

Tracking harmony decay in Old Norwegian

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1 Background

Vowel harmony → systematic correspondence for some vocalic feature

- articulatorily and perceptually motivated
- easy to learn and acquired early
- typologically common and diachronically robust
- * but harmony systems don't stick around forever

1.1 The problem of harmony decay

If harmony is so natural and functionally motivated:

* what motivates **harmony decay** and how do harmony processes die?

2 Corpus study: Old Norwegian harmony decay

Old Norwegian harmony in (i) decayed over 13th–14th centuries

(i) Progressive height harmony in Old Norwegian (c 1200–1350)

HIGH hús-i <hufi> hús-um <hufū> 'house'-DAT.SG./PL.
skip-i <fkípí> skip-um <fkípum> 'ship'-DAT.SG./PL.
NON-HIGH ljós-e <líofe> ljós-om <líofom> 'light'-DAT.SG./PL.
segl-e <fegle> segl-om <feglō> 'sail'-DAT.SG./PL.

2.1 Graphophonological harmony database

Database of linguistically annotated vowel pairs

- Medieval Nordic Text Archive (MENOTA)
- orthographically and etymologically cross-referenced

id	dipl	expanded	lemma	seq_no	v1	v2	etym1	etym2	v1_high	v2_high	VH
11857	stendr	stendr	standa	1	e	NA	ε	NA	F	NA	NA
30331	støðe	støðe	standa	1	ø	e	ø:	e	F	F	T
48957	stœpe	stœpe	standa	1	œ	e	ø:	e	F	F	T
65048	hofðingianom	hofðingianom	hofðingi	1	o	í	ɔ	i	F	T	F
65048	hofðingianom	hofðingianom	hofðingi	2	í	a	i	a	T	F	F
65048	hofðingianom	hofðingianom	hofðingi	3	a	o	a	o	F	F	T
34024	kkunar	kirkiunnar	kirkia	1	u	a	u	a	T	F	F
18773	giæva	giæva	gíof	1	æ	a	æ	a	F	F	T
43804	giava	giava	gíof	1	a	a	a	a	F	F	T

Table 1: Examples from the etymologically annotated data-frame (abbreviated)

2.2 Sanity check: data uniformity

The corpus provides reliable/consistent data

- e.g. word length and vowel frequencies (Fig. 1)

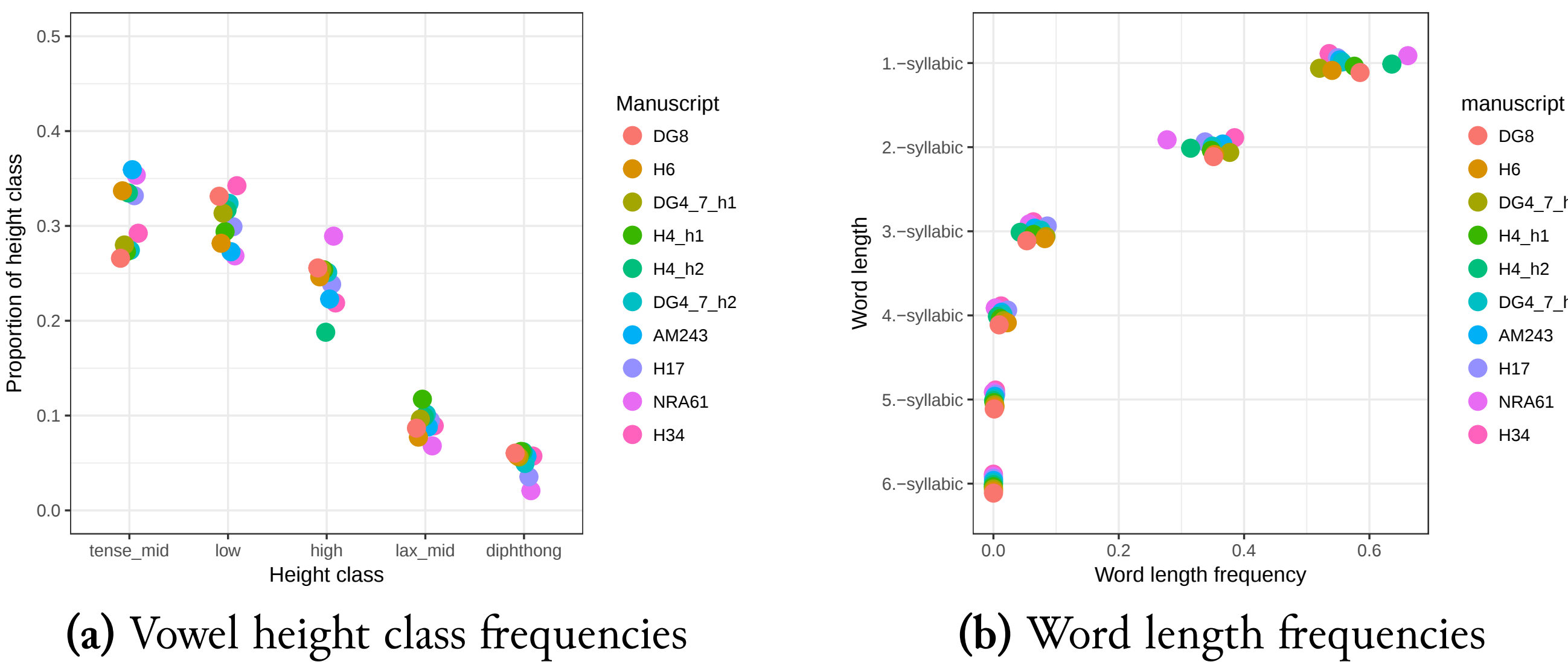


Figure 1: Vowel and word length frequencies by manuscript

3 Tracking and visualising harmony decay

3.1 PhonMatrix visualisations

Coloured vowel association matrices

- developed by Mayer et al. (2010) and Mayer & Rohrdantz (2013)

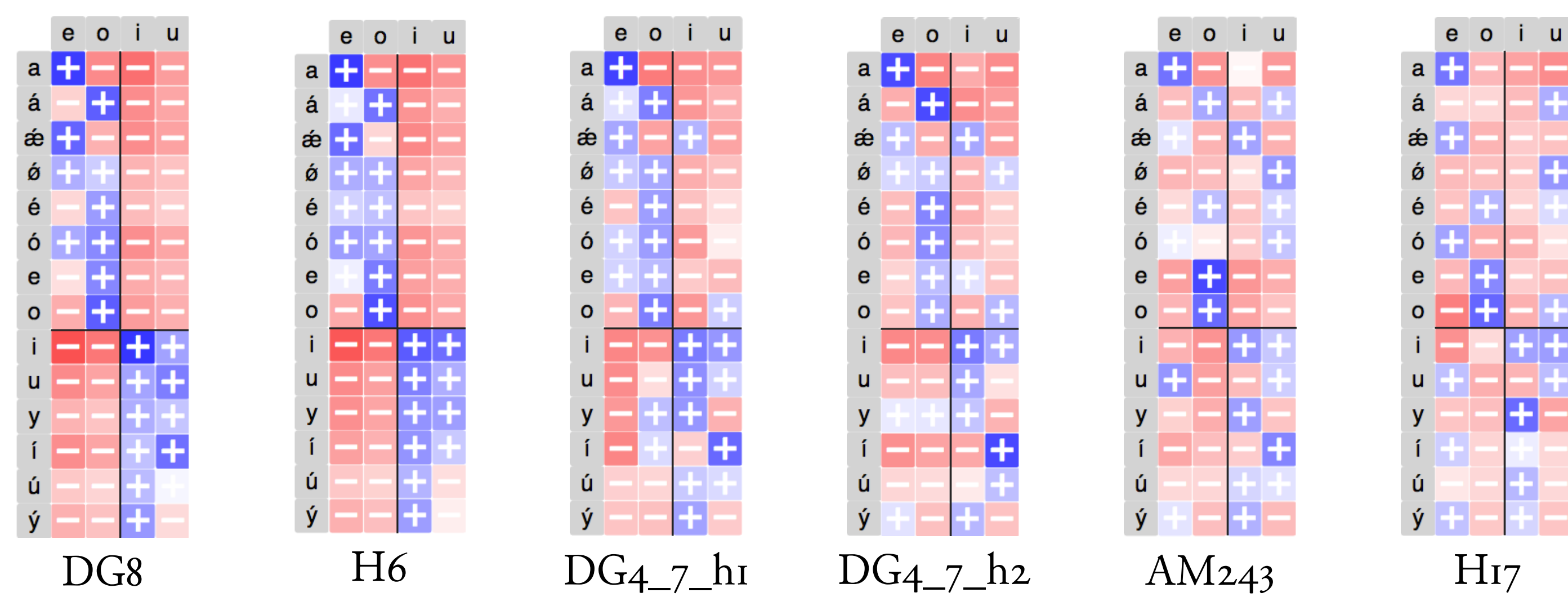
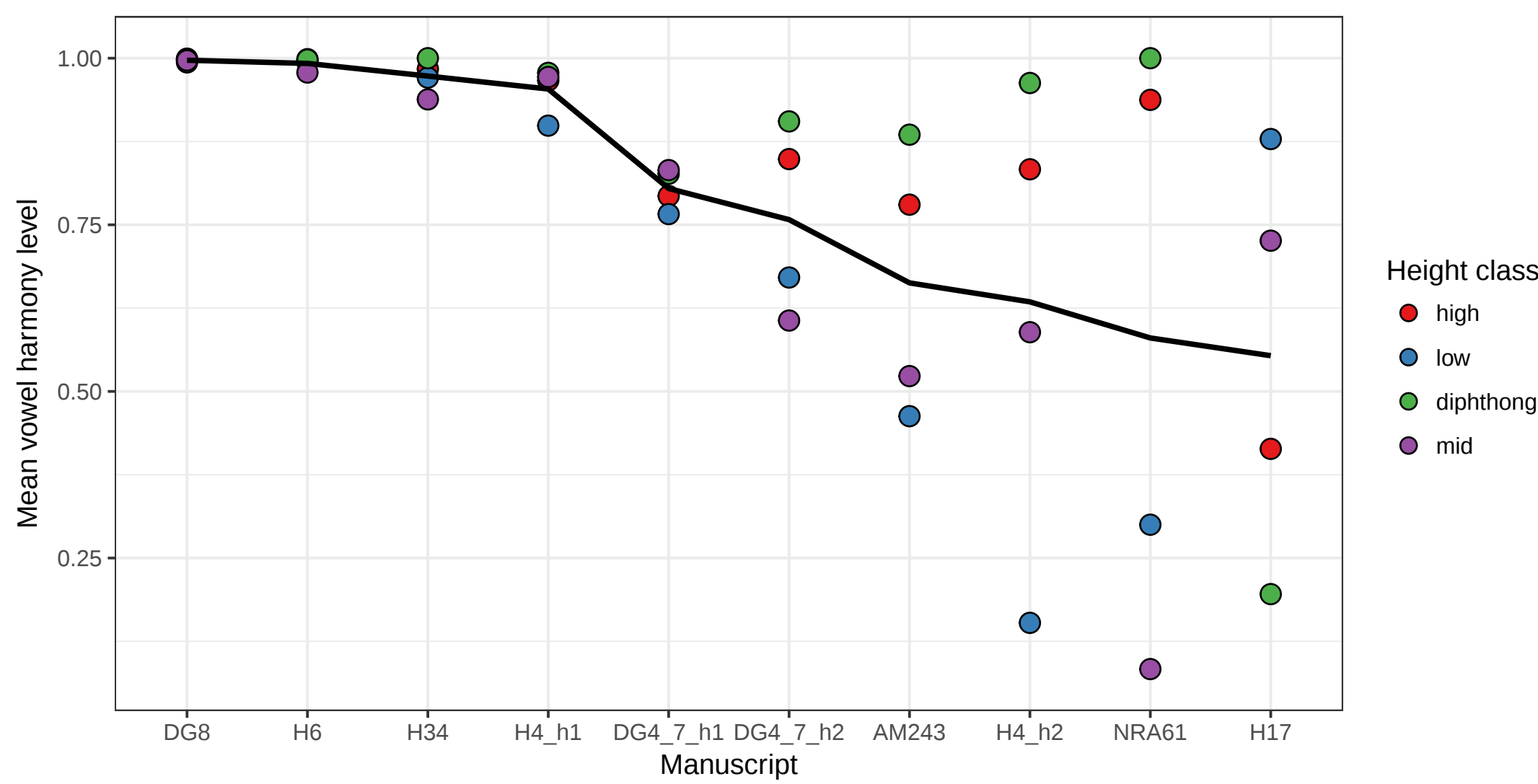


Figure 2: Sample of PhonMatrix visualisations illustrating Old Norwegian harmony decay

3.2 Spectrum of harmony decay



Manuscript	Provenance	Date
1 DG8	De la Gardie 8, fols. 70v–110v	Trøndelag c 1225–50
2 H6	Holm perg 6 fol	Eastern Norway c 1275
3 H34	Holm perg 34 4to	Bergen c 1275–1300
4 H4_h1	Holm perg 4 fol, fols. 11r–14v	Uncertain c 1275–1300
5 DG4_7_h1	De la Gardie 4–7, fols. 17v–29v	Bergen c 1270
6 DG4_7_h2	De la Gardie 4–7, fols. 30r–43v	Bergen c 1270
7 AM243	AM 243 bα fol	Bergen c 1275
8 H4_h2	Holm perg 4 fol, fols. 15r–49v	Uncertain c 1275–1300
9 NRA61	NRA 61	Uncertain c 1250
10 H17	Holm perg 17 4to	Uncertain c 1300

Figure 3: Mean harmony levels by manuscript height class in pairwise sequences

4 Conclusions

1. Reliable phonological data despite philological challenges

- consistent patterns and coherent directions of change

2. Documented vowel harmony change

- clear spectrum of decaying harmony patterns

3. Distinct stages of decay

- *pre-decay*: DG8, H6, H34, & H4_h1 – (high harmony - low variance)
- *transitional*: DG4_7_h1/h2 – (medium harmony ~ medium variance)
- *post-decay*: AM243, H4_h2, & H17 – (low harmony ~ high variance)

extended handout available at: <https://jsandstedt.hcommons.org>

5 References

- Mayer, Thomas & Christian Rohrdantz. 2013. PhonMatrix: Visualizing co-occurrence constraints of sounds. In *Proceedings of the 51st Annual Meeting of the Association for Computational Linguistics: Proceedings of the conference system demonstrations*, 73–78. <http://www.aclweb.org/anthology/P13-4013>. Sofia, Bulgaria: Association for Computational Linguistics.
- Mayer, Thomas, Christian Rohrdantz, Miriam Butt, Frans Plank & Daniel A. Keim. 2010. Visualizing vowel harmony. *Journal of Linguistic Issues in Language Technology* 4(2). <https://pdfs.semanticscholar.org/435e/32ab8792c67029977667b8e2afb415a235a.pdf>, 1–33.