# The phonological endgame: Welsh svarabhakti revisited

Pavel Iosad
University of Ulster
p.iosad@ulster.ac.uk

MancSalFiL 2012 2nd November 2012

**Plan**

- Discuss the facts of svarabhakti in South Welsh: epenthesis and deletion
- Provide a phonological analysis of epenthesis
- Show that deletion cannot be derived if the analysis of epenthesis is correct
- Argue that deletion is not phonological but allomorphic
- Reconcile the proposal with approaches to the 'duplication problem'

## 1 Svarabhakti in Welsh

### 1.1 The basic facts

**Svarabhakti in Welsh**

- Pembrokeshire Welsh (Awbery 1986)
- Welsh tends to disallow word-final rising-sonority sequences

(1)

| | | | | |
|---|---|---|---|---|
| a. | *[ˈɬestr] | | |
| b. | [ˈɬester] | *llestr* | 'dish' |
| c. | [ˈɬestri] | *llestri* | 'dishes' |

- Although consonant clusters as such are OK

(2)

| | | | | |
|---|---|---|---|---|
| a. | [ˈforð] | *ffordd* | 'road' |
| b. | [ˈfirv] | *ffurf* | 'form' |

- Epenthesis (or rather copying), not deletion:



(3)

| | | | |
|---|---|---|---|
| a. | [ˈmuːdul] | *mwdwl* | 'haycock' |
| b. | [muˈduːle] | *mydylau* | 'haycocks' |

**Svarabhakti in Welsh cont'd**

- But epenthesis is only deployed if the fully faithful candidate is monosyllabic
- If the form is longer, we get deletion

(4)

| | | | | | |
|---|---|---|---|---|---|
| a. | (i) | [ˈfeːnest] | *ffenestr* | 'window' |
| | (ii) | [feˈnestri] | *ffenestri* | 'windows' |
| | (iii) | *[feˈnesti] | | |
| b. | (i) | [ˈaːnal] | *anadl* | 'breath' |
| | (ii) | [aˈnadli] | *anadlu* | 'breathe' |
| | (iii) | *[aˈnaːli] | | |

- Minor facts about (mostly) northern dialects:
  - Some dialects have metathesis: [ˈewɨrθ] ∼ [eˈwəθra] 'uncle(s)'
  - Epenthesis sometimes fails, especially with [vC]

### 1.2 The conspiracy unmasked

**Analysis**

- 'Unity in diversity' (Hannahs 2009)
- All processes driven by the avoidance of sonority sequencing violations
- The difference between deletion and epenthesis is foot structure
- North Welsh: ['pobol] 'people' (*pobl*), ['posib] 'possible' (*posibl*)
- Both forms satisfy FtBin
  - $[(\text{posib})_{\text{Ft}}]$ defeats $*[(\text{po})_{\text{Ft}}(\text{sibil})_{\text{Ft}}]$ on foot structure
  - $*[(\text{poːb})_{\text{Ft}}]$ and $[(\text{pobol})_{\text{Ft}}]$ tie on foot structure and Dep, [poːb] loses on Max

**Trouble in South Wales**

- This analysis is not applicable to South Welsh
- North Welsh disallows long vowels except in final syllables
- South Welsh positively requires them in some contexts in penultima
- Epenthesis does not help with FtBin, because FtBin must be satisfied in the penult

(5) a. ['pu:dur] *pwdr* 'rotten'
b. *['pudur]

- Arguably, the same is true of [fe('ne$_{\mu}$s$_{\mu}$)ter]

## 1.3 The analysis of epenthesis

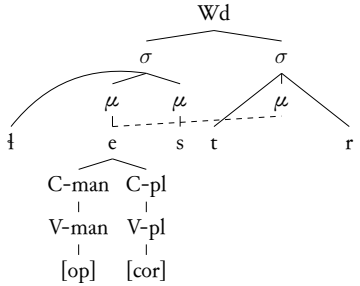
**Possible motivations for epenthesis**

- Why is ['pu:dur] better than ['pu:d]?
- Two possible answers: epenthesis is better than deletion (MAX ≫ DEP)...
- ... or we need the right prosodic structure (HL uneven trochee or extrametricality, cf. Ní Chiosáin 1999)
- It is the former

| | | SONSEQ | MAX(Seg) | DEP(Seg) | σ-XM |
|---|---|---|---|---|---|
| /pudr/ | a. [('pudr)] | *! | | | * |
| | b. [('pu:d)] | | *! | | * |
| | c. ☞ [('pu:)dur] | | | * | |
| /forð/ | d. ☞ [('forð)] | | | | * |
| | e. ['(fo:r)] | | *! | | * |
| | f. ['(fo:)roð] | | | *! | |

**The mechanism of epenthesis**

- Let's assume for now that epenthesis is phonological
- Obvious approach: spreading
- Doesn't really work: you need to copy the entire segment






**The solution**

- Multiple correspondence
- Similar to 'existential faithfulness' (Struijke 2000): MAX requires that an input have *some* output, not that it have *one* output
- Epenthesis violates not DEP but INTEGRITY

| /so$_1$u$_2$dl/ | SONSEQ | DEP | LINEARITY | INTEGRITY |
|---|---|---|---|---|
| a. ['so$_1$u$_2$dl] | *! | | | |
| b. ['so$_1$u$_2$dil] | | *! | | |
| c. ☞ ['so$_1$u$_2$du$_2$l] | | | ⟨d, u⟩ | * |
| d. ['so$_1$u$_2$do$_1$l] | | | ⟨u, o⟩<br>⟨d, o⟩! | * |

**Why is this a good thing?**

- Explains the excessive copying:
  - Why not copy/spread just one feature?
  - Why not just insert some default?
  - No hoops to jump explaining why there is no other harmony process
- Allows incomplete copy under duress from other constraints: no sour grapes (Padgett 2002)
- Never mind the features for now: see Iosad (submitted)
- I assume [i] is {V-pl[cor]}, [ə] is {V-pl[cor], V-man[cl]}
- Basically, [ə] is disallowed in final syllables: so ['ɬəvir] 'book' from /ɬəvr/
- This approach chooses the right candidate

**No sour grapes**

| /ɬə$_1$vr/ | DEP | LINEARITY | INTEGRITY | MAXLINK(V-man[cl]) |
|---|---|---|---|---|
| a. ['ɬə$_1$vir] | *! | | | |
| b. ['ɬi$_1$vi$_1$r] | | ⟨v, i⟩ | * | **! |
| c. ☞ ['ɬə$_1$vi$_1$r] | | ⟨v, i⟩ | * | * |

# 2 The problem of deletion

## 2.1 Why deletion is not phonology

**Extending the analysis**

- So far we have been assuming that epenthesis is a phonological process repairing SonSeq violations

☞ We will have the opportunity to revisit this

- What about deletion? Is there a phonological conspiracy?

| /fenestr/ | SonSeq | Max(Seg) | Dep(Seg) | σ-XM |
|---|---|---|---|---|
| a. [('fe:)nestr] | *! | | | |
| b. ☹ [('fe:)nest] | | *! | | |
| c. ☞ [fe('nes)ter] | | | * | |

**Resolving the conundrum**

- Our ranking will always prefer epenthesis over deletion, since we cannot use FtBin to that effect
- I suggest that the solution is to view the 'deletion' as *allomorphy*, or more specifically *phonologically conditioned stem allomorphy* (Bermúdez-Otero 2006, forthcoming; also Anderson 2008, forthcoming)
- The choice is between /fenestr/ and /fenest/ as *underlying* forms, which means faithfulness does not have anything to say about deletion

**Resolving the conundrum in OT**

- Faithfulness is irrelevant: a possible approach

| | window | SonSeq | Max | Dep |
|---|---|---|---|---|
| /fenestr/ a. | [('fe:)nestr] | *! | | |
| b. | [fe('nes)ter] | | | *! |
| c. | [('fe:)nest] | | *! | |
| /fenest/ d. ☞ | [('fe:)nest] | | | |

- Problem: these constraints as such cannot distinguish between [fe'nestri] and *[fe'nesti]
- If anything, *[fe'nesti] saves a complex onset



**Types of phonological conditioning**

- When we say 'phonologically conditioned', we could mean
  - Output-oriented optimization (e. g. Lapointe 2001; Wolf 2008; Anderson 2008)
  - Input-driven subcategorization (e. g. Paster 2006; Bye 2007; Yu 2007)
- We probably need both (Nevins 2011)
- With Welsh, input subcategorization seems more promising, at least in terms of descriptive adequacy
- window ⇔ { /fenest/ : ___ # ; /fenestr/ : ___ # }

## 2.2 The advantages of allomorphy

**Why allomorphy?**

- But now we have no conspiracy: SonSeq does not play a rôle in selecting ['fe:nest] over ['fe:nestr]
- So how is this good?
  - ☞ Epenthesis may also be allomorphic
  - ☞ Deletion is lexically specific
  - ☞ Deletion can show cyclic misapplication within morphosyntactic classes

**Lexically specific epenthesis**

- Pembrokeshire Welsh also shows epenthesis that is not apparently driven by SonSeq

| | | | | |
|---|---|---|---|---|
| (6) a. | (i) | ['he:lem] | *helm* | 'corn stack' |
| | (ii) | ['helmi] | *helmi* | 'corn stacks' |
| b. | (i) | ['gu:ðug] | *gwddf* | 'neck' |
| | (ii) | ['guðge] | *gyddfau* | 'necks' |

- Also compare ['ferm] 'farm' with ['sto:rom] 'storm' in relevant locations in A. R. Thomas (2000)
- Epenthesis can fail in words like *gafr*, *ofn* etc.
- Possibly no epenthesis in borrowings (Fynes-Clinton 1913; Hannahs 2009): [bekn], [nobl]

**Unpredictable deletion**

- There does not appear to be clear phonological rationale to what deletes: ['fɛːnɛstr̥] 'window' but ['aːnad̥l] 'breath;
- Hannahs (2009), following much of the literature, claims deletion of the sonorant (except [dl]) and introduces a constraint ContigMaxIO (bans deletion that leads to contiguity violations)
  - ☞ But what do we do with [d̥l] after all?
  - ☞ It's not just [dl]: also [dn], [rn] (Russell 1984; P. W. Thomas 1995; Wmffre 2003)
- This is all completely unproblematic under the allomorphy account

**Overapplication**

- Going back to the issue of *[fɛ'nesti]...
- Deletion can actually show cyclic misapplication (P. W. Thomas 1995; Wmffre 2003)
- But appears to stay inside the boundaries of morphological categories

| | | | | | |
|---|---|---|---|---|---|
| (7) | a. | (i) | ['aːnal] | *anadl* | 'breath' |
| | | (ii) | [a'naːle] | *anadlau* | 'breaths' |
| | b. | (i) | [a'nadli] | *anadlu* | 'breathe' |
| | | (ii) | *[a'naːli] | | |

- Makes sense if the selection happens at the *stem level*
- Parallel in Spanish (Bermúdez-Otero, forthcoming): *contar* ~ *cuenta* but *cuento* ~ *cuentista*

**The advantages of lexical insertion**

- In the stem-centric model of Bermúdez-Otero (2012, forthcoming), generalizations about stem allomorphs are Jackendovian lexical redundancy rules
- ☞ Principled coupling of the stem-level syndrome (Kaisse and McMahon 2011), including cyclic misapplication, with phonological irregularity
- 'Deletion' is the debris of formerly productive phonology (Kiparsky 1995; Bermúdez-Otero 2007)
- Changes in terms of deletion behaviour are changes in underlying representation
- Some confirmation
  - Some deletion does become lexically stable, e. g. [hilo] for *hidlo* 'to sieve' (Iwan Wmffre p. c.)
  - These changes clearly proceed by lexical diffusion (Wmffre 2003)



**A note on diachrony**

- If this story is true, we should be seeing these diffusing changes in the diachrony
- Also: Schumacher (2011) claims that epenthesis in [lv], [rv], [ðv] was regular in Middle Welsh
- Indeed we find ['guːðug], but also ['firv], ['palv] (MW *furyf*, *palyf*)
- Should be testable on the corpora
- Next step

**Summary**

- There is no phonological conspiracy against rising-sonority sequences in (South) Welsh
- If epenthesis is phonology, deletion is not
- Stratal solution with stem allomorphy appears to create the duplication problem
- Advantages over a '(parallel) phonology at all costs' approach
- Duplication arises via diachrony and is not a 'problem' for synchronic analysis
- Whole-language analysis is important

Diolch yn fawr!

## References

Anderson, Stephen R. 2008. Phonologically conditioned allomorphy in Surmiran (Rumantsch). *Word Structure* 1:109–134.

———. forthcoming. Stem alternations in Swiss Rumantsch. In *The boundaries of pure morphology: diachronic and synchronic perspectives,* ed. Silvio Cruschina, Martin Maiden, and John Charles-Smith. Oxford: Oxford University Press.

Awbery, Gwenllian M. 1986. *Pembrokeshire Welsh: a phonological study.* Llandysul: Welsh Folk Museum.

Bermúdez-Otero, Ricardo. 2006. Morphological structure and phonological domains in Spanish denominal derivation. In *Optimality-theoretic studies in Spanish phonology,* ed. Fernando Martínez-Gil and Sonia Colina, 278–311. Linguistik Aktuell / Linguistics Today 99. Amsterdam: John Benjamins.

———. 2007. Diachronic phonology. In *The Cambridge handbook of phonology,* ed. Paul de Lacy, 497–518. Cambridge: Cambridge University Press.

———. 2012. The architecture of grammar and the division of labour in exponence. In *The phonology and morphology of exponence: the state of the art,* ed. Jochen Trommer. Oxford Studies in Theoretical Linguistics 41. Oxford: Oxford University Press.

———. forthcoming. The Spanish lexicon stores stems with stem vowels, not roots with inflectional class features. *Probus* 23 (1).

Bye, Patrik. 2007. Allomorphy — selection, not optimization. In *Freedom of analysis?* Ed. Sylvia Blaho, Patrik Bye, and Martin Krämer, 63–92. Studies in Generative Grammar 95. Berlin: Mouton de Gruyter.

Fynes-Clinton, Osbert Henry. 1913. *The Welsh vocabulary of the Bangor district.* Oxford: Oxford University Press.

Hannahs, S. J. 2009. Welsh svarabhakti: sonority sequencing and foot structure. *Journal of Celtic Linguistics* 13:21–44.

Iosad, Pavel. submitted. Representation and variation in substance-free phonology: a case study in Celtic. PhD diss., University of Tromsø.

Joseph, Brian R., and Richard D. Janda, eds. 2003. *The handbook of historical linguistics.* Oxford: Blackwell.

Kaisse, Ellen M., and April McMahon. 2011. Lexical Phonology and the lexical syndrome. In van Oostendorp, Ewen, Hume, and Rice 2011.

Kiparsky, Paul. 1995. The phonological basis of sound change. In *The handbook of phonological theory,* ed. John Goldsmith, 640–670. Also published in Joseph and Janda (2003), 313–342. Oxford: Blackwell.

Lapointe, Steven G. 2001. Stem selection and OT. In *Yearbook of Morphology 1999,* ed. Geert Booij and Jaap van Marle, 263–297. Dordrecht: Kluwer.

Nevins, Andrew. 2011. Phonologically conditioned allomorph selection. In van Oostendorp, Ewen, Hume, and Rice 2011.

Ní Chiosáin, Máire. 1999. Syllables and phonotactics in Irish. In *The syllable: views and facts,* ed. Harry van der Hulst and Nancy Ritter, 551–575. Studies in Generative Grammar 45. Berlin: Mouton de Gruyter.

Padgett, Jaye. 2002. Feature classes in phonology. *Language* 78 (1): 81–110.

Paster, Mary. 2006. Phonological conditions on affixation. PhD diss., University of California, Berkeley.

Russell, Paul. 1984. Welsh *anadl/anaddl*, *gwadn/gwaddn*. *Bulletin of the Board of Celtic Studies* 31:104–112.

Schumacher, Stefan. 2011. Mittel- und Frühneukymrisch. In *Brythonic Celtic — Britannisches Keltisch: from Medieval British to Modern Breton,* ed. Elmar Ternes, 85–236. Münchner Forschungen zur historischen Sprachwissenschaft 11. Bremen: Hempen Verlag.

Struijke, Caro. 2000. Existential faithfulness: a study of reduplicative TETU, feature movement, and dissimilation. PhD diss., University of Maryland, College Park.

Thomas, Alan R., ed. 2000. *The Welsh dialect survey.* Cardiff: University of Wales Press.

Thomas, Peter Wynn. 1995. (t): un o newidynnau tafodieithol y Frythoneg. In *Hispano-Gallo-Brittonica: essays in honour of Professor D. Ellis Evans on the occasion of his sixty-fifth birthday,* ed. Joseph F. Eska, R. Geraint Gruffydd, and Nicolas Jacobs, 219–243. Cardiff: University of Wales Press.

Van Oostendorp, Marc, Colin J. Ewen, Elizabeth Hume, and Keren Rice, eds. 2011. *The Blackwell companion to phonology.* Oxford: Blackwell Publishing.



Wmffre, Iwan. 2003. *Language and place-names in Wales: the evidence of toponymy in Cardiganshire.* Cardiff: University of Wales Press.

Wolf, Matthew. 2008. Optimal interleaving: serial phonology–morphology interaction in a constraint-based model. PhD diss., University of Massachusetts Amherst.

Yu, Alan C. L. 2007. *A natural history of infixation.* Oxford: Oxford University Press.