Incomplete neutralization and unorthodox markedness in Breton laryngeal phonology

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Skolaj Skol-Veur Dulenn

Talk outline

1. Received view of Breton laryngeal phonology
2. Incomplete neutralization in final devoicing
3. Markedness patterns and laryngeal realism
4. Contrastive specification and enhancement in Breton
5. Mopping up: devoicing sandhi as failure of lenition

The traditional picture

- Here is the picture of sandhi and devoicing one finds in most general descriptions of Breton, such as Press (1986); Stephens (1993); Favereau (2001):
  - Voiced 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] → [αvoice] / _#[αvoice]
- 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. [bəˈnak] ‘any’
b. [urˈmiːs pəˈnak] ‘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)

Phonological perspective

- Seems to provide evidence for binary laryngeal features (Krämer 2000; Wetzels & Mascaró 2001), problematic if you believe all features are privative
- Co-exists with the voicing pattern: solution must be representational? See Krämer (2000); Hall (2009)
- Is there any explanation for the choice of words triggering devoicing sandhi?

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. ['pesk] 'fish'
b. ['bœːrɛ] '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. ['oːber] 'do'
b. ['liːzər] 'letter'
c. ['meːlən] 'yellow'

- Short vowels precede long consonants:

(8) a. ['tapːut] 'take'
b. ['jaχːɔχ] 'healthier'
c. [skʏ'dɛlːɔ] 'basins'

Vowel and consonant quantity

- 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. [lɔ'goːdən] 'mouse'
b. [lɔ'gɔtːa] '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) a. [kaːs] ‘cat’
b. [kasː] ‘send!’

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

(11) a. [toːgo] ‘hats’
b. [toːk] ‘hat’

- 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) a. [tyːt] ‘people’
b. [tʏtː] ‘id.’

- 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

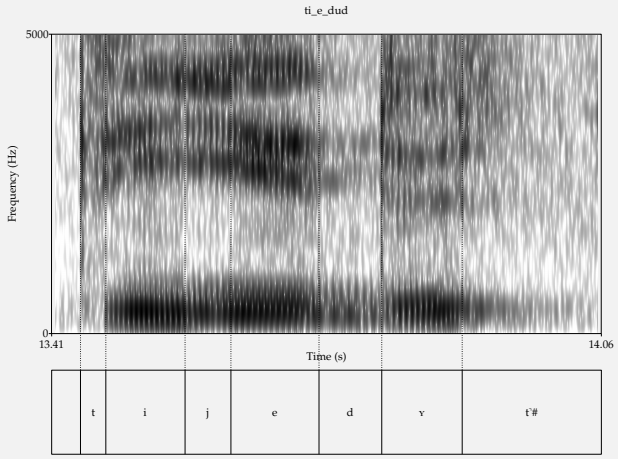
A closer look

- 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?

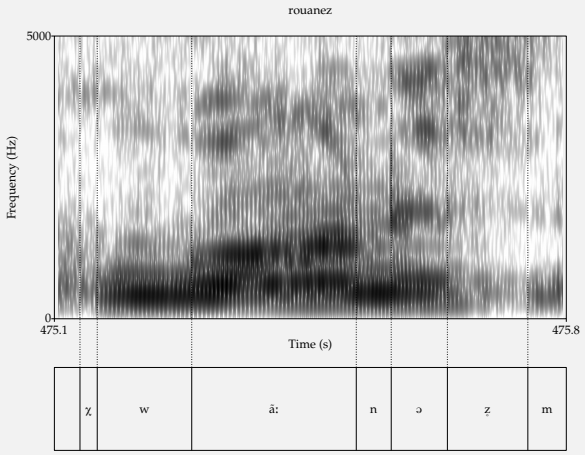
Devoicing before a pause: /ti e dyd/



Devoicing before a pause

- 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

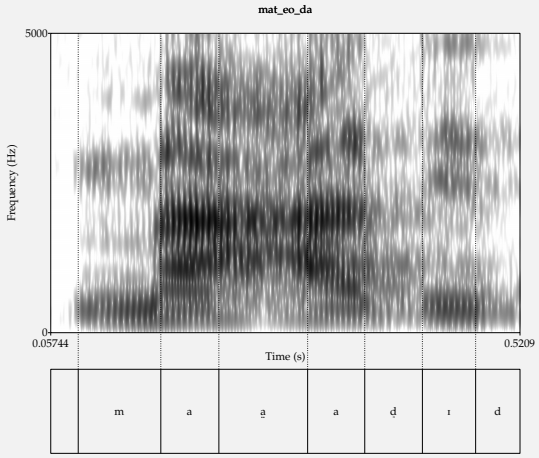
Incomplete voicing before a sonorant: /χwãnəz#m.../



Incomplete voicing before a sonorant

- 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!

Incomplete voicing before a vowel: /maːd e/



- Affective prosody though

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

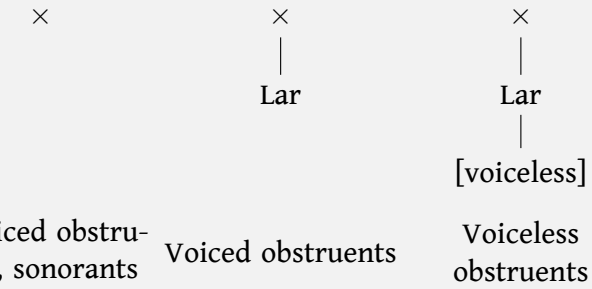
Analysis redux

- 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)



- 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

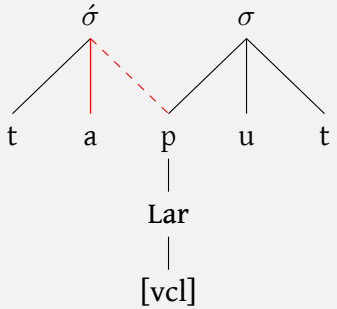
(14) Lanvénégen (Evenou 1989; transcription unchanged)

a.	[ø vweto]	*a voueto*
b.	[ø vwett o]	*e vouedivez*
c.	[ø vwet:]	*e voued*

The markedness of voiceless obstruents

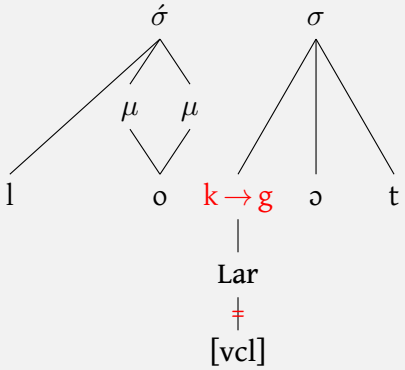
- For historical reasons, true voiceless obstruents are rare thanks to all the lenitions
- Appear mostly in clusters, borrowings and contexts with a /h/ around there somewhere
- As well as word-initially
- Key suggestion: [voiceless] is preserved only by contextual faithfulness
  - Clear parallels to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

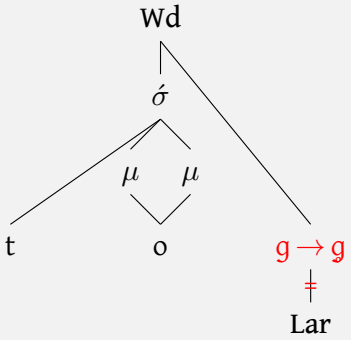
Deriving the quantity trade-off



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

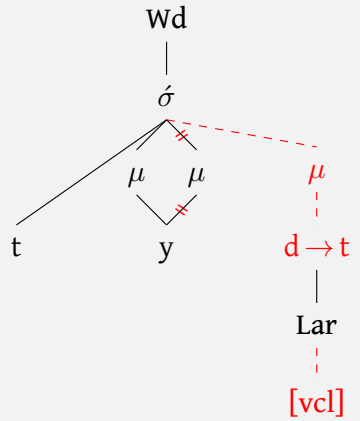
☞ Ask me about Richness of the Base and lengthening in /Vd/

Deriving final devoicing



- This is assuming final C extrametricality, which you need to derive penultimate stress anyway
- Alternative: [vcl] licensed by moraicity in some positions?

Mora affixation leads to vowel shortening I



- Cf. the analysis of Anywa vowel shortening by Trommer & Zimmermann (2010)

Mora affixation leads to vowel shortening II

- Alignment: the suffix mora has to be on the right
- Moraic bare-Lar obstruents are not allowed (= no voiced geminates: true)
- But moraic [vcl] obstruents are (= voiceless geminates are allowed: true): weight-by-position
- Vowel cannot lengthen as above

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))
  - Provective mutation
- E. g. Bothoa (Humphreys 1972, 1995):
  - Obstruents devoice:

(15) a. ['baːz̥] 'stick'
b. [o 'paːz̥] 'your (pl.) stick

  - Sonorants devoice:

(16) a. ['levər] 'book'
b. [o 'l̥evər] 'your (pl.) book'

Provection as [h]-affixation II

- Vowels prefix [h]

(17) a. ['alve] 'key'
b. [o 'halve] 'your (pl.) key'

- Most reasonable account: /h/ is just [voiceless]
- Later on lenition/voicing

Broad [voice] vs. laryngeal realism

- Due to Honeybone (2005a)
- Broad [voice]:
  - There is just the feature [±voice]
  - Different languages implement it differently, e. g. prevoiced vs. zero VOT, short-lag vs. long-lag etc.
  - [+voice] is more marked than [−voice]
- Laryngeal realism:
  - Some languages have [(+)voice] as the marked option
  - Others have other features, in practice [spread glottis]
  - Choice driven by markedness patterns within a language

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/stucture-reducing position
- ☞ Preservation of the Marked: de Lacy (2006)
- Side note: feature geometry gives de Lacy-style stringent violations for free

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

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 obstuents
- Phonological evidence for markedness preservation targeting true voiceless obstruents
- Diachronic evidence for less marked status of voiced obstruents

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

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)

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 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

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"...)

Devoicing sandhi

- Just to remind of some examples

(18) Île de Groix

a. [bəˈnak] ‘any’
b. [urˈmiːs pəˈnak] ‘any month’

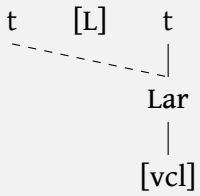
(19) Bothoa

a. [ba] ‘in’
b. [ˈlaːkad o ˈvaːs pa ˈstʃəːl]
‘put a step into the ladder’

The role of prepositions I

- Dialect after dialect one finds that prepositions consistently exhibit this behaviour
- Diachronically prepositions underwent lenition (soft mutation):
  - OW, OB *gurth*, W *wrth*, B *ouzh*
  - Variation in Welsh: *trwy* ∼ *drwy* etc.
- Crucial piece: in Welsh, historically lenited prepositions still show their radicals following mutation triggers (Ball & Müller 1992)
  - *gan* ‘by, with’ but *a chan* (**a gan*) ‘and with’, from **kant*
  - Welsh prepositions seem to have the mutation-triggering autosegment in the lexical representation, i. e. *gan* is presumably [L]*can*
- What if this is the case in Breton?

The role of prepositions II



- Generalization: initial voiceless obstruents following a lenition autosegment surface as voiceless if preceded by an obstruent
- A kind of “geminate inalterability” (Honeybone 2005b)

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. un dimezell g/*kaer
a maiden beautiful
b. ur vaouez k/*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 [bəˈnak] ‘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[aːḍ]!
Go raibh míle maith agaibh!

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