

INDO-EUROPEAN *o*-GRADE PRESENTS AND THE ANATOLIAN *hi*-CONJUGATION

Elsewhere I have argued that Indo-European originated as a branch of Indo-Uralic which was strongly modified under the pervasive influence of a North Caucasian substratum, perhaps in the sixth millennium BC (cf. Mallory 1989: 192f., Kortlandt 2010: 387-428). I have proposed the following relative chronology for the Indo-European branch of Indo-Uralic on the basis of the internal evidence:

- A. Indo-European vowel reduction, giving rise to full grade **e* under the stress and zero grade elsewhere;
- B. phonetic lowering of **u* (= syllabic **w*) to **o*, giving rise to a full grade (= non-high) vowel in unstressed syllables;
- C. analogical introduction of a full grade vowel in unstressed syllables (e.g. in compounds), which automatically yielded new **o*;
- D. introduction of **o* in stressed syllables (e.g. by decompounding), resulting in a phonemic opposition between /*e*/ and /*o*/ under the stress;
- E. analogical introduction of full grade **e* in unstressed syllables, generalizing the opposition between /*e*/ and /*o*/;
- F. rise of lengthened grade vowels **ē* and **ō*, yielding the conventional Proto-Indo-European vowel system.

Under the assumption that the Indo-European laryngeals developed from a glottal stop **q*₁, a uvular stop **q*₂, and a labialized uvular stop **q*₃, my reconstruction of the Proto-Indo-European perfect, stative (intransitive middle, e.g. Vedic *śáyē* ‘lies’) and (transitive) middle endings is the following (2010: 392f.):

	perfect	stative	middle
1sg.	- <i>q</i> ₂ <i>e</i>	- <i>q</i> ₂	- <i>m</i> <i>q</i> ₂
2sg.	- <i>tq</i> ₂ <i>e</i>	- <i>tq</i> ₂ <i>o</i>	- <i>stq</i> ₂ <i>o</i>
3sg.	- <i>e</i>	- <i>o</i>	- <i>to</i>
1pl.	- <i>me</i>	- <i>med</i> ^h <i>q</i> ₂	- <i>med</i> ^h <i>q</i> ₂
2pl.	- <i>e</i>	- <i>d</i> ^h <i>q</i> ₂ <i>ue</i>	- <i>td</i> ^h <i>q</i> ₂ <i>ue</i>
3pl.	-(<i>ē</i>) <i>r</i>	- <i>ro</i>	- <i>ntro</i>

For an earlier stage I have proposed the following reconstruction (2010: 400f.):

	perfect	stative	middle
1sg.	- <i>q</i> ₂ - <i>e</i>	- <i>q</i> ₂	- <i>m</i> - <i>q</i> ₂
2sg.	- <i>tq</i> ₂ - <i>e</i>	- <i>tq</i> ₂	- <i>s</i> - <i>tq</i> ₂
3sg.	- <i>e</i>	- <i>o</i>	- <i>t</i> - <i>o</i>
1pl.	- <i>m</i> <i>q</i> ₂ - <i>e</i>	- <i>med</i> ^h <i>q</i> ₂	- <i>me</i> - <i>d</i> ^h <i>q</i> ₂
2pl.	- <i>q</i> ₂ - <i>e</i>	- <i>d</i> ^h <i>q</i> ₂ - <i>ue</i>	- <i>t</i> - <i>d</i> ^h <i>q</i> ₂ - <i>ue</i>
3pl.	- <i>er</i>	- <i>r</i>	- <i>nt</i> - <i>r</i>

Moreover, I have argued that the Hittite *hi*-flexion comprises original perfects, new perfects created on the basis of derived presents, and transitive zero grade thematic formations such as Vedic *tudáti* ‘thrusts’. This merger obliterated the semantic distinction between the original intransitive perfects and transitive verbs in

the Hittite *hi*-flexion and similarly between the 3rd sg. endings **-o* and **-to* in the stative and the middle. As a result, the original distribution can no longer be established on the basis of the Hittite evidence. At the earliest reconstructible stage we expect *e*-grade of the root in the stative but zero grade before the ending **-e* in the perfect. If the apophonic alternation between *e*- and zero grade was still automatic at the stage when the new 1st and 2nd pl. endings **-med^hq₂* and **-(t)d^hq₂ue* were introduced into the stative paradigm (stage A), the new forms must have had zero grade in the root. The original 3rd sg. stative ending **-o* arose phonetically from lowering of Indo-Uralic **-u* (stage B). The paradigmatic alternation between full and zero grade was then evidently introduced from the stative into the perfect at a stage when the alternation between stressed **e* and unstressed **o* was automatic (stage C). The stress was eventually retracted in the singular forms of the perfect when stressed **o* and unstressed **e* had become possible (stages D and E), probably on the analogy of the athematic present and injunctive, which had root stress in the singular but not in the plural. The rise of lengthened grade in the 3rd pl. ending **-ēr* < **-er* was most recent (stage F). These developments can be summarized as follows:

stative	stage A1	stage A2	stages B-F
1sg.	<i>CeC-q₂</i>	<i>CeC-q₂</i>	<i>CeC-q₂</i>
2sg.	<i>CeC-tq₂</i>	<i>CeC-tq₂</i>	<i>CeC-tq₂</i>
3sg.	<i>CeC-u</i>	<i>CeC-u</i>	<i>CeC-o</i>
1pl.	<i>CeC-mq₂</i>	<i>CC-med^hq₂</i>	<i>CC-med^hq₂</i>
2pl.	<i>CeC-(t)q₂</i>	<i>CC-(t)d^hq₂ue</i>	<i>CC-d^hq₂ue</i>
3pl.	<i>CeC-r</i>	<i>CeC-r</i>	<i>CeC-r</i>
perfect	stages A-B	stages C-E	stage F
1sg.	<i>CC-q₂e</i>	<i>CoC-q₂e</i>	<i>CoC-q₂e</i>
2sg.	<i>CC-tq₂e</i>	<i>CoC-tq₂e</i>	<i>CoC-tq₂e</i>
3sg.	<i>CC-e</i>	<i>CoC-e</i>	<i>CoC-e</i>
1pl.	<i>CC-mq₂e</i>	<i>CC-mq₂e</i>	<i>CC-mq₂e</i>
2pl.	<i>CC-(t)q₂e</i>	<i>CC-q₂e</i>	<i>CC-q₂e</i>
3pl.	<i>CC-er</i>	<i>CC-er</i>	<i>CC-ēr</i>

It is clear that *e*-grade thematic presents such as **b^here* cannot have arisen before stage E, when both the root and the ending could have a full grade vowel **e*. Like the perfect, the original thematic conjugation had a zero grade root and could only obtain an *o*-grade root vowel after stage C (e.g. Latin *molō* ‘to mill’). In my view, the thematic present was originally an impersonal verb form with a dative subject (cf. Kortlandt 2010: 101-103). The ending was **-e* in the singular and **-o* < **-u* [əw] in the plural, reflecting the Indo-Uralic demonstrative and reflexive pronouns, respectively (see Kortlandt 2010: 399-403 for the development of the endings). This differentiation may be compared with Dutch *Het wordt geregeld* ‘It is arranged’, which implies that someone arranges something, versus *Er wordt gedanst* ‘There is dancing’, which means that people are dancing. A partial addition of the perfect endings yielded a full paradigm at stage D (when both formations still had a dative subject) and the replacement of these by the athematic secondary endings gave rise to a transitive thematic injunctive with an ergative subject at stage E (for details I refer to my earlier treatment). The developments can be summarized as follows:

	present D	present E	injunctive E
1sg.	-o-q ₁	-o-q ₁	-o-m
2sg.	-e-q ₁	-e-q ₁ i	-e-s
3sg.	-e	-e	-e-t
1pl.	-o-mq ₁	-o-mq ₁ om	-o-mo
2pl.	-e-tq ₁	-e-tq ₁ e	-e-te
3pl.	-o	-o	-o-nt

The replacement of *q₂ by *q₁ in the thematic present can be explained by the neutralization of the laryngeals before and after *o into a glottal stop *q₁ (cf. Kortlandt 2010: 365-368 and *passim*), which was subsequently generalized in the paradigm.

Most scholars have accepted Stang's derivation of *o*-grade presents such as Lith. *kálti* 'to forge', *málti* 'to grind', OCS *bosti* 'to stab', Latin *fodiō* 'I dig' from the reduplicated intensive exemplified in Vedic *jañghanti* 'strikes' (1942: 41f., cf. Kortlandt 2010: 216). Jasanoff's alternative proposal to posit an alternating paradigm with *o in the singular and *e in the plural (e.g. 1979, 2003) cannot be maintained because no such paradigm can be reconstructed (cf. Kloekhorst 2008: 142f., Peyrot 2013: 497, Kortlandt 2015). In his lucid treatment of the problem, Kümmel observes that the Indo-Iranian cognates of proposed *o*-grade presents are thematic, e.g. Vedic *sphuráti* 'jerks', *tudáti* 'thrusts', *vijáte* 'trembles' (2004: 150), and the same holds for Latin and Germanic. In my view, the Hittite *hi*-verbs represent a merger of the original perfect and the original thematic flexion with zero grade in the root, e.g. Vedic *tudáti* (Kortlandt 2010: 373-382, where "q-" has unfortunately been printed as "-q" throughout the chapter). If the root vowel of CeC-roots was introduced in this formation between stages C and E of my chronology, it automatically became *o, as happened in the singular forms of the perfect. Thus, we arrive at *o*-grade in Slavic *bosti* 'to stab', *kopati* 'to dig', *kosnōti se* 'to touch', *kovati* 'to forge' and the Germanic 6th class verbs versus zero grade in the Vedic 6th class presents adduced above. The new pattern could easily be extended to CeRC-roots. The athematic reduplicated intensive is evidently a derivative of this formation, e.g. Vedic *jañghanti* 'strikes', *dedisam* 'point out', Greek *πορφύρω* 'boil' (Vedic *bhuráti* 'quivers', *járbhurīti* 'sprawls'), Latin *susurrō* 'whisper', Gothic *inreiraida* 'quaked' (cf. Kortlandt 2010: 237), OLith. *barti* 'scolds' (with loss of reduplication). In Anatolian, the complementary distribution between *o*- and zero grade was brought into line with the paradigmatic alternation of the perfect. In Indo-Iranian, the reduplicated intensive similarly adopted the alternation of the root vowel from the 3rd class reduplicated presents but preserved the zero grade root vowel of the 6th class presents in the subjunctive (cf. Schaefer 1994: 35-43).

When the ergative (with an ending *-s) and the absolutive (with a zero ending) merged into a new nominative case, the old syntactic system broke down and the original construction of the thematic present survived only in such instances as English *me dreamed a strange dream* and German *mir träumt*, which were eventually replaced by *I dreamed* and *ich träume*. The idea that the thematic vowel was coreferential with an additional object in the thematic injunctive is now supported by Eugen Hill's analysis of the Indo-Iranian "aorist presents" (2007). This "instrumental" object (cf. Hill 2007: 293-300) was distinct from the regular direct object (goal of the action) in the accusative in *-m, which was a directive case (e.g. Latin *ire Romam* 'to

go to Rome’). The construction may be reflected in Russian *lodku uneslo vetrom* ‘the boat (acc.) was carried away by the wind (inst.)’, *ego ubilo svin’ej* ‘he (acc.) was killed by a pig (inst.)’, viz. when it fell on him from a balcony, where the verb is impersonal and the additional object is in the instrumental case. In this conception, the original meaning of the thematic present **tude* was ‘it (e.g. lightning) strikes (me)’ or ‘it is a blow (to me)’, with the affected person in the dative, and the meaning of the derived thematic injunctive **tudet* was ‘he strikes (me)’ or ‘he causes a blow (to me)’, with the agent in the ergative case. If my derivation of the ending **-e* from the Indo-Uralic demonstrative pronoun is correct, the original structure of **tud-e* was ‘it [is] a blow’, where **tud-* is a verbal root noun. The original syntax was apparently preserved in Greek *δοκεῖ μοι* ‘it seems to me’. After the separation from Anatolian, the thematic present formation supplied new presents to athematic injunctives in the other Indo-European languages (cf. Peyrot 2013: 458 and Kortlandt 2015). When Tocharian had split off, the thematic and athematic injunctives yielded imperfects and aorists, respectively, in the remaining languages and the addition of secondary endings to present stems supplied new imperfects. The thematic present then became a subjunctive when there was a competing athematic present.

In the Anatolian languages, the endings of the *hi*-conjugation are essentially the Proto-Indo-European perfect endings. The Hittite preterit endings 3rd sg. *-š* and 2nd pl. *-šten* were evidently taken from the *s*-injunctive, as they were in Tocharian (cf. Kortlandt 2014: 83). It is therefore probable that the PIE perfect became a past tense in Anatolian at a relatively early stage. It supplied a preterit to athematic injunctives in the same way as happened in Tocharian (cf. Kortlandt 2015) and in Latin (e.g. *dīxi* ‘I said’, *lēgī* ‘I read’). On the other hand, the thematic derivations in **-ie/o-* and **-ske/o-* joined the *mi*-conjugation in Anatolian (cf. Kloekhorst 2008: 129-136). The endings of the *hi*-present were evidently created on the analogy of the *mi*-present on the basis of the original perfect. Among the *hi*-presents we expect to find underived thematic presents and derived presents from athematic formations. There are only three *hi*-verbs which semantically resemble original perfects:

- *nāh-*, *nahh-* < **noq₂ei*, **nq₂enti* ‘to fear, to be(come) afraid, to be respectful, to be careful’ (Old Irish *nár* ‘modest’);
- *šakk-*, *šakk-* < **sokq₁ei*, **skq₁enti* ‘to know (about), to experience, to recognize, to remember’ (Latin *secō* ‘cut’, *sciō* ‘know’);
- *āppa-*, *āppi-* ‘to be finished, to be done’, which is a derivative of *āppa* ‘behind’ < **q₂opo* (Kloekhorst 2008: 193).

In fact, all underived *hi*-verbs may be *o*-grade presents, which is also in accordance with their semantics. The original thematic endings may actually be reflected in 1st sg. *happinahhahhi* ‘enrich’ < **-eq₂-oq₁-q₂e-i* beside *-ahhi* with haplogy (but in the preterit always *-ahhun* < **-eq₂-m*, Kloekhorst 2008: 164), 2nd sg. *-tti* < **-t(q₂)-eq₁i*, 3rd sg. *-i* < **-e-i* (identical with the perfect ending). Following Kloekhorst (2008), we arrive at a list of 48 underived *hi*-verbs in Hittite:

- *āk-*, *akk-* < **q(o)k-* ‘to die, to be killed, to be eclipsed (of sun and moon)’.
- *ār-*, *ar-* < **q₁(o)r-* ‘to come (to), to arrive (at)’, Greek *ἔρχομαι* ‘to come, to go’, Vedic *ṛchāti* ‘to go’.
- *ārr-*, *arr-* < **q₁(o)rq₁-* ‘to wash’, Tocharian A *yār-* ‘to bathe’.
- *ār^hk-*, *ark-* < **q₃(o)rg^h-* ‘to mount, to copulate’, Greek *ἄρχις* ‘testicle’.
- *ār^kk-*, *ark-* < **q₁(o)rk-* ‘to cut off, to divide’, Latin (*h*)*erciscō* ‘to divide (an estate)’.

- *au-*, *u-* < **q*₂(*o*)*u-* ‘to see, to look’, Greek *αίω* ‘to perceive’.
- *hān-*, *han-* < **q*₂(*o*)*n-* ‘to draw (liquids)’, Armenian *hanem* ‘to draw out’.
- *harra-*, *harr-* < **q*₂(*o*)*r**q*₃₋ ‘to grind, to splinter up (wood), to crush (bread)’, Greek *ἀρόω* ‘to plough’.
- *hāš-*, *hašš-* < **q*₂(*o*)*ms-* ‘to give birth (to), to beget, to procreate’.
- *hāt-*, *hat-* < **q*₂(*o*)*d-* ‘to dry up, to become parched’, Greek *ἄζω* ‘to dry up’.
- *hatk-* < **q*₂(*o*)*d*^h*g*^{h-} ‘to shut, to close’, Greek *ἄχθομαι* ‘to be burdened, to be depressed’.
- *huwapp-*, *hupp-* < **q*₂*u*(*o*)*p**q*₁₋ ‘to be hostile towards, to do evil against, to hurl, to throw’, Vedic *vápati* ‘to strew, to scatter’.
- *huwart-*, *hurt-* < **q*₂*u*(*o*)*rt-* ‘to curse’, Old Prussian *wertemmai* ‘we swear’.
- *iškalla-*, *iškall-* < **sk*(*o*)*l**q-* ‘to slit, to split, to tear’, Greek *σκάλλω* ‘to hoe’.
- *iškār-*, *iškar-* < **sk*(*o*)*r-* ‘to sting, to stab, to pierce’, Greek *κείρω* ‘to cut (off)’.
- *išpānt-*, *išpant-* < **sp*(*o*)*nd-* ‘to libate, to pour, to sacrifice’, Greek *σπένδω* ‘to libate’.
- *išpār-*, *išpar-* < **sp*(*o*)*r-* ‘to spread (out), to strew’, Greek *σπείρω* ‘to spread (out)’.
- *išparra-*, *išparr-* < **sp*(*o*)*r**q-* ‘to trample’, Vedic *sphurāti* ‘to kick’.
- *ištāp-*, *ištapp-* < **st*(*o*)*p-* ‘to plug up, to block, to enclose, to shut’, Dutch *stoppen* ‘to plug up’.
- *kānk-*, *kank-* < **k*(*o*)*nk-* ‘to hang, to weigh’, Gothic *hahan* ‘to hang’.
- *karāp-*, *kare/ip-* < **g*^h*r*(*o*)*b**q*₁₋ ‘to devour, to consume’, Vedic *grabh-* ‘to seize’.
- *lā-*, *l-* < **l*(*o*)*q*₁₋ ‘to loosen, to release, to untie, to relieve’, Gothic *letan* ‘to let’.
- *lāhu-*, *lahu-* < **l*(*o*)*q*₂*u-* ‘to pour, to cast (objects from metal), to (over)flow’.
- *lāk-*, *lak-* < **l*(*o*)*g*^{h-} ‘to knock out (a tooth), to turn (one’s ears or eyes towards), to train (a vine)’, Gothic *lagjan* ‘to lay down’.
- *malla-*, *mall-* < **m*(*o*)*l**q*₂₋ ‘to mill, to grind’, Latin *molō* ‘to mill’, Gothic *malan* ‘to mill’.
- *mālk-*, *malk-* < **m*(*o*)*l**k-* ‘to spin’, Tocharian AB *mālk-* ‘to put together’.
- *māld-*, *mald-* < **m*(*o*)*ld*^{h-} ‘to recite, to make a vow’, Old Saxon *meldon* ‘to tell’.
- *mār̥k-*, *mark-* < **m*(*o*)*rg-* ‘to divide, to separate, to distribute, to cut up’, Latin *margō* ‘border’, Gothic *marka* ‘border’.
- *mau-*, *mu-* < **m*(*o*)*u**q*₁₋ ‘to fall’, Latin *moveō* ‘move’.
- *nāh-*, *nahh-* < **n*(*o*)*q*₂₋ ‘to fear, to be(come) afraid, to be respectful, to be careful’, Old Irish *nár* ‘modest’.
- *nai-*, *ni-* < **n*(*o*)*i**q-* ‘to turn, to send’, Vedic *náyati* ‘to lead’.
- *para-*, *par-* ‘to appear, to emerge’, which is a derivative of *parā* ‘out, further’ < **pro* (Kloekhorst 2008: 630).
- *pāšk-*, *pašk-* < **P*(*o*)*s**K-* ‘to stick in, to fasten, to plant, to set up’.
- *padda-*, *padd-* < **b*^h(*o*)*d*^h*q*₂₋ ‘to dig (the ground)’, Latin *fodiō*.
- *šāh-* < **so**q*₂₋ ‘to clog, to stuff, to fill in, to plug up’, Tocharian B *soy-* ‘to be satisfied’.
- *šākk-*, *šakk-* < **s*(*o*)*k**q*₁₋ ‘to know (about), to experience, to recognize, to remember’, Latin *secō* ‘to cut’, *sciō* ‘to know’.
- *šārr-*, *šarr-* < **s*(*o*)*r**q*₁₋ ‘to divide up, to distribute, to split, to separate’.
- *šarāp-*, *šare/ip-* < **sr*(*o*)*b*^{h-} ‘to sip’, Latin *sorbeō* ‘to slurp’.
- *šarta-*, *šart-* < **s*(*o*)*rd*^h*q-* ‘to wipe, to rub’, Middle High German *serten* ‘to violate’.
- *šuhha-*, *šuhh-* < **su**q*₂₋ < **sq*₂*u-* ‘to scatter’, Greek *ῥω* ‘to rain’.
- *dā-*, *d-* < **d*(*o*)*q*₃₋ ‘to take, to wed, to decide’, Vedic *dádāti* ‘to give’, Greek *δίδωμι* ‘to give’, derivatives *uda-*, *ud-* ‘to bring (here)’, *peda-*, *ped-* ‘to take (somewhere), to carry, to transport, to spend (time)’.

- *dākk-*, *dakk-* < **d(o)kq₁*- ‘to resemble’, Greek *δοκεῖ* ‘it seems’.
- *wai-*, *wi-* ‘to cry (out)’, which is onomatopoeic (Kloekhorst 2008: 939).
- *wāk-*, *wakk-* < **u(o)q₂g-* ‘to bite’, Greek *ἄγγυμι* ‘to break’, Tocharian AB *wāk-* ‘to split, to burst’.
- *warš-* < **u(o)rs-* ‘to reap, to harvest, to wipe’, Old Latin *vorrō* ‘to wipe’.
- *wāš-* < **uos-* ‘to buy’, Latin *vēnum dare* ‘to sell’.
- *wašta-*, *wašt-* < **uosTq-* ‘to sin, to offend’.
- *zāh-*, *zahh-* < **ti(o)q₂*- ‘to hit, to beat’, Greek *σημα* ‘sign, mark’, *σῶμα* ‘corpse’.

There are no *e*-grade thematic presents in the Anatolian branch of Indo-European because these had not yet developed when it split off from the other languages. Derived *hi*-verbs are based on nasal presents (e.g. *tarna-*, *tarn-* < **trk-n(o)q-* ‘to let go’; *hamank-*, *hame/ink-* < **q₂m(o)ng^h*- ‘to tie’), *s*-injunctives (e.g. *hārš-* < **q₂(o)r_{q₃}-s-* ‘to till (the soil)’, Greek *ἀρώω*; *pahš-* < **p(o)q₂-s-* ‘to protect’, Latin *pāscō*, *pāvī*), *i*-presents (e.g. *arai-*, *ari-* < **q₃r-(o)i-* ‘to arise’, Latin *orior*; *išhai-*, *išhi-* < **sq₂-(o)i-* ‘to bind’, Vedic *syāti*; *išpai-*, *išpi-* < **spq₁-(o)i-* ‘to get full’, Vedic *sphāyate*), and reduplicated formations (cf. Kortlandt 2010: 378-380).

The third group of *hi*-verbs are the factitives in *-ahh-* < **-eq₂*-, which do not show ablaut (cf. Kloekhorst 2008: 164). The model for this formation was provided by the transitive thematic injunctive with secondary endings and an ergative subject which originated at stage E (see above). If the original meaning of **tud-e* was ‘it [is] a blow’, where **tud-* is a verbal root noun, and the meaning of the thematic injunctive **tudet* was ‘he causes a blow (to me)’, where the thematic vowel was coreferential with the “instrumental” object which was distinct from the regular direct object (goal of the action) in the accusative case, the verbal root could easily be replaced by an abstract noun denoting a property such as **neueq₂* ‘quality of being new’. In the other Indo-European languages, this type of verb was replaced by the regular denominal formation in **-eq₂-ie/o-*, e.g. Latin *novāre* ‘to renew’.

References

- Jasanoff, Jay H. 1979. The position of the *hi*-conjugation. *Hethitisch und Indogermanisch* (Innsbruck: IBS), 79-90.
- Jasanoff, Jay H. 2003. *Hittite and the Indo-European verb* (Oxford: UP).
- Hill, Eugen. 2007. *Die Aorist-Präsensformen des Indoiranischen* (Bremen: Hempen).
- Kloekhorst, Alwin. 2008. *Etymological dictionary of the Hittite inherited lexicon* (Leiden: Brill).
- Kortlandt, Frederik. 2010. *Studies in Germanic, Indo-European and Indo-Uralic* (Amsterdam: Rodopi).
- Kortlandt, Frederik. 2014. The Tocharian personal endings. *Tocharian and Indo-European Studies* 15, 79-86.
- Kortlandt, Frederik. 2015. Tocharian *ē*-grade verb forms. *Tocharian and Indo-European Studies* 16, 00-00.
- Kümmel, Martin J. 2004. Zur *o*-Stufe im idg. Verbalsystem. *Indo-European word formation* (Copenhagen: Museum Tusulanum), 139-158.
- Mallory, James P. 1989. *In search of the Indo-Europeans: Language, archaeology and myth* (London: Thames & Hudson).
- Peyrot, Michaël. 2013. *The Tocharian subjunctive* (Leiden: Brill).

Schaefer, Christiane. 1994. *Das Intensivum im Vedischen* (Göttingen: Vandenhoeck & Ruprecht).

Stang, Christian S. 1942. *Das slavische und baltische Verbum* (Oslo: Jacob Dybwad).