(Some) Indo-European ablaut is phonological:
Post-tonic */o/-deletion in neuter "*–men-stems" and beyond

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On Indo-European ablaut

- ▶ The ancient Indo-European (IE) languages show intramorphemic alternations in vowel quality and quantity (ABLAUT) within and across inflectional paradigms.

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  - (i) Qualitative ablaut: $*[e] \sim *[o]$
  - (ii) Quantitative ablaut: $*[e, o, (a)] \sim *[\varnothing]$

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- ▶ Overarching question today:

  - ∘ **To what extent were these alternations morphologically or phonologically conditioned in PIE?**

Indo-European ablaut — phonological or morphological?

- According to the dominant view (as, e.g., in the widely accepted "Erlangen Model"; Schindler 1975b,c, Rix 1992) ablaut was primarily or even entirely **morphological already in PIE**.

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- ▶ According to the dominant view (as, e.g., in the widely accepted "Erlangen Model"; Schindler 1975b,c, Rix 1992) ablaut was primarily or even entirely **morphological already in PIE**.
- ▶ Standard approach (focused on athematic nominal inflection):
    - ▶ PIE had a small set of inflectional classes ("acrostatic", "hysterokinetic", etc.) defined by prosodic templates (cf. Fellner and Grestenberger 2016).
    - ▶ Each template specified a distinct set of intraparadigmatic word stress and ablaut patterns.
    - ▶ A nominal (category)'s intraparadigmatic stress/ablaut pattern was determined by the template associated with its inflectional class.

Indo-European ablaut — phonological or morphological?

- ▶ Yet the oldest daughter languages maintain a robust correlation between word stress and quantitative ablaut, incl. intraparadigmatic alternations between stressed *[é, ó] and unstressed *[∅] — e.g., (a–b):

a.

	'father.ACC'		'to the father'
Ved.	*pitáram*	vs.	*pit(∅)ré*
Gk.	*patéra*	vs.	*pat(∅)rí*

b.

	'(s)he kills'		'they kill'
Ved.	*hánti*	vs.	*gh(∅)nánti*
Hitt.	*kuēnzi*	vs.	*ku(∅)nanzi*

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- These quantitative alternations are amenable to analysis in terms of (morpho)phonological vowel deletion (cf. Kiparsky 2010, 2018):
  - ≈ **Mid vowels (*/e, o/) are deleted in pretonic syllables.** <small>(see Appendix III)</small>

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- ▶ Reconstructing this (type of) process for PIE accounts for this data:
  - ▶ Stem-final $*$/e, o/ surface when stressed — i.e., (a–b).

a. $*$/ph₂tér-m̥/   → $*$[pəh₂térm̥]   > Ved. *pitáram,* Gk. *patéra*
b. $*$/gʷʰen-ti/   → $*$[gʷʰén-ti]   > Ved. *hánti,* Hitt. *kuēnzi*

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  - ▶ Stem-final $*$/e, o/ surface when stressed — i.e., (a–b).
  - ▶ $*$/e, o/ undergo deletion when stress is attracted to ACCENTED (i.e., stress-preferring) inflectional endings to their right — i.e., (c–d).

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b. $*$/gʷʰen-ti/ → $*$[gʷʰén-ti] > Ved. *hánti*, Hitt. *kuēnzi*

c. $*$/ph₂tér-éi/ → $*$[pəh₂.tréi] > Ved. *pitré* (cf. Gk. *patrí*)

d. $*$/gʷʰen-énti/ → $*$[gʷʰn-énti] > Ved. *ghnánti*, Hitt. *kunanzi*

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► Broad take-away from this data (cf. Kiparsky 2010, 2018):
  ◇ Some quantitative ablaut can be accounted for atemplatically via synchronic, prosodically-conditioned vowel deletion processes.

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- ► Two further questions thus arise:
    - ◦ **Does some PIE quantitative ablaut require templates?**
    - ◦ **If not, what other (morpho)phonological processes are involved?**
- ► Empirical focus for today's talk — PIE neuter "*–men-stems."
    - ► Provide a testing ground for templatic and atemplatic approaches to quantitative ablaut.

Inflection of PIE *–*men*-stems

▶ PIE had a class of primary (i.e., deradical) neuter nouns formed with a suffix (conventionally cited as) "*–*men*–."

▶ Deeper prehistory of this class controversial, but comparative reconstruction yields the following partial paradigm (cf. Kümmel 2014):

	NOM.SG	*[CéC-mn̥]	*[CéC-mō̄n]	NOM.PL
PIE	ACC.SG	*[CéC-mn̥]	*[CéC-mō̄n]	ACC.PL
	DAT.SG	*[CéC-men-ei]	*[CéC-men-ō̄m]	GEN.PL

▶ Formal properties of this PIE paradigm:
  ▶ Fixed stress on root with invariant *[e]-vocalism.
  ▶ Three allomorphs of the suffix: *[-mn̥], *[-mō̄n], *[-men].

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	DAT.SG	*[CéC-men-ei]	*[CéC-men-ōm]	GEN.PL

- ▶ Vedic continues it essentially intact — e.g., *bráhman*– 'formulation':

Vedic	NOM.SG	*bráhma*	*bráhmā(ṇi)*	NOM.PL
	ACC.SG	*bráhma*	*bráhmā(ṇi)*	ACC.PL
	DAT.SG	*bráhmaṇe*	*bráhmaṇām*	GEN.PL

Ablaut in PIE *–*men*-stems — NOM/ACC.SG vs. PL

N.NOM/ACC.SG	N.NOM/ACC.PL	
a. *[dʰéh-mn̥]	: *[dʰéh-moːn]	> Ved. *dhā́ma* : *dhā́māni* 'domain(s)'
b. *[sékʷ-mn̥]	: *[sékʷ-moːn]	> OAv. *haxmā̆* : *haxᵊmąm* 'retinue(s)'
c. *[séh-mn̥]	: *[séh-moːn]	> Lat. *sēmen* 'seed' : OHG *sāmo* 'seed'

- ▶ Suffixal alternation SG *[∅] / PL *[oː] is securely reconstructible.
    - ▶ This alternation is directly continued in Indo-Iranian and preserved in traces elsewhere — e.g., (a–c) above.
    - ▶ At least one reflex of this alternation is also found in Hittite (Gertz 1982):

Hitt.	*šarāman*	:	*šarāma*	'ration-breads'
	[sráːman]	:	[sráːma]	

(Schindler 1975c:259, 262–4; Jasanoff 2002; Nussbaum 1986:129–30, 2014a:300–1; Beekes and de Vaan 2011:205–6; *i.a.*)

Ablaut in PIE *–men*-stems — the traditional analysis

	N.NOM/ACC.SG		N.NOM/ACC.PL	
PIE	*[dʰéh₁-mn̥]	:	*[dʰéh₁-mōn]	(put-NML.N.SG/PL)

▶ Standard analysis of this alternation (since Schindler 1975c) involves
  stem suppletion — *–men*-stems belong to two inflectional classes:

  (i) SG = "proterokinetic" — characterized by stressed [é] in root and *[∅] in
      suffix in strong cases.

  (ii) PL = "amphikinetic" — characterized by stressed *[é] in root and *[o] in
      suffix in strong cases.

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▶ PL *[-mōn#] < pre-PIE **[-mon-h₂#](*/-h₂/ ⇔ N.NOM/ACC.PL) via
  SZEMERÉNYI'S LAW (Szemerényi 1962; Nussbaum 1986:129–30):

  SZEMERÉNYI'S LAW (SZL): pre-PIE **[V{R, s}F#] > PIE *[V̄{R, s}#]

▶ Following Sandell and Byrd (2014, 2015), I analyze SzL as a synchronic phonological process in PIE — i.e.:

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▶ Under this view PIE had phonological derivations like (a–b) (ANIM.NOM.SG ⇔ */-s/) and (c–d) (N.NOM/ACC.PL ⇔ */-h_2/):

a. */ph_2tér-s/ → *[pəh₂.tér] 'father' >Ved. *pitā́*, Gk. *patḗr*

b. */$h_1$su-ménes-s/ → *[h₁su.mé.nēs] 'well-minded' >Ved. *sumánās*, Gk. *eumenḗs*

c. */wéd-or-h_2/ → *[wé.dōr] 'waters' >Hitt. *widār*, Gk. *húdōr*

d. */d^heh₁´-mon-h_2/ → *[d^héh₁.mōn] 'establishments' >Ved. *dhā́māni*, OAv. *dāmạm*

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  · (But note that the rest of this analysis does not depend on this assumption; it still works if SzL was a morphophonological lengthening process in the relevant environments — i.e., if ANIM.NOM.SG and N.NOM/ACC.PL were $/$-$^\mu/$.)

	N.NOM/ACC.SG		N.NOM/ACC.PL	
PIE	*[dʰéh₁-mn̩]	:	*[dʰéh₁-mōn]	(put-NML.N.SG/PL)

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▶ PL *[-mōn#] derives from */-mon-h₂#/) via SzL.

Ablaut in PIE *–*men*-stems — the traditional analysis (rev.)

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⇒ SG */∅/ ~ PL */o/ alternation is morphological; only the lengthened vowel in PL is phonological.

Ablaut in PIE *–*men*-stems — a new analysis

	N.NOM/ACC.SG		N.NOM/ACC.PL	
PIE	*[dʰéh₁-<mark>mn̥</mark>]	:	*[dʰéh₁-mōn]	(put-NML.N.SG/PL)

▶ **Proposal:**

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- ▶ Two assumptions at the core of this analysis:

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  (i) Suffix UR in strong case forms is PIE */´-mon-/, which can be observed modulo lengthening in the PL (weak cases have */´-men-/).

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- ▶ **Proposal:** This alternation is phonological.
- ▶ Two assumptions at the core of this analysis:
    - (i) Suffix UR in strong case forms is PIE *$/$´-mon-$/$, which can be observed modulo lengthening in the PL (weak cases have *$/$´-men-$/$).
    - (ii) PIE had a phonological process deleting post-tonic short *$/$o$/$ before a tautosyllabic sonorant consonant (= R):

$$\text{POST-TONIC } */\text{o}/\text{-DELETION (PoD):}$$
$$/\ŏ/ \rightarrow \varnothing \ / \ \acute{V}C_0\_\_\_RC_0]_\sigma$$

- These two assumptions are sufficient to account for the alternation.

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▶ Inflectionally zero-marked N.NOM/ACC.SG ($/\text{-}\varnothing/$) is subject to PoD, resulting in vocalization of word-final sonorant, as in (a).

POST-TONIC $*/o/$-DELETION (PoD):
$$/\breve{o}/ \to \varnothing \:/\: \acute{V}C_0\_\_RC_0]_\sigma$$

PIE		VEDIC
a. $*/d^h\acute{e}h_1\text{-}mon\text{-}\varnothing/$	$\to \quad *[d^h\acute{e}h_1.m\underset{\textstyle.}{n}]$	$>$ *dhā́ma*

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$$\text{POST-TONIC } */o/\text{-DELETION (PoD):}$$
$$/\breve{o}/ \rightarrow \varnothing \mathbin{/} \acute{V}C_0\_\_RC_0]_\sigma$$

- ▶ But PoD is bled in PL by vowel lengthening due to SzL as in (b).

	PIE			VEDIC
a.	$*/d^h\acute{e}h_1\text{-mon-}\varnothing/$	$\rightarrow$	$*[d^h\acute{e}h_1.m\underset{.}{n}]$	>	*dhā́ma*
b.	$*/d^h\acute{e}h_1\text{-mon-}h_2/$	$\rightarrow$	$*[d^h\acute{e}h_1.m\bar{o}n]$	>>	*dhā́māni*

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b.	$*/d^h\acute{e}h_1$-mon-$h_2/$	$\rightarrow$	$*[d^h\acute{e}h_1.m\bar{o}n]$	>> *dhā́māni*

- But is there independent evidence for (or against) these assumptions?

Roadmap

§1 Assess (counter-)evidence for PoD.

§2 Motivate underlying N.NOM/ACC */-mon-/.

- ▸ Comparison with neuter "*–es*-stems."
- ▸ Evidence from "internal derivation."

§3 Comparative assessment of the (new) phonological and (traditional) morphological analyses.

§4 Conclusions & discussion.

Positive evidence for PoD?

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▶ P(N)IE had an (active) participle suffix */-ónt-/.

▶ PoD would account for */o/-deletion in this suffix when attached to athematic verbal stems with fixed initial stress, such as reduplicated presents, e.g.:

a. */RÉD-bʰer-ónt-es/ → *[bʰV́bʰ.r̩n̩.tes] > Ved. *bíbhratas* 'bearing'

b. */RÉD-ĝʰeu-ónt-es/ → *[ĝʰV́ĝʰ.wn̩n̩.tes] > Ved. *júhvatas* 'pouring'

c. */RÉD-deh₃-ónt-m/ → *[dV́d.h₃n̩.tm] > Ved. *dádatam* 'giving'

d. */RÉD-gʷeh₂-ónt-∅/ → *[gʷV́gʷ.h₂n̩t] > Ved. *jágat* '(moving) world'

· PoD is fed in (a–d) by a separate process deleting root */e/ (conditioned by the accented participle suffix per Kiparsky 2010).

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	N.NOM/ACC.SG		N.NOM/ACC.PL	
a.	*[páh₂-wr̥]	:	*[páh₂-wor]	'fire(s)'
b.	*[h₁éy-r̥]	:	*[h₁éy-or]	'day(s)'
c.	*[wód-r̥]	:	*[wed-or]	'water(s)'

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▶ PoD could also account for SG/PL suffixal alternations in other athematic neuter nouns like:

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a.	*[páh$_2$-wr̥]	:	*[páh$_2$-wōr]	'fire(s)'
b.	*[h$_1$éy-r̥]	:	*[h$_1$éy-ōr]	'day(s)'
c.	*[wód-r̥]	:	*[wed-ōr]	'water(s)'

▶ Like *–men*-stems, these nouns have been standardly analyzed as (since Schindler 1975b) as belonging to two inflectional classes:

SG = (a–b) "proterokinetic" / (c) "acrostatic;" PL = "amphikinetic."

Positive evidence for PoD?

▶ But if these nouns have suffixal */-wor/, */-or/, they would be targeted by **PoD** in NOM/ACC.SG — i.e., (a–c).

a. */péh₂-**wor-∅**/ → *[páh₂.**w̥**] > Hitt. *paḫḫur* 'fire'

b. */h₁éy-**or-∅**/ → *[h₁é.**y̥**] > YAv. *aiiarə* 'day'

c. */wód-**or-∅**/ → *[wó.d**r̥**] > Hitt. *wātar* 'water'

Positive evidence for PoD?

- ▶ But if these nouns have suffixal */-wor/, */-or/, they would be targeted by **PoD** in NOM/ACC.SG — i.e., (a–c).
- ▶ And in PL the suffix would undergo SZEMERÉNYI'S LAW, thus bleeding PoD — i.e., (d–f).

a. */péh₂-wor-∅/ → *[páh₂.wr̩] > Hitt. *paḫḫur* 'fire'

b. */h₁éy-or-∅/ → *[h₁é.yr̩] > YAv. *aiiarə* 'day'

c. */wód-or-∅/ → *[wó.dr̩] > Hitt. *wātar* 'water'

d. */péh₂-wor-h₂/ → *[páh₂.wōr] > TB *pūwar* 'fire'

e. */h₁éy-or-h₂/ → *[h₁é.yōr] > OAv. *aiiārə* 'days'

f. */wéd-or-h₂/ → *[wé.dōr] > Hitt. *widār* 'waters'

Counter-evidence to PoD?

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PIE	
*/dʰeĝʰ-om-/	'earth'
*/h₃réĝ-on-/	'ruler'
*/h₃er-on-/	'eagle'

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▶ Some animate nouns with suffixal $*$/o/-vocalism (and root stress in their strong cases; "amphikinetic") present the target for PoD.

▶ But because they are animate, their NOM.SG is $*$/-s/-marked; PoD is thus again bled by SzL:

	PIE				ANIM.NOM.SG
a.	$*$/dʰe ĝʰ-om-s/	→	$*$[dʰé.ĝʰō̄m]	>	Hitt. *tēkan* 'earth'
b.	$*$/h₃rḗ ĝ-on-s/	→	$*$[h₃rḗ.ĝō̄n]	>	Ved. *rā́jā* 'king'
c.	$*$/h₃er-on-s/	→	$*$[h₃ó.rō̄n]	>	Hitt. *ḫāraš* 'eagle'

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▶ Animate nouns with suffixal */o/-vocalism (and root stress in their strong cases; "amphikinetic") present the target for PoD.

▶ And in the other strong cases the stem-final sonorant is generally pre-vocalic — e.g., NOM.PL:

	PIE			ANIM.NOM.PL
a.	*/h₃rḗ ĝ-on-es/	→	*[h₃rḗ.ĝo.nes]	> Ved. *rā́jānas* 'kings'
b.	*/h₃er-on-es/	→	*[h₃ó.ro.nes]	> Hitt. *ḫāraniš* 'eagles'

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▶ And in the other strong cases the stem-final sonorant is generally pre-vocalic — e.g., ACC.SG (bled by sonorant vocalization):

	PIE				ANIM.ACC.SG
a.	$*$/h₃rég̑-on-m/	→	$*$[h₃ré.g̑o.n̥m]	>>	Ved. *rā́jānam* 'king'
b.	$*$/h₃er-on-m/	→	$*$[h₃ó.ro.n̥m]	>>	Hitt. *ḫāranan* 'eagle'

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▶ Animate nouns with suffixal $*/o/$-vocalism (and root stress in their strong cases; "amphikinetic") present the target for PoD.

▶ And in the special case of the ACC.SG of 'earth' PoD is bled by STANG'S LAW ($*/V\{w, m, h_2\}m\#/ \rightarrow *[\bar{V}m\#]$; Stang 1965):

PIE		ANIM.ACC.SG
$*/d^h e \hat{g}^h\text{-om-m}/$	$\rightarrow \quad *[d^h \acute{e}.\hat{g}^h \overline{om}]$	> Hitt. *tēkan* 'earth'

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- ▶ Animate nouns with suffixal $*/o/$-vocalism (and root stress in their strong cases; "amphikinetic") present the target for PoD.

- ▶ And in the $/-\varnothing/$-marked VOC.SG PoD is bled by word-level destressing of all VOC forms.

PIE		ANIM.VOC.SG
$*/h_3r\acute{e}\hat{g}$-on-$\varnothing/$	$\rightarrow$ $*[h_3r\bar{e}.\hat{g}on]$ >	Ved. *rā́jan* '(O) king'

Counter-evidence to PoD — thematic vowels?

- Thematic vowels (*–_o/e_–) present surface counter-examples to PoD.

Counter-evidence to PoD — thematic vowels?

- ▶ Thematic vowels (*–_o/e_–) present surface counter-examples to PoD.
- ▶ One set occurs in the ACC.SG (and N.NOM.SG) of thematic nominals, e.g.:

	PIE			ACC.SG
a.	*/néw-_o_-m/	→	*[né.w_o_m]	> Gk. _né(w)_on_, Hitt. _nēw_an_ 'new'
b.	*/tómh₁-_o_-m/	→	*[tóm.h₁_o_m]	> Gk. _tóm_on_ 'slice'
c.	*/wérĝ-_o_-m/	→	*[wér.ĝ_o_m]	> Gk. _(w)érg_on_, YAv. _varəz_ə_m_ 'work'
d.	*/péd-_o_-m/	→	*[pé.d_o_m]	> Gk. _péd_on_, Hitt. _pēd_on_ 'place'

Counter-evidence to PoD — thematic vowels?

- ▶ Thematic vowels (*–o/e–*) present surface counter-examples to PoD.
- ▶ Another set occurs in verbal stems — e.g., in the 3PL and 1SG.PST of "simple" thematic presents like *b^hér-e/o–* 'bear':

	PIE			PRS.IND.ACT
a.	*$/b^h$ér-o-nti/	→	*[b^hé.ron.ti]	> Ved. *bháranti* 'they bear'
b.	*$/b^h$ér-o-nt/	→	*[b^hé.ront]	> Gk. *p^héron* 'they bore'
c.	*$/b^h$ér-o-m/	→	*[b^hé.rom]	> Gk. *p^héron* 'I bore'

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▶ But thematic vowels are more generally exceptional in their tendency to resist deletion within inflectional paradigms (see Appendix IV).

⇒ Thematic vowels are morphophonologically special (MAX-TH?)

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- ▶ But thematic vowels are more generally exceptional in their tendency to resist deletion within inflectional paradigms (see Appendix IV).
  - ⇒ Thematic vowels are morphophonologically special (MAX-TH?)
- ▶ Alternatively, these theme vowels were maintained (or restored) by analogy to other paradigmatic forms.

Counter-evidence to PoD — middles in *–(t)or*?

▶ Another apparent counter-example to PoD is posed by 3SG.NPST.MID forms of PIE root presents with fixed stem-final stress, e.g., (a–b).

a. */ḱéy-<u>or</u>/ → *[ḱé.<u>yor</u>] > CLuw. *zīyar(i)*, Ved *śáye* 'lies'

b. */h₁és-<u>or</u>/ → *[h₁é.s<u>or</u>] > Hitt. *ēša* 'sits down'

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▶ And/or by analogy to other 3SG.NPST.MID forms in which the inflectional ending is stressed, e.g., (e).

a. */ĥkéy-or/   → *[ĥké.yor]   >   CLuw. *zīyar(i)*, Ved *śáye* 'lies'

b. */h₁és-or/   → *[h₁é.sor]   >   Hitt. *ēša* 'sits down'

c. */ĥkéy-o/   → *[ĥké.yo]   >> Ved. *áśayat* 'was lying'

d. */h₁és-o/   → *[h₁é.so]   >> Hitt. *ešat* 'sat down'

e. */mleuh₂-ór/   → *[mlu.h₂ór] >   Ved. *bruvé*, OAv. *mruiiē* 'is called'

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e. *\/mleuh₂-ór\/ → *[mlu.h₂ór] > Ved. *bruvé*, OAv. *mruiiē* 'is called'

- *\/ɸ-tor\/ → [ɸ-tor] (e.g., *[mn̥-yé-tor]) can be explained in the same way.

Naturalness of PoD

- ▶ Reduction or deletion of vowels in post-tonic syllables (esp. closed) is typologically common (e.g., Crosswhite 2001).

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  - ▶ Post-tonic vowels tend to delete before a tautosyllabic sonorant with vocalization of the sonorant, e.g., (a–b) (cf. Jacobs et al. 1994:393):

a.   /mənúvol/   →   [mənúv̩l]   'ugly/contemptible person'

b.   /nígun/   →   [nígn̩]   'melody'

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- a.   /mənúvol/   →   [mənúv!]   'ugly/contemptible person'
- b.   /nígun/   →   [nígn̩]   'melody'
- ▶ PoD also fits naturally in the grammar of PIE, where $*/o/$ was targeted by other morphophonological processes for deletion (e.g., pretonically).
    - · (The (non-)deletion of $*/e/$ in PoD environments is discussed below.)

Evaluating the evidence for PoD

▶ PoD was posited to account for SG/PL alternation in PIE *–men-stems (assuming underlying */-mon-/ in strong cases):

	N.NOM/ACC.SG		N.NOM/ACC.PL	
PIE	*[dʰéh₁-**mn̥**]	:	*[dʰéh₁-**mōn**]	(put-NML.N.SG/PL)

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PIE	$*[d^h\acute{e}h_1\text{-}\mathbf{m\underline{n}}]$	:	$*[d^h\acute{e}h_1\text{-}\mathbf{m\bar{o}n}]$	(put-NML.N.SG/PL)

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  ▶ And these seem to have principled morphological explanations.
▶ Several other PIE morphological categories show ablaut alternations that can be attributed to PoD.
⇒ **There is fairly robust evidence for reconstructing PoD for PIE.**

Evaluating the evidence for PoD

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PIE	*[dʰéh₁-**mn̥**]	:	*[dʰéh₁-**mṓn**]	(put-NML.N.SG/PL)

▶ There are few reconstructible surface counter-examples to PoD.
  ▶ And these seem to have principled morphological explanations.
▶ Several other PIE morphological categories show ablaut alternations that can be attributed to PoD.
◦ But — is there any independent evidence for */-mon-/ in the paradigm above?

*–*men*- and *–*es*-stems — two of a kind?

- Since at least Schindler (1975c:263–4) a close connection between neuter *–*men*-stems and *–*es*-stems has been suspected.

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- ▶ Since at least Schindler (1975c:263–4) a close connection between neuter *–*men*-stems and *–*es*-stems has been suspected.
- ▶ Morphologically, both *–*men*– and *–*es*– are primary neuter noun-forming suffixes.

–men- and *–es*-stems — two of a kind?

- ▶ Since at least Schindler (1975c:263–4) a close connection between neuter *–men*-stems and *–es*-stems has been suspected.
- ▶ Morphologically, both *–men–* and *–es–* are primary neuter noun-forming suffixes.
- ▶ Phonologically, these categories exhibit close formal affinities.

–men- and *–es*-stems — two of a kind?

▶ Like *–men*-stems the deeper prehistory of *–es*-stems is controversial, but comparative reconstruction yields the following partial paradigm:

PIE	NOM.SG	*[CéC-os]	*[CéC-ōs]	NOM.PL
	ACC.SG	*[CéC-os]	*[CéC-ōs]	ACC.PL
	DAT.SG	*[CéC-es-ei]	*[CéC-es-ōm]	GEN.PL

▶ Securely reconstructible ("nicht zu bezweifeln"; Schindler 1975c:259) formal properties of this PIE paradigm:
  ▶ Fixed stress on root with invariant *[e]-vocalism.
  ▶ Three allomorphs of the suffix: *[-os], *[-ōs], *[-es].

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	NOM.SG	*[CéC-<u>os</u>]	*[CéC-os]	NOM.PL
PIE	ACC.SG	*[CéC-<u>os</u>]	*[CéC-os]	ACC.PL
	DAT.SG	*[CéC-es-ei]	*[CéC-es-om]	GEN.PL

▶ Vedic continues it essentially intact — e.g., *mánas*– 'mental power':

	NOM.SG	*mánas*	*mánāṁsi*	NOM.PL
Vedic	ACC.SG	*mánas*	*mánāṁsi*	ACC.PL
	DAT.SG	*mánase*	*mánasām*	GEN.PL

*–*men*-stems and *–*es*-stems — two of a kind?

	N.NOM/ACC.SG		N.NOM/ACC.PL	
PIE	*[mén-os]	:	*[mén-ōs]	(think-NML.SG/PL)
> Ved.	*mánas*	:	*mánāṁsi*	'mental power(s)'
> OAv.	*manas(-cā)*	:	*manā̊*	"

► Suffixal alternation SG *[o] /PL *[ō] is directly continued in Indo-Iranian.

► SG *[o]-vocalism is clearly preserved in Greek and reflected elsewhere, e.g. (a–d):

    a. Gk. *ménos*   'strength; spirit'

    b. Lat. *genus*   'race'

    c. OCS *slovo*   'word'

    d. Hitt. *palḫaštiš*   'breadth'   (Schindler 1980; Melchert 1999; *pace* Höfler 2015)

*–*men*-* and *–*es*-stems — two of a kind?

► A side-by-side comparison — neuter (a) *–es*-stems vs. (b) *–men*-stems:

a.	NOM.SG	*[CéC-os]	*[CéC-ōs]	NOM.PL
	ACC.SG	*[CéC-os]	*[CéC-ōs]	ACC.PL
	DAT.SG	*[CéC-es-ei]	*[CéC-es-ōm]	GEN.PL

b.	NOM.SG	*[CéC-mn̥]	*[CéC-mōn]	NOM.PL
	ACC.SG	*[CéC-mn̥]	*[CéC-mōn]	ACC.PL
	DAT.SG	*[CéC-men-ei]	*[CéC-men-ōm]	GEN.PL

–men- and *–es*-stems — two of a kind?

▶ A side-by-side comparison — neuter (a) *–es*-stems vs. (b) *–men*-stems:

a.	NOM.SG	*[CéC-<u>os</u>]	*[CéC-ōs]	NOM.PL
	ACC.SG	*[CéC-<u>os</u>]	*[CéC-ōs]	ACC.PL
	DAT.SG	*[CéC-es-ei]	*[CéC-es-ōm]	GEN.PL

b.	NOM.SG	*[CéC-mn̩]	*[CéC-mōn]	NOM.PL
	ACC.SG	*[CéC-mn̩]	*[CéC-mōn]	ACC.PL
	DAT.SG	*[CéC-men-ei]	*[CéC-men-ōm]	GEN.PL

⇒ *–es-* and *–men*-stems and inflect identically **except** in NOM/ACC.SG:
*[-<u>os</u>] vs. *[-mn̩])

The prosody of *–men-* and *–es*-stems

▶ Schindler (1975c:263–4) thus hypothesized that neuter *–men*-stems and neuter *–es*-stems were of the same inflectional type, at least diachronically ("proterokinetic").

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▶ **Proposal:** Schindler's hypothesis holds for synchronic PIE as well — both suffixes have the same underlying prosodic representation, i.e.:

    (i) PREACCENTING (/´-/), preferring stress to fall on the preceding syllable.

    (ii) *$/o/$-vocalism of the suffix in strong cases (*/´-mon-/, */´-os-/).

    (iii) *$/e/$-vocalism of suffix in weak cases (*/´-men-/, */´-es-/).

The prosody of *–men*- and *–es*-stems

▶ The derivation of NOM/ACC.PL forms (via SzL) are wholly parallel:

a. $*/d^heh_1\text{´-}mon\text{-}h_2/$ → $*[d^héh_1.m\overline{o}n]$ >> OAv. *dāmąm*, Ved. *dhā́māni*

b. $*/men\text{´-}os\text{-}h_2/$ → $*[mé.n\overline{o}s]$ >(>) OAv. *manā̊*, Ved. *mánāṁsi*

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- ▶ The derivation of NOM/ACC.PL forms (via SZL) are wholly parallel:

a. $*/d^heh_1$´-mon-$h_2/$ → $*[d^héh_1$.mōn] ≫ OAv. *dāmạm*, Ved. *dhā́māni*

b. $*/men$´-os-$h_2/$ → $*[mé.nōs]$ >(>) OAv. *manā̊*, Ved. *mánāṁsi*

- ▶ But in NOM/ACC.SG PoD applies to (a) neuter *–men*-stems, but <u>does not apply</u> to (b) *–es*-stems because they terminate in a fricative:

a. $*/d^heh_1$´-mon-$\varnothing/$ → $*[d^héh_1$.mn̥] > Gk. *tʰêma*, Ved. *dhā́ma*

b. $*/men$´-os-$\varnothing/$ → $*[mé.nos]$ > Gk. *ménos*, Ved. *mánas*

The prosody of *–men-* and *–es*-stems

- ▶ The derivation of NOM/ACC.PL forms (via SZL) are wholly parallel:

a. $*/d^heh_1\acute{} \text{-mon-h}_2/ \rightarrow *[d^héh_1.m\bar{o}n]$ >> OAv. *dāmąm*, Ved. *dhā́māni*

b. $*/men\acute{} \text{-os-h}_2/ \rightarrow *[mé.n\bar{o}s]$ >(>) OAv. *manå̊*, Ved. *mánāṁsi*

- ▶ But in NOM/ACC.SG PoD applies to (a) neuter *–men*-stems, but <u>does not apply</u> to (b) *–es*-stems because they terminate in a fricative:

a. $*/d^heh_1\acute{} \text{-mon-}\varnothing/ \rightarrow *[d^héh_1.mn̩]$ > Gk. *tʰêma*, Ved. *dhā́ma*

b. $*/men\acute{} \text{-os-}\varnothing/ \rightarrow *[mé.nos]$ > Gk. *ménos*, Ved. *mánas*

- ⇒ Surface difference in suffixal vocalism ($*[\varnothing]$ vs. $*[o]$) in NOM/ACC.SG is **epiphenomenal**, a result of differing segmental properties of these suffixes.

*–*men*-stems and internal derivation

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- ▶ Two standard assumptions: (e.g., Widmer 2004:69; Fortson 2010:122–3; Weiss 2011:262–3)
    - (i) PIE neuter *–*men*-stems served as the base for ID of animate *–*mon*-stem nominals (likely, relational adjectives > animate agent nouns).
    - (ii) This derivation involved a shift in inflectional class ("proterokinetic" ⇒ "amphikinetic"), with resulting changes in stress/ablaut.

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    - (ii) This derivation involved a shift in inflectional class ("proterokinetic" ⇒ "amphikinetic"), with resulting changes in stress/ablaut.
- ▶ **Claim:** Formally, Vedic directly reflects this ID pattern, e.g.:

PIE   *[dʰér-mn̥]   > Ved. *dhárma* 'foundation' (N.NOM/ACC.SG)

PIE ⇒ *[dʰer-món]   > Ved. *dharmā́* 'support(er)' (M.NOM.SG)

(cf. Kiparsky 2010; see Appendix II)

*–*men*-stems and internal derivation

▶ PIE thus had *–*mon*-stem nominals (adjectives/animate agent nouns)
  internally derived from neuter *–*men*-stems like (a–c) with full-grade
  root and suffixal stress:

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b. PIE *[dóh₃-mn̥]   > Ved. *dā́ma* 'gift' (N.NOM/ACC.SG)
    ⇒ *[doh₃-món]   > Ved. *dāmā́* 'giver' (M.NOM.SG)

c. PIE *[dʰéh₁-mn̥]   > Gk. *tʰêma* 'tomb' (N.NOM/ACC.SG)
    ⇒ *[dʰeh₁-món] > Gk. *tʰēmṓn* 'heap' (M.NOM.SG)

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   ○ If not by inflectional class shift, how should this derivational process be analyzed?

Analyzing internal derivation: PIE *–men– ⇒ *–mon–

▶ **Proposal:** ID of PIE *–mon-stems from *–men-stems fundamentally involves only a shift in word stress one syllable to the right — schematically:

a. $*/\mathrm{d^h er\acute{}-mon-}/_{\mathrm{N}}$ ⇒ $*/[\![\mathrm{d^h er\text{-}m\acute{o}n}]\!]_{\mathrm{ADJ}}\text{-s}/_{\mathrm{ANIM}}$ → $*[\mathrm{d^h \underline{e}r.m\acute{o}n}]$

b. $*/\mathrm{d^h eh_1\acute{}-mon-}/_{\mathrm{N}}$ ⇒ $*/[\![\mathrm{d^h eh_1\text{-}m\acute{o}n}]\!]_{\mathrm{ADJ}}\text{-s}/_{\mathrm{ANIM}}$ → $*[\mathrm{d^h \underline{eh}_1.m\acute{o}n}]$

▶ Features of this derivation:

    ▶ The strong stem of the neuter noun ($*/\text{-mon-}/$) is the derivational base.

    ▶ Pretonic mid vowel deletion <u>underapplies</u> in the derived form, which exhibits the same root vocalism ($*[\underline{e}]$) as its <u>base</u>:

$$\text{(a) } *[\mathrm{d^h \acute{e}r.m\underline{n}}] \qquad \text{(b) } *[\mathrm{d^h \acute{e}h_1.m\underline{n}}]$$

· For possible implementations of this stress shift see Kiparsky (2010), Keydana (2013).

Analyzing internal derivation — rightward stress shift

▶ The proposed derivational pattern has close analogue in a well-known type of ID in IE thematic nominals, which also involves just a one syllable rightward shift in stress — e.g., (a–b):

a. PIE   *[tómh₁-o-s]   >   Gk. *tómos*   'slice' (M.NOM.SG)

   ⇒   *[tom.h₁-ó-s]   >   Gk. *tomós*   'cutting' (ADJ.M.NOM.SG)

b. PIE   *[gʷʰó.n-o-s]   >   Gk. *pʰónos*   'slaughter' (M.NOM.SG)

   ⇒   *[gʷʰo.n-ó-s]   >   Ved. *ghaná–*   'slayer' (M.NOM.SG)

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$\Rightarrow$ $*[\text{tom.h}_1\text{-ó-s}]$ > Gk. *tomós*   'cutting' (ADJ.M.NOM.SG)

b. PIE $*[\text{g}^{\text{wh}}\text{ó.n-o-s}]$ > Gk. p^h*ónos*   'slaughter' (M.NOM.SG)
$\Rightarrow$ $*[\text{g}^{\text{wh}}\text{o.n-ó-s}]$ > Ved. *ghaná–*   'slayer' (M.NOM.SG)

▶ Another similarity — pretonic mid-V deletion underapplies in derived forms in (a–b), which exhibit the same root vocalism ($*[\text{o}]$) as their base.

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- ▶ Another similarity — pretonic mid-V deletion <u>underapplies</u> in derived forms in (a–b), which exhibit the same root vocalism ($*[\text{o}]$) as their <u>base</u>.

- ▶ (Recall: PIE $*/\text{o}/$ regularly deletes pretonically as in (c–d).)

  c. $*/\text{d}^h\text{e}\hat{\text{g}}^h\text{-om-ós}/$ → $*[\text{d}^h\text{ə}\hat{\text{g}}^h.\text{mós}]$ > Hitt. *taknāš* 'of the earth'
  d. $*/\text{pent-oh}_2\text{-ós}/$ → $*[\text{p}\underset{.}{\text{n}}t.h_2\text{ós}]$ > Ved. *pathás* 'of the path'

Analyzing internal derivation: PIE *–men– ⇒ *–mon–

- ▶ Derivation by rightward stress shift is securely reconstructible in PIE thematic nominals (e.g., Fortson 2010:122; cf. Nussbaum 2017).

- ▶ Thematic nominal pairs synchronically derived by this process are found in Greek and Indo-Iranian:

a.	Gk.	*tómos*	'slice'	⇒	*tomós*	'cutting$_{ADJ}$'
b.	Gk.	*pʰóros*	'tribute'	⇒	*pʰorós*	'bearing$_{ADJ}$'
c.	Gk.	*trókʰos*	'course'	⇒	*trokʰós*	'running$_{ADJ}$; wheel'
d.	Gk.	*trópos*	'turn'	⇒$^?$	*tropós*	'twisted thong'
e.	Ved.	*códa–*	'whip'	⇒	*codá–*	'impelling$_{ADJ}$; driver'
f.	Ved.	*vára–*	'choice'	⇒	*vará–*	'suitor'
g.	Ved.	*śóka–*	'flame'	⇒	*śoká–*	'burning$_{ADJ}$'
h.	Ved.	*bhóga–*	'benefit'	⇒$^?$	*bhojá–*	'providing$_{ADJ}$; benefactor'

Analyzing internal derivation: PIE *–men– ⇒ *–mon–

- ▶ Derivation by rightward stress shift also becomes productive in other nominal categories in the individual IE languages.
- ▶ In this way (e.g.) Vedic relational adjectives can be synchronically derived from neuter –*as*-stem nouns (< PIE *–es–):

a.	Ved.	*ápas–*	'work'	⇒	*apás–*	'active'
b.	Ved.	*yáśas–*	'glory'	⇒	*yaśás–*	'glorious'
c.	Ved.	*máhas–*	'strength'	⇒	*mahás–*	'strong'
d.	Ved.	*rákṣas–*	'damage'	⇒	*rakṣás–*	*'damaging' (> M 'demon')
e.	Lat.	*sonus*	'sound_N'	⇒	Ved. *svāná–*	'sounding_A'
g.	Lat.	*sulcus*	'furrow_N'	⇒	Gk. ὁλκός	'hauler_N'

(see Meissner 2005:161–5, 206–10 for simplex *es*-stem adjectives as an *einzelsprachlich* development)

Analyzing internal derivation: PIE *–men– ⇒ *–mon–

- ▶ A side-by-side comparison of the two PIE ID patterns:

a. $*/\text{tomh}_1\text{´-o-}/_{\text{ANIM}}$ ⇒ $*/[\![\text{tomh}_1\text{-ó}]\!]_{\text{ADJ}}\text{-s}/_{\text{ANIM}}$ → $*[\text{t\underline{o}m.h}_1\text{ós}]$

b. $*/\text{d}^\text{h}\text{er´-mon-}/_{\text{N}}$ ⇒ $*/[\![\text{d}^\text{h}\text{er-món}]\!]_{\text{ADJ}}\text{-s}/_{\text{ANIM}}$ → $*[\text{d}^\text{h}\underline{\text{e}}\text{r.m\'{o}n}]$

- ▶ Three similarities between these derivations:

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a. $*/\text{tomh}_1\acute{\text{-}}\text{o-}/_{\text{ANIM}} \Rightarrow */[\![\text{tomh}_1\text{-}\acute{\text{o}}]\!]_{\text{ADJ}}\text{-s}/_{\text{ANIM}} \rightarrow *[\text{t}\underline{\text{om}}.\text{h}_1\acute{\text{o}}\text{s}]$

b. $*/\text{d}^{\text{h}}\text{er}\acute{\text{-}}\text{mon-}/_{\text{N}} \Rightarrow */[\![\text{d}^{\text{h}}\text{er-món}]\!]_{\text{ADJ}}\text{-s}/_{\text{ANIM}} \rightarrow *[\text{d}^{\text{h}}\underline{\text{er}}.\text{m}\acute{\overline{\text{o}}}\text{n}]$

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    - (ii) The <u>root vowel of the derived form</u> resists regular vowel deletion processes.

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a. $*/tomh_1´-o-/_{ANIM}$ ⇒ $*/[tomh_1-ó]_{ADJ}-s/_{ANIM}$ → $*[tom.h_1ós]$

b. $*/d^her´-mon-/_N$ ⇒ $*/[d^her-món]_{ADJ}-s/_{ANIM}$ → $*[d^her.món]$

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   ▶ **Proposal**: This is due to "inheritance" from its derivational base.

   ▶ Such base-derivative transfer effects ("synchronic analogy") are well-known cross-linguistically (Benua 1997, *i.a.*) and characteristic of PIE non-primary derivation, as observed by Schindler (1975c:260).

Analyzing internal derivation: PIE *–men– ⇒ *–mon–

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b. $*/d^her\acute{} \text{-}mon\text{-}/_N$ ⇒ $*/[\![d^her\text{-}món]\!]_{ADJ}\text{-}s/_{ANIM}$ → $*[d^her.m\acute{\tilde{o}}n]$

▶ Three similarities between these derivations:

(i) Phonologically, the derivation involves only a shift in stress one syllable to the right.

(ii) The <u>root vowel of the derived form</u> resists regular vowel deletion processes.

(iii) Semantically, an "agentive" relational adjective(/animate agent noun) is derived from a primary deverbal noun.

Analyzing internal derivation: PIE *–men– ⇒ *–mon–

▶ One possible objection to this proposal is that ID is usually thought (e.g., Widmer 2004:62, Nussbaum 2017:252) to proceed from the weak stem (i.e., */-men-/).

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► There are, however, frequently cited examples of ID in which the
  strong stem is the base, e.g. (a).

    a.   PIE */h₂oyʹ-u-/   ⇒   PIE */⟦h₂oy-ú⟧-s/

    > Ved. *ā́yu* 'life'   Ved. *āyús* 'living'

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- ▶ There are, however, frequently cited examples of ID in which the strong stem is the base, e.g. (a).
- ▶ And similar phenomena are found in "external" derivation — e.g., the strong stem is the base in (b). <small>(see Appendix I for further discussion)</small>

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   > Ved. *ā́yu* 'life'   Ved. *āyús* 'living'

   b. PIE $*$/h₂emĝʰ´-os-/ ⇒ PIE $*$/⟦h₂émĝʰ-os-to⟧-s/

   > Ved. *áṁhas* 'distress'   Lat. *angustus* 'narrow'

                             (cf. OCS *–ostĭ–*, Hitt. *–ašti–*)

Core of the proposal — an overview

(i) The underlying representation of PIE neuter *–men*-stems is
$*/´$-mon-/ in the strong cases, $*/´$-men-/ in the weak, e.g.:

STRONG: $*/d^heh_1´$-mon-/   WEAK: $*/d^heh_1´$-men-/ (place-NML.N)

Core of the proposal — an overview

(i) The underlying representation of PIE neuter *–men-stems is
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(ii) A phonological process PoD is reconstructible for PIE — this deleted
*/o/ in the (a) NOM/ACC.SG, but was bled in the (b) N.NOM/ACC.PL by
SZEMERÉNYI'S LAW.

POST-TONIC */o/-DELETION (PoD):
$$/o/ \rightarrow \varnothing \,/\, \acute{V}C_0\_\_\_RC_0]_\sigma$$

a. */d^{h}eh$_1$´-mon-$\varnothing$/ → *[d^{h}éh$_1$.mn̩] > Gk. ϑῆμα, Ved. dhā́ma

b. */d^{h}eh$_1$´-mon-h$_2$/ → *[d^{h}éh$_1$.mōn] >> OAv. dāmąm, Ved. dhā́māni

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(iii) Indirect evidence for $*/$-mon-/ comes from neuter *–es*-stems.

- ▶ These formally and functionally similar categories have the same
  prosodic representation:

  STRONG: $*/$men´-os-/   WEAK: $*/$men´-es-/   (think-NML.N)

  - ▶ But suffixal $*/o/$ surfaces in NOM/ACC.SG of *–es*-stems due to
    <u>non-application of PoD</u>.

a. $*/$men´-<u>os</u>-∅/ → $*[$mé.<u>nos</u>$]$ > Gk. *ménos*, Ved. *mánas*

b. $*/$men´-os-h$_2$/ → $*[$mé.n$\bar{o}$s$]$ >(>) OAv. *manå̇*, Ved. *mánāṁsi*

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(iii) Indirect evidence for */-mon-/ comes from neuter *–es*-stems.

(iv) Direct evidence for */-mon-/ comes from ID.

- ▶ PIE *–mon*-stem adjectives/animate nouns are derived from the strong
  stem of neuter *–men*-stems (i.e., */-mon-/) by shifting stress one
  syllable to the right (just as in thematic nominals), e.g.:

$$*/d^her´-mon-/_N \Rightarrow */[d^her-món]_{ADJ}-s/_{ANIM} \rightarrow *[d^her.mṓn]$$

> Ved. *dharmā́* 'supporter'

(cf. N *dhárma* 'foundation')

Evaluating the proposal — morphology

▶ Under this analysis, these neuter classes have ordinary (i.e., non-suppletive) inflectional paradigms — all forms are based on a single stem just like animate stem classes.

⇒ (e.g.) NOM.PL is formed by suffixation of N $*/-h_2/$ in the same way as in other neuter nouns like (a).

⇒ And in the same way as animate nouns like (b) form NOM.PL by suffixation of ANIM $*/-es/$.

a. $*/dóru-h_2/$ → $*[dó.ruh_2]$ >> Ved. *dā́rūṇi* 'pieces of wood'

b. $*/swésor-es/$ → $*[swé.so.res]$ > Ved. *svásāras* 'sisters'

Evaluating the proposal — morphology

▶ Under this analysis, these neuter noun classes have ordinary (i.e., non-suppletive) inflectional paradigms — all forms are based on a single stem just like animate stem classes.

▶ This is consistent with the (emerging) consensus that their SG and PL forms were inflectionally related already in PIE (i.e., not derived "collectives"):

▶ Nussbaum (2014a:301): "… the PIE creation of plurals in *–h₂."

▶ Melchert (2011:396): "… *–(e)h₂ was already in PIE a plural ending."

▶ Jasanoff (2008:145): "…the dat-abl. pl. of [neuter] *yugé/ó– 'yoke' was *yugó-bh(y)os, with the ordinary plural ending added to the stem in *–o–."

Evaluating the proposal — morphology

- ▶ Under this analysis, these neuter noun classes have ordinary (i.e., non-suppletive) inflectional paradigms — all forms are based on a single stem just like animate stem classes.

- ⇒ The situation for neuter nouns in PIE was the same as (e.g.) in Hittite:

	SINGULAR		PLURAL	
NOM/ACC	*wātar*	'water'	*widār*	'waters'
DAT/LOC	*wideni*	'in the water'	*widenaš*	'in the waters'

- ▶ Note the PL inflectional endings in oblique cases.

Evaluating the proposal — morphology

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- ⇒ The situation for neuter nouns in PIE was the same as (e.g.) in Vedic:

	SINGULAR		PLURAL	
NOM / ACC	*bráhma*	'formulation'	*bráhmā(ṇi)*	'formulations'
GEN	*bráhmaṇas*	'of " '	*bráhmaṇām*	'of the " '

- ► Note the PL inflectional endings in oblique cases.

Evaluating the proposal — typology & learnability

	SG	PL	SG	PL
NOM	*[mén-os]	*[mén-ōs]	*[d^{h}éh$_1$-mn̥]	*[d^{h}éh$_1$-mōn]
DAT	*[mén-es-ei]	*[mén-es-b^{h}yos]	*[d^{h}éh$_1$-men-ei]	*[d^{h}éh$_1$-mn̥-b^{h}yos]
GEN	*[mén-es-os]	*[mén-es-ōm]	*[d^{h}éh$_1$-men-(o)s]	*[d^{h}éh$_1$-men-ōm]

► Key to the solution — the underlying form may be most faithfully preserved in the plural.

  ► In *–men-stems, the strong stem UR is recoverable from NOM/ACC.PL *[-mōn]; it requires only "un-doing" SZL ($\leftarrow$ */-mon-h$_2$/).

  ► The strong stem UR of *–es-stems (*/-os-/) can be recovered in the same way, but it is also directly observable in the NOM/ACC.SG.

Evaluating the proposal — typology & learnability

▶ Cases in which plurals are a better source of information about UR than singulars are well-known cross-linguistically — e.g., in modern Dutch (Grijzenhout and Krämer 2000:56; cf. Albright and Hayes 2011:682).

Evaluating the proposal — typology & learnability

- ► Cases in which plurals are a better source of information about UR than singulars are well-known cross-linguistically — e.g., in modern Dutch (Grijzenhout and Krämer 2000:56; cf. Albright and Hayes 2011:682).

- ► In Dutch, word-final obstruents are subject to devoicing and in nominal inflection only PL is overtly marked (most commonly by [-ən]).

- ► Stem-final voiced obstruents alternate in SG/PL but stem-final voiceless obstruents do not — e.g., (a) vs. (b).

	UR	SG	PL	
a.	/pɑd/	[ˈpɑt]	[ˈpɑ.dən]	'toad(s)'
	/puːz/	[ˈpuːs]	[ˈpuː.zən]	'cat(s)'
b.	/lɑt/	[ˈlɑt]	[ˈlɑ.tən]	'lath(s)'
	/vɔs/	[ˈvɔs]	[ˈvɔ.sən]	'fox(es)'

Evaluating the proposal — typology & learnability

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	/vɔs/	[ˈvɔs]	[ˈvɔ.sən]	'fox(es)'

⇒ Underlying voicing of stem-final obstruents determinable only in PL.

Evaluating the proposal — analytic comparison

	SG	PL	SG	PL
NOM	*[mén-os]	*[mén-ōs]	*[d^{h}éh$_1$-mn̥]	*[d^{h}éh$_1$-mōn]
DAT	*[mén-es-ei]	*[mén-es-b^{h}yos]	*[d^{h}éh$_1$-men-ei]	*[d^{h}éh$_1$-mn̥-b^{h}yos]
GEN	*[mén-es-os]	*[mén-es-ōm]	*[d^{h}éh$_1$-men-(o)s]	*[d^{h}éh$_1$-men-ōm]

- ▶ Advantages of the proposed analysis (vs. traditional):
  - (i) No stem suppletion — accounts for SG/PL alternations by regular inflectional affixation and application of phonological processes (to underlying */´-mon-/, */´-os-/)
  - (ii) Directly captures Schindler's (1975c) original insight that these noun classes are morphologically related.
  - (iii) Explains root *[e]-vocalism in internally derived *–mon-stems (by "inheritance").
  - (iv) Typologically natural and learnable from surface allomorphy.

Evaluating the proposal — implications

	SG	PL	SG	PL
NOM	*[mén-os]	*[mén-ōs]	*[dʰéh₁-mn̥]	*[dʰéh₁-mōn]
DAT	*[mén-es-ei]	*[mén-es-bʰyos]	*[dʰéh₁-men-ei]	*[dʰéh₁-mn̥-bʰyos]
GEN	*[mén-es-os]	*[mén-es-ōm]	*[dʰéh₁-men-(o)s]	*[dʰéh₁-men-ōm]

▶ If this analysis is correct, quantitative ablaut in neuter *–men-stems (and *–es-stems) can be explained without appeal to templatic classes.

Evaluating the proposal — implications

	SG	PL	SG	PL
NOM	*[mén-os]	*[mén-ōs]	*[dʰéh₁-mn̩]	*[dʰéh₁-mōn]
DAT	*[mén-es-ei]	*[mén-es-bʰyos]	*[dʰéh₁-men-ei]	*[dʰéh₁-mn̩-bʰyos]
GEN	*[mén-es-os]	*[mén-es-ōm]	*[dʰéh₁-men-(o)s]	*[dʰéh₁-men-ōm]

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Evaluating the proposal — implications

	SG	PL	SG	PL
NOM	*[mén-os]	*[mén-ōs]	*[d^{h}éh$_1$-mn̥]	*[d^{h}éh$_1$-mōn]
DAT	*[mén-es-ei]	*[mén-es-b^{h}yos]	*[d^{h}éh$_1$-men-ei]	*[d^{h}éh$_1$-mn̥-b^{h}yos]
GEN	*[mén-es-os]	*[mén-es-ōm]	*[d^{h}éh$_1$-men-(o)s]	*[d^{h}éh$_1$-men-ōm]

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  (and *–es*-stems) can be explained without appeal to templatic classes.

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  ○ **Are templates necessary in order to account for PIE quantitative
    ablaut?**

Evaluating the proposal — implications

	SG	PL	SG	PL
NOM	*[mén-os]	*[mén-ōs]	*[dʰéh₁-mn̥]	*[dʰéh₁-mōn]
DAT	*[mén-es-ei]	*[mén-es-bʰyos]	*[dʰéh₁-men-ei]	*[dʰéh₁-mn̥-bʰyos]
GEN	*[mén-es-os]	*[mén-es-ōm]	*[dʰéh₁-men-(o)s]	*[dʰéh₁-men-ōm]

► If this analysis is correct, quantitative ablaut in neuter *–*men*-stems (and *–*es*-stems) can be explained without appeal to templatic classes.

► This result has implications for the broader question raised above:
   ○ **Are templates necessary in order to account for PIE quantitative ablaut?**

► Further research is required (but the positive evidence dwindles).

▶ This analysis raises some other interesting synchronic and diachronic questions about PIE phonology and morphology — e.g., about (internal) derivation.

Looking forward

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- Under what conditions do non-primary derivatives "inherit" formal properties of their base? (And how should this be analyzed?)

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  ◦ Can all ID be accounted for by rightward stress shift? (see Appendix I)

  ◦ Under what conditions do non-primary derivatives "inherit" formal properties of their base? (And how should this be analyzed?)

▶ For now:

  ◦ **What is the domain of PoD?**

Looking forward — on the domain of PoD

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▶ It was established above that $*/o/$ was regularly deleted in the environment specified by PoD (i.e., before a tautosyllabic sonorant).

▶ But it appears that $*/e/$ often deletes in the same environment, e.g.:

a. $*/\text{RÉD-b}^\text{h}\text{er-énti}/ \quad \rightarrow *[\text{b}^\text{h}\acute{V}\text{b}^\text{h}.\text{rn̩.ti}] \quad >$ Ved. *bíbhrati* 'they bear'

b. $*/\text{té(-)tk̂-énti}/ \quad \rightarrow *[\text{tét.k̂n̩.ti}] \quad >$ Ved. *tákṣati* 'they fashion'

c. $*/\text{d}^\text{h}\text{eh}_1\text{-´men-b}^\text{h}\text{i}/ \rightarrow *[\text{d}^\text{h}\text{éh}_1.\text{mn̩.b}^\text{h}\text{i}] >$ Ved. *dhā́mabhis* 'by ordinances'

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▶ These similarities suggest that PoD should be reanalyzed as a broader process targeting mid vowels ($*$/e, o/).

    ▶ This possibility is attractive, since mid vowels generally pattern together with respect to pretonic deletion.

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- Yet two morphological environments (potentially) problematize broadening PoD in this way, showing unexpected *[e].
    - Post-tonic "endless" LOCs, e.g., (a–b).

a. $*/d^heh_1$-´men-∅/ → *[dhéh₁.men]   > Ved. *dhā́man* 'in the domain'

b. $*/sed$-´men-∅/   → *[séd.men]   > Ved. *sádman* 'in the seat'

Looking forward — on the domain of PoD

- ○ Is the scope of PoD too **narrow**?

- ▶ Yet two morphological environments (potentially) problematize broadening PoD in this way, showing unexpected *[e̠].
    - ▶ Post-tonic "endingless" LOCs, e.g., (a–b).
    - ▶ Post-tonic */-s/-marked GEN.SGs to sonorant-final stems, e.g., (c–d).

a. */dʰeh₁-´men-∅/ → *[dʰéh₁.me̠n] > Ved. *dhā́man* 'in the domain'

b. */sed-´men-∅/ → *[séd.me̠n] > Ved. *sádman* 'in the seat'

c. */h₃réǵ-en-s/ → *[h₃ré.ǵe̠ns]? > OAv. *rāzə̄ng* 'of rule'

d. */dʰeh₁-´men-s/ → *[dʰéh₁.me̠ns]? > YAv. *dāmąn* 'of the being'

- ▶ Notably, forms like (c–d) are also surface exceptions to SZEMERÉNYI'S LAW and thus more generally problematic at the PIE level. (see also Appendix V)

- Is PoD part of a more general phenomenon?

Looking forward — on the domain of PoD

- ○ Is PoD part of a more general phenomenon?
- ▶ Likely — PoD can be captured by a constraint against post-tonic */o/ (or mid vowels?) in closed syllables and the difference between NOM/ACC.SG of *–men- and *–es-stems attributable to phonotactics.

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- ▶ Thus, for instance:
  - ▶ $*/o/$ is deleted in (a) because [.mn̩#] is phonotactically licit.
  - ▶ But $*/o/$ surfaces as $*[o]$ in (b) because ^{x}[ns#] is illicit (recall: SZEMERÉNYI'S LAW eliminates such sequences).

a. $*/d^heh_1\text{-}mon\text{-}\varnothing/ \rightarrow *[dhéh_1.mn̩]$ > Ved. *dhā́ma* ' domain'

b. $*/mén\text{-}os\text{-}\varnothing/ \quad \rightarrow *[mé.nos]$ > Gk. *ménos* 'spirit'

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b. $*/mén-os-∅/$ → $*[mé.nos]$ > Gk. *ménos* 'spirit'

- ▶ This opens the door for a broader investigation of how quantitative ablaut interacts with phonotactics in PIE.

Thank you!

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Albright, Adam, and Bruce Hayes. 2011. Learning and Learnability in Phonology. In John Goldsmith, Jason Riggle and Alan C. Yu (eds.), *The Handbook of Phonological Theory*, 661–690. Malden, MA / Oxford: Blackwell, 2 edn.

Balles, Irene. 2006. *Die altindische Cvi-Konstruktion: Form, Funktion, Ursprung.* Bremen: Hempen.

Beekes, Robert S.P., and Michiel A.C. de Vaan. 2011. *Comparative Indo-European Linguistics: An Introduction*, 2 edn. Amsterdam/Philadelphia: John Benjamins Publishing.

Benua, Laura. 1997. Transderivational identity: Phonological relations between words. Ph.D. diss., University of Massachusetts, Amherst.

Benveniste, Émile. 1935. *Origines de la formation des noms en indo-européen.* Paris: Maisonneuve.

Crosswhite, Katherine M. 2001. *Vowel Reduction in Optimality Theory*. New York / London: Routledgr.

Fellner, Hannes, and Laura Grestenberger. 2016. Internal Affairs: Akzent-/Ablautklassen und Interne Derivation. Paper presented at Sanskrit und die Sprachrevolution – 200 Jahre Indogermanistik, Berlin, 17–20 Mai 2016.

Fortson, Benjamin W. 2010. *Indo-European Language and Culture*, 2 edn. Oxford, U.K. / Malden, MA: Wiley-Blackwell.

Gertz, Janet E. 1982. The Nominative-Accusative Neuter Plural in Anatolian. Ph.D. diss., Yale University.

Grijzenhout, Janet, and Martin Krämer. 2000. Final devoicing and voicing assimilation in Dutch derivation and cliticization. In Barbara Stiebels and Dieter Wunderlich (eds.), *Lexicon in Focus*, 55–82. Berlin: Akademie.

Hale, Mark. 1995. Wackernagel's Law: Phonology & Syntax in the Rigveda. Unpublished ms.

Höfler, Stefan. 2015. Ist der Wettergott ein Himmelsgott? Indogermanische Götternamen und ihr Beitrag zur internen Derivation. In Christian Zinko and Michaela Zinko (eds.), *Proceedings of "Der antike Mensch im Spannungsfeld zwischen Ritual und Magie: Grazer Symposium zur indogermanischen Altertumskunde," Graz, 14–15 November 2013*, 148–189. Graz: Leykam.

Jacobs, Neil G., Ellen F. Prince, and Johan Van der Auwera. 1994. Yiddish. In König Ekkehard and Johan van der Auwera (eds.), *The Germanic Languages*, 388–419. London / New York: Routledge.

Jasanoff, Jay H. 2002. The Nom. Sg. of Germanic *n*-stems. In Alfred R. Wedel and Hans-Jörg Busch (eds.), *Verba et Litterae: Explorations in Germanic Languages and German Literature. Essays in Honor of Albert L. Lloyd*, 31–46. Newark, DE: Linguatext.

References IV

———. 2008. **–bhi, *–bhis, *–ōis*: Following the trail of the PIE instrumental plural. In Jens E. Rasmussen and Thomas Olander (eds.), *Internal Reconstruction in Indo-European: Results, Methods, and Problems. Section Papers from the XVI International Conference on Historical Linguistics, University of Copenhagen, 11th-15th August 2003*, 137–150. Copenhagen: Museum Tusculanum Press.

Keydana, Götz. 2013. Accent in Thematic Nouns. *Indo-European Linguistics* 1(1).107–130. doi: 10.1163/22125892-13010101.

Kiparsky, Paul. 2010. Compositional vs. Paradigmatic Approaches to Accent and Ablaut. In Stephanie W. Jamison, H. Craig Melchert and Brent Vine (eds.), *Proceedings of the 21st Annual UCLA Indo-European Conference, Los Angeles, October 30-31, 2009*, 137–181. Bremen: Hempen.

———. 2018. Accent and Ablaut: Emergent Cyclicity. In David M. Goldstein, Stephanie W. Jamison and Brent Vine (eds.), *Proceedings of the 28th Annual UCLA Indo-European Conference*. Bremen: Hempen.

References V

Kiparsky, Paul, and Morris Halle. 1977. Towards a Reconstruction of the Indo-European Accent. In Larry Hyman (ed.), *Studies in Stress and Accent*, 209–238. Los Angeles: University of Southern California Press.

Kloekhorst, Alwin. 2008. *Etymological Dictionary of the Hittite Inherited Lexicon*. Leiden / Boston: Brill.

Krasukhin, Konstantin G. 2000. Archaic Features of Indo-European Word-Formation: The Greek and Old Indic Type τόμος – τομός in a PIE Perspective. In James Clackson and Birgit A. Olsen (eds.), *Indo-European Word Formation: Proceedings of the Conference held at the University of Copenhagen, October 20th–22nd 2000*, 119–138. Copenhagen: Museum Tusculanum Press.

Kümmel, Martin J. 2014. Zum "proterokinetischen" Ablaut. In Norbert Oettinger and Thomas Steer (eds.), *Das Nomen im Indogogermanischen: Morphologie, Substantiv, versus Adjektiv, Kollektivum. Akten der Arbeitstagung der Indogermanischen Gesellschaft vom 14. bis 16. September 2011 in Erlangen*, 164–179. Wiesbaden: Reichert.

Lundquist, Jesse. 2015. Greek Nouns in -σις: History and Prehistory. Paper presented at the 146th Annual Meeting of the Society for Classical Studies.

Meissner, Torsten. 2005. *S-stem Nouns and Adjectives in Greek and Proto-Indo-European*. Oxford / New York: Oxford University Press.

Melchert, H. Craig. 1983. A 'New' PIE **men* Suffix. *Die Sprache* 29(1).1–26.

———. 1994. 'Čop's law' in Common Anatolian. In Jens E. Rasmussen (ed.), *In honorem Holger Pedersen. Kolloquium der indogermanischen Gesellschaft vom 25. bis 28. März 1993.*, 298–306. Wiesbaden: Reichert.

———. 1999. Two Problems of Anatolian Nominal Derivation. In Heiner Eichner and Hans C. Luschützky (eds.), *Compositiones Indogermanicae in Memoriam Jochem Schindler*, 365–375. Prague: Enigma Corporation.

———. 2011. The PIE Collective Plural and the "τὰ ζῷα τρέχει rule". In Thomas Krisch and Thomas Lindner (eds.), *Indogermanistik und Linguistik im Dialog: Akten der XIII. Fachtagung der Indogermanischen Gesellschaft vom 21. bis 27. September 2008 in Salzburg*, 395–400. Wiesbaden: Reichert.

———. to appear . Hittite Historical Phonology after 100 Years (and after 20 years). In R. Kim and P. Čech (eds.), *Hrozný and Hittite: The First 100 Years. Prague, 11–14 November 2015*. (Ms. available at: `http://linguistics.ucla.edu/people/Melchert/melchertprague2015.pdf`).

Nussbaum, Alan J. 1986. *Head and Horn in Indo-European*. Berlin/New York: de Gruyter.

References VIII

———. 1998. *Two Studies in Homeric Greek and Homeric Linguistics.* Göttingen: Vandenhoeck & Ruprecht.

———. 2014a. Feminine, Abstract, Collective, Neuter Plural: Some Remarks on Each (Expanded Handout). In Sergio Neri and Roland Schuhmann (eds.), *Studies on the Collective and Feminine in Indo-European from a Diachronic and Typological Perspective*, 273–306. Leiden: Brill.

———. 2014b. The PIE Proprietor and His Goods. In H. Craig Melchert, Elisabeth Rieken and Thomas Steer (eds.), *munus amicitiae: Norbert Oettinger a collegis et amicis dicatum*, 228–254. Ann Arbor / New York: Beech Stave Press.

Nussbaum, Alan J. 2017. Agentive and Other Derivatives of "τόμος-Type" Nouns. In Claire Le Feure, Daniel Petit and Georges-Jean Pinault (eds.), *Adjectifs verbaux et participes dans les langues indo-européennes. Proceedings of the Arbeitstagung of the Indo-European Society, Paris, 24–26 September 2014*, 232–266. Bremen: Hempen.

References IX

Probert, Philomen. 2006. *Ancient Greek Accentuation: Synchronic Patterns, Frequency Effects, and Prehistory*. Oxford / New York: Oxford University Press.

Rix, Helmut. 1992. *Historische Grammatik des Griechischen: Laut- und Formenlehre*. Darmstadt: Wissenschaftliche Buchgesellschaft.

Sandell, Ryan. 2015. Productivity in Historical Linguistics: Computational Studies in Word Formation in Ancient Greek and Sanskrit. Ph.D. diss., University of California, Los Angeles.

Sandell, Ryan, and Andrew M. Byrd. 2014. In Defense of Szemerényi's Law. Paper presented at the 33rd Annual East Coast Indo-European Conference, Blacksburg, VA, 5–7 June 2014.

References X

———. 2015. Extrametricality and Non-Local Compensatory Lengthening: The Case of "Szemerényi's Law". Paper presented at the 89th Annual Meeting of the Linguistic Society of America, Portland, 9 January 2015 (handout available at: `https://www.academia.edu/10119139/ Extrametricality_and_Non-Local_Compensatory_Lengthening_ The_Case_of_Szemere_nyis_Law`).

Schindler, Jochem. 1975a. Armenisch *erkn*, griechisch ὀδύνη, irish *idu*. *Historische Sprachforschung* 89.53–65.

———. 1975b. L'apophonie des thèmes indo-européens en *-r/n-*. *Bulletin de la Société de Linguistique de Paris* 70.1–10.

———. 1975c. Zum Ablaut der neutralen *s*-Stämme des Indogermanischen. In Helmut Rix (ed.), *Flexion und Wortbildung: Akten der V. Fachtagung der Indogermanischen Gesellschaft, Regensburg, 9. bis. 14. September 1975*. Wiesbaden: Reichert.

———. 1980. Zur Herkunft der altindischen *cvi*-Bildungen. In Manfred Mayrhofer, Martin Peters and Oskar E. Pfeiffer (eds.), *Lautgeschichte und Etymologie*, vol. 6. Wiesbaden: Reichert.

Stang, Christian S. 1965. Indo-européen **gwōm, *d(i)yēm*. In Stanisław Drewniak and Adam Heinz (eds.), *Symbolae Linguisticae in Honorem Georgii Kuryłowicz*, 292–296. Krakow: Polska Akademia Nauk.

Stüber, Karin. 2002. *Die primären s-Stämme des Indogermanischen.* Wiesbaden: Reichert.

Szemerényi, Oswald. 1962. *Trends and Tasks in Comparative Philology: An Inaugural Lecture Delivered at University College, London.* London: Lewis and Co.

Watkins, Calvert. 1982. Notes on the Plural Formations of the Hittite Neuter. In Erich Neu (ed.), *Investigationes philologicae et comparativae: Gedenkschrift für Heinz Kronasser*, 250–262. Wiesbaden: Reichert.

Weiss, Michael. 2011. *Outline of the Historical and Comparative Grammar of Latin.* Ann Arbor / New York: Beech Stave Press.

———. 2017. An Italo-Celtic Divinity and a Common Sabellic Sound Change. *Classical Antiquity* 36(2).370–389.

Widmer, Paul. 2004. *Das Korn des weiten Feldes: Interne Derivation, Derivationskette und Flexionsklassenhierarchie. Aspekte der nominalen Wortbildung im Urindogermanischen.* Innsbruck: Institut für Sprachen und Literaturen der Universität Innsbruck.

Yates, Anthony D. 2015. Anatolian Default Accentuation and its Diachronic Consequences. *Indo-European Linguistics* 3.145–187.

On internal derivation in PIE

▶ One possible objection to the proposed derivation is that ID is usually thought (e.g., Widmer 2004:62, Nussbaum 2017:252) to proceed from the weak stem (i.e., $*$/-men-/).

	PIE STRONG	PIE WEAK	IE
a.	$*$/pók̑u-/	$*$/pék̑u-/ >>	/ Ved. *páśu* 'livestock'

	PIE BASE	ID ANIM.NOM.SG	PIE/IE
b.	$*$/⟦pék̑u-⟧/ $\Rightarrow$	$*$/pek̑-ú-s/	$\rightarrow$ $*$[pe.k̑ús]
			> Ved. *paśús* 'livestock'

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▶ Some ID examples — weak stem in (a) is the base for ID in (b):

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	PIE BASE	ID ANIM.NOM.SG		PIE/IE
b.	*/⟦pék̂u-⟧/	⇒ */pek̂-ú-s/	→	*[pe.k̂ús]
			>	Ved. *paśús* 'livestock'

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▶ Some ID examples — weak stem in (c) is the base for ID in (d):

PIE STRONG	PIE WEAK	IE
c. */ $\hat{k}erh_{1/3}$´-os-/	*/ $\hat{k}erh_{1/3}$´-es-/	> Arm. *ser, seroy* 'growth'

PIE BASE	ID ANIM.NOM.SG	PIE/IE
d. */⟦$\hat{k}érh_{1/3}$-es-⟧/ $\Rightarrow$	*/ $\hat{k}erh_{1/3}$-és-s/	$\rightarrow$ *[$\hat{k}er.h_{1/3}$és]
		> Lat. *Cerēs* 'Ceres'

· See Schindler (1975a); but note that the status of simplex *s*-stem adjectives in PIE is doubtful (cf. Meissner 2005:161–5, 206–10).

On internal derivation in PIE

▶ One possible objection to the proposed derivation is that ID is usually thought (e.g., Widmer 2004:62, Nussbaum 2017:252) to proceed from the weak stem (i.e., */-men-/).

▶ Some ID examples — weak stem in (e) is the base for ID in (f):

PIE STRONG	PIE WEAK	IE
e. */syúh₂-mon-/	*/syúh₂-men-/	> Ved. *syū́ma, syū́manā* 'band; reins'

PIE BASE	ID ANIM.NOM.SG	PIE/IE
f. */⟦syúh₂-men-⟧/ ⇒	*/syuh₂-mén-s/ →	*[syuh₂-mḗn]
		> Gk. ὑμήν 'membrane'

On internal derivation in PIE

▶ Yet there are commonly cited examples of ID in which the strong stem is the base — e.g., strong stem in (g) is the base for ID in (h):

	PIE STRONG	PIE WEAK	IE
g.	$*$/h₂oy´-u-/	$*$/h₂ey´-u-/ >(>)	Ved. $\acute{a}yu$ 'life', Gk. αἰεί 'ever'

	PIE BASE	ID ANIM.NOM.SG	PIE/IE
h.	$*$/⟦h₂óy-u-⟧/ ⇒	$*$/h₂oy-ú-s/ →	$*$[h₂o.yús]
			> Ved. $\bar{a}y\acute{u}s$ 'living'

· See Nussbaum (1998:147); YAv. *aiiu*– 'old' is perhaps derived from the weak stem (cf. Widmer 2004:97 n. 129).

· Note that Ved. $\acute{a}yu$ (= OAv. *āiiū*) is the only "*o/e*-acrostatic" *u*-stem noun attested beside "proterokinetic" adjective that shows a direct reflex of the root *[o]-vocalism proper to the strong stem; this fact should not be separated from the absence of root *[o]-vocalism in other ID *u*-stem adjectives.

On internal derivation in PIE

▶ Another oft-cited potential ID example — the strong stem in (i) is the base for ID in (j):

	PIE STRONG	PIE WEAK		IE
i.	$*/h_1os\acute{}\text{-}u\text{-}/$	$*/h_1es\acute{}\text{-}u\text{-}/$	>(>)	Hitt. *āššu, āššui* 'good$_N$'

	PIE BASE		ID ANIM.NOM.SG		PIE/IE
j.	$*/[\![h_1\acute{o}s\text{-}u\text{-}]\!]/$	$\Rightarrow$	$*/h_1os\text{-}\acute{u}\text{-}s/$	$\rightarrow$	$*[h_1o.s\acute{u}s]$
					>(>) Hitt. *āššus* 'good$_{ADJ}$'

· See Watkins (1982:261), Melchert (1994:300–3), and Nussbaum (2014b:228) in support of this derivation, but the formal details are problematic (cf. Kloekhorst 2008:223–5), especially in view of Melchert's (to appear) recent rejection of "limited Čop's Law."

· See Nussbaum (1998:147–52) for more possible examples in which features of the base's strong stem are present in its internal derivative.

On "external" derivation in PIE

- ► "External" non-primary derivation works in the same way — the base may be a weak stem or a strong stem.
- ► Consider neuter *–es*-stems — the weak stem in (k) is the base for (l):

	PIE STRONG	PIE WEAK		IE
k.	*/skelˊ-os-/	*/skelˊ-es-/	>	Lat. *scelus, sceleris* 'crime'
			>	Gk. σκέλος, σκέλεος 'leg'

	PIE BASE	ID ANIM.NOM.SG		PIE/IE
l.	*/⟦skél-es-⟧/	⇒ */skél-es-to-s/	→	*[ské.les.tos]
			>	Lat. *scelestus* 'wicked'

· I assume root stress in (l) and other *–Vs-to/i–* formations below in view of Ved. *śrómata–* 'reputation' (discussed below), but this is uncertain.

On "external" derivation in PIE

- ▶ "External" non-primary derivation works in the same way — the base may be a weak stem or a strong stem.
- ▶ Consider neuter *–es*-stems — the weak stem in (m) is the base for (n):

	PIE STRONG	PIE WEAK		IE
m.	*/temp´-os-/	*/temp´-es-/	>(>)	Lat. *tempus, temporis* 'time'

	PIE BASE		ID ANIM.NOM.SG		PIE/IE
n.	*/⟦témp-es-⟧/	⇒	*/témp-es-to-s/	→	*[tém.pes.tos]
				>	Lat. *tempestus* 'timely'

On "external" derivation in PIE

▶ "External" non-primary derivation works in the same way — the base may be a weak stem or a strong stem.

▶ Consider neuter *–es*-stems — the weak stem in (o) is the base for (p):

PIE STRONG	PIE WEAK	IE
o. $*/h_2eug´-os-/$	$*/h_2eug´-es-/$	> Ved. *ójas, ójasas* 'strength'

PIE BASE	ID ANIM.NOM.SG	PIE/IE
p. $*/⟦h_2éug-es-⟧/$ $\Rightarrow$	$*/h_2éug-es-to-s/$ $\rightarrow$	$*[h_2áu.ges.tos]$
		>> Lith. *augestis* 'growth'

On "external" derivation in PIE

- ▶ "External" non-primary derivation works in the same way — the base may be a weak stem or a strong stem.
- ▶ But the strong stem of the same neuter *–es*-stem in (q) is base for (r):

	PIE STRONG	PIE WEAK		IE
q.	*/h₂eug´-os-/	*/h₂eug´-es-/	>	Ved. *ójas, ójasas* 'strength'

	PIE BASE		ID ANIM.NOM.SG		PIE/IE
r.	*/⟦h₂éug-os-⟧/	⇒	*/h₂éug-os-to-s/	→	*[h₂áu.gos.tos]
				>	Lat. *augustus* 'venerable'

On "external" derivation in PIE

- ▶ "External" non-primary derivation works in the same way — the base may be a weak stem or a strong stem.
- ▶ The strong stem of the neuter *–es*-stem in (s) is the base for (t):

PIE STRONG	PIE WEAK	IE
s. $*/b^her\hat{g}^h\acute{}\text{-}os\text{-}/$	$*/b^her\hat{g}^h\acute{}\text{-}es\text{-}/$	> YAv. *barəzah–* 'height'

PIE BASE	ID ANIM.NOM.SG	PIE/IE
t. $*/[\![b^h\acute{e}r\hat{g}^h\text{-}os\text{-}]\!]/$ ⇒	$*/b^h\acute{e}r\hat{g}^h\text{-}os\text{-}to\text{-}s/$ →	$*[b^h\acute{e}r.\hat{g}^hos.tos]$
		>> Hitt. *pargašti* 'height'

On "external" derivation in PIE

- ▶ "External" non-primary derivation works in the same way — the base may be a weak stem or a strong stem.
- ▶ And the strong stem of the neuter *–es*-stem in (u) is the base for (v):

	PIE STRONG	PIE WEAK		IE
u.	*/h₂emĝʰ´-os-/	*/h₂emĝʰ´-es-/	>	Ved. *áṁhas, áṁhasas* 'distress'
			>>	Lat. *anxius* 'distressed'

	PIE BASE	ID ANIM.NOM.SG		PIE/IE
v.	*/⟦h₂émĝʰ-os-⟧/	⇒ */h₂émĝʰ-os-to-s/	→	*[h₂ém.ĝʰos.tos]
			>	Lat. *angustus* 'narrow'
			>>	OCS *ǫzostĭ* 'narrowness'

On "external" derivation in PIE

▶ Note that non-primary deverbal *–to*-adjectives were also derived from neuter *–men*-stems in PIE (cf. Weiss 2011:313–4), e.g.:

a. PIE *[h₂éug-mn̥] > Lat. *augmen* 'increase' (N.NOM/ACC.SG)

 ⇒ *[h₂éug.mn̥.tom] > Lat. *augmentum* 'increase' (N.NOM/ACC.SG)

b. PIE *[ḱléu-mn̥] > YAv. *sraoma* 'reputation' (N.NOM/ACC.SG)

 ⇒ *[ḱléu-mn̥-to-m] > Ved. *śrómatam* 'reputation' (N.NOM/ACC.SG)

         > OHG *hliumunt* 'reputation' (N.NOM/ACC.SG)

▶ But since the vowel of the primary suffix is always deleted (i.e., *[-mn̥-]), it is not clear whether the weak stem (*/-men-/) or strong stem (*/-mon-/) is the base.

A (non-)problem in internal derivation

► Two traditional assumptions about ID are in fact incompatible:

  (i) That neuter *r/n*-stems form their plural stem by ID (⇒ "amphikinetic").

  (ii) That ID always proceeds from the weak stem ($^{\text{x}}$[páh$_2$-wōn]).

	N.SG	N.PL	
NOM	*[páh$_2$-wr̥]	: *[páh$_2$-wor]	> Hitt. *paḫḫur* 'fire' : TB *pūwar* 'fire'
ACC	*[páh$_2$-wr̥]	: *[páh$_2$-wōr]	> Hitt. *paḫḫur* 'fire' : TB *pūwar* 'fire'
LOC	*[pəh$_2$-wén-i]		> Hitt. *paḫḫweni* 'in the fire'

  · (But note that under the proposed analysis, these forms involve no derivation at all.)

Evaluating base selection in PIE (internal) derivation

- Is it plausible that the strong stem of PIE *–men*-stems (*/-mon-/) served as the base for ID of PIE *–mon*-stems?

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  ▶ Formations in *[-os-to-] derived the from strong stem (*/-os-/) of neuter *–es*-stems are directly reflected in Italic and presupposed by Anatolian and Slavic reflexes of *[-os-t-i-] (cf. Schindler 1980; Melchert 1999).

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Evaluating base selection in PIE (internal) derivation

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▶ Potential direct evidence for ID from the strong stem in other categories (Ved. *āyú–* 'living'; Hitt. *āššu–* 'good_ADJ').

⇒ PIE non-primary derivation — whether "external" or "internal" — could be based on the (traditional) weak stem or on the strong stem (as proposed for *–mon-stems).

On the nature of internal derivation

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- ▶ More specifically:
    - (i) How can an internal derivative of a primary nominal formation be distinguished from a parallel primary formation to the same root?
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On the nature of internal derivation

- Consider: PIE *[tóm.h₁os] 'slice' vs. *[tom.h₁ós] 'cutting$_{ADJ}$; cutter'.

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▶ Consider: PIE *[tóm.h₁os] 'slice' vs. *[tom.h₁ós] 'cutting$_{ADJ}$; cutter'.

◦ What excludes analyzing both as parallel derivatives of the root
   */temh₁/ 'cut' — i.e., (a–b)?

a. */tomh₁-´o-s/   → *[tóm.h₁os]   >   Gk. *tómos* 'slice'

b. */tomh₁-ó-s/   → *[tom.h₁ós]   >   Gk. *tomós* 'cutting$_{ADJ}$'

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- ▶ Consider: PIE *[tóm.h₁os] 'slice' vs. *[tom.h₁ós] 'cutting_{ADJ}; cutter'.
- ○ What excludes analyzing both as parallel derivatives of the root */temh₁/ 'cut' — i.e., (a–b)?
- ○ And if they are related by ID, why is the (traditional) direction in (c) preferable to the reverse in (d)?

a. */tomh₁-´o-s/ → *[tóm.h₁os]   > Gk. *tómos* 'slice'

b. */tomh₁-ó-s/ → *[tom.h₁ós]   > Gk. *tomós* 'cutting_{ADJ}'

c. */tomh₁´-o-/ ⇒ */⟦tomh₁-ó⟧-s/   > Gk. *tomós* 'cutting_{ADJ}'

d. */tomh₁-ó-/ ⇒ */⟦tómh₁-o⟧-s/   > Gk. *tómos* 'slice'

On the nature of internal derivation

a. $*/tomh_1\text{-}\acute{}\,o\text{-}s/$ $\rightarrow$ $*[tóm.h_1os]$ >   Gk. *tómos* 'slice'

b. $*/tomh_1\text{-}ó\text{-}s/$ $\rightarrow$ $*[tom.h_1ós]$ >   Gk. *tomós* 'cutting$_{ADJ}$'

c. $*/tomh_1\,\acute{}\text{-}o\text{-}/$ $\Rightarrow$ $*/⟦tomh_1\text{-}ó⟧\text{-}s/$ >   Gk. *tomós* 'cutting$_{ADJ}$'

d. $*/tomh_1\text{-}ó\text{-}/$ $\Rightarrow$ $*/⟦tómh_1\text{-}o⟧\text{-}s/$ >   Gk. *tómos* 'slice'

▶ In principle, semantic criteria could be used to differentiate the analysis in (a–b) involving parallel root derivation from ID in (c) or (d).

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a. $*$/tomh$_1$-´o-s/ $\rightarrow$ $*$[tóm.h$_1$os]   > Gk. *tómos* 'slice'

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- ▶ Or to support the directionality of ID in (c) against (d).

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c. $*/\text{tomh}_1\text{ }'\text{-o-}/ \Rightarrow */[\![\text{tomh}_1\text{-ó}]\!]\text{-s}/$ > Gk. *tomós* 'cutting$_{\text{ADJ}}$'

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- ▶ In principle, semantic criteria could be used to differentiate the analysis in (a–b) involving parallel root derivation from ID in (c) or (d).
- ▶ Or to support the directionality of ID in (c) against (d).
- ▶ But in practice, this is difficult (in part due to semantic change), and with respect to the directionality, (d) has been variously argued for (e.g., Benveniste 1935:172; Krasukhin 2000:133–4).

On the nature of internal derivation

a. $*/tomh_1\text{-}\acute{o}\text{-}s/ \rightarrow *[tóm.h_1os]$ > Gk. *tómos* 'slice'

b. $*/tomh_1\text{-}\acute{o}\text{-}s/ \rightarrow *[tom.h_1\acute{o}s]$ > Gk. *tomós* 'cutting$_{ADJ}$'

c. $*/tomh_1\acute{}\text{-}o\text{-}/ \Rightarrow */[\![tomh_1\text{-}\acute{o}]\!]\text{-}s/$ > Gk. *tomós* 'cutting$_{ADJ}$'

d. $*/tomh_1\text{-}\acute{o}\text{-}/ \Rightarrow */[\![tómh_1\text{-}o]\!]\text{-}s/$ > Gk. *tómos* 'slice'

- ▶ The solution proposed here is to use formal criteria.

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▶ Since pretonic $*/\text{o}/$ is subject to deletion, the derivation in (b) should yield zero-grade $^{\text{x}}[\text{tm̥.h}_1\text{ós}]$ and by a stress shift like in (d) $^{\text{x}}[\text{tm̥.h}_1\text{os}]$.

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- ▶ Since pretonic $*$/o/ is subject to deletion, the derivation in (b) should yield zero-grade ^{x}[tm̥.h$_1$ós] and by a stress shift like in (d) ^{x}[tḿ̥.h$_1$os].
- ▶ Only analysis (c) is thus viable — it accounts for the exceptional pretonic $*$[o] in $*$[tom.h$_1$ós] by inheritance from its derivational base $*$[tóm.h$_1$os], where it was not subject to PoD.

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▶ Again, such base-derivative transfer effects ("synchronic analogy") are well-known cross-linguistically (Benua 1997, *i.a.*) and characteristic of PIE non-primary derivation (per Schindler 1975c:260).

On the nature of internal derivation

▶ These formal criteria support many traditional examples of ID, including:

PIE   *[dʰér-mn̥]   >   Ved. *dhárma*   'foundation' (N.NOM/ACC.SG)

PIE ⇒ *[dʰer-mṓn]   >   Ved. *dharmā́*   'support(er)' (M.NOM.SG)

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▶ Suffixally stressed *–mon*-stems owe their pretonic root *[e] to inheritance from the root-stressed *–men*-stems from which they are derived.

On the nature of internal derivation

▶ However, other commonly cited examples of ID are not supported by these criteria, e.g.:

PIE   *[kró/ét-u-s]   >> Ved. *krátus* 'strength' (MASC.NOM.SG)

        *[krét-u-h₁]   >> Ved. *krátvā* 'of strength' (MASC.GEN.SG)

PIE ⇒ *[kr̥t-ú-s]   >   Gk. *kratús* 'strong' (ADJ.M.NOM.SG)

(Widmer 2004:65, Fortson 2010:122, Fellner and Grestenberger 2016, *i.a.*)

▶ An adjective internally derived from its base would inherit the root vocalism of its base, either *$/e/$ (if ID from weak stem) or *$/o/$ (if ID from strong stem).

▶ Thus the adjective should have root *[e] or *[o] despite fixed suffixal stress (or even if it had PK stress).

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  ◦ So how should the root zero-grade of the adjective be explained?
    ◦ Are the criteria wrong? (And if so, what should they be replaced with?)

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   ◦ So how should the root zero-grade of the adjective be explained?

      ◦ Are the criteria wrong? (And if so, what should they be replaced with?)

      ◦ Or are these just parallel primary formations to the same PIE root $*/\text{kret-}/$ 'strong'? (cf. Meissner 2005:62 n. 55)

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    ▶ e.g., M.NOM.SG Lat. *termō* 'finishing post'   (cf. *termen* 'boundary post')

▶ But word stress in this class is more problematic.

On the prosody of derived *–mon*-stems

▶ Under the traditional "amphikinetic" reconstruction, (internally derived) *–mon*-stems should have root stress in their strong case forms.

▶ But in Vedic, where this ID pattern remains relatively productive, derived nominals (< *–mon–*) consistently show suffixal stress beside root-stressed base (< *–men–*), e.g.:

		NOM.SG *[-mn̥]		⇒	NOM.SG *[-mṓn]	
a.	Ved.	*dā́ma*	'gift'	⇒	*dāmā́*	'giving; giver'
b.	Ved.	*dhárma*	'foundation'	⇒	*dharmā́*	'support; supporter'
c.	Ved.	*sádma*	'seat'	⇒	*sadmā́*	'sitter'
d.	Ved.	*bráhma*	'sacred formulation'	⇒	*brahmā́*	'formulator; priest'

On the prosody of derived *–mon*-stems

- The Greek facts are more complicated.
- Greek attests a handful of pairs that may reflect animate *–mon*-stem nouns internally derived from primary neuter *–men*-stems.
- These paired *–mon*-stem nouns show a mixture of root and suffixal stress — i.e., (a–c) vs. (d–f)

		NOM.SG *[-mn̥]		⇒	NOM.SG *[ˊ-mōn]/*[-mṓn]	
a.	Gk.	τέρμα	'end, boundary'	:	τέρμων	'boundary'
b.	Gk.	στηῖα	'stamen'	:	στήμων	'warp'
c.	Gk.	γνῶμα	'judgment'	:	γνώμων	'judge'
d.	Gk.	ϑῆμα	'tomb'	:	ϑημών	'heap'
e.	Gk.	χεῖμα	'cold, frost'	:	χειμών	'winter (storm)'
f.	Gk.	κεῦϑμα	'hiding place'	:	κευϑμών	'hiding place'

On the prosody of derived *–mon-stems

▶ Greek also attests a few (non-compound) *–mon-stem adjectives beside primary(-looking) neuter *–men-stems.

▶ Such paired *–mon-stem adjectives show only root stress — i.e., (a–c):

	NOM.SG *[-mn̩]	⇒	NOM.SG *[´-mōn]
a. Gk. μνῆμα 'remembrance'	:	μνήμων 'mindful'
b. Gk. αἷμα 'blood'	:	αἵμων 'bloody'
c. Gk. πῆμα 'misery'	:	πήμων 'baneful'

▶ But with the possible exception of (a) (Hom.+), these adjectives are unlikely to be inherited.

   ▶ (b) is attested early (Hom.?, Aesch.) but lacks a secure etymology.
   ▶ (c) is a hapax in the Orphic Hymns.

On the prosody of derived *–mon*-stems

- And the ID pattern does not appear to be productive in Greek.
- One other (non-compound) *–mon*-stem adjective is attested early (Hom.+) beside a non-primary neuter *–men*-stems with presuffixal stress (= "recessive accentuation") — i.e., (a).
- There are also a few *–mon*-stem adjectives attested early that lack a corresponding neuter *–men*-stem and are thus more likely deverbal — i.e., (b–d).

		NOM.SG *[-mn̥]		⇒		NOM.SG *[´-mōn]	
a.	Gk.	νόημα	'thought'	:	νοήμων	'understanding'
b.	Gk.	φράζεσθαι	'consider'	:	φράδμων	'considerate'
c.	Gk.	τλῆναι	'endure'	:	τλήμων	'enduring'
d.	Gk.	ἰδεῖν	'know'	:	ἴδμων	'knowing'
					(cf. Ved. *vidmán–*	'knowledge$_N$')

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- ▶ This usage is thought to arise by reanalysis of internally derived *–mon*-stems (cf. Melchert 1983:23, Weiss 2017:386–7), which occurred:
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    - ▶ Either independently in many IE languages (at least Anatolian, Tocharian, Italic, Celtic).
    - ▶ Or already in PIE.
- ▶ At least (a–b) are attested early (Hom+); all show suffixal stress:

		NOM.SG [-mn̥]	⇒	NOM.SG [mṓn]		
a.	Gk.	ἡγέεσθαι	'lead'	:	ἡγεμών	'leader'	(Hom.+)
b.	Gk.	κήδεσθαι	'care for'	:	κηδεμών	'attendant'	(Hom+)
c.	Gk.	θελάζειν	'suckle'	:	θελαμών	'wet nurse'

On the prosody of derived *–mon*-stems

- ► At least one animate deverbal *–mon*-stem is attested in Anatolian: Hitt. *išḫiman–* 'bond' (⇐ *išḫ(a)i–* 'bind'; Melchert 1983:9–10, 17).

- ► It is attested in Old Script texts with clear suffixal stress (marked by plene spelling) in its strong case forms:

  > *išḫimāš*   'bond'   (ANIM.NOM.SG)   <<   *[-mǿn]
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⇒ Convergent evidence from Greek and Anatolian for deverbal *–mon–* as a stress-attracting suffix.

    ▶ This behavior is hard to explain if the suffix were not stressed in the internally derived *–mon-* stems from which they arose.

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▶ Overall assessment:

   ▶ (i) and (iii) support suffixal stress in PIE internally derived *–mon*-stems.

   ▶ Some Greek reflexes of this class preserve the inherited stress pattern.

   ▶ Apparent root stress in other Greek reflexes of *–mon*-stems is likely due to the general diachronic tendency for default stress ("recessive accentuation") to emerge diachronically.

      ▶ This tendency is observed in Greek in thematic adjectives (Probert 2006) and prehistorically in *–ti*-stems (Lundquist 2015).

      ▶ And is associated especially with words that are not productively derived, like non-compound *–mon*-stems in Greek (cf. Yates 2015; Sandell 2015).

On the interaction between ablaut and stress assignment

▶ Kiparsky (2010, 2018) develops one theory of the "pretonic" vowel deletion pattern discussed above — core proposals:

  (i) PIE had lexically stress-preferring morphemes, which attracted stress to themselves (ACCENTED) or to the preceding syllable (PREACCENTING).

  (ii) Stress was assigned to the leftmost accented morpheme, otherwise the word's left edge (BASIC ACCENTUATION PRINCIPLE; Kiparsky and Halle 1977) —e.g.:

a. $*/g^{wh}$en-ti/ $\rightarrow *[g^{wh}$én-ti] 'kills' > Ved. *hánti*, Hitt. *kuenzi*

b. $*/g^{wh}$en-té/ $\rightarrow *[g^{wh}$n̥-té] 'you kill' > Ved. *hathá*

c. $*/h_2$eĝ-´e-té/ $\rightarrow *[h_2$áĝ-e-te] 'you drive' > Ved. *ájatha*, Gk. *ágete*

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b. $*/méh_2ter\text{-}éi/ \rightarrow *[máh_2.tr\text{-}ei]$ 'to the mother'   > Ved. *mā́tre*, Lat. *matrī*

c. $*/swésor\text{-}éi/ \rightarrow *[swés.r\text{-}ei]$ 'to the sister'   > Ved. *svásre*

d. $*/pent\text{-}oh_2\text{-}ós/ \rightarrow *[p\underset{.}{n}t\text{-}h_2\text{-}ós]$ 'of the path'   > Ved. *pathás*, Av. *paθō*

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  · Exact conditions for application of ZG (e.g., locality restrictions? phonotactic blocking?) call for further research.

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e. $*$/dóm-o-éi/ → $*$[dó.mōi] > Gk. *dómōi* 'for the home'

f. $*$/h$_1$ék̂w-o-éi/ → $*$[h$_1$ék̂.wōi] > Lat. *equō* 'for the horse'

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d. */RÉD-bʰer-énti/ → *[bʰV́bʰ.rn̩.ti] > Ved. *bíbhrati* 'they bear'

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g. $*$/bʰer-´o-mé/ → $*$[bʰé.ro.me] > Gk. *pʰéromen* 'we bear'

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⇒ PIE thematic vowels are morphophonologically special, lexically marked for non-deletion (e.g., MAX-TH).

· *n.b.* that this does not preclude all deletion of theme vowels — e.g., in derivation, where the suffix *–i–* "replaces" the thematic vowel (Schindler 1980; Melchert 1999; Balles 2006).

A rule-ordering paradox

- ▶ */-s/-marked GEN.SG forms also pose a different issue for the proposed analysis — reversing the normal order, PoD appears to apply **before** SZL in (a–c).

- ▶ Similarly, post-tonic */e/ is deleted in (d) rather than undergoing SZL.

a. */swésor-s/   → *[swé.sr̥s]   > Ved. *svásur* 'sister's'

b. */ĝénh₁-tor-s/   → *[ĝén.h₁tr̥s]   > Ved. *jánitur* 'begetter's'

c. */ĝʰéu-tor-s/   → *[ĝʰéu.tr̥s]   > Ved. *hótur*, YAv. *zaotarš* 'priest's'

d. */bʰréh₂ter-s/   → *[bʰráh₂.tr̥s]   > Ved. *bhrā́tur* 'brother's'

                                              Merc. OE *brōðʲur*

- ▶ This exceptional behavior requires some explanation, esp. in view of the comparative evidence for */-s/-marked GEN.SG in (d).
  - ⇒ Some special prosodic property of GEN.SG */-s/?

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- ▶ Under his analysis, the PIIr. "frozen syntagm" *man-s $d^h\bar{a}$– — continued in Av. *mązda*– 'remember' — preserves this ancient zero-grade.

- ▶ Alternative proposal — PIIr. *man-s $d^h\bar{a}$– results from application of PoD in a "close sandhi" context (see Hale 1995), i.e.:

pre-PIIr. */men´-os d^héh$_1$-/ → *[mén.zd^{h}éh$_1$-] 'placed his/her mind on'

> Av. *mązda*– 'remember'

- ▶ PoD can apply in "close sandhi" because its output is phonotactically licit due to resyllabification of */s/.