Phonemicisation vs. phonologisation

Voiced fricatives in Old English and Brythonic

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1 Context

1.1 Introduction

Outline of argument

- Strict (naïve) contrastivist hypothesis: if two things are predictably distributed, the distinction is phonologically irrelevant
- Voiced fricatives in Old English and Brythonic Celtic
  - Are (by and large) predictably distributed
  - Plenty of evidence that the distribution is phonologically relevant
- Phonologisation: creation of phonologically distinct representations
- Phonemicisation: establishment of unpredictable distribution
- Phonologisation precedes phonemicisation: 'allophony' → marginal contrast → contrast

Our examples

- Lenis fricatives in Old English
  - Arise from fortis/H/[spread glottis] fricatives through *foot-medial* lenition

  - Largely predictable distribution in Old English, clear phonemicisation by moderately early Middle English

- Voiced fricatives in Brythonic Celtic
  - Arise from voiced stops through phrase-level intervocalic lenition
  - Largely predictable distribution early on, major changes in prosodic structure lead to phonemicisation

- But in both cases:
  - Distribution is predictable but sensitive to phonology: it is enforced by phonological computation (Hall & Hall, Kim this conference)
  - Voiced fricatives survive secondary split, which presupposes distinct representations (Dresher this conference)

1.2 Some assumptions

The Contrastivist Hypothesis

- In its purest form, the CH is about *representations*
- What about computation?
- Most phonological theories on the market are powerful enough to coerce arbitrary representations into predictable distributions
- Can the CH be reconciled with this?
- Yes: phonemicisation is a fact about surface distributions, not about what the phonology works with (cf. Scobbie 2007)
- Fruitful to distinguish phonemicisation and phonologisation

What does phonology know?

- Standard position going back to Chomsky and Halle (1968) if not Jakobson, Fant, and Halle (1951): everything language-specific is phonological, phonetics is universal and not interesting
- Under attack from several perspectives recently
- We assume phonology exists but there is a non-trivial division of labour: 'Is X a *phonological* phenomenon?' is an interesting question (Morén 2006; Hale, Kissock, and Reiss 2007; Odden 2013)
- Under this approach, 'When does X become phonological?' is also an interesting question
- And how do we know?

The life cycle

- It is uncontroversial that phonological patterns can arise as a grammaticalisation of (predictable) phonetics (e. g. Hyman 1976; Janda 2003; Bermúdez-Otero 2007; Bermúdez-Otero and Trousdale 2012)
- If so, we expect the early stages of phonologisation to produce predictable distributions or at best marginal contrasts (Scobbie and Stuart-Smith 2008; Bye 2013)
- Further, historical phonology exists: phonological (but not necessarily phonemic) distinctness is important in phonological change

2 Fricative lenisisation in Old English

2.1 Phonemicisation in English

The textbook position

☞ We set dorsals aside here: '[x]...no longer existed' in the environments relevant here (Hogg 1992, p. 276)

- It is widely accepted that OE had *one* distinctive series of fricatives, with allophonic voicing in 'intervocalic' position

☞ Laker (2009) dissents, but Minkova (2011) provides a compelling defence of the *phonological predictability* of fricative 'voicing'

Textbook OE phonemic inventory

From Lass (1987)

Manner	Labial	Dental	Alveolar	Postalveolar	Palatal	Velar
Stop	p(ː)		t(ː)			k(ː)
	b(ː)		d(ː)			g(ː)
Fricative	f(ː)	θ(ː)	s(ː)	ʃ		x(ː)
Affricate				ʧ(ː)		
				ʤ(ː)		
Nasal	m(ː)		n(ː)			
Liquid	w		l(ː), r(ː)		j	

Textbook Middle English

- Middle English: voiced fricatives in French loans, degemination of intervocalic fortis fricatives and apocope create a contrast
- Again Lass (1987)

Manner	Labial	Dental	Alveolar	Postalveolar	Palatal	Velar
Stop	p		t			k
	b		d			g
Fricative	f	*θ*	s	ʃ		x
	v	*ð*	*z*	*ʒ*		
Affricate				ʧ		
				dʒ		
Nasal	m		n			
Liquid	w		l, r		j	

The sequence of events

- What conditions in Old English allowed the ME contrast to develop?

☞ Standard answer: French borrowings, degemination etc. were the *cause* of phonemicisation

  - Many borrowings with initial [v] (*veal*, *very*, *vile*, *victory*...), some also with initial [z]: *zeal*, *zodiac*...
  - Creation of medial contrast through degemination: OE *o*[f:]*rian*, ME *o*[f]*er*
  - Creation of final contrast through apocope: OE *lu*[v]*u*, lME *love* [lo:v]

Unanswered questions

- We find the form *fers* from Latin *versus* (e. g. in Ælfric, Orm) — sometimes taken to be evidence for fricative voicing but could it be a nativised loan? And if so, why didn't ME just carry on like this?
- Why were the other not constrained by the synchronic restrictions on fricatives? Why not *offrian* → ***over*, *lufu* → ***lof*?
- We suggest: fricative lenisisation is *phonological* already in Old English (cf. Moulton 2003)

2.2 Phonologisation in Old English

The distribution

- The basic rule is Intervocalic Voicing 101
- $\begin{bmatrix} \text{C} \\ \text{+cont} \end{bmatrix} \rightarrow$ [+voi]/[+voi]__[+voi] (e. g. Hogg 1992)
- Examples
  - *wul*[f] 'wolf' but *wul*[v]*as* 'wolves'
  - *hu*[s] 'house' but *hu*[z]*ian* 'to house'
  - *bæ*[*θ*] 'bath' but *ba*[ð]*ode* 'bathed'
- This, however, is not the whole story

Phonological factors

- How do we know that phonology is involved?

☞ The distribution is exquisitely sensitive to *phonological* factors, i. e. it is *phonologised*

1. Blocking in gemination referred to above: expected from a phonological perspective (Honeybone 2005b), gemination in OE is phonological because geminates count for weight
2. Sensitivity to metrical structure: voicing 'in the onset of weak syllable in the trochaic foot' (Minkova 2008, 2011)

   In particular, there is no voicing between unstressed nuclei (Fulk 2001, 2002):
   - *daro*[θ]*a* 'spears (gen. pl.)'
   - *earfo*[θ]*u* 'hardship (acc. pl.)'
3. Certain types of boundaries block voicing too: *trēo*[f]*æst* 'faithful', *weor*[θ]*lēas* 'worthless' (Takahashi 1995; Fulk 2002)

2.3 The phonology of fricatives

Summary

- Old English phonology manipulated distinct representations for voiceless and voiced fricatives, even though the result is (almost) complementary distribution of the two categories
- This situation must have appeared fairly early on and persisted for a long time
- Changes in the ME period were not the cause of the phonologisation but instead were enabled by it
- Essentially the same result as that of Moulton (2003)
- But we take a different view of the pattern

Specification of fricatives

- We follow Honeybone (2002, 2005a, 2012); Spaargaren (2009) in assuming voiceless fricatives in Old English must be specified for H (|spread|, |fortis|, whatever)

☞ Activity in progressive assimilation: /kyss-(i)*d*e/ → [kys*t*e] 'kissed'

☞ Activity in regressive assimilation: /me*d*-scead/ → [me*t*sceat] 'reward' (Spaargaren 2009)

☞ Southern English Fricative Voicing: lenition as loss of H: OE *fader*, southern ME *uader* 'father' (Honeybone 2005a, 2012)

The importance of lenition

- Moulton (2003) assumes something similar, but he also suggests that lenis fricatives are specified for [+voice]
- We disagree: no evidence for phonological activity of [voice] in fricatives (see especially Spaargaren 2009)

Conclusion for Old English

- The pattern makes good sense as a phonological one
- Contrast Moulton (2003, 157): the situation is 'curious' and 'contrary to all expectations given the predictability of the feature'
- Indeed we do not have to look far to find a *comparandum*

3 Voiced fricatives in Brythonic

3.1 Basics

Fricatives in mediæval and modern Brythonic

- Welsh: [v ð (ɣ)] contrast with [f θ χ]
- Cornish: [v ð z (ɣ)] contrast with [f θ s x]
- Breton: [v f̬ z ʒ] contrast with [f s x:/h ʃ], though many dialects lack [f̬]
- Seems pretty unremarkable except for the Breton
- Ample evidence for the phonological character of the contrast through alternations

Some phonological processes

- Initial mutation: lenition
  - /m b/ → /v/ (WCB)
  - /d/ → /ð/ (WC), /z/ (B)
  - /g/ → /ɣ/ with later developments (WCB)
- Final devoicing: Cornish and Breton
  - Cornish, Breton dialects with no v/f̬ contrast: unremarkable
  - Breton dialects with tripartite v/f̬/f contrast: /f̬/ → /f/, /v/ → /o/

- More initial mutation: 'new lenition' (Breton, probably Cornish)
  - /f/ → /f̬/ where available, else [v]
  - /s/ → /z/
  - /ʃ/ → /ʒ/

The connection with quantity

- Best seen in Breton
- Restrictions following stressed vowel: only two patterns allowed, with alternations
  - Long vowel → voiced fricative
  - Short vowel → voiceless fricative

(1) Central Breton (Wmffre 1999)

a.	['ko:z]	*kozh*	'old'
b.	['kosəħ]	*koshoc'h*	'older'
c.	[aɣ 'hosə]	*ar c'hoshañ*	'the oldest'

- Similar but not identical to metrical restrictions in West Germanic (OE above; Dutch according to van Oostendorp 2003)

3.2 Phonemicisation in Brythonic

The appearance of voiced fricatives

- The source of voiced fricatives is the lenition of voiced stops (e. g. Matasović 2009)

(2) a. Middle Welsh *lladdu* [ð], Breton *lazhañ* [z/h/∅], Middle Cornish *lathe* [ð] 'kill', PC **slad-* (OI *slaide* [ð] 'killing')
b. Welsh *afon* [v], Middle Breton *auon* [v], Cornish *auon* [v] 'river', PC **abon-* (OI *a(u)b* [β])

- Basic sound change: singleton stop → fricative / V_

Phonemicisation in Brythonic

- Early stage: no surface contrast between voiced stops and fricatives

☞ Fricatives postvocalically, stops postconsonantally and in gemination

- Date uncertain
  - Early, but uncertain, date (e. g. Sims-Williams 1990; McCone 1996): common to Brythonic and Goidelic and possibly also Celtiberian (Villar 1993); solves some issues around borrowings into Irish (see also Schrijver 2009 for a reevaluation of the Brythonic/Goidelic relationship)
  - Later date (Jackson 1953: second half of 5th century): lenition affects Latin stops (W *meddyg* 'doctor' ← MEDICU), therefore postdates the borrowing

Triggers of Brythonic phonemicisation

- Possible triggers of phonemicisation:
  - Syncope (mid 6th century according to Jackson 1953) creates non-postvocalic fricatives: PB **Ōrbo-genos*, Old Welsh *Urbgen*, Middle Welsh *Urien* ([j] ← *[ɣ])
  - Simplification of voiced geminates: W *aber* 'estuary' from **ab-bero-* ← *ad-bero-*. Date unclear but between lenition and 'provection' (devoicing of geminate stops arising through syncope, mid to late 6th century): OW *Cattegirn* from **Cadədiɣernos* ← *Catu-tigernos*
- But what about phonologisation?

3.3 Phonologisation in Brythonic

Phonologisation in Brythonic

- As with OE, we suggest phonologisation precedes phonologisation by a long shot
  1. Productive phonology knows about the /v ð ɣ/ ∼ /b d g/ contrast but enforces the predictable distribution
  2. The existence of mutations presupposes a postlexical across-the-board phonological process à la Bermúdez-Otero (2007); Bermúdez-Otero and Trousdale (2012)
  3. Secondary split presupposes distinct representations (e. g. Kiparsky 1995; Janda 2003; Bermúdez-Otero 2007; Dresher this conference)

Systematic restrictions

Manner	Labial	Coronal	Dorsal
Voiceless singleton stops	p	t	k
Voiceless geminate stops	pp	tt	kk
Voiced singleton stops	#b	#d	#g
Voiced geminate stops	bb	dd	gg
Voiceless fricatives		s(s)	
Voiced fricatives	(*#)v	(*#)ð	(*#)ɣ

Phonology knows about the contrast

- We propose that the positional restrictions on [b d g] vs. [v ð ɣ] are enforced by phonological computation

☞ The absence of [b d g] in the lenition position (however defined) is due to a phonological rule

- No real laryngeal contrast in fricatives: /s (h)/ and /v ð ɣ/ are not a phonological class

- The fricatives are defined only by manner: laryngeal contrast redundant
- Across-the-board deletion of stop component blocked syllable-initially, in gemination

☞ Essentially same story as for OE above

Effects of the rule

- As with OE *fers*, borrowings follow the native pattern
  - Latin MEDICU becomes W *meddyg* because of a *synchronic* restriction on surface [d], not because it is borrowed pre-lenition

  ☞ Contra Jackson (1953)
- Lack of laryngeal contrast means /v ð ɣ/ are effectively sonorants (Iosad 2012; Botma and van 't Veer, forthcoming)
  - Welsh /v ð/ are inert in laryngeal assimilation
  - Breton [v] (when distinct from [f̬]) shows sonorant-like behaviour (cf. above)

The inheritance of the rule

- Voiced fricatives are involved in initial mutation
- The source of initial mutation is the application of lenition across word boundaries
- Consistent with the life cycle of phonological processes (Bermúdez-Otero 2007; Bermúdez-Otero and Trousdale 2012; Ramsammy, forthcoming)
- Phonetic tendencies stabilise and become phrase-level *phonological* patterns

☞ Mutations cannot have appeared without there having been a phonological rule outputting the right phonological symbols

The diachrony of the rule

- Phonologisation must precede secondary split (Kiparsky 1995; Janda 2003; Bermúdez-Otero 2007)
  - Voiced fricatives survive syncope to produce forms like *Urien*
  - Voiced fricatives survive domain narrowing when lenition stops to operate at the phrase level
- Voiced fricatives become distinct phonological representations prior to changes in conditioning environments

☞ Same account in English for the preservation of [f] in *offer* and [v] in *love*

4 Discussion

4.1 Fricative voicing as lenition

Cross-linguistic similarities

- Old English
  - Phonologised distinction with a prosodically sensitive distribution
  - Weakly unconditioned process: fricative lenition 'everywhere except'
  - Survives changes of context and phonemicises
  - Changes in conditioning: Southern English Fricative Voicing
- Brythonic
  - Phonologised distinction with phonologicaly defined distributions
  - Weakly unconditioned process: stop lenition 'everywhere except'
  - Survives changes of context and phonemicises
  - Changes in conditioning: Breton and Cornish 'new lenition'
- Franconian (not discussed here for reasons of space)
  - Clearly phonological (phonologised *and* phonemicised) distinction
  - Initial fricative voicing: a weakly unconditioned process?

Do we need contact explanations?

- These similarities have sometimes been explained by contact
  - Continental Germanic → English (Bennett 1955)
  - Brythonic → Old English (Laker 2009)
  - English → Cornish & Breton (Tristram 1995)
- Arguments against
  - Chronology of relevant sound changes (e. g. Nielsen 1994)
  - Chronology of phonemicisation (Minkova 2011)
- Our argument: voiced fricatives in English and Brythonic arise via an utterly ordinary process of lenition
- However, there are important differences too
  - English: loss of H; Brythonic: loss of ʔ
  - Different sensitivity to metrical structure
- Contact is an answer in search of a question

4.2 Theoretical consequences

Fixing the Contrastivist Hypothesis

- Cases such as that discussed here appear to fly in the face of the Contrastivist Hypothesis
- Should we abandon it?
- Probably not yet: a theory of phonology includes both representation and computation, the effects of the latter do not necessarily influence the former (Hall & Hall this conference)
- However, it does seem that a different formulation is in order

The Contrastivist Hypothesis redux

- The basic insight of the CH is that the set of phonologically active features is not larger than the set of features used to distinguish between a language's segments
- But the set of phonological segments can now be larger than the set of unpredictably distributed segments
- What the CH really says is *no redundant features*
- Once we've identified the set of phonological segments (via participation in truly phonological processes) and assigned a set of minimally contrastive specifications (say, via the Successive Division Algorithm; Dresher 2009), we may not assign more features
- This version of the CH still has content, but accommodates our facts

Conclusions

- Both Old English and Brythonic Celtic acquired voiced fricatives through a *phonological* process of lenition
- In both languages the phonological pattern produced (almost) predictable surface distributions for voiced fricatives for a fair length of time
- This does not falsify the Contrastivist Hypothesis, but follows from the existence of the phonological life cycle

Thank you!

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