“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
  - [ˈtuan] 'hook' (dubhan)
  - [ˈtuan] 'song' (duan)

- 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; Oðedal 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. Lewis (Outer Hebrides)
     1. Lewis (Outer Hebrides)
     (i) [ˈpoː] 'underwater rock'
     (ii) [ˈpoː] 'cow'
  2. Tiree (Inner Hebrides)
     (i) [ˈpoʔɔ] 'underwater rock'
     (ii) [ˈpoː] 'cow'
- Does that look familiar?
Scottish Gaelic as a pitch accent language

Historical aspects

- It is reasonably clear that the “pitch accents” are historically related to the number of syllables
  - Lewis [ˈpoː], Tiree [ˈpoʔɔ] ‘underwater rock’, written bodha ← Norse boði
  - Lewis [ˈpoː], Tiree [ˈpoː] ‘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?

Pitch accent as prosodic structure

Theory

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?

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

Pitch accent without lexical tone

Recent approaches:

- Franconian Tone Area: Köhnlein (2011)
- Only boundary tones, intonation and a way to make tones land on heads of prosodic constituents (≈ 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. Vaux (2003)
Arzbach I

- According to Köhnlein (2011)
- Two types of accents (“accent 1” and “accent 2”).
  
  **Accent 1: disyllabic foot**
  
  \[ \begin{array}{c}
  F_t \\
  \sigma' \\
  \mu' \\
  \mu
  \end{array} \]

  **Accent 2: monosyllabic foot**
  
  \[ \begin{array}{c}
  F_t \\
  \sigma
  \end{array} \]

- 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. \([2^{('d\text{au}'_F)}_{F_t}]\) ‘baptism’
  b. \([2^{('dauv')_F,\text{v}}]\) ‘baptisms’

- Marked case: a word like \([d\text{auf}]\) ‘pigeon’ is stored with foot structure
  
  (disyllabic foot, possibly with an empty nucleus), which gives accent 1:
  
  (3) a. \([1^{('d\text{auf}')_F}_{F_t}]\) ‘pigeon’
  b. \([1^{('dauv')_F}_{F_t}]\) ‘pigeons’

Arzbach III

- The disyllabic foot can have other sources, such as a morpheme
  
  (4) a. \([2^{('f\text{tan}_F)}_{F_t}]\) ‘stone’ ⇔ default footing
  b. \([1^{('f\text{tan}_F)}_{F_t}]\) ‘stones’ ⇔ \([\text{f\text{tan}}] + (\sigma\sigma)_{F_t}\]

- 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 Ofstedal (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 \(1^{d\text{uban}}\) ‘hook’ vs. \(2^{d\text{uan}}\) ‘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 \(d\text{ub\text{en}}\) ‘hook’, \(d\text{\text{uan}}\) ‘song, poem’
- Why this analysis? I’m glad you asked
Svarabhakti vowels in Goidelic

- The basic rule: insert a vowel between C₁ and C₂ if C₁ is a sonorant, unless C₂ is a fortis stop or C₁ and C₂ are homorganic

(5) a. [ˈaɬəpo] ‘Scotland’
   b. [ˈfarəkə] ‘sea’
   c. [ˈkɑnəvbox] ‘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]/[i]

Svarabhakti and syllable structure: Irish I

- In Irish, svarabhakti vowels are normal syllable nuclei
- They participate in mora- and syllable-counting processes
- Ni 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. [(ˈarɨ)ɡəd] ‘money’
   b. [(ˈtarəv)] ‘bull’

- In Irish, 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

(7) a. [(ˈtʰəːr_ʃma)] ‘term’
   b. [(ˈduəl_ɡəs)] ‘duty’

Svarabhakti and syllable structure: Scottish I

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

(9) [ˈɯrɯxər] ‘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. [ˈkʰəkəʔ̃ˈrəxəɣ] ‘move’
   b. [uəʔ̃ˈrəx] ‘egg’

(11) Heavy ones don’t
   [ˈtrəxəɣ] ‘beach’

(12) Consonant counts for coda weight
   a. [ˈmərəv] ‘dead’
   b. *[ˈmərəvəʔ̃] ‘dead (gen. sg.)’

Svarabhakti and syllabic structure: Scottish III

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

(13) a. (i) [ˈɔbəð] ‘work’
    (ii) [ˈɔbəraq] ‘work (gen. sg.)’
    (iii) *[ˈɔbaruəq]

    b. (i) [ˈbələx] ‘boy’
    (ii) [ˈvələxu] ‘boy (voc. pl.)’
    (iii) *[ˈvələxu]

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) [ˈlˠɯːɣ] ‘calf’
    (ii) [ˈlˠʊiː] ‘calf (gen. sg.)’

    b. (i) [ˈpalˠəx] ‘boy’
    (ii) [ˈpalˠɪç] ‘boy (gen. sg.)’

Svarabhakti and syllabic structure: Scottish V

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

   [ˈpaɫək] ‘skull’ (ballag)
   [ˈpaɫək] ‘belly’ (balg)
Svarabhakti and syllabic structure: Scottish VI

- Again, the simplest analysis is this:
- [ˈpalˠak] ‘skull’ is disyllabic
- [ˈ2-palˠak] ‘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...

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

Svarabhakti and syllabic structure: Scottish VII

- Literature:
  - Ofedal (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

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)
Historical implications

Linguistic contacts

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

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) [.pälˠak.] 'belly'
     (ii) [.pulůk̚.] 'bellies'
  b. (i) [.pa.lˠax.] 'boy'
     (ii) [.pa.lˠɪç] '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) ['broːv] 'rush'
     (ii) ['brivʲ] 'rush (gen. sg.)'
  b. (i) ['knuk] 'hill'
     (ii) ['knikʲ] 'hill (gen. sg.)'

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

(18) Examples with historical epenthesis
  a. (i) ['boləɡ] 'belly'
     (ii) ['bilʲɪɡʲ] 'belly (gen. sg.)'
  b. (i) ['lanəv] 'child'
     (ii) ['lınʲɪvʲ] 'child (gen. sg.)'

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 III

▶ Variation

(19) Examples with historical vowel

a. (i) [ˈsoləs] ‘light’
   (ii) [ˈsolɪʃ] ‘light (gen. sg.)’
   (iii) [ˈsilʲɪʃ]

b. (i) [ˈdorəs] ‘door’
   (ii) [ˈdirɪʃ] ‘door (gen. sg.)’

c. (i) [ˈkuːntəs] ‘count’
   (ii) [ˈkuːntɪʃiː] ‘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 /lʲanv/ 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 CVCəC 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. [ˈparuz̥] ‘parish’
   b. [ˈdaˌvad̥] ‘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
  
  \begin{align*}
  (21) & \text{a. } [ˈparuz] & \text{‘parish’} \\
  & \text{b. } [ˈparuʒəw] & \text{‘parishes’}
  \end{align*}

- 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:
  
  \begin{align*}
  (22) & \text{a. } [ˌhyːˈaːl] & \text{‘hindrance’} \\
  & \text{b. } [ˌʃyːˈbadər] & \text{‘rubbish’}
  \end{align*}

- We expect the same with double-stressed words
  
  \begin{align*}
  (23) & \text{a. } [ˈdaˌvadəw] & \text{‘sheep’}
  \end{align*}

- 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 [ˌdaˈvadəw]

- 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: Ó Óscairde & 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)
References I


References II


References III


References IV


References V


References VI


