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Paying the inheritance tax

Novel and preserved overabundance in Latin prefixed verbs

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Overabundance

> […] the situation in which two (or more) inflectional forms are available to realize the same cell in an inflectional paradigm […]

Thornton (2019: 223)

(e.g. English *burnt-burned*)

- In the framework of canonical typology (Corbett 2008):

→ **deviation** from the canonical expectation of **uniqueness of realization** in inflectional paradigms

- Renewed interest in the last decade

→ Stump 2015, Guzmán Naranjo and Bonami 2021, Bermel and Knittel 2012, Lečić 2015

Influence of derivational history on inflectional behaviour

Overabundance pertains to inflection, but the derivational history of lexemes can have an influence on their inflectional behaviour

- Complex lexemes often inherit their inflection from their base

e.g. Breton 'strawberry hull' SG *tok-sivi* - PL *tok-où-sivi* (cf. Stump 2001)

- The morphological process by which a lexeme is created often determines its inflection

e.g. French *rag-eur* 'rageful.M' - *rag-euse* 'rageful.F' (cf. Bonami & Boyé 2006)

➢ Quantitative assessments of the impact of such facts (Bonami & Pellegrini 2022) show that taking derivational information into account makes inflectional predictions easier

Influence of derivational history on overabundance

- Complex lexemes often inherit their inflection from their base

e.g. Breton ‘strawberry hull’ SG *tok-sivi* - PL *tok-où-sivi* (cf. Stump 2001)

Expectations:

- overabundant base lexemes → overabundant derivatives
  - ! this is not exceptionless
- non-overabundant base → non-overabundant derivatives
  - ! other forces are at play that give rise to alternative options for the inflection of derivatives

(≈ inheritance tax)

⇒ derived lexemes as fertile ground for the diffusion and introduction of overabundance phenomena

(≈ intensive farming for zoonosis)

A case study: prefixed verbs in Latin

Set of (mostly spatial) prefixes (preverbs) that are frequently attached to verbs, forming derived verbs that (mostly) inherit their inflectional behaviour from their base

- ✓ Non-overabundant base verb → non-overabundant derivative, e.g.:
  - ‘walk’ (1st conj.), PRS.ACT.INF *ambul-āre* → *ab-ambul-āre*
  - ‘run’ (3rd conj.), *curr-ere* → *intrō-curr-ere*
  - ‘bring’ (irr.), *fer-re* → *ante-fer-re*
- ✓ Overabundant base verb → overabundant derivative, e.g.:
  - ‘turn’, *vert-ere/vort-ere* → *ad-vert-ere/ad-vort-ere*
  - ‘smear’, *ung-ere/ungu-ere* → *in-ung-ere/in-ungu-ere*
- ✗ Overabundant base verb → non-overabundant derivative
  - ‘smear’, *ung-ere/ungu-ere* → *prae-ung-ere* (**prae-unguere*) vs. *sub-ungu-ere* (**subungere*)
- ✗ Non-overabundant base verb → overabundant derivative

Novel overabundance in derivatives

- ✗ Non-overabundant base verb → overabundant derivative
- ○ Non-systematic application of morpho-phonological processes whose context is only met in derivatives
  - Processes that occur at the prefix-base boundary:

    'join' *ser-ere* → *ad-ser-ere/asser-ere*
  - Weakening of short vowels in non-initial syllable (active in Old Latin):

    'gather' *leg-ere* → *dī-lig-ere* (weakening) vs. *inter-leg-ere* (no weakening) vs. *ē-lig-ere/ē-leg-ere* (both options)
- ○ Other analogy driven processes

  'lie' (1st conj.), PRF.1SG *cubuī* → *ex-cubuī* (inherited) vs. *re-cub-āvī* (analogy) vs. *in-cub-uī/in-cub-āvī* (both options)

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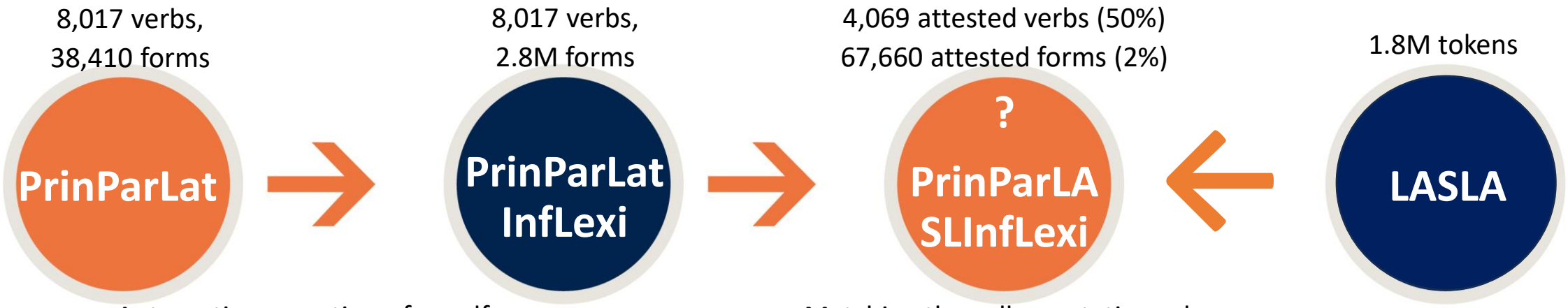
Extracting data



- Automatic generation of wordforms
- Hard coding of irregular wordforms

- Matching the cell annotation schemas
- Extraction of form frequencies

- Phonological transcription

Lexicon-based study, **potential*** overabundance

Corpus-based study, **realised*** overabundance

- Derivational relatedness

WFL

*Aigro & Vihman (2023)

Aggregating data

Grouping of lexemes into families consisting of bases and prefixed verbs derived from them

- Potential overabundance → PrinParLat, focusing on three principal parts

lexeme	PRS.ACT.INF	FUT.ACT.IND.3SG	PRF.ACT.IND.1SG	PRF.PASS.PTCP.NOM.N.SG	FUT.ACT.PTCP.NOM.N.SG
CLAUDO 'close'	***claudere/cludere***	*claudet/cludet*	***clausī/clūsī***	***clausum/clūsum***	*clausūrūm/clūsūrum*

- Realised overabundance → PrinParLASLInfLexi (see above)

present stem	perfect stem	third stem
***claud*-(105)/*clūd*-(35)** (IND.3SG *claudit*(9)/*clūdit*(9), INF *claudere*(14)/*clūdere*(4), …)	***claus*-(33)/*clūs*-(13)** (IND.3SG *clausit*(9)/*clūsit*(9), INF *clūsisse*(1), PST.SBJV.3PL *clausissent*(1), …)	***claus*-(181)/*clūs*-(18)** (PRF.PTPC.NOM.M.SG *clausus*(18)/*clūsus*(3), PRF.PTPC.NOM.F.SG *clausa*(25)/*clūsa*(1), …)

! The impact of cells that display systematic overabundance in all lexemes is not considered

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Results

- Potential overabundance (lexicon data)

	lexemes displaying novel overabundance phenomena	diff. % overabundant lexemes in derivatives vs. bases
PRS.ACT.INF	639/4,676 (13.67 %)	+ 1.39
PRF.ACT.IND.1SG	471/4,295 (10.97 %)	- 3.32
PRF.PTCP.NOM.N.SG	431/3,953 (10.9 %)	- 3.92

- Realised overabundance (corpus data)

	lexemes displaying novel overabundance phenomena	diff. % overabundant lexemes in derivatives vs. bases
present stem	151/2,258 (6.69 %)	+ 3.08
perfect stem	73/1,847 (3.95 %)	- 23.93*
third stem	82/1,658 (4.95 %)	+ 1.7

- Remarkable amount of novel overabundance phenomena in derivatives (more evident in lexical data)
- Overall proportion of overabundant lexemes is similar in bases and derivatives

* Outlier due to optionally contracted perfects (type *am-āvisse-am-āsse*)

Results: frequent verbs

- ✗ Distorting effect of frequency → focus on lexemes with frequency > 100
- ○ Potential overabundance (lexicon data)

	lexemes displaying novel overabundance phenomena	diff. % overabundant lexemes in derivatives vs. bases
PRS.ACT.INF	72/329 (21.88 %)	+ 10.14
PRF.ACT.IND.1SG	72/310 (23.23 %)	+ 11.4
PRF.PTCP.NOM.N.SG	63/312 (20.19 %)	+ 5.01

- ○ Realised overabundance (corpus data)

	lexemes displaying novel overabundance phenomena	diff. % overabundant lexemes in derivatives vs. bases
present stem	34/293 (11.6 %)	+ 8.69
perfect stem	24/294 (8.16 %)	- 9.58*
third stem	24/262 (9.16 %)	+ 7.74

- ➢ Increase in the proportion of novel overabundance phenomena in derivatives
- ➢ Overall proportion of overabundant lexemes is higher in derivatives than in bases

* Outlier due to optionally contracted perfects (type *amāvisse-amāsse*)

Sources of novel overabundance

- Potential overabundance (lexicon data)

	processes at prefix-base boundary	vowel weakening	analogy
PRS.ACT.INF	497	73	75
PRF.ACT.IND.1SG	362	37	116
PRF.PTCP.NOM.N.SG	354	39	75

- Realised overabundance (corpus data)

	processes at prefix-base boundary	vowel weakening	analogy
present stem	128	19	13
perfect stem	67	4	12
third stem	80	5	8

- Morpho-phonological processes at the prefix-base boundary have the lion's share
- Other potential sources of novel overabundance have a weaker impact

Processes occurring at the prefix-base boundary

- Assimilation:
  - Partial: e.g. *con + pōnere* → *com-pōnere* ‘unite’, *ad + serere* → *ad-serere* [atserere] ‘join’
  - Total: e.g. *ad + legāre* → *alligāre* ‘bind to’, *ad + serere* → *asserere* ‘join’
- Loss of prefix-final [s] when followed by a voiced consonant:
  - e.g. *dis + gerere* → *dīgerere* ‘force apart’ , *trans + mittere* → *trāmittere* ‘send across’ (also *transmittere*)
- Insertion of [s] before voiceless stops:
  - e.g. *ab + cēdere* → *abscēdere* [apskedere] ‘depart’, *sub + cipere* → *suscipere* ‘take up’ (also *succipere*)
- Contraction:
  - e.g. *dē + agere* → *dēgere* ‘carry on’
- Insertion of [d] to avoid hiatus
  - e.g. *re + integrāre* → *redintegrāre* ‘make whole again’
- … (cf. Cser 2020)

Processes occurring at the prefix-base boundary

prefix	overabundant/total verbs (%) PrinParLat	LASLA	most frequent base initials PrinParLat	LASLA	examples
con-	59/544 (10.85 %)	14/297 (4.71 %)	[l] : 27 [r] : 13	[l] : 8 [r] : 3	*conlaudāre/collaudāre* *conruere/corruere*
ex-	39/476 (8.19 %)	7/282 (2.48 %)	[f] : 15 [w],[s]: 4	[f] : 6 [s] : 1	*effringere/ecfringere* *essurīre/ēsurīre*
in-	46/438 (10.5 %)	13/247 (5.26 %)	[r] : 21 [l] : 19	[r] : 8 [l] : 5	*inrīdere/irrīdēre* *inlīdere/illīdere*
de-	11/411 (2.68 %)	2/230 (0.87 %)	[s]: 4 [r] : 3	[e],[r] : 1	*deerrare/dērrāre* *dērigere/dīrigere*
re-	14/407 (3.44 %)	3/222 (1.35 %)	[a] : 3 [k],[p] : 2	[d],[k],[p] : 1	*redūcere/reddūcere*
ad-	184/363 (50.69 %)	65/213 (30.52 %)	[s] : 49 [p] : 30 [l]: 21	[s] : 21 [p] : 11 [f] : 8	*adserere/asserere* *adpetere/appetere* *adfīgere/affīgere*

- *ad-* is the prefix that most frequently gives rise to overabundance
- Similar rates of overabundance with the nasal-ending prefixes *con-* and *in-*
- Liquid consonants particularly oscillating in their capability to trigger regressive assimilation

Vowel weakening

- In all stems, e.g. ‘touch’
  - ✓ PRS.ACT.INF *con-tract-āre/con-trect-āre,*
  - ✓ PRF.ACT.IND.1SG *con-tract-āvī/con-trect-āvī,*
  - ✓ PRF.PASS.PTCP.NOM.N.SG *con-tract-ātum/con-trect-ātum*
- Only in the present stem, e.g. ‘bequest’
  - ✓ PRS.ACT.INF *ē-leg-ere/ē-lig-ere,*
  - PRF.ACT.IND.1SG *ēlēgī,*
  - PRF.PASS.PTCP.NOM.N.SG *ēlēctum*
- Only in the perfect (e.g. ‘surround’)…
  - *circum-st-āre*
  - ✓ PRF.ACT.IND.1SG *circum-stet-ī/circum-stit-ī*

…and/or third stem (e.g. ‘stand before’)

- PRS.ACT.INF *prae-st-āre*

✓ PRF.PASS.PTCP.NOM.N.SG *prae-stat-um/prae-stit-um*

Vowel weakening

	PrinParLat bases	n.	LASLA bases	n.	examples
present stem	*sparg-*	7	*tract-*	3	*consparg-/consperg-, dētract-/dētrect-, ēleg-/ēlig-, perem-/perim-*
	leg-,tract-	5	*em-,leg-,sparg-*	2	
	cant-,sed-,iac-, em-,frang-,farc-	3	*iac-,prem-,sid-, sec-,quaer-,carp-, mand-,len-,nec-, perg-*	1	
	carp-,part-,pang-, calc-,sacr-,rep-	2			
	(26 bases)	1			
perfect stem	*spars-,tractāv-*	5	*tractāv-*	2	*contractāv-/contrectāv-, circumstet-/circumstit-, enecu-/enicāv-*
	stet-,cantāv-,licu-,sacrāv-, carps-,partīv-,fars-	2	*necu-,stet-*	1	
	(13 bases)	1			
prf. ptcp. stem	*spars-,tractāt-*	5	*iact-*	2	*superiact-/superiect- dēlenīt-/dēlinīt- āmandāt-/āmendāt-, dispans-/dispess-*
	pass-,fart-,nōt-,cantāt-,partīt-pact-,iact-,sacrāt-,carpt-	2	*lenīt-,mandāt,pass*	1	
	(11 bases)	1			

Analogical processes in the present system

- Shift to the 1st conjugation (3 cases)

  e.g. ‘go into’ *in-vād-ere/in-vād-āre*

- Shift to the 4th conjugation (3 cases)

  e.g. ‘spread all over’ *circum-lin-ere/circum-lin-īre*

Analogical processes in the perfect system

- Extension of -V*v*- stem formation pattern (18 cases)
  - ‘stand before’, PRS.ACT.INF *prae-st-āre* – PRF.ACT.IND.1SG *prae-stit-ī/prae-st-āv-ī*
  - ‘lie in’ PRS.ACT.INF *in-cub-āre* – PRF.ACT.IND.1SG *in-cub-u-ī/in-cub-āv-ī*
- Extension of unmarked perfect stems (18 cases)
  - ‘cut off’, PRS.ACT.INF *dē-tond-ere* – PRF.ACT.IND.1SG *dē-totond-ī/dē-tond-ī*
  - ‘unweave’, PRS.ACT.INF *re-tex-ere* – PRF.ACT.IND.1SG *re-tex-u-ī/re-tex-ī*
- Extension of -*s*- stem formation pattern (9 cases)
  - ‘understand’, PRS.ACT.INF *intelleg-ere* – PRF.ACT.IND.1SG *intellēg-ī/intellēx-ī* [intelle:ksi]
- Extension of -*u*- stem formation pattern (6 cases)
  - ‘twist out’, PRS.ACT.INF *ex-torqu-ēre* – PRF.ACT.IND.1SG *ex-tors-ī/ex-tors-u-ī*

Analogical processes in the third stem

- Extension of -V*t*- stem formation pattern (11 cases)
  - ‘stand before’, PRS.ACT.INF *in-cub-āre* – PRF.PTCP *in-cubit-um/in-cub-ātum,*
  - ‘peel off’, PRS.ACT.INF *dē-glūb-ere* – PRF.PTCP *dē-glūp-tum/dē-glūb-ātum*
- Extension of -*t*- stem formation pattern (7 cases)
  - ‘drive out’, PRS.ACT.INF *dē-pell-ere* – PRF.PTCP *dē-puls-um/dē-pult-um*
  - ‘die off’, PRS.ACT.INF *ē-mor-ī* – PRF.PTCP *ē-mortu-um/ē-mort-um*
- Extension of -*s*- stem formation pattern (3 cases)
  - ‘approach’, PRS.ACT.INF *ad-or-ī* – PRF.PTCP *ad-ort-um/ad-ors-um*
  - ‘patch again’ PRS.ACT.INF *re-sarc-īre* – PRF.PTCP *re-sart-um/re-sars-um*

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Results

- Potential overabundance (lexicon data)

	lexemes that do not preserve overabundance phenomena found in bases
PRS.ACT.INF	610/765 (79.74 %)
PRF.ACT.IND.1SG	732/1,013 (72.26 %)
PRF.PTCP.NOM.N.SG	572/720 (79.44 %)

- Realised overabundance (corpus data)

	lexemes that do not preserve overabundance phenomena found in bases
present stem	101/123 (82.11 %)
perfect stem	462/644 (71.74 %)
third stem	87/114 (76.32 %)

- Lack of preservation of overabundance is by far the most frequent scenario
- Remarkable similarity of results obtained with different sources of data

Results: frequent verbs

- ✗ Distorting effect of frequency → focus on lexemes with frequency > 100
  - Potential overabundance (lexicon data)

	lexemes that do not preserve overabundance phenomena found in bases
PRS.ACT.INF	55/70 (78.57 %)
PRF.ACT.IND.1SG	37/96 (38.54 %)
PRF.PTCP.NOM.N.SG	25/48 (52.08 %)

  - Realised overabundance (corpus data)

	lexemes that do not preserve overabundance phenomena found in bases
present stem	18/25 (72.0 %)
perfect stem	41/95 (43.16 %)
third stem	12/27 (44.44 %)

- ➢ Decrease in the proportion of cases where overabundance is not preserved

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Conclusions

- Novel overabundance phenomena frequently arise in prefixed verbs
  - Most frequently due to morpho-phonological adjustments at the prefix-base boundary
  - More rarely due to other (analogy-driven) processes
- The proportion of overabundant lexemes remains relatively stable between bases and derivatives
- Many overabundant bases do not transmit their overabundance patterns to derivatives

⇒ Even where we expect inflection of derivatives to be inherited from their base, there are other forces at play that counter this tendency, with a remarkable impact on the lexicon

⇒ This confirms the value of quantitative investigations of the impact of derivational history on inflectional behaviour

Future work

- Take into account the **relative frequency** of variants
  - If one of the cell-mates is much more frequently used than the other one in the base might explain the lack of attestation of the latter in derivatives in some cases

- Explore the role of factors that might motivate whether a specific morpho-phonological or analogical process is applied or not (also in non-overabundant cases)
  - Cases of overabundance as intermediate according to those factors?

Thank you!

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