

# “Pitch accent” and prosodic structure in Scottish Gaelic: historical implications

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## Plan

- ▶ Discuss Scottish Gaelic as a “pitch accent” language
- ▶ Discuss pitch accent as the expression of prosodic structure
- ▶ Argue that all the ingredients for Scottish Gaelic pitch accents have internal motivation
- ▶ Convince you that contact with North Germanic is not necessary to explain the appearance of accents in Scottish Gaelic



## Between tone and stress

- ▶ We start with these definitions by Hyman (2006)
- ▶ “A language with **tone** is one in which an indication of pitch enters into the lexical realization of at least some morphemes”
- ▶ “A language with **stress accent** is one in which there is an indication of word-level metrical structure meeting the following two central criteria:
  1. *Obligatoriness*: every lexical word has at least one syllable marked for the highest degree of metrical prominence (primary stress);
  2. *Culminativity*: every lexical word has at most one syllable marked for the highest degree of metrical prominence.



## “Pitch accent” languages

- ▶ An intermediate type
- ▶ Many definitions: see van der Hulst (2011)
- ▶ For our purposes: a language with lexical restrictions on the tonal expression of stress accent
- ▶ Basically, any language which can be described as having “accent 1” and “accent 2”
- ▶ Such as mainland North Germanic



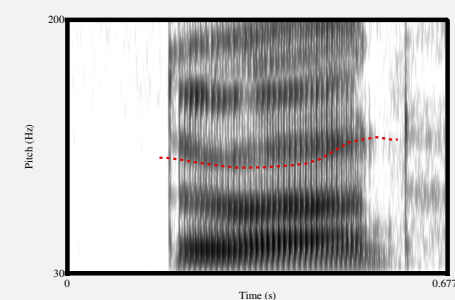
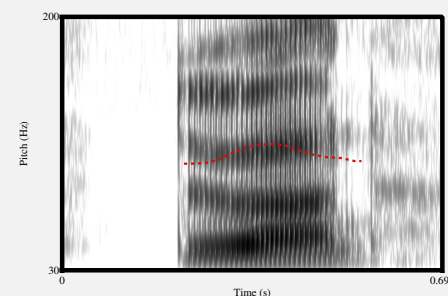
## Representing pitch accents

- ▶ All sorts of controversy
- ▶ Relationship of tone to stress accent: which comes first?
- ▶ Which of the two accents is marked? Which is default?
- ▶ Is the tone specified lexically or is it assigned top-down by the intonational system?
- ▶ What about *stød*?
- ▶ Is “pitch accent” even a thing?
- ▶ Preview: **no** (Hyman 2006, 2009)



## The data

- ▶ In Scottish Gaelic dialects, words can differ only in their tonal contours



- ▶ Source: UCLA Phonetics Lab Archive, licensed under CC BY-NC 2.0



## Interpretation I

- ▶ Early vs. late H peak (or rise-fall vs. rise)
- ▶ Does indeed look a lot like North Germanic
- ▶ Explicitly analysed in terms of “accent 1” and “accent 2” by Ternes (1973, 2006)
- ▶ Found in most Scottish dialects:
  - ▶ Outer Hebrides (Borgstrøm 1940; Oftedal 1956; Watson 2010)
  - ▶ Western part of the mainland (Borgstrøm 1941; Ternes 2006; Wentworth 2005)
  - ▶ Eastern dialects (Dorian 1978)



## Interpretation II

- ▶ Remarkably, in southern dialects words that differ in terms of tone elsewhere use glottal stops (Holmer 1938; Ternes 1980)
- |     |      |                        |                   |
|-----|------|------------------------|-------------------|
| (1) | a.   | Lewis (Outer Hebrides) |                   |
|     | (i)  | [ <sup>1</sup> po:]    | ‘underwater rock’ |
|     | (ii) | [ <sup>2</sup> po:]    | ‘cow’             |
|     | b.   | Tiree (Inner Hebrides) |                   |
|     | (i)  | [poʔ]                  | ‘underwater rock’ |
|     | (ii) | [po:]                  | ‘cow’             |
- ▶ Does that look familiar?



## Historical aspects

- ▶ It is reasonably clear that the “pitch accents” are historically related to the number of syllables
  - ▶ Lewis [¹'po:], Tìree ['poʔɔ] ‘underwater rock’, written *bodha* ← Norse *boði*
  - ▶ Lewis [²'po:], Tìree ['po:] ‘cow’, written *bò* ← Old Irish *bó*
- ▶ Also similar to North Germanic
- ▶ We return below to whether there is a historical connection
- ▶ But how do we analyse this synchronically?



## Preview of the argument

- ▶ “Pitch accent” in Scottish Gaelic, as in several other languages, is related to syllable count not just historically, but also synchronically
- ▶ Differences in pitch and/or glottal activity are the phonetic expression of a difference in **prosodic** structure which derives from **underlying** contrasts
- ▶ Both underlying prosodic structure and the expression of lexical prosodic structure in terms of pitch are independently found in Celtic
- ▶ Ergo: there is no necessary historical link between “pitch accents” in Scottish and in North Germanic
- ▶ ...although of course it cannot be excluded



## The phonetics of pitch accents

- ▶ The phonetics of “pitch accents” (e. g. Bruce 1977):
  - ▶ Boundary tones
  - ▶ Intonational accents (e. g. focus marking)
  - ▶ ...and **perhaps** lexical tones
- ▶ Many options for representing accent types (e. g. Gussenhoven 2004)
  - ▶ Equipollent: different lexical tones
  - ▶ Privative: lexical tone vs. default tone
  - ▶ Privative: lexical tone vs. no tone (i. e. only boundary tones and intonational accents)
  - ▶ Structural: no lexical tone
- ▶ ...wait, what?



## Pitch accent without lexical tone

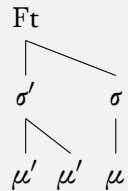
- ▶ Recent approaches:
  - ▶ North Germanic: Morén (2003, 2008)
  - ▶ Franconian Tone Area: Köhnlein (2011)
- ▶ Only boundary tones, intonation and a way to make tones land on heads of prosodic constituents ( $\approx$  the star in the standard notation)
- ▶ Differences between morphemes amount to underlying differences in prosodic structure
- ▶ One “accent” is unspecified, only boundary tones and intonational accents
- ▶ The other accent is specified prosodic structure (morification, syllabification, footing), with intonation taking this into account
- ▶ Distinctive moraicity unproblematic (lexical geminates), ditto distinctive footing (think Russian stress)
- ▶ Distinctive syllabification sometimes assumed not to exist, but cf. Vauk (2003)



## Arzbach I

- ▶ According to Köhnlein (2011)
- ▶ Two types of accents (“accent 1” and “accent 2”).

Accent 1: disyllabic foot



Accent 2: monosyllabic foot



- ▶ Phonology (simplified): no L tones on head morae
- ▶ This, plus intonation, gives the different melodies
- ▶ No lexical tone necessary anywhere
- ▶ Unmarked case: phonology responsible for footing



## Arzbach II

- ▶ Uneven trochees are dispreferred, so normally we just build a (H) foot, giving accent 2

- (2) a. [<sup>2</sup>(‘d̥auf)<sub>Ft</sub>] ‘baptism’  
b. [<sup>2</sup>(‘d̥au)<sub>Ft</sub>və] ‘baptisms’

- ▶ Marked case: a word like [d̥auf] ‘pigeon’ is stored with foot structure (disyllabic foot, possibly with an empty nucleus), which gives accent 1:

- (3) a. [<sup>1</sup>(‘d̥auf\_)<sub>Ft</sub>] ‘pigeon’  
b. [<sup>1</sup>(‘d̥auvə)<sub>Ft</sub>] ‘pigeons’



## Arzbach III

- ▶ The disyllabic foot can have other sources, such as a morpheme
- (4) a. [<sup>2</sup>(‘ftam)<sub>Ft</sub>] ‘stone’ ⇐ default footing  
b. [<sup>1</sup>(‘ftam\_)<sub>Ft</sub>] ‘stones’ ⇐ [ftam] + (σσ)<sub>Ft</sub>
- ▶ If this analysis is correct, we expect the melodies to be contingent on intonation, position in the phrase etc.
  - ▶ Which is of course described for both Franconian/Limburg varieties and North Germanic



## Back to Scotland

- ▶ Following Oftedal (1956); Ladefoged et al. (1998), I suggest that the Scottish Gaelic “pitch accents” are, at least historically/in some dialects, purely a function of **underlying syllabification** (also Smith 1999; Hall 2006)
- ▶ Going back to <sup>1</sup>*dubhan* ‘hook’ vs. <sup>2</sup>*duan* ‘song’
- ▶ Accent 1: disyllabic, early H timing (= rise-fall)
- ▶ Accent 2: monosyllabic, late H timing (= rise, no fall)
- ▶ Scottish Gaelic stress is overwhelmingly initial
- ▶ H\* is timed towards the end of the stressed syllable
- ▶ Reproduces diachrony: Old Irish *dubán* ‘hook’, *dúan* ‘song, poem’
- ▶ Why this analysis? I’m glad you asked



## Svarabhakti vowels in Goidelic

- ▶ The basic rule: insert a vowel between  $C_1$  and  $C_2$  if  $C_1$  is a sonorant, unless  $C_2$  is a fortis stop or  $C_1$  and  $C_2$  are homorganic

- (5)
- |    |                                      |            |
|----|--------------------------------------|------------|
| a. | [a <sup>l</sup> vapə]                | ‘Scotland’ |
| b. | [fa <sup>r</sup> vak <sup>j</sup> ə] | ‘sea’      |
| c. | [kã <sup>n</sup> āv <sup>h</sup> ox] | ‘sand’     |

- ▶ In Hebridean dialects, or at least on Lewis, the epenthetic vowel is always a copy of the preceding vowel
- ▶ In other Scottish dialects (towards the south) the vowel may be a copy *modulo* backness which comes from the consonant
- ▶ In Irish, the epenthetic vowel is normally [ə]/[ɪ]



## Svarabhakti and syllable structure: Irish I

- ▶ In Irish, svarabhakti vowels are normal syllable nuclei
- ▶ They participate in mora- and syllable-counting processes
- ▶ Ní Chiosáin (1999): svarabhakti is blocked after a non-final binary foot, but improves footing when there is not enough segmental material for this optimal structure

- (6)
- |    |                           |         |
|----|---------------------------|---------|
| a. | [('ar <sup>i</sup> )gʲəd] | ‘money’ |
| b. | [('tar <sup>v</sup> )]    | ‘bull’  |

but

- (7)
- |    |                            |        |
|----|----------------------------|--------|
| a. | [('tʲe:r <sup>u</sup> )mə] | ‘term’ |
| b. | [('duəl <sup>u</sup> )gəs] | ‘duty’ |



## Svarabhakti and syllable structure: Irish II

- ▶ Green (1997); Ó Sé (1989, 2008): svarabhakti vowels count for the three-syllable window in Munster Irish stress
- ▶ Stress falls on heavy syllables within a three-syllable window, otherwise initial stress
- ▶ Svarabhakti can push a long vowel outside the three-syllable window

- (8)
- |    |   |         |
|----|---|---------|
| a. | [kʲanə <sup>u</sup> hə:rʲ]                | ‘buyer’ |
| b. | [ʲimɪ <sup>l</sup> ʲəka:n]                | ‘navel’ |
| c. | *[ʲimɪ <sup>l</sup> ʲə <sup>u</sup> ka:n] |         |



## Svarabhakti and syllabic structure: Scottish I

- ▶ Plenty of evidence that the svarabhakti vowel does not project a syllable
- ▶ Speaker intuitions (Borgstrøm 1940; Oftedal 1956) (for what it’s worth)
- ▶ Lack of vowel reduction (Oftedal 1956):

- (9) [ʲur<sup>u</sup>xər] ‘shot’



## Svarabhakti and syllabic structure: Scottish II

- The consonant before the epenthetic vowel counts as a coda: Argyllshire dialects (data from Holmer 1938, analysis by Smith 1999)

(10) Light stressed syllables epenthesize [ʔ] to achieve bimoraicity

- a. [kʰa<sub>μ</sub>⟨ʔ⟩<sub>μ</sub>raxəŋ] ‘move’  
b. [ʰu<sub>μ</sub>⟨ʔ⟩<sub>μ</sub>] ‘egg’

(11) Heavy ones don’t

[tʰra<sub>μ</sub>i<sub>μ</sub>] ‘beach’

(12) Consonant counts for coda weight

- a. [ma<sub>μ</sub>r<sub>μ</sub>av] ‘dead’  
b. \*[ma<sub>μ</sub>⟨ʔ⟩<sub>μ</sub>rav]



## Svarabhakti and syllabic structure: Scottish III

- Syncope is used to prevent lapse, but does not affect epenthetic vowels (Smith 1999)

- (13) a. (i) [obəði] ‘work’  
(ii) [obrəx] ‘work (gen. sg.)’  
(iii) \*[obərəx]  
b. (i) [balvəx] ‘boy’  
(ii) [valvaxu] ‘boy (voc. pl.)’  
(iii) \*[valvuxu]



## Svarabhakti and syllabic structure: Scottish IV

- Palatalization: fronting and/or raising of vowels, palatalization of consonants
- Affects the **rhyme** of the final syllable, stopping short of the onset

- (14) a. (i) [lʰu:ɣ] ‘calf’  
(ii) [lʰu:ɰ] ‘calf (gen. sg.)’  
b. (i) [palvəx] ‘boy’  
(ii) [palvɰç] ‘boy (gen. sg.)’

- But with svarabhakti

- (15) a. [tɔrɔɣ] ‘fishing line’  
b. [tɔðvɔɣ] ‘fishing lines’  
c. \*[tɔruɣ]

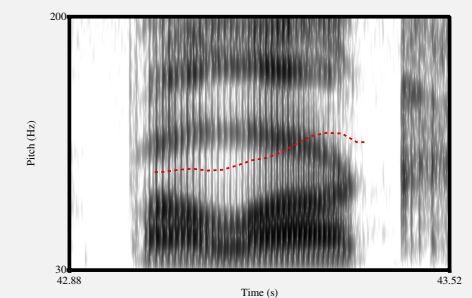
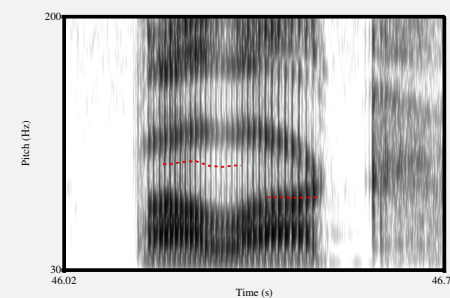


## Svarabhakti and syllabic structure: Scottish V

- Finally, svarabhakti and non-svarabhakti words exhibit the same pitch accent contrast.

[palvək] ‘skull’ (*ballag*)

[palvək] ‘belly’ (*balg*)



## Svarabhakti and syllabic structure: Scottish VI

- ▶ Again, the simplest analysis is this:
- ▶ ['<sup>1</sup>pal<sup>ɥ</sup>ak] ‘skull’ is disyllabic
- ▶ ['<sup>2</sup>pal<sup>ɥ</sup>ak] ‘belly’ is monosyllabic
- ▶ H\* times to the right of the syllable
- ▶ Probably not to morae, because Argyllshire [ʔ] insertion shows that the consonant is moraic, but H\* goes further to the right
- ▶ Although of course these are different varieties...



## Svarabhakti and syllabic structure: Scottish VII

- ▶ Literature:
  - ▶ Oftedal (1956): words with svarabhakti are phonological monosyllables
  - ▶ Ladefoged et al. (1998): this is what I follow
  - ▶ Smith (1999): epenthetic vowels do not project (maximal) syllables
  - ▶ Gestural analyses with various degrees of phonologization: Hind (1996); Hall (2006)
  - ▶ See also Bosch & de Jong (1997)
- ▶ See an overview of other analyses in Bosch (2010)
- ▶ Ask me why they don’t work



## Pitch accents in Scottish Gaelic: conclusion

- ▶ There are none
- ▶ The difference between “accent 1” and “accent 2” is **only** a function of prosodic structure and the timing of the tone
- ▶ Don’t we expect the accent tunes to change with intonation?
- ▶ Apparently they may (Ternes 2006, p. 140); further study needed.

### Key conclusion

- ▶ There is nothing special about “pitch accent” (Hyman 2006, 2009)
- ▶ In Scottish Gaelic, it is just prosodic structure plus intonation



## Background

- ▶ The context for all this is the Norse settlement in Scotland
  - ▶ Orkney and Shetland
  - ▶ Caithness
  - ▶ Western Isles
  - ▶ Inner Hebrides
  - ▶ Man
  - ▶ But not the Highlands to any significant extent
- ▶ Presumed language shift: Norse → Gaelic
- ▶ Historical sources sorely lacking (cf. Woolf 2007)
- ▶ Placename evidence (much ongoing research)



## Linguistic contacts

- ▶ Norse borrowings (Stewart 2004; Cox 2010)
- ▶ Laryngeal phonology, especially preaspiration
  - ▶ Marstrander (1932); Oftedal (1947, 1956); Borgstrøm (1974); Helgason (2005); Hansson (2001): borrowing from Norse
  - ▶ Ó Baoill (1980); Ní Chasaide & Ó Dochartaigh (1984); Ó Murchú (1985); Ní Chasaide (1986); Ó Maolalaigh (2010): possible paths for internal development
- ▶ And so the pitch accents (especially Borgstrøm 1974)



## The pitch accent recipe

- ▶ I have just argued that pitch accent in Scottish Gaelic represents:
  - ▶ Differences in prosodic structure
  - ▶ The expression of this structure by pitch
- ▶ Do we need Norse contact for either?
- ▶ I suggest we don't



## Prosodic structure in Celtic I

- ▶ The facts of epenthesis submit to an analysis in terms of differences in prosodic structure even without reference to pitch accents

- (16) Scottish
- |    |      |              |           |
|----|------|--------------|-----------|
| a. | (i)  | [ˈpa.lʲak.]  | ‘belly’   |
|    | (ii) | [ˈpu.lʲukʲ.] | ‘bellies’ |
| b. | (i)  | [ˈpa.lʲax.]  | ‘boy’     |
|    | (ii) | [ˈpa.lʲiç]   | ‘boys’    |

- ▶ Similar facts, without the pitch accents, are found, for instance, in Munster Irish (Ó Sé 2000)
- ▶ Which is about as far from Scotland as you can get



## Prosodic structure in Celtic II

- ▶ The basic palatalization pattern is the same

- |      |    |      |          |                   |
|------|----|------|----------|-------------------|
| (17) | a. | (i)  | [ˈbrov]  | ‘rush’            |
|      |    | (ii) | [ˈbrivʲ] | ‘rush (gen. sg.)’ |
|      | b. | (i)  | [ˈknuk]  | ‘hill’            |
|      |    | (ii) | [ˈknikʲ] | ‘hill (gen. sg.)’ |

- ▶ In polysyllabic words, both patterns are possible, although they often do not reproduce history

- (18) Examples with historical epenthesis
- |    |      |             |                    |
|----|------|-------------|--------------------|
| a. | (i)  | [ˈbɒləg]    | ‘belly’            |
|    | (ii) | [ˈbʲilʲiɡʲ] | ‘belly (gen. sg.)’ |
| b. | (i)  | [ˈlʲanəv]   | ‘child’            |
|    | (ii) | [ˈlʲinʲivʲ] | ‘child (gen. sg.)’ |





## Prosodic structure in Celtic III

### ► Variation

#### (19) Examples with historical vowel

- |    |       |              |                    |
|----|-------|--------------|--------------------|
| a. | (i)   | ['soləs]     | ‘light’            |
|    | (ii)  | ['solɪ]      | ‘light (gen. sg.)’ |
|    | (iii) | ['silɪ]      |                    |
| b. | (i)   | ['dɔrəs]     | ‘door’             |
|    | (ii)  | ['dɪɪ]       | ‘door (gen. sg.)’  |
| c. | (i)   | ['ku:ntəs]   | ‘count’            |
|    | (ii)  | ['ku:ntɪfɪ:] | ‘counts’           |

- I suggest the existence of the Munster Irish examples shows that the contrast between mono- and polysyllables can be sustained even without the gestural and pitch cues
- We saw that in Irish the epenthetic vowel ended up being a normal syllable nucleus



## Prosodic structure in Celtic IV

- However, this does not necessarily mean that the **underlying** contrast between /soləs/ and /lɪanv/ was gone when the epenthesis facts ceased to hold
- Admittedly the modern system is much messier
- But I suggest it shows that Goidelic languages are perfectly able to persevere with the contrast between underlying CVCC and CVCɔC structures
- Aren’t these just inherited from Old Irish? Well, yes, but then this is also true of Scottish



## Pitch elsewhere in Celtic

- Traditionally, the other “Celtic language with pitch” is Welsh
- See Pilch (1975) for an elaborate structuralist description
- Also Thomas (1967); Rhys (1984); Bosch (1996); Williams (1999); Ball & Williams (2001)
- Pitch is heavily implicated in the expression of stress and intonation
- But no lexical contrasts
- Are there other examples?
- **Yes**



## “Double stress” in Breton I

- Breton dialect of Bothoa
- East-central Brittany (no Vikings in sight...)
- Source: Humphreys (1995)
- Contrast between two types of disyllabic words, written as one stress versus a two-stress pattern

- |      |    |           |          |
|------|----|-----------|----------|
| (20) | a. | ['paruz]  | ‘parish’ |
|      | b. | ['da,vad] | ‘ewe’    |

- “Double-stressed” words are characterized by rising pitch on the second syllable and relatively long duration (in fact said to sound like Welsh)
- Humphreys (1995) explicitly compares the contrast to the North Germanic accents
- I suggest it is (again) prosodic structure



## “Double stress” in Breton II

- Single-stress: no underlying structure, default footing, no alternations expected

- (21) a. ['paruz] 'parish'  
b. ['paruzəw] 'parishes'

- Double-stress: two feet underlyingly
- Prediction: in the language at large, in words with more than one foot (weight-to-stress, lexically stressed suffixes) main stress falls on the rightmost bimoraic foot:

- (22) a. [hy:'a:l] 'hindrance'  
b. [fy:'badər] 'rubbish'

- We expect the same with double-stressed words

- (23) a. ['da,vad] 'ewe'



## “Double stress” in Breton III

- b. [da'vadəw] 'sheep'

- Further confirmation of underlying footing: secondary stress on light syllables is rare (not to say exceptional), cannot be coerced by the phonology: therefore must be underlying in [da'vadəw]
- ✎ Pitch can express prosodic structure without Viking interference
- We know this from the Franconian tone area by now
- Ask me about the history of Bothoa prosody



## Summing up

- Both ingredients for a Scottish-type “pitch accent” can arise without external influence
- There is nothing extraordinary about Scottish accents that requires a contact explanation
- Can we rule out a rôle for contact with Norse?
- Of course we cannot
- But many of the contact arguments are a bit circular, because we know so little about the actual history and rely on the linguistic evidence

Tapadh leibh!



## Bonus: preaspiration

- How extraordinary is preaspiration?
- Less than previously thought, it would appear
  - Ulster Irish: Ní Chasaide & Ó Dochartaigh (1984)
  - Tyneside English: Docherty & Foulkes (1999)
  - Glasgow English: Gordeeva & Scobbie (2010)
  - Welsh: Morris (2010)
- Also: what **is** “preaspiration” (Kehrein & Golston 2004; Ó Maolalaigh 2010; Árnason 2011)?
- Although contrast Silverman (2003)



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