, New Phrygian inscription No. 48: paleographic and linguistic comments, in Gusmani et al. (eds.), pp. 115-130.
 - , 1998, New Phrygian metrics and the *δεως ζεμελως* formula, in *Studies in honor of Calvert Watkins*, ed. Jay H. Jasanoff et al., Innsbruck: Institut für Sprachwissenschaft der Universität Innsbruck. Pp. 413-421.
 - Macdonell, Arthur A., 1910, *Vedic grammar*, Strassburg: J. Trübner.
 - Mallory, J. P., 1997, Phrygian language, in *Encyclopedia of Indo-European culture*, ed. J. P. Mallory et al., London: Fitzroy Dearborn. Pp. 418-420.
 - Mayrhofer, Manfred, 1956-1980, *Kurzgefasstes etymologisches Wörterbuch des Altindischen. A concise etymological Sanskrit dictionary*, 4 vols., Heidelberg: Carl Winter.
 - , 1983, *Sanskrit und die Sprachen Alteuropas. Zwei Jahrhunderte des Widerspiels von Entdeckungen und Irrtümern* (Nachrichten der Akademie der Wissenschaften in Göttingen, I. Philologisch-historische Klasse Jahrg. 1983, Nr. 5), Göttingen: Vandenhoeck & Ruprecht.
 - , 1986, *Indogermanische Grammatik*, 1: 2. Halbband: *Lautlehre (segmentale Phonologie des Indogermanischen)*, Heidelberg: Carl Winter.
 - , 1992-2001, *Etymologisches Wörterbuch des Altindischen*, 3 vols., Heidelberg: Carl Winter.
 - Neroznak, Vladimir Petrovič, 1978, *Paleobalkanskije jazyki*, Moscow: Nauka.
 - , 1992, Phrygian, in *Reconstructing languages and cultures*, ed. Edgar C. Polomé and Werner Winter (Trends in Linguistics, Studies and monographs 58), Berlin / New York: de Gruyter. Pp. 271-278.
 - Neumann, Günter, 1971, Spätphrygisch *ακκαλος* und *ακαλα*, in *Donum indogermanicum. Festgabe für Anton Scherer zum 70. Geburtstag*, ed. Robert Schmitt-Brandt, Heidelberg: Carl Winter. Pp. 155-160.
 - , 1986, Zur Syntax der neuphrygischen Inschrift Nr. 31, *Kadmos* 25: 79-84.
 - , 1987, Review of Diakonoff / Neroznak 1985, *Kratylos* 32: 88-93.
 - , 1988, *Phrygisch und Griechisch* (Österreichische Akademie der Wissenschaften, Philosophisch-historische Klasse, Sitzungsberichte Bd. 499), Vienna: Verlag der Österreichischen Akademie der Wissenschaften.
 - , 1997, Die zwei Inschriften auf der Stele von Vezirhan, in Gusmani et al. (eds.), pp. 13-32.
 - , 1999, *δορυμος*: Belege, Bedeutungen, Herkunft, Etymologie, in *Florilegium linguisticum: Festschrift für Wolfgang P. Schmid zum 70. Geburtstag*, ed. Eckhard Eggers et al., Frankfurt a.M.: Lang. Pp. 345-353.
 - , 2002, Ein neuer Beleg für ΔΟΥΜΟΣ, *HS* 115: 57-58.
 - Orel, Vladimir, 1997, *The language of Phrygians*, Delmar, New York: Caravan Books.

- , 1999, Phrygian *κίμερος*, *Glotta* 74: 111-113.
- Panagl, Oswald and Kowal, Béla, 1983, Zur etymologischen Darstellungen von Restsprachen: am Beispiel des Phrygischen, in *Das etymologische Wörterbuch: Fragen der Konzeption und Gestaltung*, ed. Alfred Bammesberger (Eichstätter Beiträge Bd. 8, Abteilung Sprache und Literatur), Regensburg: Friedrich Pustet. Pp. 185-199.
- Pokorny, Julius, 1959, *Indogermanisches etymologisches Wörterbuch*, 1, Heidelberg: Carl Winter.
- Polomé, Edgar C., 1986, A note on Thraco-Phrygian numerals: Alan S. C. Ross in memoriam, *JIES* 14: 185-187.
- Rasmussen, Jens Elmegård, 1992, Winter's law of Balto-Slavic lengthening – an unnatural fact?, *Copenhagen Working Papers in Linguistics* 2: 63-77.
- Rico, Christophe, 2000, L'alternance du type *θάνατος/θνήσκω*: bilan de cent vingt ans de recherches, *IF* 105: 161-200.
- Schlerath, Bernfried, 2001, Iranisch und Balto-Slawisch, *HS* 114: 285-289.
- Schmitt, Rüdiger, 1963, Der angebliche Phrygergott *Bagaios*, *Sprache* 9: 38-47.
- Schwyzer, Eduard, 1939, *Griechische Grammatik*, 1, Munich: C. H. Beck.
- Sihler, Andrew L., 1988, Greek reflexes of syllabic laryngeals with a Postscript on PIE kinship terms in **-H₂ter*, in Bammesberger 1988: 547-561.
- Speirs, Albert G. E., 1978, *The Proto-Indo-European labiovelars*, Amsterdam: Adolf M. Hakkert.
- Vasmer = Fasmer, Maks, 1986-1987, *Ètimologičeskij slovar' russkogo jazyka*, tr. & rev. O. N. Trubačev, 4 vols., 2nd ed., Moscow: Progress.
- Vinogradov, Viktor Vladimirovič et al. (eds.), 1956-1961, *Slovar' jazyka Puškina*, 4 vols. (Institut jazykoznanija Akademii nauk SSSR), Moscow: Gos. izd. inostr. i nac. slovarej.
- Watkins, Calvert, 1997, Proto-Indo-European: comparison and reconstruction, in *The Indo-European languages*, ed. Anna Giacalone Ramat and Paolo Ramat, London / New York: Routledge. Pp. 25-73.
- Whitney, William Dwight, 1889, *Sanskrit grammar*, 2nd ed., Cambridge, Massachusetts: Harvard University Press.
- Woodhouse, Robert, 1995, Proto-Indo-European injective asperes [sic], *IF* 100: 92-100.
- , 1996a, The origin and relative chronology of Winter's law: some observations on Kortlandt's prehistory of Slavic and glottalic hypothesis, *JIES* 24: 27-44.
- , 1996b, The chronology of Slavic plain voiced stops, *HS* 109: 279.
- , 1997, Merlingen's implosives, Bartholomae's law, Germanic aspirates and consonant shifts, *PBB* 119: 374-398.
- , 1998a, On PIE. tectals, *IF* 103: 40-60.

-
- , 1998b, Verner's and Thurneysen's laws in Gothic as evidence for obstruent development in early Germanic, *PBB* 120: 194-222.
 - , 1998c, Grassmann's law before consonant shift in Messapic and 'Pelasgian', *JIES* 26: 469-473.
 - , 2003a, PIE. **s(w)er(H)K-* 'heed, care for, grieve, lie ill, waste away', *IF* 108: 58-91.
 - , 2003b, The biblical shibboleth story in the light of Late Egyptian perceptions of Semitic sibilants: reconciling divergent views, *JAOS* 123: 271-289.
 - , 2003c, Gothic *siuns*, the domain of Verner's law and the relative chronology of Grimm's, Verner's and Kluge's laws in Germanic, *PBB* 125: 207-222.
 - , 2005, Assibilative palatalization of tectals in Phrygian and the adequacy of bitectal frameworks for Proto-Indo-European, *IF* 110: 205-234.
 - Woudhuizen, Fred C., 1993, Old Phrygian: some texts and relations, *JIES* 21: 1-25.
 - Zgusta, Ladislav, 1964, *Kleinasiatische Personennamen*, Prague: Československá akademie věd.
 - , 1984, *Kleinasiatische Ortsnamen*, Heidelberg: Carl Winter.