Based:
Predicting paradigmatic leveling in nominal accent-ablaut classes

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(1) R(*o*) vs. R(*e*)

a. Gk. πούς, ποδ- vs. Lat. *pēs, ped-* 'foot'

b. Gk. ὄϊς, Lat. *ovis*, OIr. *oí*, Go. *awi-* vs. CLuw. *ḫāwīš* c., Lyc. *χawa-* c., Toch. B $\bar{a}_u w$ 'sheep' (cf. Pinault 1997; Yoshida 2013)

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- This pertains to both individual lexical items as in (1) as well as to inflectional (sub)classes, e.g., proterokinetic *ti*-stems generalize R(Ø) in Indo-Iranian and Greek (but see Vine 2004), neuter *s*-stems generalize R(*e*), etc.

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- If we could establish criteria for predicting which allomorph will be generalized under which circumstances, this would be extremely helpful for using morphophonological, -syntactic, and -semantic features to determine subgrouping
- That is, we want to be able to make statements of the type "The inner Indo-European languages always generalized R(*o*) in these types of paradigms"
  - This is probably too strong, we will not be able to make statements of this kind. But you get the idea.

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- = the base that allows acquirers to infer all other forms of the paradigm with a minimal set of morphophonological rules → which can be algorithmically modelled with the **Minimal Generalization Learner (MGL)**
- Based on these assumptions, we argue that the combination of language-specific sound laws and syncretism can give rise to differently "based" inferences, and hence differences in the generalization of, e.g., **pod-* vs. **ped-*

Outline of the talk

- Introduction
- Background: Analogy & paradigm leveling
  - Analogy & directionality
  - Based Analogy
  - The Minimal Generalization Learner
- Overview: PIE accent-ablaut classes & root ablaut
- Case study: **pód-/*péd-*
- Discussion & future work
- Conclusion

Background: Analogy

- **Analogy** is usually defined as "the extension of existing rules to new forms" or "rule generalization" (Kuryłowicz 1949; Anderson 2015: 15; Arndt-Lappe 2015), cf. (2a).
- With "**proportional analogy**", (2b), as a special case.
- **Paradigmatic leveling** = extension of a particular alternant/allomorph to a particular slot (or slots) of the paradigm in which it was not originally found, (2c).

(2) Types of analogical changes in inflectional morphology

a. Rule extension: E.g., OE *cū*, pl. *cȳ* → *cow*, pl. *cows*

b. Four-part proportional analogy: E.g., *sing* : *sang* = *bring* : x, x = *brang*; *drive* : *drove* = *dive* : x, x = *dove*, etc.

c. Paradigmatic leveling: E.g., *reach* : *raught* → *reach reached*, *melt* : *molt* : *molten* → *melt* : *melted* : *melted*, etc.)

See Hill (2020).

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  - often these factors all seem to coincide to favor a single form

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- In any language, there are differences in the frequency of forms, differences in the "degree of suffixation" of forms, differences in markedness, etc., but it seems that speakers weigh these factors differently in deciding which form to extend in leveling
- Proposals that use such factors to explain them thus may allow us to make typological predictions, but not predictions about a particular language at a particular time, because we do not know which factors will be decisive in that particular case

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- Accordingly, the fact that leveling obeys consistent directionality is a natural consequence of the fact that the grammar is unidirectional and derives all output forms from the same basic input form for all lexical items
  - "leveling favors the most informative form" (Albright 2010: 533) = the form from which all other inflectional properties of the paradigm can be derived with the least amount of base modifications

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  - this means that languages can have very different grammatical organizations depending on which parts of the paradigm are affected by neutralizations
    - Cf. Vennemann 1978: 189's predictability principle: "Sound change neutralizes contrasts, analogy emphasizes contrasts by generalizing them"
  - The claim is that these differences in predictability, rather than chance, are responsible for the observed cross-linguistic differences in the directionality of analogical change

The Minimal Generalization Learner

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- Formally, the structural change can be represented in the format A $\rightarrow$ B, and the context in the format / C _ D, to yield word-specific rules

The MGL: example

Step 1 Assembling of sets of word forms (minimal pairs)

(1)

([mɪs]$_{\text{pres.}}$, [mɪst]$_{\text{past}}$)	'*miss*(*ed*)'
([prɛs]$_{\text{pres.}}$, [prɛst]$_{\text{past}}$)	'*press*(*ed*)'
([læf]$_{\text{pres.}}$, [læft]$_{\text{past}}$)	'*laugh*(*ed*)'
([hʌg]$_{\text{pres.}}$, [hʌgd]$_{\text{past}}$)	'*hug*(*ged*)'
([rʌb]$_{\text{pres.}}$, [rʌbd]$_{\text{past}}$)	'*rub*(*bed*)'
([nid]$_{\text{pres.}}$, [nidəd]$_{\text{past}}$)	'*need*(*ed*)'
([dʒʌmp]$_{\text{pres.}}$, [dʒʌmpt]$_{\text{past}}$)	'*jump*(*ed*)'
([plæn]$_{\text{pres.}}$, [plænd]$_{\text{past}}$)	'*plan*(*ned*)'

The MGL: example

Step 2 Comparison of word forms and inference of simple rules from these minimal pairs

(2)
$\varnothing \rightarrow$ t / # mɪs __ #
$\varnothing \rightarrow$ t / # prɛs __ #
$\varnothing \rightarrow$ t / # læf __ #
$\varnothing \rightarrow$ d / # hʌg __ #
$\varnothing \rightarrow$ d / # rʌb __ #
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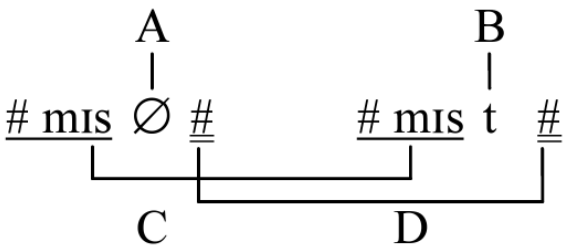
$\emptyset \rightarrow$ d / # plæn __ #

Step 3 Iterative comparison of the context of two rules for ever more general rules

(3)



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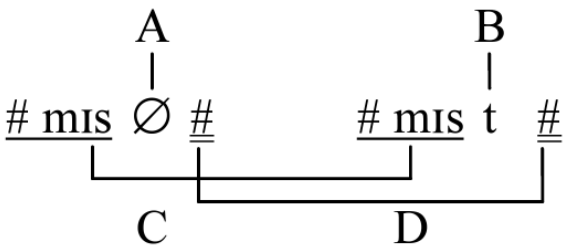

- Disclaimer: our implementation at this stage is less sophisticated

Nominal accent/ablaut classes

(3) PIE nominal accent-ablaut classes, Fortson (2010: 119–22)

	a. acrostatic	b. proterokinetic
SS	R(ó)-S(Ø)-E(Ø)	R(é)-S(Ø)-E(Ø)
WS	R(é)-S(Ø)-E(Ø)	R(Ø)-S(é)-E(Ø)
Nom.	**nók$^{u}_{\wedge}$-t-s*	**mén-ti-s*
Gen.	**nék$^{u}_{\wedge}$-t-s*	*mn̥-téi̯-s*
	'night'	'thought'
	c. hysterokinetic	d. amphikinetic
SS	R(Ø)-S(é)-E(Ø)	R(é)-S(o)-E(Ø)
WS	R(Ø)-S(Ø)-E(é)	R(Ø)-S(Ø)-E(é)
Nom.	**ph$_2$-tér-s* (> **-tḗr*)	**déh$_3$-tor-s* (> **-tṓr*)
Gen.	**ph$_2$-tr-és*	**dh$_3$-tr-és*
	'father'	'giver'

- Eichner 1973, 1974; Schindler 1975ab; Hoffmann 1976; Rix 1976, etc.

Root nouns

- **Type Ia**: R(*ó*/*é*) ablaut (as if ≈ acro with Ø-suffix) → R(*o*/Ø) ablaut
- Original function (deverbal/$\sqrt{}$-derived stems): animate (/m.) agent nouns.

(4)
  a. Nom. **dóm-s* 'house' > **dṓm*: Gk. δῶ, arm. *town* /tūn/.
  b. Gen. **dém-s*: in Gk. δεσπότης 'ruler' < **dems-pot(eh₂)-*, Ved. *dám-pati-*, Av. *dəṇg paiti-*, etc.; » **d(m̥)m-és*, cf. Schindler 1967, 1972b.
  c. Loc. **dḗm*: Av. *dąm*

(5)
  a. Nom. **pód-s* 'Fuß': Ved. *pā́t*, Gk. πούς vs. Lat. *pēs*
  b. Gen. ***péd-s* » **péd-e/os* » **pe/od-é/ós*, cf. Ved. *padás*, Gk. ποδός vs. Lat. *pedis*.

- Schindler 1972ab

Root nouns

(6) Further examples for Type Ia:

a. *$b^h\breve{o}r$- 'thief': Gk. φώρ, φωρός; Lat. *fūr*.

b. *$\hat{k}(u)\underset{\frown}{u}$*ón*-, *$\hat{k}un$-´ 'dog': Ved. *śvā́*, *śun*-; Gk. κύων, κυνός; OIr. *cú*, etc.

c. *$g^{\underset{\frown}{u}}\acute{o}\underset{\frown}{u}$- 'cow': Ved. *gáuḥ*; OAv. *gāuš*; GK. βοῦς, βοός; Lat. *bōs*; OIr. *bó*; OE *cū*, etc.

d. *$\underset{\frown}{u}\acute{o}i\hat{k}$-/*$\underset{\frown}{u}i\hat{k}$-´ 'dwelling': SS in Gk. adv. οἴκα-δε 'home(wards)' (< acc.), WS in Ved. *víś*-.

Root nouns

- **Type Ib**: "Narten" version of Ia, R(*é*/*e*) ablaut.

(7)
a. Nom. **h*$_3$*réĝ-s* 'judge, ruler': Ved. *(-)rā́j-*, Lat. *rēx*, OIr. *rí*.
b. Gen. ***h*$_3$*réĝ-s* » **h*$_3$*réĝ-(e/o)s*: Lat. *rēgis*
c. Loc. **h*$_3$*réĝ* + *-i*: Lat. abl. *rēge* (Neri 2017; or generalization of WS)

Root nouns

- **Type II**: R(*é*/Ø) ablaut, accented endings in WS (as if ≈ amphi with zero suffix)
- Original function (deverbal/$\sqrt{}$-derived stems): (f.) action nouns/verbal abstracts

(8)
a. Nom. **di̯éu̯-s* (**di̯éu̯-s*) 'sky': Ved. *dyáuḥ*, Gk. Ζεύς, Lat. *Iū̆-(p)piter*
b. Acc. ***di̯éu̯-m* > **di̯ém* (Stang) > Gk. Ζῆν, Ved. *dyā́m*, Lat. *diem*.
c. Gen. **di̯u̯-és*: Ved. *div-áḥ*, Gk. Δι(F)-ός

- root noun according to Schindler 1973; but could also be a denominal **u*-stem (Rau 2010)

Root nouns

(9) Further examples for type II:

a. *h_2*nér*-, *h_2*nr-́ ‘Mann’: ved. *nár*-, Gen. *náras*; Gk. ἀνήρ, gen. ἀνδρός < **anr-ós*; cf. Lat. *Ner-ō*.

b. *$\hat{k}$*ér* < *$\hat{k}$*érd*, gen. *$\hat{k}\underset{\circ}{r}$*d-é/ós* ‘heart’: Gk. κῆρ (n.), Luw. *zār-za*; gen. Hitt. *kartaš*, Lat. *cordis*.

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- But it's unclear why a particular root allomorph was selected in a particular subbranch — formal criteria (e.g., "always select the WS allmorph"), lexically specific, or random?
  - E.g., Gk. πούς (exp. πός or πώς; both attested), ποδός vs. Lat. *pēs*, *pedis*; but Gk. ὄις, ὀιός, Lat. *ovis*, *-is*

Digression: Evidence for inherited R(o/e) ablaut

- R(o/e) and R($o/\emptyset$) etc. ablaut not just "internally" reconstructed; in some cases both alternants are attested at the level of the individual branches ("doublets")

(10)
a. Gk. ῥώξ, ῥᾴξ 'berry' < *$sróh_2g$-/*$sréh_2g$- (Lat. *frāga*).
b. Gk. ὄκρις 'jagged point' < *$h_2ók̂ri$- vs. Gk. ἄκρις 'peak' < *$h_2ék̂ri$-
c. Gk. acc.sg. ὦλκα 'furrow' (Hom. *ὤλξ) < *$h_2u̯ólk$- vs. Gk. αὖλαξ 'furrow' < *$h_2u̯lk$-
d. Gk. σύρξ 'flesh' < *$tu̯órk̂$- vs. Gk. σάρξ 'flesh' < *$tu̯rk̂$-
e. Gk. γῆρας 'old age' < *$ĝérh_2$-*s* vs. γέρας 'gift of honor' < *$ĝérh_2$-*s*

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(10)
a. Gk. ῥώξ, ῥᾱ́ξ 'berry' < *$sróh_2g$-/*$sréh_2g$- (Lat. *frāga*).
b. Gk. ὄκρις 'jagged point' < *$h_2ók̂ri$- vs. Gk. ἄκρις 'peak' < *$h_2ék̂ri$-
c. Gk. acc.sg. ὦλκα 'furrow' (Hom. *ὤλξ) < *$h_2u̯ólk$- vs. Gk. αὖλαξ 'furrow' < *$h_2u̯lk$- ´
d. Gk. σύρξ 'flesh' < *$tu̯órk̂$- vs. Gk. σάρξ 'flesh' < *$tu̯rk̂$-
e. Gk. γῆρας 'old age' < *$ĝérh_2$-s vs. γέρας 'gift of honor' < *$ĝérh_2$-s

- But note that the evidence from different branches for ablaut alternations is sufficient independent of the existence of "doublets" — otherwise we would need to assume "allofams" (see Fellner and Hill 2019 for criticism).

Example: PIE *pód-/péd- 'foot'

(11) (late?) PIE *pód-/*péd- 'foot'

	Singular	
nom.	*pód-s	Ved. *pā́t*, Lat. *pēs*, Gk. ποός
acc.	*pód-m̥	Ved. *pā́da[m]*, YAv. *pādə[m]*, Gk. πόδα, Lat. *pedem*
instr.	*péd-eh$_1$	Ved. *padā́*
dat.	*péd-ei̯	Ved. *padé*, Lat. *pedī*
abl.gen.	*péd-e/os	Ved. *padás*, Gk. π[o]δός, Lat. *pedis*
loc.	*pĕ́d-í	Ved. *padí*, Gk. π[o]δί, Lat. (abl.) *pede*
	Dual	
nom.	*pód-eh$_1$	Ved. *pā́dā*
acc.	*pód-eh$_1$	Ved. *pā́dā*
instr.dat.abl.	*péd-b^{h}i̯V-?	Ved. *padbhyā́m*
gen.loc.	*péd-ou̯s ?	Ved. *padóḥ*
	Plural	
nom.	*pód-es	Ved. *pā́daḥ*
acc.	*pé/ód-n̥s	Ved. *padás*, YAv. *paδō*, Gk. πόδας, Lat. *pedēs*
instr.	*péd-b^{h}i-	Myc. *p[o]-pi*, Ved. *padbhíḥ*
dat.abl.	*péd-b^h(i̯)os	YAv. *paδəbiias-*
gen.	*péd-oHom	Lat. *pedum*
loc.	*péd/pé́d-su	Ved. *patsú*, Gk. π[o]σ(σ)[ί], OIr. *ís* 'under'

*pód-/*ped- in late PIE

(12) Late PIE *pód-/*péd- 'foot'

	Singular	Plural
nom.	*pód-s	*pód-es
acc.	*pód-m̥	*pód-n̥s
instr.	*péd-eh$_1$	*péd-b^{h}i-
dat.	*péd-ei̯	*péd-b^{h}os
abl.	*péd-e/os	*péd-b^{h}os
gen.	*péd-e/os	*péd-oHom
loc.	*pĕ̯d-í	*pé̯d-/péd-su

Proto-Italic/Pre-Latin

(13) Proto-Italic/Pre-Latin paradigm of 'foot'

	Singular	Plural
nom.	***pós**/***pṓs**	*pód-es
acc.	*pód-em	*pód-ēs
dat.	*péd-e͡i	***pébbos** /péd-bos/ (?)
abl.	*péd-es	***pébbos** /péd-bos/ (?)
gen.	*péd-es	*péd-ōm
loc.	*péd-e	***péssu** /péd-su/

Proto-Italic/Pre-Latin: base-generalizing *pód-*

- pód- → pós (pṓs?)
  - d-deletion (& lengthening): d → Ø
- pód- → pód-es
- pód- → pód-em
- pód- → pód-ēs
- pód- → péd-e͡i
  - ablaut: o → e
- pód- → pébbos
  - ablaut: o → e
  - d-substitution $_1$: d → b
- pód- → péd-es
  - ablaut: o → e
- pód- → pébbos
  - ablaut: o → e
  - d-substitution $_1$: d → b
- pód- → péd-es
  - ablaut: o → e
- pód- → péd-ōm
  - ablaut: o → e
- pód- → péd-e
  - ablaut: o → e
- pód- → péssu
  - ablaut: o → e
  - d-substitution $_2$: d → s

Proto-Italic/Pre-Latin: base-generalizing *péd-*

- péd- → pós (pṓs?)
  - ablaut: e → o
  - d-deletion (& lengthening): d → Ø
- péd- → pód-es
  - ablaut: e → o
- péd- → pód-em
  - ablaut: e → o
- péd- → pód-ēs
  - ablaut: e → o
- péd- → péd-e̯i̯
- péd- → pébbos
  - d-substitution $_1$: d → b
- péd- → péd-es
- péd- → pébbos
  - d-substitution $_1$: d → b
- péd- → péd-es
- péd- → péd-ōm
- péd- → péd-e
- péd- → péssu
  - d-substitution $_2$: d → s

Summary: Proto-Italic/Pre-Latin rules

- Rules **péd-* → **pód-*
  - ablaut: e → o (nom.sg., acc.sg., nom. pl., acc.pl. [4])
  - d-substitution $_1$: d → b (dat. pl., abl. pl. [2])
  - d-substitution $_2$: d → s (loc.pl. [1])
  - d-deletion: d → ∅ (nom.sg. [1])

Summary: Proto-Italic/Pre-Latin rules

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  - ablaut: e → o (nom.sg., acc.sg., nom. pl., acc.pl. [4])
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  - d-deletion: d → Ø (nom.sg. [1])

Summary: Proto-Italic/Pre-Latin rules

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- loss of "ablaut rule" → generalization of R(e)

*pód-/*ped- in Greek

(14) Pre-Greek *pód-/*péd- 'foot'

	Singular	Plural
nom.	***pṓs**	*pód-es
acc.	*pód-m̥	*pód-n̥s
instr.	*ped-éh$_1$	*ped-b^{h}í-
dat.	*ped-éi̯	*ped-b^{h}ós
abl.	*ped-ós	*ped-b^{h}ós
gen.	*ped-ós	*ped-ṓm
loc.	*ped-í	*péd-si (?)

(Pre-)Proto-Greek

(15) (Pre-)Proto-Greek II *pód-/péd- 'foot'

	Singular	Plural
nom.	***pṓs***	*pód-es*
acc.	*pód-a*	*pód-as*
instr.	*ped-é* (?)	***pep-pʰí***
dat.	*ped-éi̯*	***pes-sí*** (?)
gen.	*ped-ós*	*ped-ṓn*
loc.	*ped-í*	***pes-sí***

Proto-Greek

(16) Proto-Greek *pód-/péd- 'foot'

	Singular	Plural
nom.	***pṓs***	*pód-es*
acc.	*pód-a*	*pód-as*
instr.	*ped-é* (?)	***pep-pʰí***
dat.	*ped-éi̯*	***pes-sí*** (?)
gen.	*ped-ós*	*ped-ṓn*

(Pre-)Proto-Greek: base-generalizing *pód-*

- pód- → pṓs
  - d-deletion (& lengthening): d → Ø
- pód- → pód-es
- pód- → pód-a
- pód- → pód-as
- pód- → ped-é
  - ablaut: o → e
  - accent shift: x-ý
- pód- → pep-p^{h}í
  - ablaut: o → e
  - accent shift: x-ý
  - d-substitution $_1$: d → p
- pód- → ped-éi̯
  - ablaut: o → e
  - accent shift: x-ý
- pód- → pes-sí
  - ablaut: o → e
  - accent shift: x-ý
  - d-substitution $_1$: d → s
- pód- → ped-ós
  - ablaut: o → e
  - accent shift: x-ý
- pód- → ped-ṓn
  - ablaut: o → e
  - accent shift: x-ý

(Pre-)Proto-Greek: base-generalizing *ped-*

- ped- → pṓs
  - ablaut: e → o
  - d-deletion (& lengthening): d → Ø
- ped- → pód-es
  - ablaut: e → o
  - accent: ý-x
- ped- → pód-a
  - ablaut: e → o
  - accent: ý-x
- ped- → pód-as
  - ablaut: e → o
  - accent: ý-x
- ped- → ped-é
  - accent: x-ý
- ped- → pep-p^{h}í
  - accent: x-ý
  - d-substitution $_{1}$: d → p
- ped- → ped-éi̯
  - accent: x-ý
- ped- → pes-sí
  - accent: x-ý
  - d-substitution $_{2}$: d → s
- ped- → ped-ós
  - accent: x-ý
- ped- → ped-ṓn
  - accent: x-ý

Summary: Proto-Greek

- Rules **ped-* → *pód-*
  - ablaut: e → o (nom.+acc.sg., nom.+acc.pl. [4])
  - accent: x-x́ (instr.sg.+pl., dat.sg.+pl., gen.sg.+pl. [6])
  - accent: x́-x (acc.sg., nom.+acc.pl. [3])
  - d-deletion: d → Ø (nom.sg. [1])
  - d-substitution $_1$: d → p (instr.pl. [1])
  - d-substitution $_2$: d → s (dat.pl. [1])

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→ the allomorph *pód-* is **based**

- loss of "ablaut rule" → generalization of R(o)

Summary: Proto-Greek II

After merger/loss of instr.:

- Rules *ped- → pód-
  - ablaut: e → o (nom.+acc.sg., nom.+acc.pl. [4])
  - accent: x-x́ (~~instr.sg.+pl.,~~ dat.sg.+pl., gen.sg.+pl. [4])
  - accent: x́-x (acc.sg., nom.+acc.pl. [3])
  - d-deletion: d → Ø (nom.sg. [1])
  - ~~d-substitution $_1$: d → p~~
  - d-substitution $_2$: d → s (dat.pl. [1])

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After merger/loss of instr.:

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  - ablaut: e → o (nom.+acc.sg., nom.+acc.pl. [4])
  - accent: x-x́ (~~instr.sg.+pl.,~~ dat.sg.+pl., gen.sg.+pl. [4])
  - accent: x́-x (acc.sg., nom.+acc.pl. [3])
  - d-deletion: d → Ø (nom.sg. [1])
  - ~~d-substitution $_1$: d → p~~
  - d-substitution $_2$: d → s (dat.pl. [1])
- The allomorph *ped- requires **13** instances of base modification to generate all forms

Summary: Proto-Greek II

After merger/loss of instr.:

- Rules *ped- → pód-
  - ablaut: e → o (nom.+acc.sg., nom.+acc.pl. [4])
  - accent: x-ý (~~instr.sg.+pl.,~~ dat.sg.+pl., gen.sg.+pl. [4])
  - accent: ý-x (acc.sg., nom.+acc.pl. [3])
  - d-deletion: d → Ø (nom.sg. [1])
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  - ~~d-substitution $_1$: d → p~~
  - d-substitution $_2$: d → s (dat.pl. [1])
- The allomorph *pód- requires **10** instances of base modification to generate all forms

Summary: Proto-Greek II

After merger/loss of instr.:

- Rules *ped- → pód-
  - ablaut: e → o (nom.+acc.sg., nom.+acc.pl. [4])
  - accent: x-ý (~~instr.sg.+pl.,~~ dat.sg.+pl., gen.sg.+pl. [4])
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→ the allomorph *pód- is (even more) **based**

- loss of "ablaut rule" → generalization of R(o)

Interim summary

- The difference between the Italic/Latin generalization and the Greek generalization stems from 1) differences in (the chronology of) their case syncretism patterns and 2) differences in the way the IE accent developed in the two branches

Discussion

- This model is extremely sensitive to language-specific syncretisms and sound change, which is a plus — that's exactly what we expect to be relevant in the *einzelsprachliche* developments of these paradigms

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- ... but it also means that the relative chronology of these sound changes and syncretisms becomes extremely important, as the Greek case study has shown
- Finally, note that this model only compares surface/output forms — it makes no prediction w.r.t. how these forms are put together ("in the lexicon", PFM-style vs. "in the syntax", DM-style)

Implications

- This case study also implies that R(o/e) ablaut was preserved until a very late stage, practically into the earliest stages of the daughter languages
- ... but this may not be so controversial after all given the examples for inherited "doublets" (ex. (10))

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(17) Lat. *tripudium* 'ritual dance in triple time' < **tri-pod-* (Cic.+; *tripodāre* Carmen Arvale? ≈ Umbr. *atripursatu* (3sg.ipv), etc.); Umbr. *du-pursus*, *petur-pursus* (dat.pl.) 'biped, quadruped' < **-pōd-* (EDIL: 462)

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- ... but this may not be so controversial after all given the examples for inherited "doublets" (ex. (10))
- Moreover, there is independent evidence that Greek inherited the R(e) allmorph and Latin the R(o) allomorph:

(17) Lat. *tripudium* 'ritual dance in triple time' < **tri-pod-* (Cic.+; *tripodāre* Carmen Arvale? ≈ Umbr. *atripursatu* (3sg.ipv), etc.); Umbr. *du-pursus*, *petur-pursus* (dat.pl.) 'biped, quadruped' < **-pōd-* (EDIL: 462)

(18) Gk. πεδά 'after, with' (Aeol., Dor., Arc.; functionally ≈ μετά); πέδον 'ground' (inherited; cf. Hitt. *peda-* n. 'place', Ved. *padá-* n., OAv. *pada-* 'footstep', Umbr. *peřum* 'ground, place', etc.; cf. EDG: 1160–1)

Future work

- More case studies, especially of larger classes and in other IE languages (esp. Anatolian & Indo-Iranian are needed)
  - Consider this a pilot study

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- More case studies, especially of larger classes and in other IE languages (esp. Anatolian & Indo-Iranian are needed)
  - Consider this a pilot study
- Relative chronology will certainly need to be revised to some extent; as will the formalization of the relevant rules for the MGL
- Some way of operationalizing the respective generalizations for the purposes of subbranching is needed

Conclusion

- A (grammar-)**based** explanation has the potential to explain the *direction* of analogy/leveling, since a formalized grammar makes an explicit statement about which patterns are governed by productive rules and which are exceptional

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Conclusion

- A (grammar-)**based** explanation has the potential to explain the *direction* of analogy/leveling, since a formalized grammar makes an explicit statement about which patterns are governed by productive rules and which are exceptional
- **Based** formalized grammars of the morphotactics of different stages will hopefully enable us to get a clearer picture of how these inflectional classes developed on the way to the daughter languages — with implications for subbranching (cf. Hale 2015)
- We believe that the **based** approach to paradigm leveling outlined today is an important step in this direction

Thank you, Köln!

(Kyffhäuserstraße Ecke Heinsbergstraße)

ÖAW ÖSTERREICHISCHE AKADEMIE DER WISSENSCHAFTEN

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Appendix: PIE *h_2ó$_{\underline{u}}$-i-/h_2é$_{\underline{u}}$-i- ‘sheep’

(19) *h_2ó$_{\underline{u}}$-i-/*h_2é$_{\underline{u}}$-i- ‘sheep’

	Singular	
nom.	*h_2ó$_{\underline{u}}$-i-s	Ved. *ávis*, CLuv. *ḫāwīš*, Gk. ὄϊς, Lat. *ovis*, OIr. *oí*, Go. *awi-*, Lith. *avìs*, Arm. *hovi-* (Toch. B $\bar{a}_u w$)
acc.	*h_2ó$_{\underline{u}}$-i-m	Ved. *-avim*, Gk. ὄϊν, Lat. *ovim* (1x, Plaut.)
instr.	*h_2á$_{\underline{u}}$-i-h_1 (*h_2á$_{\underline{u}}$-i-eh_1)	
dat.	*h_2á$_{\underline{u}}$-i-ei	
abl.gen.	*h_2á$_{\underline{u}}$-i-e/os	Ved. *ávyas*, Gk. ὄιος, ὀιός
loc.	*h_2á$_{\underline{u}}$-ĕi(-i)	
	Dual	
nom.	*h_2ó$_{\underline{u}}$-i-h_1	
acc.	*h_2ó$_{\underline{u}}$-i-h_1	
instr.dat. abl.	(*h_2á$_{\underline{u}}$-i-b^hiV-?)	
gen.loc.	(*h_2á$_{\underline{u}}$-i-ous ?)	
	Plural	
nom.	*h_2ó$_{\underline{u}}$-i-es	Gk. ὄϊες (& οἴιες 1x; Ved. *-avā́yas*; Toch. B *awí*)
acc.	*h_2ó$_{\underline{u}}$-i-ns	Gk. ὄῑς
instr.	*h_2á$_{\underline{u}}$-i-b^hi(-)	Ved. *ávibhis*
dat.abl.	*h_2á$_{\underline{u}}$-i-b^h(i)os	
gen.	*h_2á$_{\underline{u}}$-i-oHom	Gk. ὀίων (& οἰῶν); (Ved. *ávī[n]ām*)
loc.	*h_2á$_{\underline{u}}$-i-su	

Late PIE

	Singular	Plural
nom.	*$h_2$óu̯-i-s	*$h_2$óu̯-i̯-es
acc.	*$h_2$óu̯-i-m	*$h_2$óu̯-i-ns
instr.	*$h_2$áu̯-i̯-eh_1 / *$h_2$áu̯-i-h_1	*$h_2$áu̯-i-b^hi-
dat.	*$h_2$áu̯-i̯-ei̯	*$h_2$áu̯-i-b^hos
abl.	*$h_2$áu̯-i̯-e/os	*$h_2$áu̯-i-b^hos
gen.	*$h_2$áu̯-i̯-e/os	*$h_2$áu̯-i̯-oHom
loc.	*$h_2$au̯-ēi̯/ *$h_2$au̯-i̯-í (?)	*$h_2$áu̯-i-su

Pre-Latin

(20) Pre-Latin ‘sheep’

	Singular	Plural
nom.	*ó$\underset{\frown}{u}$i-s	*ó$\underset{\frown}{u}\underset{\frown}{i}$-es
acc.	*ó$\underset{\frown}{u}$i-m	*ó$\underset{\frown}{u}$i-ns
dat.	*á$\underset{\frown}{u}\bar{i}$ (< *a$\underset{\frown}{u}\underset{\frown}{i}\underset{\frown}{i}$-e$\underset{\frown}{i}$)	*á$\underset{\frown}{u}$i-b^hos
abl.	*á$\underset{\frown}{u}\bar{i}$ (< *a$\underset{\frown}{u}\underset{\frown}{i}\underset{\frown}{i}$-e)	*á$\underset{\frown}{u}$i-b^hos
gen.	*á$\underset{\frown}{u}\bar{i}s$ (< *á$\underset{\frown}{u}\underset{\frown}{i}\underset{\frown}{i}$-es)	*á$\underset{\frown}{u}\underset{\frown}{i}\underset{\frown}{i}$-ōm

Pre-Greek I

(21) (Pre-)Proto-Greek I ‘sheep’

	Singular	Plural
nom.	*ó$\underset{\frown}{u}$i-s	*ó$\underset{\frown}{u}\underset{\frown}{i}$-es
acc.	*ó$\underset{\frown}{u}$i-m	*ó$\underset{\frown}{u}$i-ns
inst.	*á$\underset{\frown}{u}\underset{\frown}{i}$-e (?)	*a$\underset{\frown}{u}$i-p^{h}í-
dat.	*a$\underset{\frown}{u}\underset{\frown}{i}$-éi	*a$\underset{\frown}{u}$i-sí
gen.	*a$\underset{\frown}{u}\underset{\frown}{i}$-ós	*a$\underset{\frown}{u}\underset{\frown}{i}$-ṓm
loc.	*a$\underset{\frown}{u}\underset{\frown}{i}$-í	*a$\underset{\frown}{u}$i-sí (?)

Pre-Greek II

(22) (Pre-)Proto-Greek II ‘sheep’

	Singular	Plural
nom.	*óu̯i-s	*óu̯i̯-es
acc.	*óu̯i-m	*óu̯i-ns
inst.	*áu̯i̯-e (?)	*au̯i-p^hí-
dat.	*au̯i̯-éi̯	*au̯i-sí
gen.	*au̯i̯-ós	*au̯i̯-ṓm

Trickier: /ou̯i/ ∼ /ou̯i̯/ ∼ /au̯i/ ∼ /au̯i̯/

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