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Incomplete neutralization and unorthodox markedness in Breton laryngeal phonology

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The received view

Final devoicing and voicing sandhi

Here is the picture of sandhi and devoicing one finds in most general descriptions of Breton, such as Press (1986); Stephens (1993); Favereau (2001):

Voice- and voiceless obstruents contrast word-initially and word-medially

1. ganet ‘born’ vs. kanet ‘sung’
2. ober ‘do’ vs. tapout ‘take’

Word-finally the contrast is neutralized, only voiceless obstruents are permitted

3. togoù ‘hats’ but tok ‘hat’

In pre-sonorant phrasal contexts final obstruents are voiced

4. ma[d] eo ‘[it] is good’

Phonological account

Final devoicing is a textbook case: [+voice] → [−voice] / _#

Where [+voice] is “more marked” in some non-trivial sense

Sandhi voicing is probably assimilation:

[−vocalic +consonantal] → [əvoice] / _#[əvoice]

Why can this be problematic?

Are the data correct? Sandhi voicing is sometimes described as variable, not categorical, non-obligatory etc. (e.g. by Wmffre 1999)

Is Breton [voice] or [spread glottis]?

Level mismatch: normally obstruent clusters devoice irrespective of the underlying values (by “provection”)

Problematic for the Contrastivist Hypothesis (Dresher 2009; Hall 2007): [voice] is normally redundant in obstruents, should not be phonologically active
Devoicing sandhi

- Along with the voicing sandhi, some dialects are described as having a sandhi rule whereby an initial voiced obstruent (in lexically specified words) is devoiced following an obstruent.
- Example from Île de Groix (Ternes 1970):
  
  (5)  
  a. \([\text{bo}^\prime \text{nak}]\) ‘any’  
  b. \([\text{ur}^\prime \text{mi:s pa}^\prime \text{nak}]\) ‘any month’

- Agrees with the behaviour of word-internal clusters
- But co-exists with the voicing pattern, and is lexically specified
- Found in other dialects, e.g. Plougrescant (Jackson 1960)

Perspective taken here

- Minimalist feature theory with a non-trivial phonetic implementation component
- Assignment of features based on phonological activity within a language rather than on a priori assumptions, whether motivated cross-linguistically or “functionally” grounded
- Feature geometry
- Contrastive specification all the way
- Privative features only
- How do all the Breton data fit with these assumptions?

The “new quantity system” and its implications

- The Neo-Brythonic quantity system (Jackson 1953, 1967; McCone 1996):
  - Long vowels in open syllables before lenis consonants (=“voiced” in most modern varieties)
  - Short vowels before clusters and fortis singletons (=“voiceless” in most modern varieties)
- Distribution of voicing or length should be predictable
- And it generally is, though English/French borrowings complicate the picture: see Wells (1979) for Welsh
- Robust diachronic evidence: the Breton lapous/labous axis, devoicing in SE Wales (Awbery 1984)
Devoicing in Plougrescant

This is mostly based on Jackson (1960); I have also consulted Le Dû (1978).

Important quantity facts:
- Vowel length contrastive in main-stressed syllables
- Voiced and voiceless obstruents contrast word-initially, so the length of the preceding vowel is not a necessary condition to distinguish them.

(6) a. [ˈpesk] ‘fish’
    b. [ˈbœːrɛ] ‘morning’

However, the quantity-related trade-off is present, as we will see momentarily.

Notes on quantity

Jackson (1960) claims that all consonants except voiced obstruents have short and “half-long” allophones. Since the opposition is binary, I transcribe his half-length as length for clarity.

However, Le Dû (1978) claims that there is no length contrast, at least for obstruents.

Cross-dialectal evidence points in conflicting directions:
- Many use “fortis”/“lenis”, which is not really helpful
- Léonais has both voiced and voiceless geminates (Falc’hun 1951; Carlyle 1988)

Vowel and consonant quantity

I assume that length is indeed present.

In any case, a non-trivial phonetic implementation can take care of the analysis.

Long vowels precede short consonants:

(7) a. [ˈoːber] ‘do’
    b. [ˈliːzɔr] ‘letter’
    c. [ˈmeːlən] ‘yellow’

Short vowels precede long consonants:

(8) a. [tæpːut] ‘take’
    b. [jækːɔ] ‘healthier’
    c. [skv’dɛlɔ] ‘basins’

Stressed syllables are at least bimoraic: no ‘CVCV…’

No overlong syllables: no ‘CVːCːV…’

Voiced obstruents cannot follow short vowels, since they cannot be long.

Any change which involves [+voice] → [−voice] postvocalically must have consequences for vowel length.

And it does!

(9) a. [lɔˈɡoːdən] ‘mouse’
    b. [lɔˈɡɔtːa] ‘hunt mice’
Final devoicing and vowel length

- Word-finally, voiced obstruents are impossible
- But there is still a length contrast following stressed vowels (mostly monosyllables for obvious reasons)

(10)  
<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>[kaːs]</td>
</tr>
<tr>
<td></td>
<td>‘cat’</td>
</tr>
<tr>
<td>b.</td>
<td>[kasː]</td>
</tr>
<tr>
<td></td>
<td>‘send!’</td>
</tr>
</tbody>
</table>

- Normally, vowel length persists even if the laryngeal contrast is neutralized

(11)  
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<tbody>
<tr>
<td>a.</td>
<td>[toːgo]</td>
</tr>
<tr>
<td></td>
<td>‘hats’</td>
</tr>
<tr>
<td>b.</td>
<td>[toːk]</td>
</tr>
<tr>
<td></td>
<td>‘hat’</td>
</tr>
</tbody>
</table>

- So this does not seem to be [+voice] → [−voice] after all
- More like incomplete neutralization in FD languages like (apparently) Dutch (Ernestus & Baayen 2006; Jansen 2007) or (possibly) Polish and Russian (e.g. van Oostendorp 2008)

Shortening-cum-devoicing

- Jackson (1960) notes another type of devoicing which does lead to vowel shortening, but describes it as unsystematic

(12)  
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<table>
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<tbody>
<tr>
<td>a.</td>
<td>[tyːt]</td>
</tr>
<tr>
<td></td>
<td>‘people’</td>
</tr>
<tr>
<td>b.</td>
<td>[tʏtː]</td>
</tr>
<tr>
<td></td>
<td>‘id.’</td>
</tr>
</tbody>
</table>

- It seems safe to identify this with Le Dû’s (1978) vowel shortening following the indefinite article
- In other words, a morphological process with phonological consequences

A closer look

- The analysis (such as it is) so far might hold water, but what is the phonetic evidence?
- Work in progress
- These slides: pictures based on Le Clerc de la Herverie (1994)
- Dialect of Groñvel/Glomel (Haute-Cornouaille)
- Recorded narratives

Expectations

- The standard account based on assimilation would make the following predictions:
  - Prepausal obstruents are categorically devoiced
  - Sandhi voicing is anticipatory (cf. Myers 2010)
- Do these predictions hold up?
Devoicing before a pause: /ti e dyd/

- The final stop is certainly not voiced, as expected before a pause
- But there is a fair bit of voicing
- Coarticulation with preceding vowel?
- Such coarticulation does not seem to be normally found with voiceless stops, though

Incomplete voicing before a sonorant: /χwänəz#m.../

- Mostly the sandhi obstruents in pre-sonorant positions are voiced
- But there are some examples like this
- Voicing overspill from the preceding consonant
- Classic pattern of **passive voicing** (Westbury & Keating 1986; Jansen 2004)
- This does not seem to be categorical assimilation
- Can even happen before vowels!
**Conclusion on sandhi voicing**

- Phonetic data seem to indicate incomplete neutralization
- Word-final obstruents are passively voiced, mostly by overspill from the preceding vowel
- Does not seem to be anticipatory
- Phonetics and phonology point to a three-way contrast

**Analysis redux**

- Breton has a slightly unorthodox markedness hierarchy in laryngeal phonology
- Voiceless ≫ voiced ≫ delaryngealized
- Substance-free laryngeal realism
- Diachronic evidence: new lenition

**The segments**

> I propose the following types of laryngeal specifications for Breton consonants

(13) $\times$ $\times$ $\times$

<table>
<thead>
<tr>
<th>$\text{Devoiced obstruents, sonorants}$</th>
<th>$\text{Voiceless obstruents}$</th>
<th>$\text{Voiced obstruents}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lar</td>
<td>Lar</td>
<td>[voiceless]</td>
</tr>
</tbody>
</table>

- Broadly familiar: Lombardi (1995); Avery (1996) and many more
Delaryngealization

- Since word-final obstruents are passively voiced, I assume they are phonetically underspecified for laryngeal state
- A sign of phonological underspecification (Keating 1988): no laryngeal target
- In terms of the representation in (13), the Laryngeal node is simply deleted in word-final position

Contrast preservation

- Unlike Dutch (Ernestus & Baayen 2006, 2007; Jansen 2004), in (this dialect of) Breton the voiceless obstruents do not delaryngealize and thus the contrast is preserved, pace Hall (2009)
- For instance, lexically voiceless final obstruents do not undergo sandhi voicing, and can geminate even in dialects with no word-internal gemination

The markedness of voiceless obstruents

- For historical reasons, true voiceless obstruents are rare thanks to all the lenitions
- Appear mostly in clusters, borrowings and contexts with a /h/ around there somewhere
- As well as word-initially
- Key suggestion: [voiceless] is preserved only by contextual faithfulness
  - Clear parallels to the distribution of /h/
  - Contrast is robust word-initially and in the stressed syllable: reasonable for positional faithfulness

Deriving the quantity trade-off

- The voiceless obstruent piggybacks on Stress-to-Weight to be parsed into the stressed syllable and thus keep [vcl]
Deriving the quantity trade-off

No superheavy syllables, so [vcl] doesn’t stand a chance

Ask me about Richness of the Base and lengthening in /Vd/

Mora affixation leads to vowel shortening I

Mora affixation leads to vowel shortening II

This is assuming final C extrametricality, which you need to derive penultimate stress anyway

Alternative: [vcl] licensed by moraicity in some positions?

Pavel Iosad (UiT/CASTL) Breton laryngeal phonology

Cf. the analysis of Anywa vowel shortening by Trommer & Zimmermann (2010)
Provection as [h]-affixation I

- Some sort of [voiceless], or [stiff vocal cords], or [spread glottis] feature is unavoidable because of [h]-affixation:
  - The /-hV/ suffixes (adjectival comparison, verbalizers as in (9-b))
  - Provection mutation
- E.g. Bothoa (Humphreys 1972, 1995):
  - Obstruents devoice:
    (15) a. [ˈbaːz̥] ‘stick’
    b. [o ˈpaːz̥] ‘your (pl.) stick’
  - Sonorants devoice:
    (16) a. [ˈlevər] ‘book’
    b. [o ˈlevər] ‘your (pl.) book’

Provection as [h]-affixation II

- Vowels prefix [h]
  (17) a. [ʼalve] ‘key’
    b. [o ʼhalve] ‘your (pl.) key’
- Most reasonable account: /h/ is just [voiceless]
- Later on lenition/voicing

Evidence for marked status of [vcl]

- Categorically voiceless versus passively voiced: reminiscent of [spread glottis] languages
  - English: Honeybone (2005a) and any number of references
  - (Standard) German: Jessen & Ringen (2002); Beckman et al. (2009) and any number of references
  - Welsh: Ball (1984); Jones (1984); Ball & Williams (2001)
  - Irish: e.g. West Muskerry (Ó Cuív 1944)
  - Turkish: Kallestinova (2004)
  - Itunyoso Trique: DiCanio (2010)
Further evidence

- Final devoicing could be evidence of [+voice] being more marked than [−voice]
  - Nonassimilatory neutralization as markedness reduction: de Lacy (2006)
  - Neutralization as deletion of structure: Harris (2009)
- But we have seen that it cannot be [+voice] → [−voice]
- On the contrary, true voiceless obstruents are preserved in a markedness/structure-reducing position
- Preservation of the Marked: de Lacy (2006)
- Side note: feature geometry gives de Lacy-style stringent violations for free

Interim summary

- Final devoicing does not involve a change of [+voice] to [−voice]
- Phonetic evidence for laryngeal unmarkedness of devoiced obstruents
- Phonological evidence for moraic inertness of devoiced obstruents
- Phonological evidence for markedness preservation targeting true voiceless obstruents
- Diachronic evidence for less marked status of voiced obstruents

New lenition as context-free deletion of [vcl]

- “New lenition” is the (mostly) context-free voicing of fricatives (also in initial position): (Jackson 1967, §497 sqq.)
- Broad [voice]: addition of marked feature
  - Makes little sense phonetically: voiced fricatives are notoriously hard to articulate (cf. Jansen 2004, for an overview)
- Laryngeal realism: deletion of marked feature, very straightforward
  - Cf. Southern English Fricative Voicing and binnenhochdeutsche Schwächung (Honeybone 2005a)
    - Though see Seiler (2009) for binnenhochdeutsche Schwächung as degemination rather than a featural process

Why [voiceless]?

- Most “laryngeal realism” languages we have seen seem to use [spread glottis]
- Why not Breton?
- Substance-free approach: not really important what we call it, as long as there is a feature (Blaho 2008)
- But there is evidence to decide
Further issues

[Voiceless] or [spread glottis]

Phonetic evidence I

- Trégorrois and Cornouaillais seem not to use aspiration
  - Bothoa (Humphreys 1995)
  - Plougrescant (Jackson 1960; Le Dû 1978)
  - Carhaix (Timm 1984), though described by Humphreys (1995) as “peu fiable” (does anybody know what’s up?)

- Léonais and Vannetais do seem to have aspiration
  - Saint-Pol-de-Léon (Sommerfelt 1978)
  - Le Bourg Blanc (Falc’hun 1951)
  - Île de Groix (Ternes 1970), though it’s apparently like Swedish (Ringen & Helgason 2004) and has long-lag VOT vs. prevoiced

- Both Léonais and Vannetais have important differences in the relevant respects
  - Léonais has a gemination contrast for both voiced and voiceless obstruents (Falc’hun 1951; Carlyle 1988)

Evidence from interfaces I

- Assume a surface-underspecification theory of the phonetics–phonology interface
- Assume enhancement (Stevens & Keyser 1989; Avery & Idsardi 2001) is active, but as an interface option rather than operating on redundant features
- Corollary: enhancement should operate on aspects of the implementation which are not implicated in the realization of contrastive features

Further issues

[Voiceless] or [spread glottis]

Phonetic evidence II

- Vannetais of course has final stress, so a very different picture with respect to head feet and licensing of laryngeal features is only to be expected

- The most realistic solution seems to be [voiceless] (“laryngeal hyperrealism”? Though Honeybone 2005a admits the possibility of non-[spread glottis] features)

Evidence from interfaces II

- In terms of Avery & Idsardi (2001):
  - Passive voicing is enhancing a Glottal Width ([spread glottis]) contrast using Glottal Tension (slack vocal cords)
  - Conversely: a Glottal Tension realization ([stiff vocal cords], or [voiceless]) should make Glottal Width available for enhancement

- Carhaix (Timm 1984): word-final obstruents (which are devoiced) can be (slightly) aspirated
- Should be looked into (recall it’s “peu fiable”…)

Further issues

[Voiceless] or [spread glottis]
Devoicing sandhi

- Just to remind of some examples

(18) Île de Groix
   a. \([bəˈnak]\) ‘any’
   b. \([urˈmiːs pəˈnak]\) ‘any month’

(19) Bothoa
   a. \([ba]\) ‘in’
   b. ‘[laːkəd o vaːs paˈstʃəːl]’ ‘put a step into the ladder’

Further evidence

- This is the same generalization as in the well-known adjective soft mutation rule
- Adjectives following feminine singular and masculine plural animate nouns undergo lenition (=voicing) unless the noun ends in an obstruent

(20) a. \(\text{un dimezell } g/*\text{kaer}\)
    a maiden beautiful

   b. \(\text{ur vaouez } k/*\text{gaer}\)
    a woman beautiful

- The same generalization!
- Sonorants are exempt because there is no Lar node: no contrastive specification
Further instances of devoicing sandhi

- Some further examples of the lenition autosegment at work
- Cf. the Île de Groix [baˈnak] ‘any’: this is Middle Breton pennac (Lewis & Piette 1962)
- Many “often used” noun-adjective compounds: probably treated as single words, and word-internal clusters are normally voiceless
- Discussion: Jackson (1967, §487) (“provection in common phrases”), Hall (2009)
- Principled explanation for why “underspecified” segments only appear word-initially

Summing up

- Final devoicing in Breton is not [+voice] → [−voice]
- Voiceless obstruents are more marked than voiced ones in Breton
- Evidence for [voiceless] as a possible feature
- The analytical potential of feature geometry
- Principled analysis of devoicing sandhi without recourse to binarity, contra Krämer (2000)

Residual issues and future work

- Empirical issues
  - Phonetic verification
  - Complete OT analysis
  - Extension to other dialects and Welsh
- Conceptual issues
  - Feature geometry or features dependent on features à la Blaho (2008)?
  - Voicing-as-subtraction? But see Bye & Svenonius (2009)

Trugarez m[aːd̥]!
Go raibh mile maith agaibh!
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References III


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Ó Cuív, Brian. 1944. The Irish of West Muskerry. Dublin: Dublin Institute for Advanced Studies.


References VIII


References IX


