

NICHOLAS ZAIR

PIE ‘bird’ and ‘egg’ after Schindler

1. Introduction¹

SCHINDLER’s (1969; henceforth ‘SCHINDLER’) article on the Proto-Indo-European words for ‘bird’ and ‘egg’ has been the definitive exposition of these forms ever since it was first published. However, in the intervening forty years or so there have been advances in our understanding of both phonology and morphology in Proto-Indo-European languages which have a major impact on the reconstructions that SCHINDLER put forward for the words for ‘bird’ and ‘egg’. In this article I will argue that we should return to the traditional reconstruction of **H₂ōǵi-o-m* for ‘egg’ rather than SCHINDLER’s reconstruction **ō-Huǵi-o-m*, and that Latin *avis*, Armenian

¹ This article has had an extremely long gestation period. Much of the research involved was carried out while in receipt of a Doctoral Competition grant from the Arts and Humanities Research Council of Great Britain (2006-2008) and a Rhys Scholarship in Celtic Studies at Jesus College, Oxford (2009). Versions were presented at the Oxford Comparative Philology seminar and at the 21st Annual Indo-European Conference at UCLA in 2009. At both of these I received many helpful questions and comments. I am grateful to Dr Tijmen PRONK and Dr Yoram COHEN, who very kindly provided me with pre-print versions of their articles. Professor Andreas WILLI and Dr James CLACKSON read earlier drafts of the article and their comments and advice have improved it beyond recognition. Special thanks are due to Dr Peter BARBER who has discussed ‘bird’ and ‘egg’ with me repeatedly over the last few years, and who has patiently educated me on the subject of Sievers’ Law, including allowing me to see drafts of his book on the subject (in preparation). As always, mistakes and omissions are my own.

haw, Vedic *véḥ* reflect an acrostatic *i*-stem of the shape $*H_2o/e\bar{u}-i-s$ rather than a root-noun $*H_2uo/e\bar{i}-s$, as supposed by SCHINDLER.²

2. ‘Bird’: preliminaries

The word for ‘bird’ is attested in several Indo-European languages, where it seems to reflect an original *i*-stem. In Vedic, the paradigm is mainly that of a standard *i*-stem, with the following parts of the paradigm attested: acc. sg. *vím*, gen. sg. *véḥ*, nom. pl. *váyah*, gen. pl. *vīnám*, instr. pl. *víbhīḥ*, dat. pl. *víbhyaḥ*. The exception to the usual picture is the nom. sg., where beside expected *víḥ* we also find *véḥ*. In Avestan the word also appears as an *i*-stem, with only the expected nom. sg. in Young Avestan *vīš*. The Italic evidence consists of Latin *avis*, Umbrian acc. pl. **avif**, in Armenian we have *haw*, and Greek has a derivative αἰετός, ἄετός ‘eagle’.

According to SCHINDLER, the Indo-European word was an acrostatic root noun with nom. sg. $*H_2uo\bar{i}-s$, gen. sg. $*H_2ue\bar{i}-s$, whence the Vedic nom. and gen. sg. *véḥ*, and with subsequent remodelling to fit the usual (proterodynamic) *i*-stems, nom. sg. *víḥ* (cf. nom. sg. *agníḥ*, gen. sg. *agnéḥ* ‘fire’). The rationale behind this reconstruction is very reasonable: that no model for the analogical creation of Vedic nom. sg. *véḥ* can be conceived of, and consequently it must be an archaism. However, this reconstruction meets with a serious objection in the form of the Italic and Armenian forms. SCHINDLER supposes that these can come regularly from $*H_2uo/e\bar{i}-$ by means of an anaptyctic vowel, whence $*H_2uo/e\bar{i}- > \text{Lat. } avis, \text{ Arm. } haw$. PETERS (1980: 40-2) expands on this theory by restricting the environment for the anaptyxis to originally monosyllabic forms. However, SCHRIJVER (1991: 25-31) has shown that anaptyxis never occurs in Italic before a single consonant.³ PETERS’ other example of $*H_2u-$ developing anaptyctic *-a-* in a monosyllable in Armenian is *agay* ‘spent the night’ $< *H_2u\bar{e}s-t$, but this can be explained as an augmented form $*e-H_2u\bar{e}s-t$ (CLACKSON 1994: 105; accepted by LIV 294). The usual reflex of $*H_2u-$ in Armenian is *g-*, e.g. *geł* ‘desire’ $<$

² In this article *H* stands for any laryngeal, *V* for any vowel.

³ It may occur before two consonants if Lat. *aiō* ‘say’ comes from $*H_1g-\bar{i}e/o-$ (thus SCHRIJVER). But cf. Lat. *stella* $< *H_2ster-leH_2$.

**H₁uel-* (cf. Gk. ἐέλω). Consequently, both Italic and Armenian contradict the Vedic evidence by suggesting a preform **HVui-*.

Further investigation allows us to gather more information about the quality of both the laryngeal and the vowel in the first syllable of the Italic and Armenian forms. In Armenian both **a-* and **o-* may be possible: KORTLANDT (1983: 12-15, 1984, 1987) maintains that **a-* can come from **H₂e-* or **H₃e-*, KLINGENSCHMITT (1982: 173) that it can only reflect **H₂e-*.

Latin and Umbrian *a-* can come from either original **a-*, or from **o-* before **-y-* by Thurneysen-Havet’s law. According to VINE (2006), Thurneysen-Havet’s law turned **-oy-* to **-ay-* in Proto-Italic in syllables which lacked the Proto-Indo-European accent. It would be possible to generate a preform **ouís* as the input for Thurneysen-Havet’s law by positing a protodynamic *i*-stem with nom. sg. **H₃éy-i-s* and gen. sg. **H₃y-éj-s*, and supposing that Italic generalised the full-grade of the strong stem and the accentuation of the weak stem.⁴ However, Occam’s razor would suggest a stem **H₂ey-i-*, which is phonologically just as plausible.

Gk. αἰετός supports the reconstruction **H₂ey-i-*, since it points to **H₂eyi-eto-* or **H₂yí-eto-*. However, HART (2004: 346-8) and OLSEN (2006: 237-8) have argued for initial **H₃-*. In both cases, the primary evidence consists of Hittite *šuwaiš*, which shows a supposed development of **H₃-* to Hitt. *š* in a labial context (proposed independently, in slightly different form, by both scholars). But this form, originally identified as ‘bird’ by OTTEN/VON SODEN (1968: 40 fn. 2), has been shown by COHEN (forthcoming; followed by KLOEKHORST 2008: 795) to be an action noun meaning ‘abandonment, rejection’. Without the support of *šuwaiš*, the reconstruction with **H₃-* becomes extremely unlikely: OLSEN (2006: 237-8) assumes an original paradigm **H₃ayí-/H₃yí-*; since this involves positing *a/ø* ablaut, such a reconstruction should be considered a last resort. HART supposes that Gk. οἰωνός ‘large bird; bird of augury’ shows the original

⁴ An acrostatic nominative stem **H₂oy-í-* or an acrostatic oblique stem **H₃ey-í-* are implausible because the Proto-Indo-European accent would be expected to correspond with the full grade (see SCHINDLER 1972, 1975; MEIER-BRÜGGER 2003: 201-18).

vocalism, and that αἰετός is a loan-word from a language where *-o- became *-a-. She explains Italic **auī-* by invoking a law of SCHRIJVER'S (1991: 454-74) whereby *-o- gives *-a- after a labial consonant, and including *-H₃- within the group of consonants supposed to have effected this change. Apart from the fact that no other evidence can be provided for such a development following *-H₃-, this requires that the distinction between *H₃o- and *H₃e- was preserved into Proto-Italic, which seems unlikely (cf. Lat. *onus* 'load, burden' = Skt. *ánas-* 'cart' < *H₃enos, *opus* 'labour, work' = Skt. *ápas-* 'work' < *H₃epos). There is of course no reason to suppose Gk. αἰετός is not indigenous: it is phonologically and morphologically unexceptional (VINE 1998: 11-12), while οἰωνός can reflect an o-grade formation.

Since there is no real evidence for *H₃-, I conclude, on the basis of Lat. *auis*, U. *avif* and Gk. αἰετός, that the initial laryngeal was *H₂-. Lat. *auis*, U. *avif* and Arm. *haw* must go back to *H₂euī-; on the other hand, Ved. *veḥ* must reflect *H₂ue/oī-. In principle, three paradigms are reconstructable: acrostatic *H₂ou-i-/ *H₂eu-i-, acrostatic *H₂uoī-/ *H₂ueī-, or proterodynamic *H₂eu-i-/ *H₂u-eī-. The last, which on the face of it could most easily give both sets of forms, is ruled out because in proterodynamic *i*-stems in Indo-Iranian a single stem was generalised throughout the paradigm, so that nom. sg. **auis*, gen. sg. **uāis* would have been remodelled to nom. sg. *vīh*, gen. sg. *véh* without any opportunity for the creation of the by-form nom.sg. *véh* (SCHINDLER 152-3). Of the remaining acrostatic paradigms, *H₂ou-i-/ *H₂eu-i- could create the Italic and Armenian forms, but not the Indo-Iranian ones, and *H₂uoī-/ *H₂ueī- would explain the Indo-Iranian forms, but not the Italic and Armenian forms. Since they are mutually incompatible, clearly one must be correct, and the forms in the other families were created by some analogical process. A final conclusion can only be reached after we incorporate evidence so far unconsidered: let us turn to the Proto-Indo-European word for 'egg'.

3. 'Egg': preliminaries

Proto-Indo-European 'egg' is even better attested than 'bird', but finding a coherent pre-form for all of these forms is just as difficult. Except where

specified, the discussions of the forms in individual languages below are based on SCHINDLER (160-3). An apparently Proto-Indo-European sound law which pertains to the reconstruction of these forms must be mentioned briefly. This is Sievers’ Law, which will be discussed in much greater length shortly. However, in its simplest formulation, Sievers’ Law can be expressed as a constraint against consonantal **-ǰ-* and **-ǰ-* directly following a super-heavy syllable. Thus, it is maintained, we only find clusters of the shape **CVCCǰV-* and **CVCCǰV-*, never **CVCCǰV-* and **CVCCǰV-*. As we shall see, one possible reconstruction of the words for ‘egg’ is **H₂ǰǰom*, but if this version of Sievers’ Law is correct, a form of the shape **H₂ǰǰom* could not have existed in Proto-Indo-European, since it would instead have given **H₂ǰǰom*. In examining the Indo-European words for ‘egg’ we must consider whether or not they definitively point to either **H₂ǰǰom* or **H₂ǰǰom*, or to some other preform.

Young Avestan *aēm*, Modern Persian *xāya* and various other Iranian languages point to **ǰom*. However, some Modern Iranian forms such as Wazīrī *yōwya* and Tālīšī *ūva* seem to go back to **ǰom*. According to HENNING (1954: 291-2), this shows that the original Iranian preform was **ǰom*, which developed either to **ǰom* or **ǰom* in different Iranian languages. However, SCHINDLER (160) remains undecided, and maintains that the forms which seem to show **ǰom* may have a secondary origin.

Serbo-Croatian *jáje* goes back regularly to **ǰom*, with epenthesis of *j-*. Armenian *jow* apparently goes back to **ǰom*, where the initial **ǰ-* is not expected, and must be due to a sort of assimilation from **ǰom*. But Dr CLACKSON (personal communication) points out that *-ow* might be the regular result of **ǰom*, since **-ǰ-* and **-ǰ-* fall together in Armenian and since **-ǰǰā* gives *-ow* in **mātrǰǰā* > Arm. *mawrow* ‘step-mother’ (cf. Attic Greek *μητρουιά* ‘step-mother’, Old English *mōdrige* ‘mother’s sister’; CLACKSON 1994: 145-7).⁵ Initial *j-* in *jow* would still have to be explained by some sort of *ad hoc* change **ǰom* > **ǰom*.⁶

⁵ There is apparently another reflex of **-ǰ-* in Arm. *araj* ‘front’ from **prǰH₃ǰo-*, with *-r-* for **-r-* by analogy with *ar* ‘to’ (OLSEN 1999: 196-7, 811).

According to SCHINDLER (following HAMP 1955: 400), Albanian *ve* may reflect **āuǰā*, **āuiǰā* or **āǰā* from **ōuǰā* etc. by way of a change **ōu-* > **āu-*. This is on the basis of North Geg /*vóe/*, in which, according to SCHINDLER, the *-o-* can only come from **-ē-* or **-ā-*. Whatever the precise details, the Albanian forms no doubt ultimately reflect **ōuǰā*, **ōuiǰā* or **ōǰā*.

OE. *æg*, Old Norse *egg*, Old High German *eie* (dat. sg.) go back to **ajjom* < **ojjom*, for which the only plausible derivation is from **oujjom* by Osthoff's law < **ōujjom*, although the only other evidence for **-uj-* > **-ij-* seems to consist of OE *mōdrige*, and the evidence for Osthoff's law in Germanic is scanty (LÜHR 1976: 84 fn. 4; RINGE 2006: 75-8).

Latin *ōuum* comes from **ōjom*, which may be derivable from **ōujjom*, as there seem to be no other Latin examples of **-uj-*. A preform **ōuijom* would have given ^x*ōuium*.

Welsh *wy*, Breton *vi*, Middle Cornish *oycan* come from **āujjom* < **ōujjom* or from **ājjom* (cf. W. *mwy* < **māǰōs*). They cannot come from **ōujjom* > **ōuijom* by Sievers' Law > **āuijom* because this would have given **ǰuijom* > **oujjom* > W. *ewydd* (see SCHRIJVER 1995: 296-8, 299-301, and for **ǰu-* > **ōu-* see SCHRIJVER forthcoming: §3.6.1). However, if Sievers' Law originally applied to Celtic, it seems to have been subsequently eliminated (UHLICH 1993; SCHRIJVER 1995: 282-9) so it is possible that *wy* comes from an original **ōuijom* which became **ōujjom* again.

The evidence of the Greek forms for 'egg' is complicated because it is not clear that we can reliably tell the difference between **ōujjom* and **ōuijom*. The attested forms include Attic and Ionic ὄβον, Lesbian ὄβον. These could probably come from **ōuijom*, by comparison with forms like Att. πρῶος, Ion. πρῶίος 'early' and Att. πατρῶος, Ion. πατρῶίος 'coming from one's father'. The former is derived from πρῶί 'early in the day, early' and therefore reflects **prōui-o-* > **prōuijo-*. The latter is probably derived from the

⁶ An alternative possibility is that Arm. *jow* comes from a different word entirely: OLSEN (1999: 54) suggests a reconstruction **ǰ^hu-to-m*, comparing Old Norse *ǰóta hrognum* 'spawn', Lat. *fundō* in the sense 'engender, bear'.

same preform as *πάτρως* ‘father’s brother’ with the possessive suffix **-iH₂-o-* and thus reflects **patrōy-iH₂-o-* > **patrōy̑ijo-* rather than **patrōy̑jo-* (on the suffix see below).

Although Ionic *ῥόν* shows an iota-subscript, which implies /ō̑ion/ rather than expected ^xῶϊόν as in *πρώϊος*, the word is found only in the prose of Herodotus, where there is no metrical evidence to show that ῶϊόν should be preferred to ῥόν. In the original manuscripts the word would have been written ΩΙΟΝ, so it is only a later editorial decision to write ῥόν rather than ῶϊόν, and the Ionic form as we have it does not argue against **ōy̑jom*. Lesbian ῶϊόν does seem to point to **ōy̑jom*, since otherwise we would probably find disyllabic ῶϊον or ῥ̑ον (the form comes from Sappho, so we have metrical evidence for its trisyllabicity). However, SCHINDLER suggests ῶϊόν might come from ῶεον, which is attested in Semonides and Ibycus. There seems to have been an interchange (perhaps morphological rather than phonological) between the material suffixes -ιο- and -εο- in Aeolic; cf. ὄστιον beside ὄστειον ‘bone’.⁷ The origin of ῶεον and Argive ὄβεα ‘eggs’ (Hesychius), ostensibly from **ōy̑jom*, is unclear. If Lesb. ῶϊόν is based on ῶεον, then it is possible that **ōy̑jom*, if it had not undergone Sievers’ Law, could have given Att., Ion. ῥόν.

An argument in favour of **ōy̑jom* is that, as SCHINDLER (160-1) points out, **ōy̑jom* ought to have undergone Wheeler’s law, a pan-Greek rule by which a final accent is retracted onto the previous syllable in dactylic words (PROBERT 2006: 87-9, 91-6; COLLINGE 1985: 221-3). However it is possible to suggest an explanation for the failure of Wheeler’s Law to operate on **ōy̑jom* (see below, section 6). Consequently, based only on the Greek evidence, both **ōy̑jom* and **ōy̑jom* seem to be possible. Which we reconstruct may be affected by our pre-existing views on Sievers’ Law.

4. SCHINDLER’S RECONSTRUCTION

We can see from the above that only Greek and perhaps Albanian and Celtic have words for ‘egg’ which it is possible to trace back to a preform

⁷ On the collective suffix **-ejo-* see OETTINGER (1995).

**ōuījom*. The others seem indirectly to attest **ōuījom* by assimilation of the sequence **-uī-* to **-īi-* or **-uū-*. The problems involved with Sievers' Law lead SCHINDLER to reconstruct Proto-Indo-European **ōHuijom* instead of **ōuījom*. Since his assumptions regarding the further development of this sequence into the attested languages are expressed in a rather condensed fashion in two different places, it is worth quoting the key passages in full:

“Der Ansatz **ōhuijom* ist nur berechtigt, wenn angenommen werden darf, daß die Reduktion von *ōu* zu *ō* noch voreinzelsprachlich nach Laryngalschwund und der Tilgung des Hiats möglich war. Dabei muß unter Umständen damit gerechnet werden, daß *h* nach langem Vokal früher als nach kurzem geschwunden ist” (SCHINDLER 165).

“Idg. **ōhuijom* wurde voreinzelsprachlich zunächst zu **ō'uījom*. Nach Beseitigung des Hiats entstand /**ōuiom*/, das als **ōuījom* (gr. ?), sofern die Regel [āyuwa]⁸ noch in Kraft war, oder als **ōūjom* (lat. ?), **ō(u)jom* ... realisiert werden konnte. Mit diesen Ansätzen sind alle einzelsprachlichen Formen erklärbar mit Ausnahme von gr. **ōφεјov* und germ. **ajja-*” (SCHINDLER 167).

SCHINDLER (166) explains **ōhuijom* as a substantivised prepositional hypostasis **ō-Hui-om* meaning “‘das beim Vogel Befindliche’”, consisting of the preposition **ō* ‘near, near to, towards’, the stem of the word for ‘bird’ in the zero grade, and a composition suffix **-o-*. This is parallel to compounds like Ved. *ā-pathi-* ‘travelling hither, near’ (without composition-suffix) and *ānu-path-a-* ‘following the road’.

This explanation seems to me to be very unlikely, for several reasons. Semantically, it seems strange to call eggs ‘things that are near the bird’; as we shall see later, a meaning ‘belonging to the bird’ makes a lot of sense, but ‘near the bird’ is curiously unspecific.⁹ In terms of word-composition, **ō* is a perfectly common preposition to use in compounds of this sort in Indo-Iranian, but outside the Indo-Iranian languages it only appears in a

⁸ I.e. Sievers' Law.

⁹ And cf. BEEKES (1992: 135 fn. 6): “[t]he meaning is quite unconvincing”.

short form **o*¹⁰ (for example, in Gk. ὀκέλλω “run ashore, run aground”).¹¹ There is therefore very little proof that it goes back as far as the proto-language. These objections have already been raised by DE VAAN (2008: 438).

The reconstruction **ōHujóm* is also problematic on formal and phonological grounds. SCHINDLER admits that there is very little evidence for a Proto-Indo-European (or at least pre-dialectal) loss of laryngeals after long vowels to give **ō’ujóm*. Between vowels laryngeals were lost only relatively late in Indo-Iranian, as is shown by Ved. *vátaḥ*, YAv. *vāta-* ‘wind’ < **H₂ueH₁pto-*, which often scan as though they were **uaHata-*, Ved. *rayim* (acc. sg.) ‘riches’ < **reH-i-* (MAYRHOFER 1986: 124). Contraction of vowels in hiatus occurred only later. Presumably SCHINDLER posits the earlier loss of laryngeals after long vowels to allow the change of **ō’ujóm* to **ōjóm* in Avestan (for which of course there is no parallel); if the laryngeal were lost as usual between vowels in Indo-Iranian, we would expect **ōHujóm* > **ō’ujóm* to lose the hiatus and give **āujóm*, the beginning of which might be expected to be preserved as Young Avestan *āu-* (HOFFMANN/FORSSMAN 2004: 72). However, if the laryngeal in **ōHujóm* were already lost in Proto-Indo-European, it seems very unlikely that the hiatus would last all the way into Latin to allow **ōujóm* > **ōuom* > **ōuom*, as apparently envisaged by SCHINDLER. An early development to **ōujóm* is far more probable.

As it happens, it will be suggested below that the Iranian forms may come directly from **āujóm* > **ājjóm*. It has already been mentioned that Lat. *ōuum* may come from **ōujóm*, and that Proto-Germanic **ajja-* probably comes from **ōujó-* < **ōujó-*. But part of the point of SCHINDLER’s reconstruction **ōHujóm* is evidently to explain why the Indo-European languages show so many reflexes of the word for ‘egg’. If we assume that **ōHujóm* gave **ōujóm* directly in the individual languages as a result of contraction of **ō’ujóm*, which then underwent individual developments in each language, SCHINDLER’s argument loses much of its force. It becomes

¹⁰ Note that **o-H₂ui-o-*, with the short form of the preposition, will not give the desired result, since it would become **oujo-* > ^x*ōujó-*.

¹¹ But BEEKES (1992: 172-3) doubts the existence of **o* at all.

only a way to avoid Sievers' Law while retaining the early-dialectal reconstruction **ōujom*.

Even if we were to follow this sort of reduced version of SCHINDLER's etymology, it still runs into difficulties in Greek, since to get **ōujjom*¹² from **ōujom* we have to assume that Sievers' Law was still in operation to prevent this becoming **ōujjom* in Proto-Greek. In fact, it will be argued below that Sievers' Law may have been an independent but parallel sound change in several Indo-European languages. But of course this is not SCHINDLER's position, and if it were accepted, it removes the other reason to reconstruct **ōHujom*: the avoidance of Sievers' Law operating in Proto-Indo-European. SCHINDLER's assumption, without further evidence, that Sievers' Law occurred twice, is circular and further weakens his argument. It is only necessary to invoke it once in Proto-Indo-European and once in Proto-Greek in order to explain away the problems involved in his reconstruction of 'egg'. Furthermore, Wheeler's Law is still a problem, since it should have applied regardless of which of SCHINDLER's putative pre-stages **ō'ujom* and **ōujjom* it operated at.

The drawbacks listed above seem to me to be enough to make SCHINDLER's approach quite implausible. Since other examples of **ōHuj-* are impossible to find, it is true that it is very hard categorically to disprove SCHINDLER's proposal. However, so many developments from an already unconvincing starting point are required to be taken on trust, without any positive evidence in their favour, that we are at liberty to consider more promising approaches.

5. 'Egg' as a *vṛddhi* derivative of 'bird'

According to DARMS (1978: 509 fn. 277), the true Proto-Indo-European preform was **ōjom*, which can give many of the attested words. The Latin (*ōuum* as a replacement for **ōjom*) and the Greek forms were altered by analogy with the word for 'bird' (a popular etymology was already suggested by ERNOUT/MEILLET 1960: 472). Of course, this is once again not

¹² Which seems in the end to be SCHINDLER's (167) preferred preform for Greek.

disprovable, but it seems fairly unlikely: **ōjom* and **ajis* (uel. sim.) would hardly be formally similar enough for even folk-etymology to have much room to forge a connection.¹³ Curiously, DARMS’ proposal also ignores the problem of Proto-Germanic **ajja-*, which is equally difficult to explain by a folk-etymological connection with **ajis* (which is anyway not attested in Germanic). In general, explanations by means of folk-etymology must be a last resort when formal derivation is completely impossible (as noted by DARMS). In this case, I would argue, it is at least possible to make a case for development by regular phonological changes.

Perhaps the oldest view of ‘egg’ is to see it as a *vṛddhi* derivation from the word for ‘bird’ (going back to BOPP and BRUGMANN; for the history of this idea see SCHINDLER 165-6 and DARMS 1978: 321). *Vṛddhi* is a way of deriving adjectives or nouns from nouns, involving the insertion of a full-grade vowel into the base form and addition of a thematic vowel as a suffix to athematic stems. The semantics of the derived form generally reflect a meaning of belonging to, or being made of the same sort of material, as the base form. *Vṛddhi* is very productive in Indo-Iranian, but there is enough relic evidence in the other languages to allow us to trace it back to Proto-Indo-European (WACKERNAGEL/DEBRUNNER 1954: 103-36; DARMS 1978: 1-2 and *passim*). So if it were a *vṛddhi* form, **ōjom* would have originally meant ‘pertaining to a bird, bird’s’; as Dr. Adam HYLLESTED points out to me (p.c.), **ōjom* may well have originally been an adjective modifying the Proto-Indo-European noun for ‘egg’ which then came to be used for the ‘egg’ itself; cf. Latin *ficatum* ‘(liver) stuffed with figs’, from which come the usual words for ‘liver’ in the Romance languages such as Italian *fegato*, French *foie* (VÄÄNÄNEN 1981: 81).

If we start from a preform **ōjom* it is reasonable to assume that in the languages in which we find **ōjom* assimilation of **-uj-* to **-j-* had occurred, even though we may have no further evidence for this sequence; assimilation is a common Indo-European development. In most

¹³ Admittedly, οἰωνός may have suggested a connection with **ōjom* in Greek, but οἰωνός itself is taken to be derived from φόν by SCHMEJA (1963: 35-6), followed by PETERS (1980: 292-305).

languages, **-j̥i-* was treated the same as, or simplified to, **-j̥-*. In Germanic, where there was already a phonemic distinction between **-j̥-* and **-j̥i-* due to the development of **-j̥H-* to **-j̥i-*, the difference was of course also maintained in the word for ‘egg’. In Latin, on the other hand, **-uj̥-* evidently assimilated to **-u̥u-* > **-u̥-* (prior to Osthoff’s Law) or simply lost **-j̥-*.

DARMS (1978: 322) argues against **ōuj̥om* being seen as a *v̥rddhi* derivation on the grounds that *v̥rddhi* formations are always based on the weak stem of a noun, for example **dejuo-* ‘divine’, which is based on **dju-*, not **djeu-*. However, that this is not always the case is suggested by Gk. ὄα, ὄα¹⁴ ‘sheepskin; border, fringe; edge’ < **ōuj̥ā*. According to DARMS (1978: 323-4) this comes from **H₃ēuj̥eH₂*, derived by *v̥rddhi* from **H₃euj̥-i-* > Attic. οἷς ‘sheep’. A necessary assumption is that Eichner’s Law, by which the vowel in **H_{2/3}ē-* is alleged not to have been coloured by the preceding laryngeal, did not apply in Greek.¹⁵ However, more important is that PIE ‘sheep’ must be reconstructed as **H₂ou̥-i-/H₂euj̥-i-* on account of Lyc. *xawā* (acc. sg.) ‘sheep’, Toch. B. *ā_vw* ‘ewe’, Ved. *aviḥ* ‘sheep’.¹⁶ We can

¹⁴ There seems to have been some confusion of the length of the first vowel in words where long *-ō-* preceded another vowel, and variants with both *ω* and *ο* are found without a clear pattern. This reflects a tendency to shorten the first of two long vowels in hiatus, according to THREATTE (1980: 227-8). According to PETERS (1980: 292-305) the form ὄα is the expected reflex of **ōuj̥ā* > **ōj̥j̥ā* > Old Attic **ōiā* by shortening of long vowels before **j̥(i)* followed by another long vowel. The existence of ὄα in Attic (no earlier than the 4th century BC) is therefore surprising, although perhaps it could be a loan word from Doric where shortening did not occur (cf. Cretan (β)ὀ(α)ν)? According to ADRADOS (1950: 410, 416-17) it is an archaism preserved by a semantic split with ὄα, which only means ‘border, fringe’, while ὄα normally means ‘sheepskin’.

¹⁵ For the arguments for and against Eichner’s Law see EICHNER (1973); MAYRHOFER (1986: 132-4); LINDEMAN (1987: 56-9, 1997: 79-88); JASANOFF (1988); RASMUSSEN (1990/1991 [1999]); SCHRIJVER (1991: 53, 129-34, 1995: 300-1); VINE (2002 [2006]: 292-6); KLOEKHORST (2008: 567-8).

¹⁶ **H₃-* was lost in Lycian: compare Lyc. *epiriye-* ‘sell’ (KIMBALL 1987); Toch. B. *ā_vw* cannot come from **ou̥i-* but must reflect **au̥i-* (PINAULT 1997: 182-4, 190-3; KIM 2000); the lack of lengthening by Brugmann’s Law in Ved. *aviḥ* suggests **au̥i-* rather than **ou̥i-*, although it could be analogical on forms like gen. sg.

therefore see that the *vṛddhi* derivation that gave Gk. ὄα, ὄα must have been based on the strong stem **H₂oui-* rather than weak **H₃eui-*.

6. Sievers’ Law

As already pointed out, the major problem with a preform **ōuīom* is that it ought to have given **ōuījom* by Sievers’ Law, if Sievers’ Law was a Proto-Indo-European development.

Sievers’ Law has been a topic for debate for nearly a hundred and fifty years, and cannot be adequately discussed here in all its aspects. We have already seen that, ignoring complications, Sievers’ law can be described as a rule that causes **-i-* and **-u-* to become **-ij-* and **-uj-* after a super-heavy syllable. Discussions and further bibliography can be found in SEEBOLD (1972), COLLINGE (1985: 159-74), SCHINDLER (1977), MAYRHOFER (1986: 164-7).

The identification of forms which demonstrate Sievers’ Law in the individual languages is complicated by the fact that there seems to be an original adjectival suffix **-ijō-* unrelated to Sievers’ Law phenomena. This has been explained as a possessive suffix **-iH₂-o-* > **-ijō-* (mentioned above), which may be connected to the Italic and Celtic *o*-stem genitive singular in **-ī* (BURROW 1949: 58; KLINGENSCHMITT 1975: 154 fn. 10; HARÐARSON 1993: 164 fn. 25). MAYRHOFER (1986: 161, 165-6), following a suggestion of SCHINDLER’s, suggests a thematisation of the locative ending **-ī*, which is always syllabic, whence **-ī-o-* > **-ijō-* in forms like Ved. *dāmiya-* ‘being in a house’. It is possible that both explanations may be correct and that we have originally two suffixes.

The language families which give us reliable evidence for the operation of Sievers’ Law are Indo-Iranian, Germanic, and perhaps Greek. In Vedic Sanskrit, for example, we find the trisyllabic adjective *dāivīya-* ‘divine’ < **dēiujō-* compared with disyllabic *satyá-* ‘true’.¹⁷ In Gothic Sievers’ Law

avyaḥ, in which Brugmann’s Law would have been prevented in a closed syllable (KIM 2000: 39 fn. 4). For more on ‘sheep’ see section 7 below.

¹⁷ In texts of the Veda the variant suffixes are not usually distinguished, but the vocalic variant can be reconstructed on the basis of the meter.

variation is found in verbs formed with the suffix **-jo-*. After a heavy syllable the usual result of **-je-* in Gothic is *-ji-*, e.g. *bidjip* '(s)he requests' < **g^{wh}ed^h-je-ti* (SEEBOLD 1970: 91-3). After a super-heavy syllable we find Gothic *-ei-* < **-ī-* < **-iji-* < **-ije-*, e.g. *sōkeiþ* '(s)he seeks' < **sāgiīeti* < **sāg-je-ti*. In Greek, Sievers' Law may be reflected in the comparative suffix, where **-jon-* tends to occur after heavy syllables (e.g. Gk. *μῆζων* 'greater' < **meg-jon-*), but **-ijon-* after super-heavy syllables (e.g. *ἀλγῶν* 'more painful').¹⁸

The evidence for Sievers' Law in other languages is far more opaque. For example, in Latin the distinction between verbs of the *capiō*, *capere* and *audiō*, *audīre* types may reflect a Sievers'-style development. Verbs which have a super-heavy root syllable do belong to the *ī*-type (by way of **-ije-* > **-ī-*?), but so do most verbs with heavy root syllables ending in a liquid, nasal or **-u-* (e.g. *uenīre*). Verbs with heavy root syllables ending in a stop, however, belong to the *i*-type (e.g. *capere*). Furthermore, some (but not all) verbs with a disyllabic root also show up as *ī*-type verbs (e.g. *sepelīre*); perhaps these group with the super-heavy root type. An added complexity is that in early Latin many verbs of the *i*-type have alternants of the *ī*-type, e.g. *cupere/cupīre*. It is possible to fit these facts into a framework based on Sievers' Law (thus SEEBOLD 1972: 110-21), but they do not provide firm evidence for it (and see SCHRIJVER 2003 for an explanation which largely does without Sievers' Law).

Postconsonantly the glides **-j-* and **-u-* are in general particularly prone to interchange with their vocalic counterparts (as SIHLER 2006: 6 points out), which will tend to wipe out the evidence of Sievers'-type variations. For example, in Latin postconsonantal **-j-* became **-ij-*, while **-u-* became **-uu-* after **-t-* and **-u-* gave **-u-* after a liquid (MEISER 1998: 91-93). Therefore the clear absence of Sievers' law in e.g. Celtic (UHLICH 1993; SCHRIJVER 1995: 281-9) is not evidence against it being a Proto-Indo-European law, since the traces of Sievers' Law might have been erased by subsequent developments.

¹⁸ But there are exceptions, e.g. *ἥσσων* 'weaker' < **sēk-jon-*.

To assume, on the basis of its existence in Germanic, Indo-Iranian and perhaps Greek, that Sievers’ Law took place in Proto-Indo-European itself, is at first sight the most efficient hypothesis, and methodologically sound. However, there is some evidence that suggests Sievers’ Law might have been an independent but parallel development in the languages in which it occurred, like Grassman’s Law in Indo-Iranian and Greek (LEJEUNE 1972: 56-8) or Osthoff’s Law in Greek (LEJEUNE 1972: 219-20), Latin (MEISER 1998: 75-6), Celtic (MCCONE 1996: 63-4), Germanic (RINGE 2006: 75-8) and perhaps Balto-Slavic (JASANOFF 2004: 251-2).

Tocharian provides some evidence that the development of an independent Sievers’-type variation was possible. Although there is only slim evidence that it underwent Sievers’ Law *per se* (thus RINGE 1991, 1996: 11-12), PRONK (2009) shows that an anaptyctic **-ä-* was created before any resonant in Tocharian when preceded by a super-heavy syllable.¹⁹ This was a Proto-Tocharian (or Tocharian B) change rather than a Proto-Indo-European development, since any vowel other than **-ä-* < **-e-*, **-i-*, **-u-* in the previous syllable counts as long for the purpose of syllable weight. Therefore, it demonstrates that Sievers’ Law-type variation could occur independently.

SIHLER (1995: 176, 2006: 185-91) argues for independent Sievers’ Laws. He points out that in Germanic Sievers’ Law took place also after sequences which became super-heavy only as a result of purely Germanic developments. Thus, for example, Gothic *waurkeiþ* ‘(s)he works’ < **uirkīθ* < **urkijīθ* < **urg-je-ti* had a super-heavy first syllable only after vocalic **-r-* became **-ur-* in Proto-Germanic, but still shows the result of the Sievers’ Law sequence **-iji-* < **-ije-*. It should also be noted that Gothic shows the same pattern of super-heavy syllable + *-ei-* vs. heavy syllable + *-ji-* even in verbs formed with the iterative/causative present suffix **-eje-* > **-iji-*, e.g. **uort-eje-ti* > **uardijīθ* > *(fra-)wardeiþ* ‘(s)he destroys’ but **logh-eje-ti* > **lagijīθ* > *lagjīþ* ‘(s)he lays’. It is possible that these

¹⁹ Thus making it similar to the ‘extended’ version of Sievers’ Law, which supposes that **-l-*, **-r-*, **-m-* and **-n-* also developed vocalic alternants after super-heavy syllables (i.e. to **-ll-* etc.). There is very little evidence for the extended version of the law in other Indo-European languages (SIHLER 2006, *passim*).

developments are just an extension of the inherited original pattern put in place by the Proto-Indo-European operation of Sievers' Law. But it is just as likely, and perhaps more efficient, to suppose that Sievers' Law in Germanic took place only once, after the changes of **-R-* > **-uR-* and **-e-* > **-i-* had already occurred.²⁰

Another possible example of Sievers' Law operating within an individual language may be a restriction to the clusters which count as creating a super-heavy syllable in Vedic. According to SCHINDLER (1977: 60-61), Sievers' Law did not apply after **CVCC-* clusters when the first of the final consonants were obstruents. Thus, the Vedic absolutive suffixes *-tví*, *-tvá* and *-tváya* never show the expected Sievers' variations, even when preceded by a consonant, e.g. *yuk-tvá*. Similarly, Ved. *mátsya-* 'fish' does not show vocalic **-i-*. If this restriction is correct, it suggests a different environment for Sievers' Law from Germanic, where obstruents did not prevent the operation of Sievers' Law, e.g. Goth. *wahseip* '(s)he grows' < **uahsij̥iθ* < **H₂uogs-eje-ti*. However, none of the examples of the restriction provided by SCHINDLER can definitely be shown to go back to Proto-Indo-European, so it is possible that they were all created or borrowed after Sievers' Law had ceased to operate. SIHLER (2006: 185-8) also finds a couple of apparent Vedic examples of Sievers' Law operating on this cluster, e.g. *gábhastiyos* 'arms, hands' (although these may very well be Vedic creations as well).

Altogether, there is a certain amount of evidence to suggest that Sievers' Law might have applied independently in Germanic and in Indo-Iranian, two of the main language families for which we have solid evidence for its existence. On that basis, and since the Tocharian evidence suggests that a Sievers'-type development could happen independently, we are not compelled to assume that Sievers' Law was a Proto-Indo-European development rather than a parallel development in Indo-Iranian, Germanic and Greek, along the lines of Osthoff's and Grassman's Laws.

²⁰ In that case Sievers' Law, at least in Germanic, would not be purely a constraint on **-i-* following super-heavy syllables but would also prevent **-ij̥-* following heavy syllables (often called the 'converse of Sievers' Law').

This may help explain the problems we raised earlier with regard to the development of Gk. $\phi\acute{o}\nu$ < * $\delta\bar{u}j\acute{o}m$. If it had undergone Sievers’ Law * $\delta\bar{u}ij\acute{o}m$ would be expected to give * $\delta\bar{u}ij\acute{o}m$ by Wheeler’s Law (>^x $\phi\acute{o}\nu$). If Sievers’ Law did not take place at all in Greek, * $\delta\bar{u}j\acute{o}m$ could already have become * $\delta\bar{ij}\acute{o}m$ before Osthoff’s Law took place (which would otherwise have given * $\delta\bar{u}j\acute{o}m$ > * $\delta\bar{u}j\acute{o}m$). Alternatively, we could say that the Greek version of Sievers’ Law must have operated before Osthoff’s Law, but after Wheeler’s Law. When Wheeler’s Law applied the word for ‘egg’ was still * $\delta\bar{u}j\acute{o}m$ and thus remained unaffected. It was then changed to * $\delta\bar{u}ij\acute{o}m$ prior to Osthoff’s Law and hence escaped the shortening of its initial vowel. The reverse order of Sievers’ and Osthoff’s Law can be seen in Germanic, where * $\delta\bar{u}j\acute{o}m$ became * $\delta\bar{u}j\acute{o}m$ (> * $a\bar{ij}am$) by Osthoff’s Law and was therefore unaffected by Sievers’ Law.

The development of * $\delta\bar{u}j\acute{o}m$ > YAv. *aēm* is more problematic; as SCHINDLER (165) points out, we know that Sievers’ Law should have operated on this sequence in Indo-Iranian, on the basis of *vṛddhi* forms like Ved. *kāvīya-* beside *kavi-*. Obviously, if this was always the case, then * $\delta\bar{u}j\acute{o}m$ must have given * $\delta\bar{u}ij\acute{o}m$ in Proto-Indo-Iranian. However, *vṛddhi* was an extremely productive and synchronically transparent process in Indo-Iranian, so we need not assume that forms like *kāvīya-* are very old. There seem to be two possible ways out of the problem. One is that Sievers’ Law came into existence independently in Indic and Iranian. In that case, it may be that original clusters of * $-uj-$ gave * $-ij-$ in Iranian before Sievers’ Law took place. If it is the case that forms like Wazīrī *yōwya* and Tālīšī *ūva* reflect * $\delta\bar{u}j\acute{o}m$, the result of the original cluster * $-uj-$ might not in fact have been * $-ij-$, but * $-y-$, with this cluster being simplified either to * $-i-$ or to * $-u-$ in the different Iranian languages.

The other possibility is that * $-uj-$ gave * $-ij-$ in Indo-Iranian before Sievers’ Law. In that case Vedic forms like *kāvīya-* would have to be secondary, or re-formed after the base form: thus * $kāuj\acute{o}-$ > * $kāij\acute{o}-$ → * $kāuj\acute{o}-$ (after *kavi-*) > * $kāuj\acute{i}o-$ (Sievers’ Law). Evidently the etymological connection between * $\delta\bar{u}j\acute{o}m$ > $\delta\bar{ij}\acute{o}m$ and the word for ‘bird’ was not recognised, perhaps because ‘bird’ had already been remodelled to * $H_2u\acute{o}j-/H_2uej-$ (on which see below).

7. ‘Bird’ from **H₂o/eu-i-s*

We have seen that a reconstruction **H₂ōu̯i-o-* is by far the most plausible reconstruction for PIE ‘egg’. This gives us valuable information about the original form of the word for ‘bird’. We left the decision between an acrostatic noun with full grade I (**H₂ou̯-i-*/**H₂eu̯-i-*) or II (**H₂uo̯i-*/**H₂ue̯i-*) open in our previous discussion. There is a weak presumption in favour of the former, since it is suggested by two language families which are not closely related (Italic and Armenian), against the evidence for full-grade II in Indo-Iranian. However, RIEKEN (1999: 24) has explained the creation of the Italic and Armenian forms from full-grade II by an analogy based on a reinterpretation of the oblique stem: the gen. sg. **H₂ue̯i-s* was equivalent to the gen. sg. of a proterodynamic noun of the type **m̥-tej-s*, which led to the creation of a new nom. sg. **H₂eu̯-i-s* equivalent to nom. sg. **men-ti-s*. On its own this is quite plausible, but **H₂ōu̯i-o-* ‘egg’ provides the evidence for full grade I, since **H₂ou̯i-* must have been the source from which the *v̥rddhi* form **H₂ōu̯i-o-* was derived. Contrary to SCHINDLER, therefore, we see that Lat. *avis*, U. *avif*, Arm. *haw* must directly reflect the weak stem of an acrostatic *i*-stem **H₂o/eu̯-i-*.²¹ It should be noted that this means that the word for ‘bird’ was homophonous with the word for ‘sheep’ (on which more directly below).²² This seems remarkable, but that is the way the evidence points.

How then are we to explain Ved. *véh*, since it cannot reflect the original noun formation? This is admittedly problematic, but one possibility may lie in the tendency for the Indo-European languages to replace *e*-grade in the weak stems of acrostatic nouns with the productive zero grade, and position the full grade in the stem or ending as in proterodynamic/amphidynamic noun paradigms (SCHINDLER 1972: 35-6, 1975: 7; JASANOFF 2003: 68-9). This was particularly characteristic of neuter *u*-stems in Indo-Iranian. Thus the new ‘semi-proterodynamic’ paradigm is preserved in YAv. *āiiu* < **H₂o̯i-u-*, OAv. gen. sg. *yaoš* ‘age’ < **H₂i-eu̯-s* (cf. Gk. *αιετ* ‘forever’ < **H₂ei̯-u-e̯i*), and in Ved. *dāru* < **doru*, gen. sg. *dróḥ* ‘wood’ <

²¹ Or, less likely, the strong stem.

²² Nom. sg. **H₂ou̯-i-s* > Gk. Hom. *ἄϊς*, Lat. *ovis*, Lyc. acc. sg. *xawā* ‘sheep’; gen.sg. **H₂eu̯-i-s* > Toch. B. *āuw* ‘ewe’, Ved. *áviḥ* ‘sheep’.

**dr-eu-s*. However, this paradigm did not remain stable for long. The Indo-Iranian languages tended to generalise a single stem, and subsequently to treat this stem as a standard *u*-stem: thus Ved. gen. sg. *snóḥ* < **sn-eu-s* ‘summit’ was replaced by *sánoh* after the nom. sg. *sánu* < **son-u-s*, and we find that the stem of nom. sg. Ved. *áyu* ‘age’ has been spread through the entire paradigm in loc. sg. *áyuni*.

If the creation of a ‘semi-proterodynamic’ paradigm occurred to the word for ‘bird’, the result would be nom. sg. **H₂ou-i-s*, gen. sg. **H₂u-ei-s*. As it happens, the originally acrostatic *i*-stems did not alter their original paradigm so uniformly as the *u*-stems, if Ved. *áhiḥ*, Av. *aži-* ‘snake’ reflect the original weak stem seen in gen. sg. **H₁eg^{wh}-i-*.²³ But the shift remained a possibility, as shown by YAv. *ərəzi-* ‘scrotum’ from gen. sg. **H₁rg^h-ei-s* ← **H₁erǵ^h-i-* (cf. a similar change in Hitt. *arkijes* ‘testicles’, but Gk. ὄρχις, Mir. *uirge* ‘testicle’, which are derived from nom. sg. **H₁orǵ^h-i-*; WATKINS 1975).

In the case of **H₂ou-i-s*, **H₂eu-i-s* ‘bird’, the creation of the ‘semi-proterodynamic’ paradigm may well have been favoured by the unfortunate homophony with **H₂ou-i-s*, **H₂eu-i-s* ‘sheep’. The resulting paradigm had nom.sg. **H₂ou-i-s*, gen. sg. **H₂u-ei-s*, and from here it is easy to see how the paradigm could have been altered to follow the regular proterodynamic pattern by changing the vowel in the nom. sg. to give **H₂eu-i-s*, by analogy with the type nom. sg. **men-ti-s*, gen. sg. **mṇ-tei-s*. ‘Bird’ then took part in the usual generalising of the weak root in *i*-stems to give attested Ved. *víḥ* (cf. Ved. *matíḥ* ‘thought’ < **mṇ-ti-s* ← **men-ti-s*).²⁴ However, for ‘bird’ another way of regularising the paradigm was also possible: rather than replace the vowel in nom. sg. **H₂ou-i-* it was possible to retain it, but move it into full-grade II to give **H₂uoí-s*. Beside gen. sg. **H₂u-ei-s*, now reinterpreted as **H₂uei-s*, this would give a perfectly regular acrostatic type usually found in root-nouns. The change would have been particularly

²³ Whence also Gk. ἔχις ‘adder, viper’ via **H₁eg^{wh}-i-os*; cf. Gk. ὄφις ‘snake’ < nom. sg. **H₁og^{wh}-i-* (JASANOFF/NUSSBAUM 1996: 198). But for a different explanation of the words for ‘snake’ see now OETTINGER (2010).

²⁴ The same process evidently occurred with YAv. *ərəzi-* ‘scrotum’ < **H₁rg^h-i-* ← **H₁orǵ^h-i-*.

promoted by the loss of laryngeals, when the ‘root’ of gen. sg. **u-ej-s* would seem to consist of only **u-*. This anomaly could be rectified by analysing **u-ej-s* as **uej-s*, for which a nom. sg. **uoi-s* would be regularly expected.

Eventually the treatment of ‘bird’ as an originally proterodynamic *i*-stem with nom. sg. *viḥ* won out in Vedic, but the relic form *véḥ* shows that at an earlier stage a competing analysis as an originally acrostatic root-noun was also possible. Neither was original, but was the result of a sequence of Indo-Iranian processes which we can see also in the originally acrostatic *u*-stems: first the creation of ‘semi-proterodynamic’ paradigms with *o/ø* root-ablaut followed by regularisation of a single stem. In the case of *u*-stems the strong stem forms were generalised, in the *i*-stems it was the weak stem forms.

8. Conclusion

The Proto-Indo-European word for ‘bird’ was an acrostatic *i*-stem **H₂o/eu-i-*, the oblique stem of which is directly represented by Lat. *avis*, U. *avif*, Armenian *haw*. Vedic *véḥ* is an analogical creation based on a new oblique stem demonstrated by a gen. sg. **H₂u-ej-s* with the productive proterotonic type of full grade. It should be noted that the words for ‘bird’ and ‘sheep’ were homophonous in Proto-Indo-European. No doubt for that reason, the individual languages generalised different parts of the paradigm of ‘sheep’ and ‘bird’ (e.g. Lat. *avis* ‘bird’, *ovis* ‘sheep’) and the homophony probably added to the pressure for the remodelling of the paradigm of *véḥ*.

The word for ‘egg’ was **H₂ōu-ī-om*, a *vṛddhi* derivation from the strong stem of ‘bird’ originally meaning ‘bird’s (egg)’. SCHINDLER’s reconstruction **ō-Huī-o-m* ‘what’s next to the bird’ is improbable both semantically and for formal reasons.

References

- ADRADOS, F. R. 1950. Tratamiento de los grupos *-ụ-* y *-ị-* en jónico-ático. *Emerita* 18, 408-24.
- BEEKES, R. S. P. 1992. Widow. HS 105, 171-86.
- BURROW, T. P. 1949. Schwa in Sanskrit. TPhS 48, 22-61.
- CLACKSON, J. 1994. *The Linguistic Relationship between Armenian and Greek*. Oxford, Blackwell.
- COHEN, Y. Forthcoming. *Rara avis*. A study of the HU section of the S^a vocabulary. Your Praise is Sweet. A Memorial Volume for Jeremy BLACK from Students, Colleagues and Friends (ed. H. D. BAKER, EL. ROBSON & G. ZÓLYOMI). Oxford, Griffith Institute.
- COLLINGE, N. E. 1985. *The Laws of Indo-European*. Amsterdam/Philadelphia, John Benjamins
- DARMS, G. 1978. Schwäher und Schwager, Hahn und Huhn. Die Vrddhi -Ableitung im Germanischen. Munich, R. Kitzinger.
- DE VAAN, M. 2008. *Etymological Dictionary of Latin and the other Italic Languages*. Leiden/Boston, Brill.
- EICHNER, H. 1973. Die Etymologie von heth. *mehur*. MSS 31, 53-105.
- ERNOUT, A./MEILLET A. 1960. *Dictionnaire étymologique de la langue latine: histoire des mots*⁴. Paris, Klincksieck.
- HAMP, E. P. 1955. Italic perfects in **/-x^w-/* and I.E. **A^w*. Word 11, 399-403.
- HARÐARSON, J. A. 1993. Griechisch (Ϝ)ἔμμαι, in *Indogermanica et Italica*. Festschrift für Helmut RIX zum 65. Geburtstag, 159-68 (ed. G. MEISER). Innsbruck, IBS.
- HART, G. 2004. Some problems in Anatolian phonology and etymology, in *Indo-European Perspectives*. Studies in Honour of Anna Morpurgo Davies (ed. J. H. W. PENNEY), 341-54. Oxford, Oxford University Press.
- HENNING, W. B. 1954. Ein unbeachtetes Wort im Awesta, in *Asiatica*. Festschrift Friedrich WELLER zum 65. Geburtstag gewidmet von seinen Freunden, Kollegen und Schülern (ed. J. SCHUBERT & U. SCHNEIDER), 289-92. Leipzig, Otto Harrassowitz.
- HOFFMANN, K./FORSSMAN, B. 2004. *Avestische Laut- und Flexionslehre*². Innsbruck, IBS.
- JASANOFF, J. H. 1988. PIE **ǵnē-* 'recognize, know', in *Die Laryngaltheorie und die Rekonstruktion des indogermanischen Laut- und Formensystems* (ed A. BAMBESBERGER), 227-39. Heidelberg, Winter.
- , 2003. *Hittite and the Indo-European Verb*. Oxford, Oxford University Press.
- , 2004. Acute vs. circumflex: some notes on PIE and post-PIE prosodic phonology, in *Per Aspera Ad Asteriscos*. *Studia Indogermanica in honorem Jens*

- Elmegård RASMUSSEN sexagenarii Idibus Martiis anno MMIV, (ed. A. HYLLESTED et. al.), 247-55 Innsbruck, IBS.
- JASANOFF, J./NUSSBAUM, A. 1996. Word games: the linguistic evidence in *Black Athena*, in *Black Athena Revisited* (ed. M. LEFKOWITZ and G. ROGERS), 177-205. Chapel Hill / London, North Carolina University Press.
- KIM, R. 2000. Reexamining the prehistory of Tocharian B 'ewe'. TIES 9, 37-44.
- KIMBALL, S. 1987. * H_3 in Anatolian, in Festschrift for Henry Hoenigswald: on the occasion of his seventieth birthday (ed. G. CARDONA and N. H. ZID), 185-192. Tübingen, G. Narr.
- KLINGENSCHMITT, G. 1975. Tocharisch und Urindogermanisch, in Flexion und Wortbildung. Akten der V. Fachtagung der Indogermanischen Gesellschaft Regensburg, 9. - 14. September 1973 (ed. H. RIX), 148-63. Wiesbaden, Dr. Ludwig Reichert.
- , 1982. Das altarmenische Verbum. Wiesbaden, Dr. Ludwig Reichert.
- KLOEKHORST, A. 2008. Etymological Dictionary of the Hittite Inherited Lexicon. Leiden/Boston, Brill.
- KORTLANDT, F. H. H. 1983. Notes on Armenian historical phonology III. *h-*. *Studia Caucasica* 5, 9-16.
- , 1984. PIE. **H* in Armenian. *Annual of Armenian Linguistics* 5, 41-3.
- , 1987. Notes on Armenian historical phonology V. *Studia Caucasica* 7, 61-5.
- LEJEUNE, M. 1972. *Phonétique Historique du Mycénien et du Grec Ancien*. Paris, Klincksieck.
- LINDEMAN, F. O. 1987. Introduction to the 'Laryngeal Theory'. Oslo, Norwegian University Press.
- , 1997. Introduction to the 'Laryngeal Theory'. Innsbruck, IBS.
- LIV: H. RIX et al. 2001. *Lexikon der indogermanischen Verben*.² Wiesbaden, Dr. Ludwig Reichert
- LÜHR, R. 1976. Germanische Resonantengemination durch Laryngal. MSS 33.
- MAYRHOFER, M. 1986. *Indogermanische Grammatik I/2: Lautlehre*. Heidelberg, C. Winter.
- MCCONE, K. 1996. *Towards a Relative Chronology of Ancient and Medieval Celtic Sound Change*. Maynooth, Department of Old Irish, St. Patrick's College.
- MEIER-BRÜGGER, M. 2003. *Indo-European Linguistics*. Berlin / New York, Walter de Gruyter.
- MEISER, G. 1998. *Historische Laut- und Formenlehre der lateinischen Sprache*. Darmstadt, Wissenschaftliche Buchgesellschaft.
- OETTINGER, N. 1995. Griech. ὀστέον, heth. *kuḷēi* und ein neues Kollektivsuffix, in *Verba et Structurae*. Festschrift für Klaus STRUNK zum 65. Geburtstag (ed. H. HETTRICH et al.), 211-27. Innsbruck, IBS.

- , 2010. Die indogermanischen Wörter für 'Schlange', in *Ex Anatolia Lux. Anatolian and Indo-European studies in honor of H. Craig MELCHERT on the occasion of his sixty-fifth birthday* (ed. R. KIM et al.), 278-84. Ann Arbor, Beech Stave Press.
- OLSEN, B. A. 1999. The noun in Biblical Armenian: origin and word-formation. With special emphasis on the Indo-European heritage, Berlin / New York, Mouton de Gruyter.
- , 2006. Hittite *š* from *h₃ʔ*, in *GIS.HUR gul-za-at-ta-ra*. Festschrift for Folke JOSEPHSON (ed. G. CARLING), 237-47. Göteborg, Meijerbergs Arkiv för Svensk Ord-forskning 32.
- OTTEN, H. / VON SODEN, W. 1968. Das akkadisch-hethitische Vokabular KBo I 44 + KBo XIII 1. (StBoT 7). Wiesbaden, Harrassowitz.
- PETERS, M. 1980. Untersuchungen zur Vertretung der indogermanischen Laryngale im Griechischen. Wien, Verlag der Österreichischen Akademie der Wissen-schaften.
- PINAULT, G.-J. 1997. Terminologie du petit bétail en tokharien. *Studia Etymologica Cracovensia* 2, 175-218.
- PROBERT, P. 2006. *Ancient Greek Accentuation: Synchronic Patterns, Frequency Ef-fects, and Prehistory*. Oxford, Oxford University Press.
- PRONK, T. 2009. Reflexes of the deletion and insertion of Proto-Tocharian **ā* in To-charian B. *TIES* 11, 69-113.
- RASMUSSEN, J. E. 1990/1991 [1999]. Some Additional Examples of PIE **-ēh₂-* and **-h₂ē-*, in J. R., *Selected Papers on Indo-European Linguistics* vol. 2, 394-412. Copenhagen, Museum Tusulanum Press.
- RIEKEN, E. 1999. *Untersuchungen zur nominalen Stammbildung des Hethitischen*. Wiesbaden, Harrassowitz.
- RINGE, D. A. 1991. Laryngeals and Sievers' law in Tocharian. *MSS* 52, 137-68.
- , 1996. *On the Chronology of Sound Changes in Tocharian*. Volume 1. From Proto-Indo-European to Proto-Tocharian. New Haven, Connecticut, American Oriental Society.
- , 2006. *From Proto-Indo-European to Proto-Germanic. A Linguistic History of English*, Volume I. Oxford, Oxford University Press.
- SCHINDLER, J. 1969. Die idg. Wörter für 'Vogel' und 'Ei'. *Sprache* 15, 144-67.
- , 1972. L'apophonie des noms-racines indo-européens. *BSL* 67, 31-8.
- , 1975. L'apophonie des thèmes indo-européens en *-r/n*. *BSL* 70, 1-10.
- , 1977. Notizen zum Sieversschen Gesetz. *Sprache* 23, 56-65.
- SCHMEJA, H. 1963. Die Verwandtschaftsnamen auf *-ως* und die Nomina auf *-ωνός, -ωνή* im Griechischen. *IF* 68, 22-41.
- SCHRIJVER, P. 1991. *The Reflexes of the Proto-Indo-European Laryngeals in Latin*. Amsterdam/Atlanta (GA), Rodopi.

- , 1995. *Studies in British Celtic Historical Phonology*. Amsterdam/Atlanta (GA), Rodopi.
- , 2003. *Athematic i-presents: the Italic and Celtic evidence*. *Incontri Linguistici* 26, 59-86.
- , Forthcoming. *Old British*, in *The Brythonic Languages Past and Present* (ed. E. TERNES). Bremen, Hempen.
- SEEBOLD, E. 1970. *Vergleichendes etymologisches Wörterbuch der germanischen starken Verben*. The Hague / Paris, Mouton.
- , 1972. *Das System der indogermanischen Halbvokale. Untersuchungen zum sogenannten "Sieversschen Gesetz" und zu den halbvokalhaltigen Suffixen in den indogermanischen Sprachen, besonders im Vedischen*. Heidelberg, Indogermanische Bibliothek.
- SIHLER, A. 1995. *New Comparative Grammar of Greek and Latin*. New York, Oxford University Press.
- , 2006. *Edgerton's law: The Phantom Evidence*. Heidelberg, C. Winter.
- THREATTE, L. 1980. *The Grammar of Attic Inscriptions. Volume One: Phonology*. Berlin / New York, Walter de Gruyter.
- UHLICH, J. 1993. *Die Reflexe der keltischen Suffixvarianten *-iō- vs. *-iū- im Altirischen*, in *Akten des ersten Symposiums deutschsprachiger Keltologen (Gosen bei Berlin, 8.-10. April 1992)* (ed. M. ROCKEL and S. ZIMMER), 353-70. Tübingen, Max Niemeyer.
- VÄÄNÄNEN, V. 1981. *Introduction au latin vulgaire*³. Paris, Klincksieck.
- VINE, B. 1998. *Aeolic ὄρπετον and Deverbative *-etó- in Greek and Indo-European*. Innsbruck, IBS.
- , 2002 [2006]. *Gk. σφήν, Eng. spoon: a note on 'Eichner's law'*. *MSS* 62, 289-99.
- , 2006. *On 'Thurneysen-Havet's law' in Latin and Italic*. *HS* 119, 211-49.
- WACKERNAGEL, J./DEBRUNNER, A. (1954). *Altindische Grammatik II,2. Die Nominalsuffixe*. Göttingen, Vandenhoeck & Ruprecht.
- WATKINS, C. 1975. *La famille indo-européenne de Grec ὄρχις: linguistique, poétique et mythologie*. *BSL* 70, 11-26.