Indo-European ablaut and the trap of the leftmost column

Anthony D. Yates, UCLA (adyates@ucla.edu) — 27th Manchester Phonology Meeting • May 23–25, 2019

§1 – Overview

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

  QUALITATIVE: *[e] ~ *[o] QUANTITATIVE: *[e, o, (a)] ~ *[∅]

- Overarching question (much disputed since the 19th c.):
  - **Was ablaut morphologically or phonologically conditioned in Proto-Indo-European (PIE)?**
- Traditional analysis (e.g., "Erlangen Model"; Schindler 1975a,b, Rix 1992) — ablaut was (purely) morphological; intraparadigmatic ablaut (and stress) alternations specified by prosodic templates.
- Yet quantitative ablaut correlates strongly with presence/absence of word stress; much can thus be derived atemplatically via prosodically conditioned (primarily pre-tonic) vowel deletion processes (cf. Kiparsky 2010, 2018), but the exact conditions for deletion remain to be determined.
- Two specific claims advanced here:
  - (i) PIE had a purely phonological process targeting post-tonic vowels for deletion — i.e., (3) below.
  - (ii) This process accounts for ablaut in neuter "*–*men*-stems" better than previous templatic analyses.

§2 – Puzzle

- PIE deverbal neuter nouns with suffix "*–*men*–" show *[∅] ~ *[o:] SG/PL suffixal alternation — e.g., (1):

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

- *[-mo:n] in PL derives from */-mon-χ/ (*/-χ/ ⇔ N.NOM/ACC.PL) by (2), which deletes a word-final post-consonantal fricative (F) with compensatory lengthening of preceding V: (Szemerényi 1962; Nussbaum 1986:129–30; Sandell and Byrd 2014, 2015)

(2) Szemerényi's Law (SzL): PIE */VCF#/ → *[V:C#]
  a. */méχter-s/ → *[máχte:r] > AGk. *mḗtēr* 'mother' b. */wéd-or-χ/ → *[wédo:r] > AGk. *húdōr* 'waters'

- But suffixal */∅/ ~ */o/ SG/PL alternation still requires explanation — under the traditional account, it is not a property of an established templatic class.
- Standard solution (Schindler 1975b) involves stem suppletion — *–*men*-stems belong to two classes:
  - (i) SG = "proterokinetic" — characterized by stressed [é] in root and *[∅] in suffix in NOM, ACC.
  - (ii) PL = "amphikinetic" — characterized by stressed *[é] in root and *[o] in suffix in NOM, ACC.
- ◦ Can this alternation be explained without stem suppletion or appeal to templatic classes?

§3 – Proposal

- **Major proposal:** The alternation in (1) is phonological — two core assumptions:
  - (i) Suffix UR is */ˊ-mon-/, observable modulo lengthening in PL (*/-men-/ outside NOM/ACC).
  - (ii) PIE had the phonological process in (3) deleting post-tonic */o/ before a tautosyllabic consonant.

(3) Post-tonic */o/-Deletion (PoD): */o/ → ∅ / V́C$_0$___C$_1$]$_\sigma$

- PoD applies to inflectionally zero-marked N.NOM/ACC.SG (/-∅/) in (4a), but is bled in PL by SzL in (4b):

(4) a. */dʰeh-ˊmon-∅/ → *[dʰéh.mn̥] > Ved. *dhā́ma* 'domain'
  b. */dʰeh-ˊmon-χ/ → *[dʰéh.mo:n] > Ved. *dhā́māni* 'domains', OAv. *dāmąm* 'creations'

§4 – Phonological evidence

- Other categories provide independent evidence for PoD, which would account for:
  - · Similar SG/PL alternations in other neuter nouns — e.g., (5a–b) (URs = */-wor/, */-or/).
  - · Deletion in participle suffix */-ónt-/ in, e.g., (6a–b) (fed by separate deletion of root */e/).

(5) a. *[wód-r̥] : *[wéd-o:r] > Hitt. *wātar* : *widār* 'waters'
  b. *[páχ-wr̥] : *[páχ-wo:r] > Hitt. *paḫḫur* 'fire' : TB *pūwar* 'fire'

(6) a. */RÉD-bʰer-ónt-es/ → *[bʰṔbʰ.rn̥.tes] > Ved. *bíbhratas* 'bearing'
  b. */RÉD-gʷeχ-ónt-∅/ → *[gʷṔgʷ.χnt] > Ved. *jágat* '(moving) world'

- Surface exceptions to PoD essentially limited to thematic vowel *–*o/e*– (Max-Th?).

§5 – Analysis: Deletion vs. Lengthening

- Interaction between PoD and SzL falls out from (7).
- PoD applies in zero-marked N.NOM/ACC.SG as in (8b).
- Both PoD and SzL are viable repairs for *CF]$_\sigma$ in (9); mora-preserving (9b) with SzL is preferred to (9c) with vowel deletion by PoD.
- Same phonotactic constraint (*CF]$_\sigma$) that drives SzL in (9) also blocks PoD in (11) below.

(7) *CF]$_\sigma$, Max-C/_V_ ≫ *ˊoC]$_\sigma$ ≫ Max-μ ≫ Max-C

(see handout for definition & details)

(8)

/dʰeμhμˊ-moμnμ-∅/	*CF]$_\sigma$	Max-C/_V_	*ˊoC]$_\sigma$	Max-μ	Max-C
a. dʰéμhμ.moμnμ			*!		
b. ☞ dʰéμhμ.mn̥μ				*	
c. dʰéμhμ.moμ		*!		*	*

(9)

/dʰeμhμˊ-moμnμ-χμ/	*CF]$_\sigma$	Max-C/_V_	*ˊoC]$_\sigma$	Max-μ	Max-C
a. dʰéμhμ.moμnμχμ	*!		*		
b. ☞ dʰéμhμ.moːμμnμ					*
c. dʰéμhμ.mn̥μχμ				*!	
d. dʰéμhμ.moμnμ			*!	*	*
e. dʰéμhμ.moːμμχμ		*!			*

§6 – Morphological evidence

- Two pieces of morphological evidence support a UR */ˊ-mon-/ in NOM/ACC of "–*men*-stems."

[A] Schindler (1975b:263–4) argued for a diachronic connection between neuter *–*men*-stems and "*–*es*-stems" on formal grounds — both are (i) primary deverbal neuter nouns with (ii) fixed root stress; (iii) invariant root *[é]-vocalism; and (iv) [o:]-suffixal vocalism in N.NOM/ACC.PL — e.g., (10):

(10)

	N.NOM/ACC.SG		N.NOM/ACC.PL
PIE	*[mén-os]	:	*[mén-o:s]
> Ved.	*mánas*	:	*mánāṁsi*
> OAv.	*manas(-cā)*	:	*manā̊*

(11)

/meμnˊ-oμsμ-∅/	*CF]$_\sigma$	Max-C/_V_	*ˊoC]$_\sigma$	Max-μ	Max-C
a. ☞ méμ.noμsμ			*		
b. méμnμsμ	*!			*	
c. méːμμnμ		*!		*	*

- **Proposal:** Both have same synchronic prosodic representation — i.e., preaccenting with suffixal */o/-vocalism; surface difference in NOM/ACC.SG of *–*es*-stems due to (11) phonotactic blocking of PoD.

(11) a. */menˊ-os-∅/ → *[mén-os] > AGk. *ménos* 'spirit', Ved. *mánas* 'thought'
  b. */menˊ-os-χ/ → *[mén-o:s] > OAv. *manā̊*, Ved. *mánāṁsi* 'thoughts'

[B] Standardly assumed that PIE animate *–*mon*-stems were derived from neuter *–*men*-stems ("internal derivation"; ID), which would have involved a shift in templatic class ("protero-" ⇒ "amphikinetic"). (Widmer 2004:69; Fortson 2010:122–3; Weiss 2011:262–3, *i.a.*)

- **Claim:** Formally, Vedic directly continues this derivational process, e.g., (12).

(12) PIE *[dʰér-mn̥] > Ved. *dhárma* 'foundation' (N.NOM/ACC.SG)
  ⇒ *[dʰer-mó:n] > Ved. *dharmā́* 'support(er)' (ANIM.NOM.SG)

- **Proposal**: ID involves only a shift in stress one syllable to the right.

⇒ PIE animate *–*mon*-stems "inherit" suffixal */o/-vocalism from neuter *–*men*-stems as in (13a).

(13) a. */dʰer-ˊmon-/$_N$ ⇒ */⟦dʰer-món⟧$_{ADJ}$-s/$_{ANIM}$ → *[dʰer.mó:n] > Ved. *dharmā́* 'support(er)'
  b. */tomh-ˊo-/$_{ANIM}$ ⇒ */⟦tomh-ó⟧$_{ADJ}$-s/$_{ANIM}$ → *[tom.hós] > AGk. *tomós* 'cutting$_{ADJ}$' (⇐ *tómos* 'slice')

- This proposal functionally and formally unifies ID in (13a) with better established thematic type in (13b):
  - · ID produces a relational adjective (> animate agent noun) from a primary deverbal noun.
  - · Derived forms also show underapplication of pre-tonic mid-V deletion in root (a transparadigmatic uniformity effect; Benua 1997, *i.a.*), as often in IE non-primary derivation (cf. Schindler 1975b:260).

§7 – Conclusions (& questions for future research)

- Quantitative ablaut in NOM/ACC of PIE neuter *–*men*- and –*es*-stems is due to:
  - (i) Ordinary inflectional affixation (not stem suppletion; contra Schindler 1975b).
  - (ii) Application of regular phonological processes: SzL in (2), PoD in (3).
- ◇ Key to the solution — suffix **UR is recoverable from the plural** (not the leftmost column/citation form).
- More broadly, PIE *–*men*- and *–*es*-stems support an atemplatic approach to PIE ablaut, which includes:
  - (i) Morphophonological deletion of mid vowels before accented (or stressed?) vowels.
  - (ii) Phonological deletion of post-tonic */o/ (and */e/?) in closed syllables.
  - (iii) Phonotactic blocking and morphologically-induced underapplication (when?) of these processes.

Indo-European ablaut and the trap of the leftmost column

[Companion handout to MFM 27 poster]

Constraints

(1) ***Post-tonic-[o]/_C]$_\sigma$** **[*´oC]$_\sigma$**
Assign one violation mark (*) for each sequence in which [o] occurs in a syllable that has one or more coda consonants and immediately follows the syllable that bears primary stress.

- Markedness constraint that drives Post-tonic */o/-Deletion (PoD), which applies (e.g.) in nom/acc.sg of PIE *–*men*-stems in (8b).

(2) ***CF]$_\sigma$** **[*CF]$_\sigma$**
Assign a violation mark (*) for each sequence in which a fricative follows a consonant in a syllable coda.

- Markedness constraint that drives fricative deletion with compensatory lengthening, i.e., Szemerényi's Law (SzL; see Sandell and Byrd 2014, 2015 for details); blocks PoD in nom/acc.sg of PIE *–*es*-stems ((11a) > (11b)).

(3) **Max-C/_V_** **[Max-C/_V_]**
Assign one violation mark (*) for each vowel-adjacent consonant in the input that does not have a correspondent in the output.

- Positional faithfulness constraint privileging the preservation of vowel-adjacent consonants, which have better acoustic cues and are thus more perceptible (cf. Côté 2004, Steriade 2009, *i.a.*). Controls which consonant is deleted via SzL ((9b) > (9e)), and prevents overapplication of SzL in nom/acc.sg of PIE *–*es*-stems ((11a) > (11c)).

(4) **Max-C** **[Max-C]**
Assign one violation mark (*) for each consonant in the input that does not have a correspondent in the output.

(5) **Max-μ** **[Max-μ]**
Assign one violation mark (*) for each mora in the input that does not have a correspondent in the output.

Conventions

- A preceding acute (´-) marks a morpheme that is preaccenting, i.e., prefers stress to fall on the immediately preceding syllable. PIE had a lexical accent system with a general preference for left-edge word stress (Kiparsky and Halle 1977; Kiparsky 2010; Yates 2016, 2017).
- I employ *[h], *[χ], *[ʁ] to represent the symbols *h_1, *h_2, *h_3 standardly used in IE scholarship (cf. Kümmel 2007:227–36).

Acknowledgments

Thank you to the members of Indo-European and Linguistic Theory Research Group (iMoLT), especially Jesse Lundquist, Ryan Sandell, and Sam Zukoff for their feedback on various iterations of this project. I am grateful also to Craig Melchert, Brent Vine, and to the members of the UCLA PIES and American Indian Linguistics Seminars. Any mistakes or bad ideas are my own.

References

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

Côté, Marie-Hélène. 2004. Syntagmatic Distinctness in Consonant Deletion. *Phonology* 21(1).1–41.

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

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.

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.

Kümmel, Martin J. 2007. *Konsonantenwandel: Bausteine des Lautwandels und ihre Konsequenzen für die vergleichende Rekonstruktion*. Wiesbaden: Reichert.

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

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

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.

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

———. 1975b. 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.

Steriade, Donca. 2009. The phonology of perceptibility effects: The P-map and its consequences for constraint organization. In Kristin Hanson and Sharon Inkelas (eds.), *The Nature of the Word: Studies in Honor of Paul Kiparsky*, 151–179. Cambridge, MA / London: M.I.T. Press.

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

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

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. 2016. Stress assignment in Hittite and Proto-Indo-European. *Proceedings of the Linguistic Society of America* 1.25/1–15.

———. 2017. Lexical Accent in Cupeño, Hittite, and Indo-European. Ph.D. diss., University of California, Los Angeles.