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INDO-EUROPEAN MIDDLE VERBS FORMED WITH -*R*- AS A PHONETIC ARCHAISM

The paper discusses the primary and secondary endings of the Indo-European middle. It is suggested that, rather than being a local (Italo-Celtic) innovation, the *r*-endings of the middle voice represent a Proto-Indo-European archaism. Numerous middle forms containing the element -*r*- are found not only in the Tocharian languages, but also in most of the Anatolian languages attested in the second millennium BC (including Hittite, Palaic, Cuneiform Luvian and Hieroglyphic Luvian). Other Indo-European languages (including Greek and Indo-Iranian) display a zero marker, whereas the oldest Hittite texts attest the primitive feature -*t*-. The Old Hittite middle marker *-*ti*, it is claimed, was more archaic than its late variants *-*ri* as well as *-*i*. The original primary middle endings in non-Anatolian Indo-European should be reconstructed as follows: 1 sg. pres. *-$mh_2e\check{R}i$, 2 sg. *-$sh_2e\check{R}i$, 3 sg. *-$to\check{R}i$, 1 pl. pres. *-$mesdhh_2o\check{R}i$, 2 pl. *-$sdh(u)\underset{}{u}e\check{R}i$, 3 pl. *-$nto\check{R}i$ for transitive verbs and 1 sg. *-$h_2e/o\check{R}i$, 2 sg. *-$th_2e\check{R}i$, 3 sg. *-$o\check{R}i$, 1 pl. *-$medhh_2o\check{R}i$, 2 pl. *-$dh(u)\underset{}{u}e\check{R}i$, 3 pl. *-$ro\check{R}i$ for intransitive verbs. The Indo-European phoneme *$\check{R}$ seems to be a reflex of a Proto-Indo-European (i.e. Indo-Hittite) dental stop *$\check{D}$, probably identical with the Indo-European dental spirant *$đ$.

Keywords: *archaisms*, *Indo-European phonology*, *Indo-Hittite*, *middle voice*, *r-endings*

Most linguists of the 19th century believed that the *r*-endings of the middle (and passive) voice were introduced in the Indo-European languages relatively late, representing one of the purported innovations of Italo-Celtic (cf. Bednarczuk 1988: 175). Thus, Latin has *r*-endings in the primary and secondary tenses, including the subjunctive; the ending *-*r* universally appears in the first and third persons (e.g. *legor*, *-itur*, pl. *legimur*, *-untur*), although it is absent in the second person (pl. *legiminī* contains an unclear ending *-minī*, perhaps derived from a participle plural form ending in *-*menoi*; sg. *legere* derives from

*leg-eso, whereas *legeris* is probably an innovative form resulting from the recharacterization with final -s – accordingly, *legeris* continues *legere+s)[1]. The middle endings of the first and second persons are not attested in the preserved Oscan and Umbrian texts. However, the Osco-Umbrian languages systematically retain the *r*-endings of the third person, e.g. Osc. *vincter* 'vincitur', *karanter* 'vescuntur', subj. *sakahíter* 'sanciatur'; Umbr. *herter* 'oportet', *emantur* 'accipiantur'. The Osco-Umbrian endings *-ter* and *-nter* (*-ntur*) evidently derive from *-tori* and *-ntori*, respectively, displaying the vowel -e- caused by *i*-umlaut. The Insular Celtic languages have comparable *r*-endings in the deponent and passive conjugations. Deponents, found only in Old Irish, display *r*-endings across the paradigm (1 sg. -ur, 2 sg. -ther, 3 sg. -thir, 1 pl. -mur, 3 sg. -tir) except for the 2nd person pl. -the, as can be gleaned from the regular deponent paradigm of the Old Irish verb denoting 'to think' (cf. Jasanoff 1977: 165): 1 sg. *domoiniur* 'I think', 2 sg. *domointer*, 3 sg. *domointhar*, 1 pl. *domoinemmar*, 2 pl. *domoinid*, 3 pl. *domoinetar*.

The passive (Brythonic: impersonal), a category confined to the third person, is found in both Old Irish and Welsh, e.g. OIr. 3 sg. absol. *berair*, 3 pl. *bertair*, conj. 3 sg. *berar* 'is carried' (García Castillero 2001-2002), MW. *kerir* 3 sg. 'is loved', OW. *planthonnor* 3 pl. 'fodiuntur'. The common origin of the Italo-Celtic formations was noticed in 1861 and the hypothesis concerning the innovative character of the *r*-endings dominated historical-comparative linguistics for many years[2], although certain scholars correctly observed that the New Phrygian inscriptions potentially contain two middle forms with *r*-endings (NPhryg. αββερετορ 'affertur' < IE. *ad-bheretori, αδδακετορ 'afficitur' < IE. *ad-dhə₂ketori).

The discovery of a range of further Indo-European languages (belonging to the Tocharian and Anatolian families) in the two first decades of the 20th century altered the perspective of the research on the Indo-European middle (Bader 1997: 41-59). In both Tocharian and Anatolian, the *r*-endings are exclusively primary. In Tocharian, the final -r appears as an obligatory element of all present middle endings, as seen e.g. in the regular paradigm of the verb 'to hear' (Toch. A *klyos-*, B *klyaus-* < IE. *ḱleu̯s-*, cf. Pol. *słuchać, słyszeć*).

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[1] An alternative derivation is possible here (Lat. *legeris* < IE. *legesari < PIE. *leg-e-sh₂e-Ri by the metathesis of the two final syllables), but this seems less plausible than the traditional analysis.

[2] Even in modern times, the Italo-Celtic medio-passive in -r has been considered as innovative to a certain extent. Though accepting the traditional view about the secondary origin of the middle *r*-endings, Bednarczuk (1988: 182) states: "As Italo-Celtic innovations in this respect may be considered the tendency (parallel to Hittite and Tocharian) to introduce *r*-endings in all persons, also in the past tense, but with the exception of 2.pl., whereas in Hittite and Tocharian they are limited to the present, including also 2. pl.".

Table 1. Tocharian middle endings and their equivalents
in the Italo-Celtic languages

Person	Tocharian A	Tocharian B	Italo-Celtic endings
1 sg.	*klyosmār*	*klyausemar*	Lat. -*or*, OIr. -*ur*
2 sg.	*klyostār*	*klyaustar*	OIr. -*ther*
3 sg.	*klyostär*	*klyaustär*	Lat. -*tur*, Osc. -*ter*, OIr. -*thir*
1 pl.	*klyosamtär*	*klyausem(t)tär*	Lat. -*mur*, OIr. -*mur*
2 pl.	**klyościär*	*klyaustär*	
3 pl.	*klyososantar*	*klyausentar*	Lat. -*ntur*, Osc. -*nter*, OIr. -*tir*

Source: own work.

The Anatolian evidence is likewise impressive. Hittite preserves *ri*-endings everywhere, e.g. 1 sg. *iyaḫḫari* 'I march', 2 sg. *iyattari* (beside *iyattati*) 'you march', 3 sg. *iyattari* '(he) marches', *kittari* 'lies', *neyari* 'is led', *duqqari* 'it is right' (impersonal construction), 1 pl. *uwawastari* (beside -*wastati*) 'we see', 2 pl. *sarkaliyatumari* (beside -*dumati*), 3 pl. *iyantari* 'they march'. Like Hittite, Luvian attests numerous middle forms, which invariably feature *ri*-endings, e.g. 3 sg. *ayari* 'is made', *haltittari* 'is called', 2 pl. *aztuwari* 'you eat', 3 pl. *wassantari* 'they wear'. Palaic furnishes an isolated 3 sg. form *kitar* 'lies, is laid' (= Hitt. *kittari*), while Hieroglyphic Luvian has the analogous *ziyyar* 'id.' (Melchert 1987). It is worth emphasizing that the Luvoid languages differentiate intransitive and transitive verbs by employing the 3 sg. endings -*ar(i)* and -*tar(i)*, respectively.

In view of the Tocharian and Anatolian data, it is generally recognized in modern linguistics that the secondary middle endings in numerous Indo-European languages (e.g. Anatolian, Tocharian, Italic, Celtic and Phrygian) are optionally or obligatorily accompanied by an element containing the syllable **ri*. Other Indo-European families (Indo-Iranian, Greek and Germanic), however, build middle endings by means of a vocalic element **-i*, as can be demonstrated on the basis of the following comparisons (intransitive PIE **ḱei̯-* 'to lie, be laid', transitive PIE **bher-* 'to carry, bear, bring') in Table 2.

In two different works, Jasanoff (1977, 1978) attempted to explain the relationship between the primary middle endings in **-r* and those in **-i*. He thought that the *r*-marker of the middle forms "is etymologically related to the *r*-desinences of the 3 pl. perfect (Lat. -*ēre*, -*ērunt*, Ved. -*u*, etc.) and middle (Ved. -*ra[n]*, -*re*, Toch. B -*re*)" (Jasanoff 1977: 17). The element -*r*- was added secondarily to the *i*-endings, creating a new middle ending -*ri*. As a 'bipartite' morpheme, **-ri* tended to spread at the expense of **-i*, so that new forms in **-ntori* and **-tori* were created beside older **-ntoi* and **-toi*. According to the scholar, "[i]n the post-IE period **-ri* was extended to the first and second persons in some dialects, while in others it was entirely eliminated" (Jasanoff 1977: 18).

Table 2. Intransitive and transitive middle verbs in Old Indic, Avestan
and Ancient Greek

Person	Old Indic	Avestan	Ancient Greek	reconstructed *i*-endings in Central Indo-European
1 sg.	*śáye, bháre*	*-ē*	*keĩmai, phéromai*	intrans. *-ai* (or *-oi*), trans. *-mai*
2 sg.	*śése, bhárase*	*-sē*	*keĩsai, phéreai* or *phérē*	*-sai*
3 sg.	*śáye* or *śéte, bhárate*	*-tē* in *saētē*	*keĩtai*, dial. *keĩtoi, phéretai*, dial. *phéretoi*	intrans. *-ai* (< *-oi*), trans. *-tai* (< *-toi*)
1 pl.	*śémahe, bhárāmahe*	*-madē*	*keĩmetha*, dial. *keĩmestha, phérometha*, dial. *phéromestha*	*-me(s)dhai*
2 pl.	*śédhve, bháradhve*	*-dvē*	*keĩsthe, phéresthe*	*-(s)dhu̯ei*
3 pl.	*śére* or *śénte, bhárante*	*-rē* in *sōirē, -ntē*	*keĩntai*, dial. *keĩntoi, phérontai*, dial. *phérontoi*	intrans. *-roi*, trans. *-ntai* (< *-ntoi*)

Source: own work.

Jasanoff's explanation seems unconvincing for a number of reasons. First
of all, the *r*-endings of the Indo-European middle are attested in the peripheral
languages, namely in Western Europe (Italic, Celtic), in East Asia (Tocharian)
and in Asia Minor (Anatolian, Phrygian). Such a distribution suggests that the
ending *-ri* should be regarded as more archaic than *-i*[3] (attested in Greek
and Indo-Iranian, i.e. in the Indo-European languages of the central subgroup[4]).
Secondly, all Indo-European languages exhibit internal consistency as to the

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[3] Justus (2000) suggests that the *r*-forms attested in Anatolian, Tocharian, Italic, Celtic and Phry-
gian are due to a common innovation, carried out in the posited Hittite-Tocharian-Italic-Celtic
branch of Indo-European. Justus dates the disintegration of this branch to ca. 2000 BC. The
existence of this specific branch is doubtful, however, as Hittite belongs to the Southern Indo-
European (Anatolian) branch, Italic and Celtic to the West Indo-European branch, Phrygian to
the Palaeo-Balkan branch and Tocharian to the East Indo-European branch. Blažek (2002: 224)
rejects Justus's interpretation and prefers to treat the *r*-forms as "an archaism" rather than an in-
novation.

[4] Germanic is of no relevance here, as it only continues secondary endings. The Baltic and Slavic
languages preserve no information about the middle endings at all.

selection of the middle endings in *-ri* or *-i*. Put differently, there is no Indo-European language that would possess both of these endings simultaneously[5]. Thus, no traces of the alleged contamination of both sets of endings are preserved in the abundant lexical material. Thirdly, Jasanoff ignores the archaic forms *-tati* (beside *-tari*) and *-duwati* (beside *-dumari*) in Hittite. It is entirely certain that primary middle endings in Hittite (as in other Indo-European languages) are strongly connected with secondary middle endings; thus, the relation between Hitt. *-tati* (*-tari*) and *-tat* (*-ta*) must be elucidated. The statement that "the opposition between the primary and secondary middle endings appears to have been late and at least optional in Indo-European" (Jasanoff 1977: 178) is hardly correct. Fourthly, there is no obvious indication that the *r*-endings of the middle are related to the perfect forms with the element *-r-* (limited to the 3 pl.). Fifthly, the extraction of *-r-* (from the ending *-ro-i*) and the alleged secondary creation of the ending *-tori* on the basis of an earlier *-toi* seems – in my opinion – pure speculation, since it is well known that no liquid infixes exist in the Indo-European languages. What is more, the ending *-ro-i* (3 pl.) in the so-called *media tantum* should be considered an Indo-Iranian innovation rather than an archaism: as the Indo-Iranian languages demonstrate no traces of the desinence *-ri* (only showing *-i* instead), Skt. *-re* and Av. *-rē* (alternating with Skt. *-nte*, Av. *-ntē*) may hardly be treated as a source for the alternative Indo-European ending *-ntori*.

In the following, I shall examine the problem of the origin of the *r*-endings in the Indo-European middle. Our discussion needs to start from the well-known fact that the primary endings of the active voice in Indo-European (1 sg. *-mi*, 2 sg. *-si*, 3 sg. *-ti*, 1 pl. *-mes[i]*, 2 pl. *-tes[i]*, 3 pl. *-nti*) were created on the bases of the respective secondary ones (1 sg. *-m*, 2 sg. *-s*, 3 sg. *-t*, 1 pl. *-me*, 2 pl. *-te*, 3 pl. *-nt*) – namely, by means of the particle *-i*. Thus, we must review the important question of the relationship between the primary and secondary endings in the Indo-European middle.

According to Beekes (2011: 268), the secondary personal endings of the middle voice had the following form:

	PIE intransitive	PIE transitive	Examples (IE *$\acute{k}ei$- 'to lie, be laid')
1 sg.	-h_2	-mh_2	Skt. *aśayi*, Gk. *ekeímēn*
2 sg.	-th_2o	-sth_2o	Skt. *aśethāḥ*, Gk. *ékeiso*
3 sg.	-*o*	-*to*	Skt. *aśeta*, Gk. *ékeito*
1 pl.	-med^hh_2	-$me(s)d^hh_2$	Skt. *aśemahi*, Gk. *ekeímetha*
2 pl.	-d^hwe	-td^hwe	Skt. *aśedhvam*, Gk. *ékeisthe*
3 pl.	-*ro*	-*ntro*	Skt. *aśerata*, Gk. *ékeinto*

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[5] The alleged New Phrygian form αδδακεται is due to erroneous excerption from the text of the relevant inscription. The correct (active) form is αδδακετ, whereas αι belongs to the initial particle αινι, used to begin new phrases in New Phrygian apotropaic formulae. The only attested middle form is αδδακετορ, displaying the exclusive ending *-τορ (< IE. *-tori).

The primary middle endings as attested in the principal Proto-Indo-European (i.e. Indo-Hittite) languages are presented in Table 3 below (the crucial examples were already presented in the earlier part of the article).

Table 3. The primary middle endings
in the principal Proto-Indo-European languages

Person	San-skrit	Avestan	Greek	Tocharian A/B	Hittite	Latin	Old Irish	Gothic
1 sg.	-e	-ē	-mai	-ār / -mar	-ḫari	-or	-ur	-da
2 sg.	-se	-sē	-sai	-tār / -tar	-tari/-tati	-ris	-ther	-za
3 sg.	-e, -te	-tē	-tai, -toi	-tär / -tär	-ari/-tari	-tur	-thir	-da
1 pl.	-mahe	-madē	-me(s)tha	-mtär / -mtär	-wastari/-ti	-mur	-mir	-nda
2 pl.	-dhve	-dvē	-sthe	-cär / -tär	-dumari/-ti	-minī	-the	-nda
3 pl.	-re, -nte	-ntē	-ntai	-ntär / -ntär	-ntari	-ntur	-tir	-nda

Source: own work.

Beekes (2011: 268) stresses that "[t]he historical interpretation of these endings is far from simple. Scholars have, therefore, not achieved full agreement". He attempts to answer the following two questions: (1) What is the relationship between the primary and secondary middle endings? (2) What is the relationship of the middle *r*-forms to the *r*-less forms?

As regards the former issue, Beekes draws the correct conclusion that the primary endings of the middle voice were usually formed on the basis of the corresponding secondary ones. The marker -*r*-, he argues, was not characteristic of the primary endings. He agrees with Jasanoff that it was taken from original forms like Skt. *śére* 'they lie', Avest. *sōire* 'id.' and perhaps also from the 3 pl. ending -*r*, -*ēr* of the perfect tense. But neither was the -*i* of Sanskrit and Greek the original marker of the primary middle endings in Proto-Indo-European, because the languages which generalized the -*r* show no trace of the -*i*: according to Beekes, the marker -*i* was typical of active forms. Consequently, Beekes (2011: 269) concludes that "there was no opposition between primary and secondary" – an opinion with which I find it difficult to agree. Firstly, it is obvious that such an opposition is broadly attested across Indo-European,[6] so that there is

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[6] Latin and Osco-Umbrian only continue the primary middle endings, with no trace the secondary ones (Jasanoff 2003: 54); however, Venetic – probably a member of the Italic family as well – displays the secondary middle ending *-*to* in a number of verbal forms (cf. Ven. *donasto* 'he/she gave / donavit', *vhaksto* 'he/she made / fecit'). This proves that the Italic languages preserved the distinction between primary and secondary endings until a certain period. It should be emphasized that Latin, as well as the Osco-Umbrian languages, generally lost the distinction between the primary and secondary active endings, cf. Lat. *videt* 'he sees' and *vīdit* 'he saw'; nevertheless,

no reason to assume that this was not the case in the proto-language. While the secondary endings may be securely reconstructed by means of the traditional phonetic rules (laws) of Indo-European, the reconstruction of the primary forms is extremely difficult; still, it should not be regarded as impossible. Secondly, it is not true that the languages which generalized the marker *-*r*- show no trace of the element *-*i*. To be sure, neither Phrygian nor Latin attest the *-*i*, but it should be borne in mind that both of these languages regularly lost the marker *-*i* of the active voice as well: cf. NPhryg. αδδακετ = Lat. *afficit* 'he/she makes' (< IE. **ad-dhə₂keti*). Hence, the Latin and Phrygian evidence is ambiguous. On the other hand, although final *-*i* was also lost in the remainder of Italic as well as in Celtic, the shape of Osco-Umbrian -*ter* (< **-tori*, not **-tor*) and -*nter* (< **-ntori*) as well as of Old Irish -*thir* (< **-tori*), -*mir* (< **-mori*) etc. shows the effect of *i*-umlaut caused by the lost vowel. The same situation appears to be reflected in Tocharian. Some years ago, Adams (1985) demonstrated that the vowel *ä* in the endings -*tär* and -*mtär* is secondary, caused by the influence of the final vowel **i*; cf. also Toch. B *laks* 'fish' < IE. **lok̑-si-* 'salmon'. Accordingly, the Tocharian endings -*tär* and -*mtär* seem to derive from **-tori* and **m(e)dhori*, respectively. (The reason why the Tocharian 3 pl. ending of the active – e.g. A *ākam*, B *ākeñc* 'leads' < IE. **ag̑onti* – displays no trace of *i*-umlaut lies in the fact that the process was restricted by the nasal **-n*-). The most ancient Anatolian languages (Hittite, Luvian) show numerous examples of the ending -*ri* (Hittite also -*ti*), so that there is no reason to favor the scarce evidence from Palaic and Hieroglyphic Luvian (both languages have -*r*) instead. To conclude, the original middle marker **-ri* (and not **-r*) is securely documented in all of the key languages except for Latin and Phrygian.

We may now proceed to the second question. It is established beyond all doubt that two basic (and related) formations are attested in the Indo-European languages. In the peripheral languages of the Indo-European family (i.e. in Tocharian, Anatolian, Phrygian, Latin and Celtic), the primary endings of most middle forms are formed by means of the element **-ri*. On the other hand, in the Central group of Indo-European dialects (i.e. in Greek, Indic and Iranian), the marker of the primary ending was **-i*. The same marker was also used in the active voice (e.g. 1 sg. primary **-mi* < 1 sg. secondary **-m*, 2 sg. primary **-si* < 2 sg. secondary **-s*, etc.); thus, the original Indo-European principle of forming primary verbal endings is generally clear in both voices (active and middle).

Since the relationship between the primary and secondary middle endings is the clearest in Hittite, we must devote special attention to Anatolian.

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it is clear that this distinction (i.e. **-ti* vs. **-t*) still existed in the early phase of the Latin language. As noted earlier, the languages of the northern group (Germanic, Baltic and Slavic) must be excluded from our discussion.

1. Anatolian evidence

The Anatolian languages – particularly Hittite – attest a somewhat unexpected situation, since pairs of competing middle endings are attested: cf. 2 sg. *-tari* besides *-tati*, 2 pl. *-dumari* besides *-dumati*, also 3 sg. *-ari* besides *-ati* (cf. Oettinger 1995: 48). Besides, the secondary ending *-ta* may sometimes be used instead of 3 sg. *-tari*. This situation is noteworthy and quite remarkable for two reasons. Firstly, the middle endings in *-ri* are well attested in Anatolian (Yoshida 1990), cf. Hitt. *kittari* '(he) lies', Hier. Luv. *zi-ya-ar* 'id.', Palaic *kitar* 'lies, is laid' (< Anat. **keị-tari* or **keị-ari*[7]); thus, the Anatolian languages confirm the archaic character of expressing the middle voice by means of the marker *-ri*. Secondly, the Hittite (and generally the Anatolian) evidence for the marker *-ri* is no doubt earlier than that for **-i* (although Mycenaean Greek and Vedic are also among the earliest attested IE languages). Thirdly, the Hittite secondary middle endings often feature a dental consonant, e.g. Hitt. 2 sg. *-tat*, 2 pl. *-dumat*, which has no counterpart in the other Indo-European languages. This may or may not be a phonological archaism; in any case, it is clear that Hitt. 2 sg. *-tat* must be treated as the basic form, from which the primary ending of 2 sg. *-tati* (and probably also *-tari*) is derived. Similarly, the 2 pl. primary endings *-dumati* as well as *-dumari* are based on the 2 pl. secondary ending *-dumat*. This situation suggests that the primary middle *ri*-endings in Hittite are in fact of a secondary origin in relation to those in *-ti*. Thus, Hittite seems to preserve the original ending of the 3 sg., namely *-ati* (*-tati*)[8], which later developed into *-ari* (*-tari*), as seen in all the remaining Anatolian languages. That is to say, all the IE middle endings in **-ri* should be also derived from earlier forms containing an original dental. It follows that the **-R-* of the IE middle marker goes back to an unidentified dental stop **D* rather than to the PIE liquid **r*.

I propose to mark this unknown dental stop using the symbol **Ď*. The voiced character of this phoneme is evidently confirmed by Sturtevant's rule, according to which Hittite voiceless stops in the position between two vowels were written by means of geminates: accordingly, the geminate *-tt-* in Hittite goes back to PIE **t*, while a single intervocalic *-t-* derives from voiced dentals, e.g. from PIE **d* or **dh*. It should be emphasized that the phoneme **Ď* (attested in Hittite in the secondary middle endings as well as in numerous primary ones) can be identified neither with **d* nor with **dh*. The Anatolian dental **d* is palatalized before **i* to Hitt. *š* (not to *r*, as in the case under discussion), like **t* to Hitt. *z*. The Indo-Hittite stop **dh* preserves its dental character in the same position, cf. Hitt. *it* imper. 2 sg. < IE. **idhi*,

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[7] Or perhaps from Anat. **ki-tari* / **kị-ari* with zero-grade, as suggested by Lindeman (1972).

[8] It is not impossible that the Lydian ending *-eni* attested in the verbal form *siyeni* 'lies, is laid' derives from Anat. **-ati* (< Indo-Hittite **-oĎi*), as opposed to Hier. Luv. *zi-ya-ar* 'id.', which reflects Anat. **-ari* (< **-oŘi* < Indo-Hittite **-oĎi*). The alternation between the nasal [*n*] and the voiced dental [*d*] is well-known, cf. Hitt. *nepiš* n. 'sky, heaven', OChSl. *nebo* 'id.', OInd. *nábhas-* n. 'cloud, mist' vs. Luv. *tapaš* 'heaven', Hier. Luv. *ti-pa-sa* 'id.', Lith. *debesìs* 'cloud'.

cf. Skr. *ihi*, Anc. Gk. *íthi*.[9] Thus, the development of Indo-Hittite *Ď* to Anat. *r* and IE *r* is, so to speak, exceptional. It cannot be excluded, however, that the phoneme *Ď* was originally identical with the so-called Brugmannian 'interdental' spirant *đ*, correctly reconstructed for the Proto-Indo-European phonological system on the basis of several residual facts (cf. Brugmann 1904: 207). It seems possible that this phoneme (or its palatalized variant) was modified to *Ř* (in my notation) under certain conditions, currently unrecoverable (perhaps in intervocalic position or in the position before a front vowel, such as *i*). As stressed by Jasanoff (1977a: 422), the phonological change of the dental spirant *đ* to *r* can be exemplified by material from a variety of unrelated languages. He notes, following Collinder (1965: 61), that Proto-Uralic *đ* yields *r* in some Finnish dialects, and he also emphasizes that "*r* patterns morphophonemically as a lenited *đ* in the Fulani language of West Africa" (referring to Greenberg 1963: 26). According to Jasanoff, Armenian *r* is the normal equivalent of *đ* in Middle Iranian borrowings, e.g. Arm. *Markʻ* 'Medes' < Iran. *Māđa*-, Arm. *aroyr* 'brass' < Iran. *rauđa*-, Arm. *boyr* 'fragrance' < Iran. *bauđī*-, Arm. *marax* 'grasshopper' < Iran. *mađaxa*- (cf. Hübschmann 1897: 52, 111, 122, 192)[10]. Moreover, he argues that Arm. *r* may be the regular reflex of IE. *dh* in certain unclear positions (Jasanoff 1977a: 417-423). Finally, the development of intervocalic *d* to *ř* in Umbrian is noteworthy, as is the less-known change of *d* to *r* in Lusitanian (Witczak 1999: 70-71; 2005: 267-274; Blažek 2006: 13; Mańczak 2006).

In my opinion, the newly posited phoneme *Ř* develops in two different ways in the non-Anatolian Indo-European languages: it falls together with the liquid *r* in most of the peripheral languages (e.g. in Tocharian, Latin or Celtic), but it disappears completely in the central languages (e.g. in Greek, Sanskrit and Avestan). Thus, the development of this phoneme can be sketched out as follows:

INDO-HITTITE   *Ď*
(Old Hittite -*t*-)
                      |
PROTO-IE.   *Ř*
(Hitt., Pal., Luv. -*r*-)
                      |
Peripheral IE.   *R*   Central IE.   Ø
Tocharian   *r*   Sanskrit   ZERO
Latin   *r*   Avestan   ZERO
Celtic   *r*   Greek   ZERO
Phrygian   *r*

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[9] Oettinger (1995: 48) suggested – offering no concrete arguments – that the middle ending -*ati* (alternating with -*ari*, e.g. *išduwati* beside *išduwari* 3 sg. praes. 'es wird bekannt', *kištati* beside *kištari* 'es erlischt', *šiyati* beside *šiyari* 'es spritzt hervor') was created on the basis of the 2 sg. active imperative ending *-dhi*. This suggestion is entirely arbitrary and unfounded.

[10] It should be emphasized, however, that the change of *đ* to *r* is known from West Iranian languages spoken near the Caspian Sea, e.g. Kumzari (Skjærvø 1989: 365). Thus, Armenian might have borrowed these words not from Persian, but from the Iranian dialects of the Caspian area.

Hence, my hypothesis suggests that the middle marker in *-ri* is nothing other than a more archaic variant of the marker *-i* in Indo-European: both derive from IE *-Ři* (according to my tentative notation) and ultimately from Indo-Hittite *-Ďi* (or perhaps *-đi* in the original Brugmannian notation). It should be assumed that Indo-Hittite *Ď* was completely lost in final position in all Indo-European languages except Hittite. As for other environments, the interdental spirant *đ* (and its voiceless equivalent *þ*), suggested by Karl Brugmann, was only preserved in some residual positions (especially in clusters involving guttural stops); in all other circumstances, PIE. *đ* seems to disappear completely.

2. Reconstructing the primary endings of the Indo-European middle

At this point, I would like to discuss the evidence offered by the different Indo-European languages as well as – to the extent this is possible – to reconstruct the primary middle endings for the whole paradigm. While accepting the traditional view regarding the status of *r*-endings in Indo-European, I will use the grapheme *Ř (instead of *Ď or *đ) for Proto-Indo-European reconstructions. In many cases, of course, the capital letter *R represents the late Indo-European phoneme *r, synchronically identical with – though different in origin from – the common Indo-Hittite liquid *r.

1 sg.

According to Beekes (2011: 268), the 1 sg. secondary endings of the middle voice were *-h_2 (intransitive) and *-mh_2 (transitive). After Jasanoff (1994: 150) I suggest an alternative reconstruction: *-h_2e for intransitive verbs and *-mh_2e for transitive ones. All the primary middle endings attested in the individual Indo-European languages are formed on the basis of these forms:

(1) *-h_2e/o-i (orig. intransitive) > Indo-Iranian *-ai > Skt. -e, Avest. -ē
(2) *-mh_2e-i (orig. transitive) > Greek -mai
(3) *-h_2e/o-Ri (orig. intransitive) > Toch. A -ār, Lat. -or, OIr. -ur, Hitt. -ḫḫari
(4) *-mh_2e-Ri (orig. transitive) > Toch. B -mar

Comments: Greek and Tocharian B exclusively use the transitive endings, while Indo-Iranian, Latin, Celtic and Anatolian, as well as Tocharian A, prefer the intransitive endings. It may be added that PIE *o in the position after *h_2 preserved the original value ŏ in Latin and Celtic, but the variant *h_2e yielded the vowel ă in Greek and Tocharian (note that Toch. AB ā is a regular reflex of *ă). The *Ri*-endings are attested in all the peripheral Indo-European languages, while the innovative endings without -*R*- occur in the central dialects of the Indo-European family, i.e. in Indo-Iranian and Greek. It seems logical to conclude that all the primary endings of the middle voice represent two original variants: PIE. *-h_2e/oŘi (intransitive) vs. PIE. *-mh_2eŘi (transitive).

2 sg.

The 2 sg. secondary middle endings were *-th₂e* (intransitive), according to Jasanoff (1994: 150), and *-sh₂e* or *-sh₂o* (transitive)[11]. The corresponding primary endings would have been:

(1) *-th₂e-i* (orig. intransitive) – not attested
(2) *-sh₂e-i* (orig. transitive) > Skt. -*se*, Avest. -*sē*, Greek -*sai* (cf. also Goth. -*za*)
(3) *-th₂e-Ri* (orig. intransitive) > Toch. A -*tār*, B -*tar*, OIr. -*ther*, Hitt. -*tari* (< OHitt. -*tati*)
(4) *-sh₂e-Ri* (orig. transitive) – not attested (cf. Lat. -*ris*)

Comments: Only two out of the four logical possibilities are actually attested. It is worth emphasizing that the archaic (peripheral) languages preferred the PIE intransitive ending *-th₂eŘi*, whereas the innovative languages of the central group opted for the transitive ending *-sh₂e-i* (reflecting PIE. *-sh₂eŘi*). The Latin ending -*ris* is unclear; it could potentially be related to *-sh₂eRi* if it arose through the metathesis of the final syllables (see fn. 1). The change of PIE *h₂e* to *ă* occurred in Greek and Tocharian (see above). Crucially, Hittite displays two basic variants, -*tari* and -*tati*; the latter appears to be the more archaic one. It is now clear that the Anatolian middle ending *-tari* developed from earlier *-tati*. Sturtevant's rule suggests that the second -*t*- was voiced; thus, we are dealing with the development of *Ď* to *Ř* (perhaps via the intermediate stage of the spirant *đ*).

3 sg.

The secondary endings were *-o* (intransitive) or *-to* (transitive). The corresponding primary middle endings go back to four different archetypes:

(1) *-o-i* (orig. intransitive) > Skt. -*e*, Avest. -*ē*
(2) *-to-i* (orig. transitive) > Skt. -*te*, Avest. -*tē*, Greek -*tai* (also -*toi*), cf. Goth. -*da*
(3) *-o-Ri* (orig. intransitive) > Hitt. -*ari*, Luv. -*ari*, Hier. Luv. -*ar*
(4) *-to-Ri* (orig. transitive) > Toch. AB -*tär*, Lat. -*tur*, Old Irish -*thir*, Phrygian -τορ, Hittite -*tari*, Luvian -*tari*, Palaic -*tar*.

Comments: The Sanskrit intransitive form *śaye* '(he) lies' cannot be dissociated from Hier. Luv. *zi-ya-ar* 'id.' (both from PIE. *ḱei̯-oŘi*). On the other hand, Hitt. *kittari*, Palaic *kitar* and Gk. *keĩtai* '(he) lies' go back to the variant (transitive) archetype *ḱei̯-toŘi*. Greek has -*tai* by analogy to -*mai* (1 sg.) and -*sai* (2 sg.), where the vocalism *ă* is motivated by the neighboring laryngeal *h₂*. The regular (transitive) ending -*toi* is, however, preserved in a number of Greek dialects, e.g. in Mycenaean, Arcadian and Cypriot. All of the above-mentioned variants represent two original endings: PIE *-oŘi* (intransitive) vs. PIE. *-toŘi* (transitive).

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[11] Beekes (2011: 268) reconstructs the transitive ending as *-sth₂o*. However, the actually attested forms (e.g. Gk. -*so*, Goth. -*za*, Lat. -*re*) unanimously indicate PIE *-sh₂e/o*. It is probable that the *s*-forms are based on the active endings *-s* (secondary) and *-si* (primary).

1 pl.

The secondary endings were *-$medh\hbar_2$ (intransitive) and probably *-$mesdh\hbar_2$ (transitive), cf. OInd. -*mahi*, Toch. A *mät*, B -*mte*, Hitt. -*wasta*, Gk. -*metha* and -*mestha*. The following primary endings are theoretically expected:
(1) *-$medhh_2$-o-i (orig. intransitive) > Skt. -*mahe*, Avest. -*madē*
(2) *-$mesdhh_2$-o-i (orig. transitive) – not attested (cf. Skt. -*mahe*)[12]
(3) *-$medhh_2$-o-Ri (orig. intransitive) > Toch. AB -*mtär*
(4) *-$mesdhh_2$-o-Ri (orig. transitive) > Hitt. -*waštari* (< OHitt. -*waštati*).
    To these four endings, we must add one more possibility:
(5) *-mh_2-o-Ri (abbreviated ending) > Lat. -*mur*, OIr. -*mir*.

Comments: The Tocharian ending -*mtär* represents primitive *-$medhh_2$-o-Ri, related to the (intransitive) ending *-$medhh_2$-o-i in Indo-Iranian. Hittite prefers the two transitive endings -*waštari* and -*waštati* (note that intervocalic -*m*- is regularly changed to -*w*- in Hittite; this process is common in numerous Indo-European languages, e.g. in Tocharian, Albanian and Indo-Aryan, including Romani). Ultimately, two closely related endings were possible here: PIE *-$medhh_2$oŘi (intransitive) vs. PIE. *-$mesdhh_2$oŘi (transitive). The innovative ending *-mh_2-oŘi, a simplified form of *-$m(es)d^hh_2$oŘi, was introduced in Italo-Celtic. Greek utilizes the secondary endings -*metha*, -*mestha*.

2 pl.

The secondary middle endings are reconstructed as *-$dh\underset{}{u}e$ (intransitive) and *-$sdh\underset{}{u}e$ (transitive)[13]. Accordingly, the following primary endings are expected:
(1) *-$dh\underset{}{u}e$-i (orig. intransitive) > Skt. -*dhve*
(2) *-$sdh\underset{}{u}e$-i (orig. transitive) – not attested
(3) *-$dh\underset{}{u}e$-Ri (orig. intransitive) > Toch. A -*cär*, B -*tär*
(4) *-$sdh\underset{}{u}e$-Ri (orig. transitive) – not attested
(5) *-$dh\underset{}{uu}e$-Ri > *-$dhume$-Ri (both intransitive and transitive) > Hitt. -*dumari* (< -*dumati*)

Comments: The intransitive ending (PIE *-$d^h\underset{}{u}eŘi$) is found in Indo-Iranian and Tocharian. Hittite attests two cognate endings, -*dumari* and -*dumati* (from Anat. *-$d^humeĎi$ and Indo-Hittite *-$d^h\underset{}{uu}eĎi$). Latin introduced an innovative ending -*minī* (of unclear origin). Greek adopted the secondary ending -*sthe*. Old Irish uses -*the* (hardly related to Gk. -*sthe*).

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[12] It is uncertain what the regular reflex of IE *sdh* in Sanskrit was. If this cluster yielded Sanskrit *dh* (or even *h*), then the ending -*mahe* could also represent the prototype *-$mesdhh_2$-o-i.
[13] Beekes (2011: 268) reconstructs *tdhue* instead of *sdh(u)u̯e*.

3 pl.

Two secondary endings appear in the Indo-European languages, namely
*-*ro* (intransitive) and *-*nto* (transitive): cf. Skt. *aśeram*, Gk. *ekeĩnto* etc. The
primary middle endings may be extrapolated as follows:
(1) *-*ro-i* (orig. intransitive) > Skt. -*re*, Avest. -*re*
(2) *-*nto-i* (orig. transitive) > Skt. -*nte*, Gk. -*ntai*, -*ntoi*
(3) *-*ro-Ri* (orig. intransitive) – not attested[14]
(4) *-*nto-Ri* (orig. transitive) > Toch. AB -*ntär*, Lat. -*ntur*, OIr. -*tir*, Hitt. -*antari*
   Comments: In Indo-Iranian, the 3 pl. ending *-*rai* is only found with middle
forms that have intransitive meaning (cf. García Castillero 2002), e.g. Skt. *śere*
'they lie', Avest. *sōire* 'id.' < IE *$\acute{k}ei$-*ro-i* (ultimately from PIE *$\acute{k}ei$-*ro-Ři*).
The transitive middle forms are confirmed both by the peripheral languages
displaying *Ri*-endings and by the innovative dialects of the central group. The
extant data point to the following two original variants: PIE *-*roŘi* (intransitive)
vs. PIE *-*ntoŘi* (transitive).

3. Conclusions

The modern reconstruction of the Proto-Indo-European (or Indo-Hittite)
proto-language is not yet fully established. In the present study, it was suggested
that it is necessary to posit the existence of an Indo-Hittite phoneme *Ď, perhaps
identical with the voiced 'interdental spirant' *đ, suggested many years ago by
Karl Brugmann (1904: 207). In the position before the vowel *i, this phoneme
was changed into a liquid *Ř in Proto-Indo-European, further developing into
*r in Anatolian, Tocharian, Phrygian, Latin and Celtic; however, it disappeared
completely in Sanskrit, Avestan and Greek. This phoneme appears as the basic
element in the marker *-*Ři* of the primary endings of the Indo-European middle.
The following primary middle endings have been reconstructed for Early
(Proto-)Indo-European, the language from which all of the non-Anatolian Indo-
European languages originate:

	PIE. intransitive	PIE. transitive
1 sg.	*-h_2e/oŘi	*-mh_2eŘi
2 sg.	*-th_2eŘi	*-sh_2eŘi
3 sg.	*-oŘi	*-toŘi
1 pl.	*-$medhh_2$oŘi	*-$mesdhh_2$oŘi (abbreviated variant *-mh_2oŘi)
2 pl.	*-$dh\underset{}{u}$eŘi	*-$sdh(u)\underset{}{u}$eŘi
3 pl.	*-roŘi	*-ntoŘi

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[14] The ending would have contained two *r*-liquids; thus, it was presumably eliminated for eu-
phonic reasons.

Hopefully, therefore, it has been demonstrated that the middle marker *-ri* was in fact more archaic than *-i*: the Greek and Indo-Iranian middle endings, which appeared as a result of the regular loss of Early PIE. *-Řˇ-*, should be considered as innovative. On the other hand, it is obvious that the medio-passive *r*-endings of Italic and Celtic cannot represent a common Italo-Celtic innovation, as was frequently thought in the past (roughly a hundred years ago, this was still the generally accepted view). That being said, the abbreviated middle ending of the 1 pl. (cf. Lat. *-mur*, OIr. *-mur*, *-mar* < IE. dial. *-mori* < *-mh₂oŘ̌i* < PIE. *-me[s]dhh₂oŘ̌i*) indeed seems to be one of the morphological innovations of the West Indo-European (i.e. Italo-Celtic) languages.

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