

Explaining licensing mismatches in Welsh

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Plan of talk

- ▶ Licensing mismatches in Welsh
- ▶ What it means to be a head
- ▶ Abstract prominence
- ▶ Against headless feet
- ▶ Conclusion



The Welsh data Basic data

Vowel system: North Welsh

- ▶ The monophthongs (diphthongs are quietly ignored)

Height	Front	Central	Back
High	i:	ɨ(:)	u:
	ɪ		ʊ
Mid	e:		o:
	ɛ	ə	ɔ
Low	a	ɑ:	

- ▶ Lax:tense = short:long
- ▶ Also paradigmatically:

- (1) a. ['tɔ:n] 'tune'
b. ['tɔna] 'tunes'



The Welsh data Penultimate stress

Stress I

- ▶ Most stresses are penultimate if possible

- (2) a. ['tɔ:n] 'tune'
b. ['mənɨð] 'mountain'
c. [mə'nəðɔið] 'mountains'

- ▶ Final stress is semi-exceptional:

- ▶ Stressed suffixes:

- (3) a. [gwa'kaɨ] 'to empty' ([ˈgwa:g] 'empty')
b. [kəm'raɨg] 'Welsh language' ([ˈkəmri] 'Wales')

- ▶ Unstressable prefixes/proclitics:

- (4) a. [əm'la:ð] 'tire oneself' ([ˈtɑ:ð] 'kill')
b. [əm'la:ɨn] 'ahead' ([ən + blɑ:ɨn] 'in front')



Stress II

- Exceptional antepenultimate stress in borrowings, which revert to the native pattern when affixed (Thomas 1996, p. 789):

- (5) a. ['tɛlɛfɔn] 'phone'
b. [tɛlɛ'fo:na] 'phones'



Vowel alternations

- Some instances of [i] surface as [ə] in non-final positions

- (6) a. (i) ['dɪn] 'man'
(ii) ['dɛnjɔn] 'men'
(iii) [dɛ'nɔldɛb] 'humanity'
b. (i) ['mənɪð] 'mountain'
(ii) [mə'nəðɔið] 'mountains'

- So do most instances of [u]:

- (7) a. (i) ['trɒm] 'heavy'
(ii) ['trəmaχ] 'heavier'
b. (i) ['patrɒm] 'pattern'
(ii) [pat'rəma] 'patterns'



Lack of vowel alternations

- But not all [ɪ]'s do thus:

- (8) a. ['pɪr] 'pure'
b. ['pɪrɔ] 'purify'

- Non-alternating [u] is very rare and comes mostly from borrowings.
- Similar alternations occur with diphthongs, but these are not the focus here
- Fair bit of theoretical literature: Allen (1975); Cartmill (1976); Thomas (1984); Awbery (1986); Bosch (1996); Hannahs (2007); Green (2007)



Some background

- Most analyses suppose it is a centralization rule, so something like the following:

Rule	/trum-aχ/	/dyn/	/dyn-jɔn/	/puur-ɔ/
[+rd] lowering	/trəm-aχ/		/dɛn-jɔn/	
Centralization		/dɪn/		/pɪrɔ/
Output	/trəmaχ/	/dɪn/	/dɛnjɔn/	/pɪrɔ/

- This works
- On the other hand, this is simply the last 500 years of Welsh historical phonology



The length contrast

- ▶ There is a length contrast for vowels in stressed syllables:
 - ▶ North Welsh: ultima (= monosyllables)
 - ▶ South Welsh: ultima and penultima
- ▶ Examples from South Welsh:

- (9) a. (i) ['di:n] 'man'
 (ii) ['gwin] 'white'
 b. (i) ['a:raɫ] 'other'
 (ii) ['kareg] 'stone'

- ▶ In North Welsh, penultima only allow short vowels:

- (10) a. ['araɫ] 'other'
 b. ['karag] 'stone'



The distribution of length

- ▶ Where length is possible, it is truly contrastive only in a small set of contexts
- ▶ Otherwise, it is largely predictable depending on the following segment (with some variation)

Length distribution	Following segments
Long	/b d g v ð f θ χ ø/
Short	/p t k/ + clusters
Contrast	/m n ŋ l r/
Long in ultima, short in penultima	/ʔ s/ (SW only)

- ▶ Exhaustive study in Awbery (1984)



Informal analysis

- ▶ Vowel length is driven by minimum binarity and constrained by maximum binarity: stressed vowels must lengthen if they can
- ▶ Mix of coerced and distinctive weight (Morén 2001)
 - ▶ Predictable length: coerced weight (no analysis offered here for reasons of focus)
 - ▶ Unpredictable length: underlying (non-)moraicity
- ▶ South Welsh: moraic binarity
- ▶ North Welsh: syllabic binarity, coda becomes important if a bisyllabic foot is unavailable
- ▶ Binarity is commonly assumed as a property of **heads**
- ▶ E. g. MAIN-TO-WEIGHT (Bye & de Lacy 2008)



So why is all this important?

- ▶ **Penultima** show head-like properties in that they tend to binarity
- ▶ **Ultima** show head-like properties in that they resist vowel reduction and/or are loci for augmentation
- ▶ Where is the head of the word in Welsh?
- ▶ Proposed answer:
 - ▶ The head is (normally) on the **penultimate** syllable
 - ▶ Being a head means being **binary**
 - ▶ Ultima bear **prominence**, which is a **feature**
 - ▶ Final-syllable effects are **feature co-occurrence** effects



Head seeks dependent

- ▶ Proposal (not really new): being head means being a possible locus for head-dependent asymmetries
- ▶ Asymmetries have to do with licensing more structure:
 - ▶ Branching (Dresher & van der Hulst 1998); also “visibility”
 - ▶ Licensing features/elements, as in GP/DP (Harris 1997; Cyran 2010, you name it)
- ▶ In our case, it's branching: a head foot has to be binary, leading to lengthening or weight-by-position effects

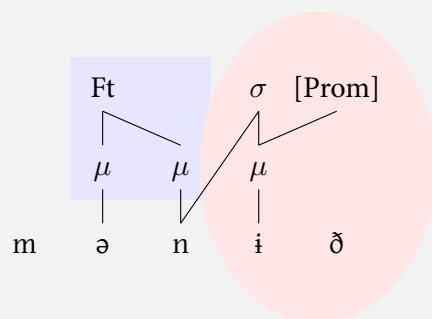


Prominence is a feature

- ▶ The concept of prominence is in principle separate from the concept of a head
- ▶ Though they coincide in many languages
- ▶ Attachment of features to prosodic nodes is nothing new:
 - ▶ Many approaches to vowel harmony
 - ▶ Tones, especially in Element Theory with the H and L
 - ▶ Laryngeal features: Kehrein & Golston (2004)
- ▶ Prediction: pure prominence-related effects are like feature co-occurrence effects



Example representation



Final-syllable effects again

- ▶ Looks a lot like vowel reduction in non-final syllables

- (11)
- | | | | |
|----|------|-----------|-----------|
| a. | (i) | [ˈdɪn] | ‘man’ |
| | (ii) | [ˈdɛnjən] | ‘men’ |
| b. | (i) | [ˈtrɔm] | ‘heavy’ |
| | (ii) | [ˈtrɛmɔ] | ‘heavier’ |

- ▶ I abstract from a lot of the detail here: see Hannahs (2007) for the nitty-gritty
- ▶ *u, *i → ə in non-final syllables is a historical process all right (Jackson 1953)
- ▶ But is it a good reason to postulate the same relationship in the modern phonology?
- ▶ Most of the literature says yes



For underlying [ə]

- ▶ Hannahs (2007): [ə] is not a reduced vowel in any meaningful sense:
 - ▶ Freely appears in stressed syllables
 - ▶ Freely appears in syllables of various complexity
 - ▶ No tendency for [ə] to function as a default vowel
- ▶ Analysis:
 - ▶ Non-alternating [i] is just /i/
 - ▶ Alternating [i] is in fact an underlying [ə]

	mənəð	*[ə]-FINAL σ	IDENT-IO(vowel feature)
a.	mənəð	*!	
b.	ᵘə mənəð		*
c.	minið		**!



Issues around underlying /ə/

- ▶ For fairness' sake...
 - ▶ The schwa is slightly deficient: cannot be long, cannot appear in hiatus (Awbery 1984; Thomas 1996)
- ▶ However, I agree with Hannahs' insight: /ə/ as the underlying vowel makes sense
- ▶ Further evidence: in a small area in SW Wales (NE Pembs., SW Cards.), the constraint *[ə]-FINAL σ is inactive or less active, giving forms like ['bər] 'short' (Awbery 1984, 1986; Wmffre 2003), which doesn't really make sense in a vowel-reduction theory of [ə]
- ▶ Further parallel: in many dialects, a similar restriction against final-syllable /e/ is in force (Awbery 1984)
- ▶ But can we make the constraint less descriptive?
- ▶ Also: the /u ~ ə/ alternation probably should not be dealt with in this way, and is a bona fide reduction process



Pitch prominence

- ▶ A different solution is proposed by Bosch (1996)
- ▶ She assumes the penult bears **rhythmic** prominence...
- ▶ ...while the final syllable bears **pitch** prominence
- ▶ Pitch prominence licenses more contrasts
- ▶ This seems to make phonetic sense:
 - ▶ Extensive pitch movement on the final syllable is a well-known (or at least widely-cited) feature of Welsh (for an overview, see Ball & Williams 2001)
 - ▶ Also Welsh English (Walters 2003)



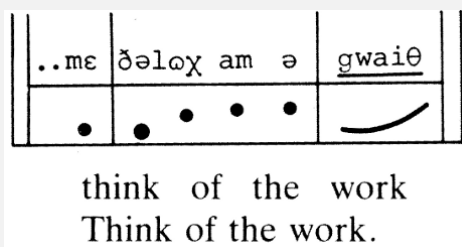
Pitch prominence: the true story

- ▶ The information comes mainly from non-instrumental dialect descriptions
- ▶ Final high pitch *may* be used by speakers as a cue to accent location...
- ▶ But its appearance is far from categorical
- ▶ It is in fact confined to certain pragmatically defined contexts
- ▶ For more detailed descriptions, see Thomas (1967); Rhys (1984); Williams (1999); Ball & Williams (2001)
- ▶ Also Walters (2003) describes it as just one possibility among many for Welsh English



Pitch prominence is not word-final prominence

- ▶ The schwa alternations are quite categorical
 - ▶ For most lexical items, they are obligatory
 - ▶ A few cases described as being in “free variation” (don’t ask)
 - ▶ But still the high pitch is nowhere near being so obligatory
- ▶ High pitch might be more of a phrase-boundary tone than something word-related
- ▶ In particular, Rhys (1984) describes it as stretching across unstressed syllables to the right edge (image from Rhys 1984, p. 142)



Prominence is abstract

- ▶ Not all pitch-prominent syllables demonstrate the “correct” schwa alternations
- ▶ Nor is pitch prominence an obligatory factor in the schwa alternations
- ▶ To my knowledge, nobody has conclusively demonstrated that word-final high tones are not one (or both) of
 - ▶ Phrase boundary tone
 - ▶ Non-phonological spill-over due to peak delay (cf. Myers 2000)
 - ▶ This last possibility is intriguing given the often short duration of “stressed” vowels (Williams 1999)
- ▶ It appears that whatever drives the schwa alternations in the final syllable, it is **abstract**, not something so easily read off the phonetics
- ▶ Prominence is a feature



Summary: Welsh

- ▶ The penultimate syllable is the locus of binarity-related restrictions ⇒ head foot
- ▶ The final syllable is the locus of featural restrictions ⇒ abstract feature drives markedness phenomena
 - ▶ /ə/-raising: feature co-occurrence drives a faithfulness violation
 - ▶ /u/-lowering: feature co-occurrence creates an exception from across-the-board lowering
 - ▶ Aside: if something reacts to the features of Welsh /ə/, it must in fact have features
- ▶ These data show that **both** syllables can lay claim to being singled out by the phonology
- ▶ So there must be two ways to single out prosodic constituents



Why divorce?

- ▶ Not a new idea at all
- ▶ Though normally prominence is represented by the grid: cf. Hyde (2001); Vaysman (2008)
- ▶ Arguably this is a necessary evil in parallel OT
- ▶ Serial theories allow a large class of headship–stress mismatches, via readjustment and/or tier conflation
- ▶ Without recourse to these devices, OT arguably cannot avoid a representational approach



Headless feet

- ▶ A well-known type of mismatch is where iterative footing is necessary to derive stress placement, but there is no surface evidence for the non-head feet
- ▶ Cairene Arabic (see Hayes 1995 for references)
- ▶ Given the lack (?) of other head-dependent asymmetries, this can be represented by headless feet

- (12) a. (?in)(kása)⟨ra⟩ ‘it got broken’
 b. mu(dar)(rísi)⟨t⟩ ‘teacher (f., construct state)’

- ▶ This works if there is no evidence for head-dependent asymmetries that have nothing to do with stress



Feet with unstressed heads I

- ▶ A different type of mismatch is found when feet are necessary to derive main stress placement (like in CA), there is no secondary stress, but there are other asymmetries
- ▶ Several cases recently discussed by Buckley (2009)

- (13) Kashaya
 ?ah(qo'la:)(mada:)(dadu) ‘to get longer and longer’

- ▶ Just one stress, but unstressed heads undergo iambic lengthening
- ▶ Classic branching asymmetry (Dresher & van der Hulst 1998)



Feet with unstressed heads II

- ▶ In other cases we find head-dependent asymmetries in licensing
- ▶ Latvian (Buckley 2009 citing Kariņš 1996): initial non-iterative stress, but variable vowel deletion and segment duration confirm footing
- ▶ McCarthy (2008) proposes right-aligned trochees to explain Havlík's Law in Common Slavic (every other yer vowel deletes), yet there is zero evidence for iterative stress
- ▶ In extreme cases, there is no (main) stress at all, but with plenty of other evidence for footing, as in Kera (Pearce 2006): intensity, duration, tone spreading and vowel harmony all converge on the same foot structure



Head-stress mismatches

- ▶ Both previous types of mismatches can be accommodated if either stress or head status is “invisible”
 - ▶ The CA type of data is explained by recourse to headless feet
 - ▶ The Kashaya/Kera type of data can be explained by assuming non-trivial phonetic implementation of headship
- ▶ The important prediction is the possibility of a complete mismatch, where headship and prominence can be disentangled
- ▶ I propose that Welsh is exactly a case of this type
- ▶ The Welsh data show that different **phonological** representations are needed



More cases

- ▶ One candidate is Roman Italian (Garvin 1989; Krämer 2009)
- ▶ Stress retraction counterbleeds *raddoppiamento*

(14) [(‘sa)(ra g)’grande] ‘will be big’

- ▶ Stress is retracted due to *CLASH
 - ☞ If stress is feature-like, *CLASH is just another guise of OCP
- ▶ The position of the head does not shift, so the binarity requirement persists
- ▶ The foot is not “headless”, and there is no need for OO-MAX, contra Krämer (2009)
- ▶ For more potential cases, see Vaysman (2008)



Conclusions

- ▶ Headship is about asymmetries
- ▶ Prominence is about markedness and faithfulness, and more specifically about features
- ▶ These need to be represented separately in the phonology
- ▶ Many if not most languages show perfect alignment, but this is not the only option

Diolch yn fawr!



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