

Will the real PIE perfect please stand up?

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I. Introduction

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The Neogrammarians (c. 1880-1930) identified three kinds of tense-aspect stems in Proto-Indo-European (PIE): presents (= imperfective stems), aorists (= perfective stems) and so-called perfects. Older presentations treat these as completely coordinate categories.

The perfect, however, stands apart from the present and aorist in both form and meaning.

The object of this talk will be to investigate the relationship of the perfect to the present and aorist, and ultimately to offer a theory of where it came from.

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On the formal side, PIE presents and aorists

- come in many shapes and sizes (root presents and aorists, thematic presents and aorists, presents with an infix nasal, *s*-aorists, etc.);
- distinguish between an active voice, with endings 1 sg. **-m* (\pm deictic particle **i*), 2 sg. **-s(i)*, 3 sg. **-t(i)*, 3 pl. **(é)nt(i)*, and a middle or mediopassive voice, with a separate set of middle endings that we will meet later.

The perfect, by contrast,

- is formed in one basic way only, with reduplication and **o* : zero ablaut;¹
- has a special set of perfect endings (1 sg. **-h₂e*, 2 sg. **-th₂e*, 3 sg. **-e*, 3 pl. **(é)rs*). These are sometimes called "active," but there is no separate middle.

¹The sole exception is the perfect stem **yóid-* ~ **yúd-* 'know', which lacks reduplication.

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On the semantic side, present and aorists can mean almost anything:

- actions, e.g.,

<i>*g^hen-</i> 'strike, slay'		<i>*deh₁-</i> 'give'	
pres. act. <i>*g^hén-mi</i>	<i>*g^hé^h-més</i>	aor. act. <i>*déh₁-m</i>	<i>*déh₁-me</i>
<i>*g^hén-si</i>	<i>*g^hé^h-iē</i>	<i>*déh₁-s</i>	<i>*déh₁-te</i>
<i>*g^hén-ti</i>	<i>*g^hé^h-énti</i>	<i>*déh₁-t</i>	<i>*dh₁-ént</i>

- processes, e.g.,

<i>*gneh₁-</i> 'recognize'		<i>*b^huH-</i> 'become'	
pres. act. <i>*g^hnéh₁-s-mi</i>	<i>*g^hnéh₁-s-mes</i>	aor. act. <i>*b^húH-m</i>	<i>*b^húH-me</i>
<i>*g^hnéh₁-s-si</i>	<i>*g^hnéh₁-s-te</i>	<i>*b^húH-s</i>	<i>*b^húH-te</i>
<i>*g^hnéh₁-s-ti</i>	<i>*g^hnéh₁-s-qi</i>	<i>*b^húH-t</i>	<i>*b^húH-ént</i>

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- and even states, e.g.,

<i>*uek-</i> 'wish'		<i>*kei-</i> 'lie'	
pres. act. <i>*uek-mi</i>	<i>*uk-més</i>	pres. mid. <i>*kéi-h₂er</i>	<i>*kéi-medh₂r</i>
<i>*uek-si</i>	<i>*uk-iē</i>	<i>*kéi-th₂er</i>	<i>*kéi-dh₂gor(?)</i>
<i>*uek-ti</i>	<i>*uk-énti</i>	<i>*kéi-or</i>	<i>*kéi-rór</i>

The perfect, on the other hand, is obligatorily non-eventive, denoting a resultative state, e.g.,

<i>*men-</i> 'bring to mind'		
perf. <i>*me-món-h₂e</i>	<i>*me-m^héH(?)</i>	'I have in mind, etc.'
<i>*me-món-th₂e</i>	<i>*me-mn-é(?)</i>	
<i>*me-món-e</i>	<i>*me-mn-ér</i> (< <i>**-érs</i>)	

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When the active and middle of a verb have separate readings, the perfect aligns with the middle.

Exx. from Greek:

<i>óllumi</i> (act.) 'I destroy'	
<i>óllumai</i> (mid.) 'I perish'	perf. <i>ólōla</i> 'I am lost, done for'
<i>peíthō</i> (act.) 'I persuade, prevail on'	
<i>peíthomai</i> (mid.) 'I am persuaded, obey'	perf. <i>pépoitha</i> 'I trust, rely on'
<i>hístēmi</i> (act.) 'I make stand'	
<i>hístamai</i> (mid.) 'I stand still, stop'	perf. <i>hēsitéka</i> 'I stand'
<i>leípō</i> (act.) 'I leave (tr.)'	
<i>leipomai</i> 'I am left'	perf. <i>léloipa</i> 'I am gone'

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II. Hittite

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In Anatolian, the first branch to leave the family, there is no obvious reflex of the perfect at all.

Hittite verbs show a mixture of expected and unexpected features. These include:

- maintenance of the PIE active : middle opposition
- loss of the present vs. aorist aspect distinction, resulting in a simplified tense system
- two types of active inflection, known as the *mi*-conjugation and the *hi*-conjugation

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Exx. of *mi*-conjugation:

<i>epp- / app-</i> 'seize'		<i>arnu-</i> 'bring'	
pres. <i>epmi</i>	<i>appweni</i>	pres. <i>arnumi</i>	<i>arnumeni</i>
<i>epši</i>	<i>apteni</i>	<i>arnuši</i>	<i>arnutteni</i>
<i>epzi</i>	<i>appanzi</i>	<i>arnuzi</i>	<i>arnuanzi</i>

Exx. of *hi*-conjugation:

<i>dā-</i> 'take'		<i>halzišša-</i> 'cry out, call (repeatedly)'	
pres. <i>dāhhi</i>	<i>tummēni</i>	pres. <i>halziššahhi</i>	<i>halziššaweni</i>
<i>dāni</i>	<i>dattēni</i>	<i>halziššatti</i>	<i>halziššatteni</i>
<i>dai</i>	<i>danzi</i>	<i>halziššai</i>	<i>halziššanzi</i>

The two conjugations are identical in the plural; this is probably secondary.

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Important facts about the *mi*- and *hi*-conjugations:

- There is no difference in meaning; membership in the one or the other conjugation is lexically and/or morphologically determined.
epp- / app- is lexically coded as a *mi*-verb; *dā-* is coded as a *hi*-verb. Derived stems in *-nu-* (*arnu-*) follow the *mi*-conjugation; derived stems in *-šša-* (*halzišša-*) follow the *hi*-conjugation.
- The *mi*-conjugation endings (*-mi*, *-ši*, *-zi*) uncontroversially go back to the PIE active set (*-m + i, *-s + i, *-t + i).
- The *hi*-conjugation endings, interestingly, go back to the PIE perfect set:
1 sg. *-hi* < *-hai < *-ha + i (*-ha = PIE 1 sg. perf. *-hze (cf. Gk. -a))
2 sg. *-ši* < *-šai < *-šha + i (*-šha = PIE 2 sg. perf. *-thze (cf. Gk. -tha))
3 sg. *-i* < *-ei < *-e + i (*-e = PIE 3 sg. perf. *-e (cf. Gk. -e))

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Despite the mismatch in meaning and stem-formation, the perfect and the *hi*-conjugation are obviously somehow related.

Three possible scenarios come to mind for the relationship:

- 1) The *hi*-conjugation developed within Anatolian from something like the PIE perfect;
- 2) The perfect and the *hi*-conjugation developed from some PIE or Proto-"Indo-Hittite" category significantly different from both; or
- 3) The perfect developed from a PIE or PIH source category similar to the *hi*-conjugation.

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Scenario 1 (perfect → *hi*-conjugation):

This was long the standard view, and it still has defenders. But it was convincingly refuted a half century ago by Warren Cowgill (1972 [1975]).

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Scenario 2 (mystery source category → perfect, *hi*-conjugation):

According to Cowgill (1979), the source category was a predicatively employed nominal form (e.g., **dāh3-e* '(is) a giver / taker').² But no nominal theory can explain a) the special resultative-stative sense of the perfect, b) the source of the reduplication, or c) why the *hi*-conjugation is associated with certain kinds of characterized stems but not others.

² Cf. similar proposals by Kurylowicz (1964: 62) and Szemerényi (1970: 306).

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Scenario 3 (*hi*-conjugation (vel sim.) → perfect):

This is the position I call the “*h2e*-conjugation theory” (Jasanoff 1979, 2003, etc.).

According to the *h2e*-conjugation theory, PIE had various kinds of present and aorist stems that took the “perfect” endings in the active. One such stem-type evolved into the perfect proper; the rest remained what I call “*h2e*-conjugation” presents and aorists. These became *hi*-verbs in Hittite and were analogically transformed elsewhere.

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III. Two series of verbal forms

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The starting point for the *h2e*-conjugation theory was the discovery, in part on the basis of Hittite, that the PIE perfect and middle endings were originally identical. Compare:

	Hitt. middle	PIE middle	=	PIE perfect
sg. 1	- <i>h2a</i>	*- <i>h2e</i>	=	*- <i>h2e</i>
2	- <i>ta</i>	*- <i>h2e</i>	=	*- <i>h2e</i>
3 a)	- <i>a</i>	*- <i>o</i>	=	*- <i>e</i>
b)	- <i>ta</i>	*- <i>to</i>		
pl. 3 a)	—	*- <i>ro</i>	=	*- <i>er</i> , *- <i>r(s)</i> < *- <i>(e)rs</i>
b)	-(<i>a</i>) <i>nta</i>	*- <i>nto</i>		

¹⁵⁰ The variants *-*to* (sg.) and *-*nto* (pl.) in the third person show the influence of the corresponding active endings (*-*t*, *-*(e)nt*). In the daughter languages the influence of the active often spreads further (cf., e.g., Gk. 1 sg. *-*mai*, with *-*m*- from the active (*-*m*), for expected *-*ai*).

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There must therefore have been a stage within the prehistory of PIE when there were just two series of verbal forms, an *m*-series and an *h2*-series.

The “two-series” framework, which is now widely (though not universally) accepted, is not new. Well-known advocates have included Pedersen, Stang, Kurylowicz, Watkins, and Gamkrelidze & Ivanov.

According to the two-series model, the *m*-series underlies ordinary present and aorist actives like pres. **g^mh3-én-mi*, *-*si*, *-*ti*, etc.; aor. **déh3-m*, **déh3-s*, **déh3-t*, etc. . .

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... while the *h*-series is reflected in

- 1) ordinary present and aorist middles with the middle endings, e.g., pres. **kéi-h₂er*, **kéi-th₂er*, **kéi-or*, etc.;³
- 2) the perfect proper, with the perfect endings, e.g., **memón-h₂e*, **memón-th₂e*, **memón-e*, etc.; and
- 3) *h₂e*-conjugation presents and aorists, likewise with the “perfect” endings, that became neither middles nor perfects, e.g., pres. **mólh₂-h₂ei* ‘I grind’, **mólh₂-th₂ei*, **mólh₂-ei*, etc.

^{1or} The *h₂e*-conjugation present **mólh₂- / *melh₂-* ‘grind’ gave the Hittite *hi*-conjugation verb *mallaḫhi* ‘I grind’. Outside Anatolian it was transformed into Lat. *molō*, Go. *malan*, Lith. *malu*, OCS *meljǫ*, etc.

³The final **r* is a deictic particle proper to the middle, parallel to **s* in the active.

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We will use the term *protomiddle* to refer to

- a) the pre-PIE *h₂*-series of endings
- b) the pre-PIE category of voice to which these endings gave expression.

The exact value of the pre-PIE protomiddle, which no doubt had something to do with transitivity and/or alignment, is a potentially interesting topic.

But it is not our topic here. The essential fact about the protomiddle for our present purposes is that it was the source of the late PIE perfect, middle, and *h₂e*-conjugation.

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By the time of the breakup of PIE, the middle proper had become differentiated from the protomiddle and emerged as a category in its own right. True middles were marked by a series of innovative formal features vis-à-vis the protomiddle:

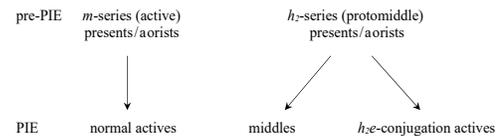
- partly distinctive endings (3 sg. *-*o*, 1 pl. *-*med^hh₂*, etc.)
- use of *-*r* as a deictic particle in the “here and now” present
- elimination of paradigmatic ablaut

The residue of protomiddle forms that were *not* renewed as middles were reanalyzed as actives — but actives that continued to inflect with the *h₂e*-conjugation endings.

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The formal relationships can thus be visualized as follows:



INTERIM CONCLUSION: *the perfect is a functionally specialized h₂e-conjugation present or aorist.*

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IV. The derivational history of the perfect

Questions that remain:

- How did the perfect acquire its resultative-stative sense and cease to be a normal *h₂e*-conjugation present / aorist?
- Why was it only this one kind of *h₂e*-conjugation stem — reduplicated and with **o* : zero ablaut — that developed into the perfect, and not other kinds of *h₂e*-conjugation stems?

Answers emerge from a closer look at how the perfect patterned in the synchronic system of late PIE.

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Not all PIE roots made perfects. Those that did were mostly associated with “stative-intransitive systems.” These are morphological complexes consisting of

- a perfect
- a root aorist denoting entry into the state
- one or both of
 - a (non-resultative) stative or processual present in **-je/o-*; and/or
 - a middle root present with the same meaning

Ex.: relevant forms of **bʰeudʰ-* ‘wake up’:

perf. 3 sg. **bʰebʰoudʰ-e* ‘is awake (having woken up)’
 aor. 3 sg. **bʰoudʰ-e* ‘has woken up’
je/o-pres. 3 sg. **bʰudʰ-jé-tor* ‘is wakeful, is waking up’
 root pres. 3 sg. **bʰudʰ-ór* ‘id.’

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More exx. of stative-intransitive systems:

**gēnh-* ‘come into being, be born’:

perf. 3 sg. **gēgōnh-e* ‘exists (having come into being)’
 aor. 3 sg. **gōnh-e* ‘has come into being’
je/o-pres. 3 sg. **gñh-jé-tor* ‘come into being, is/gets born’

**ueh-g-* ‘break’:

perf. 3 sg. **ueyōhg-g-e* ‘is broken (having undergone breakage)’
 aor. 3 sg. **uōhg-g-e* ‘has broken (intr.)’
 root pres. 3 sg. **uhg-ór* ‘is/gets broken’

**ped-* ‘fall’:

perf. 3 sg. **pepōd-e* ‘is down (having fallen)’
 aor. 3 sg. **pōd-e* ‘has fallen’
je/o-pres. 3 sg. **péd-je-tor* ‘falls, is falling’

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The particular form taken by the aorist in these complexes — the “stative-intransitive aorist” — is interesting:

3 sg. aor. **bʰoudʰ-e* ‘has woken up’ : 3 pl. **bʰudʰ-ér*
 3 sg. aor. **gōnh-e* ‘has come into being’ : 3 pl. **gñh-ér*
 3 sg. aor. **uōhg-g-e* ‘has broken (intr.)’ : 3 pl. **uhg-g-ér*
 3 sg. aor. **pōd-e* ‘has fallen’ : 3 pl. **ped-ér(?)*

The stative-intransitive aorist, a relatively new addition to the IE canon, was a *h2e*-conjugation root aorist with **o* : zero ablaut. The only way it differed from the perfect was that it was not reduplicated:

3 sg. aor. **bʰoudʰ-e* : perf. **bʰebʰoudʰ-e*
 3 sg. aor. **gōnh-e* : perf. **gēgōnh-e*
 3 sg. aor. **uōhg-g-e* : perf. **ueyōhg-g-e*
 3 sg. aor. **pōd-e* : perf. **pepōd-e*

The formal similarity is unlikely to be accidental.

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SECOND INTERIM CONCLUSION: *The perfect was historically derived from the stative-intransitive aorist by reduplication.*

How and why would reduplication have converted a change-of-state aorist into a resultative-stative present?

Possibility 1. Reduplication first turned the root aorist into a present, just as in actives of the *m*-series:

aor. act. 3 sg. **déh-t* ‘has given’ → pres. act. 3 sg. **dédéh-ti* ‘gives, is giving’
 aor. act. 3 sg. **ðéh-t* ‘has put’ → pres. act. 3 sg. **ðéðéh-ti* ‘puts, is putting’

... and the resulting reduplicated present (e.g., **bʰebʰoudʰ-e* ‘is wakeful, is waking up’) then went on to evolve resultative meaning:

‘is wakeful, is waking up’ (process) ⇒ ‘is awake (having woken up)’ (resultative stative).

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The problem with this scenario lies in the second part. Presents built to roots of this type never otherwise acquire a resultative sense. Exx.:

**bʰudʰ-jé-tor*: cf. Ved. (*prāti*) *būdhya māna-* ‘awakening’, YAv. *būdhia-* ‘be(come) aware’
**bʰudʰ-ór*: cf. Lith. *būdi* (infin. *-ėti*) ‘is/are on duty’, OCS *būdi(ŭ)*, infin. *-ėti* ‘keeps watch’
**gñh-jé-tor*: cf. Ved. *jāyate* ‘is/gets born’, OIr. *-gainethar* ‘id.’
**uhg-ór*: cf. Toch. B *wokator* ‘breaks open, blooms’
**péd-je-tor*: cf. Ved. (*áva*) *pādya-* ‘fall down’, YAv. *paīdīta-* ‘sink’

The presents in stative-intransitive systems always either remain processual or turn into non-resultative statives like Lith. *būdi*. They never pattern like the perfect, which owing to its resultative sense tends to evolve into a kind of past tense in some branches (late Vedic, late Greek, Italic, Celtic, Germanic).

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Possibility 2. Reduplication first converted the stative-intransitive aorist into an intensive stative-intransitive aorist:

**bʰoudʰ-e* ‘has woken up’ → **bʰebʰoudʰ-e* ‘has well and truly woken up’
**gōnh-e* ‘has come into being’ → **gēgōnh-e* ‘has definitively come into being’
**uōhg-g-e* ‘has broken (intr.)’ → **ueyōhg-g-e* ‘has broken to bits (intr.)’
**pōd-e* ‘has fallen’ → **pepōd-e* ‘has taken a hard fall’

... and then, owing to the thoroughness of the change of state, the final state was pragmatically interpreted as persisting into the time-frame of the present:

**bʰebʰoudʰ-e* ‘has well and truly woken up’ ⇒ ‘is awake (having woken up)’
**gēgōnh-e* ‘has definitively come into being’ ⇒ ‘exists (having come into being)’
**ueyōhg-g-e* ‘has broken to bits (intr.)’ ⇒ ‘is broken (having undergone breakage)’
**pepōd-e* ‘has taken a hard fall’ ⇒ ‘is down (having fallen)’

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Possibility 2 gives a better account of the resultative-stative meaning of the perfect than Possibility 1, which fails to generate the resultative component.

The likeliest hypothesis, then, is that the perfect was an etymological aorist — specifically, an intensive version of the stative-intransitive aorist.

Once forms like **b^heb^houd^h-e* had lost their eventive meaning ('has well and truly woken up' ⇒ 'is awake (having woken up)'), the emergent perfect was free to become a third "system" in the architecture of the PIE verb, parallel to the present "system" and aorist "system."

But this was an extremely late development — possibly even later than the departure of Anatolian and Hittite from the rest of the family.

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V. Summary

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Steps in the emergence of the perfect:

- At the "two-series" stage of pre-PIE, certain *h₂*-series (= protomiddle) root aorists with **o* : zero ablaut denoted entry into a state.
- When the middle proper underwent formal renewal and separated from the rest of the protomiddle, the aorists in question ("stative-intransitive aorists") remained on the unrenewed (*h_{2e}*-conjugation) side of the divide.
- At some point prior to the separation of Anatolian from the rest of the family, the stative-intransitive aorist acquired a reduplicated variant with intensive meaning.
- This intensive change-of-state aorist, through a process of pragmatic reinterpretation, was revalued as a non-eventive resultative stative — the formation we know as the perfect.

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SOME Q&A'S

Q: Why does the perfect align with the middle rather than the active in cases like

Gk. perf. *ólōla* 'I am lost' : *ólumai* (mid.) 'I perish' (not : *ólumi* (act.) 'I destroy') and others seen earlier?

A: Because the perfect was itself, at a deeper level, a kind of middle — specifically, a protomiddle. Although the *h_{2e}*-conjugation and the middle parted company formally, the semantic links between them persisted.

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Q: Why, in formal terms, is there only one kind of perfect stem?

A: Because there was only one kind of stative-intransitive aorist. The perfect developed exclusively out of the reduplicated stative-intransitive root aorist, with its distinctive **o* : zero ablaut pattern.

Q: Why, although the perfect is a kind of stative present, are the perfect endings not followed by the deictic here and now particle **i* (**-h₂ei*, **-th₂ei*, etc.)?

A: Because the perfect is etymologically an aorist, and aorists never take a here and now particle. This historical feature was retained by the perfect even after it had ceased to be an aorist.

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Q: Did the creation of the perfect postdate the breakup of the undivided IE (or IH) family?

A: Possible but not certain. Anatolian has a few forms that look formally like reduplicated stative-intransitive aorists, but these lack the resultative meaning of true perfects. It is conceivable that the last step in our scenario — the shift from an intensive stative-intransitive aorist ('has well and truly woken up') to a non-eventive resultative-stative ('is awake (having woken up)') was a post-Anatolian development.

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