

## Splitting “intervocalic” - *the first steps*

Katalin Balogné Bérces  
PPCU, Piliscsaba & CASTL, Tromsø\*  
bbkati@yahoo.com

Patrick Honeybone  
University of Edinburgh  
patrick.honeybone@ed.ac.uk

The point and structure of this talk

- to make a clear case that the environment that is so often called 'intervocalic' needs to be split
- parameter: difference/no difference betw. post-short vs. post-long
- by:
  - setting out the details of the collected cases of relevant phenomena (Section 2), and
  - providing a brief review of previous related analyses and their shortcomings, outlining potential theoretical consequences (Section 3)

Motto 1: "In the following, I assume that only *single* intervocalic consonants can be ambisyllabic. Furthermore, they must follow a short lax vowel. [...] Unfortunately, there is little evidence for the ambisyllabic status of consonants [...]" (Wiese 1996: 36-37, italicized emphasis original, underlined emphasis ours)

Motto 2: "This kind of variable consonantal strength according to whether the preceding vowel is long or short hardly meets any empirical echo." (Scheer and Ziková 2010: 418)

Emphasis is on the set of data we think ought to be considered in theoretical frameworks. Further research is needed for an appropriate analysis.

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### 1. Background

Phonological strength

- weak = frequent site for lenition (weakening, see below)
- strong = more resistant to lenition (stability, or less weakening than in weak position – implicational hierarchy)
- certain positions (e.g., stressed vowels, word-initial or post-coda consonants) are stronger than others (e.g., unstressed vowels, word-final or coda consonants) both synchronically and diachronically
- universal tendencies + parameters (e.g., pre-consonantal vs. final codas, word-initial C, stress-sensitivity, quality of C<sub>1</sub> for post-coda C<sub>2</sub>, etc., see Scheer & Ségéral 2008)

Several strands of phonological theory have focused on phenomena known as lenition (see, e.g., Lass & Anderson 1975, Lass 1984, Harris 1994, 1997, Kirchner 1998, Ségéral & Scheer 1999, 2008, etc.)

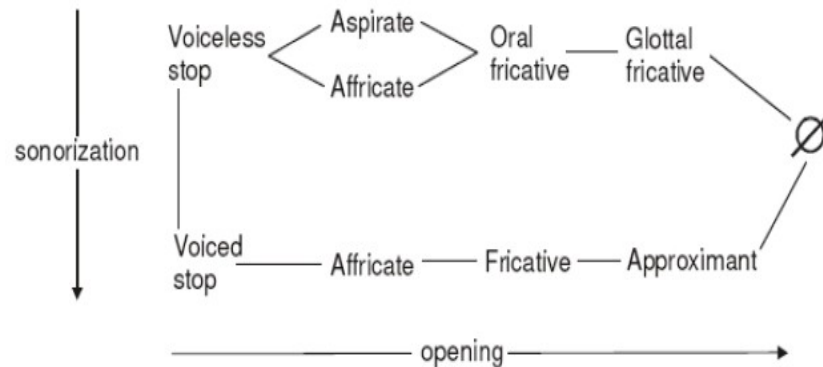
- there are two ways in which lenition has been claimed to be phonologically interesting:
  - (i) the set of phonological processes involved
  - (ii) the set of environments in which lenition can/can't occur
    - some work tries to link the two, to provide a fully explanatory model

We focus here on (ii), and simply assume that some link in terms of (i) applies, grouping together all and only those processes which ‘weaken’ segments

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- one simplistic definition derives from Vennemann’s claim (recorded in Hyman 1975: 165) that “a segment X is said to be weaker than a segment Y if Y goes through an X stage on its way to zero”; this links different segment types in terms of their relative “weakness” on a continuum (sometimes called a “hierarchy of phonological strength” or “lenition trajectory”), along which segments are assumed to be likely to progress diachronically, e.g.:



(Lass 1984: 178)

... which allows us to group together processes of these types as cases of lenition:

- spirantisation (a segment becoming a fricative, e.g., p becoming f)
- sonorisation (i.e., the loss of obstruency, e.g., tapping/flapping in accents of English)
- delaryngealisation (i.e., the loss of [voice] in so-called voice languages, traditionally called devoicing, as in a number of Slavic languages)
- ‘voicing’ (lenisation) in so-called aspiration languages, see below

(... although it is debatable whether it is possible to render a unified phonetic definition to lenition as such -- cf., e.g., Bauer 2008)

What is usually assumed in lenition taxonomies (e.g., Scheer and Ségéral 2008):

- there are a possible set of strong positions and a possible set of weak positions
- individual cases of lenitions in languages must obey this implicational hierarchy (if they occur in a strong position, they must also occur in a weak position)
- that is:

strong(er)	weak(er)	
[ #__ ] [ c.__ ]	[ __.c ] [ __# ]	[ v__v ]
syllable-initial/onset, foot-initial/fothead	syllable-final/coda	<b>“intervocalic”</b>

The ‘stress parameter’:

- lenition only occurs if the vowel following the segment is not stressed, means that there can be two types of medial environment (cf. esp. Harris 1994, 1997 for English):
- “intervocalic” needs to be split into:
- a stronger [ v\_\_v̇ ] and a weaker [ v̇\_\_v ] (the latter: “ambisyllabic”)

Our point here is that an empirical observation has been missed up till now, or even (worse than that!) dismissed

- we claim that “intervocalic” needs to be further split
- a stronger [ vv\_\_v ] and a weaker [ v\_\_v ]

These two parameterisations of the “intervocalic” position are necessary because *some* cases of lenition pattern in this way; not all cases do.

Further work will be needed to establish whether these two parameters are independent or not.

- can the [ vv\_\_v ] vs [ v\_\_v ] parameter hold only in systems with [ v\_\_v̂ ] vs [ v̂\_\_v ]
- all our examples for post-short vs. post-long come from stress sensitive lenition systems

A number of frameworks have built (some of) the above observations into theory, in order to provide predictive/explanatory models

- we (briefly) consider some of this work in Section 3, but
- certain models fail to consider stress (e.g., Coda Mirror – Ségéral & Scheer 1999), or, on the contrary, base the whole model on stress (e.g., Licensing Inheritance – Harris 1997)
- even if the post-short vs. post-long distinction is recognized, it is connected to phonotactics (distribution of tense/long and lax/short vowels) and not to lenition (e.g., Wiese 1996 on German; cf. Motto 1 above), and
- frequently analysed with reference to ambisyllabicity / resyllabification or covert / virtual gemination – all debatable theoretical tools
- some predict lenition after short vowels only (e.g., Balogné Bércecs 2008, and, incidentally, Hermans 2010)
- others predict that post-long C’s are weaker than post-short C’s (e.g., Coda Mirror – modified in Coda Mirror v2 (Scheer & Ziková 2010) to rule out the distinction altogether; cf. Motto 2 above)

Ideally, models of lenition need to not overgenerate and be able to account for only those environments in which lenition is possible.

But then, on the other hand, and this is our point: they must not undergenerate, either.

However, we try to be (relatively) theoretically neutral, so that the main point is that any framework which intends to be able to account for lenition phenomena needs to be able to account for data like this.

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## 2. Data: does vowel length matter in lenition?

In order to make the point of our paper, we need to show that robust phonological patterns can be found in (the history of) languages which:

- (i) involve segmental changes which are clearly of the ‘lenition’ type
- (ii) occur in an intervocalic environment, but only if the vowel is short

We have four.

- we expect that more will be found, and that they may have been missed in previous observations, because the pattern was not one that phonologists have been looking for
- as they have never been collected before, we have not expected to be able to find them
- in any case... four is enough (one would be enough!) to show that lenition theory needs to be able account for this type of patterning.

The phenomena all derive from once-active synchronic lenitions. These lenitions are not all still clearly synchronically active, but, if not, the diachrony is clear and the split intervocalic patterning is indubitable. They involve:

- sonorisation
  - lenisation (what looks like ‘voicing’)
  - spirantisation
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## 2.1 Sonorisation: English tapping/flapping

One type of process which has been firmly taken into the canon of lenitions (see, e.g., Harris 1994, 1997, etc.) is the process known as ‘tapping’ or ‘flapping’. The process:

- occurs in many varieties of Present-Day English, including some Irish and Southern Hemisphere dialects, and most American dialects
- also occurs in other languages (Western Apache, Bantu, etc.)
- affects coronal stops, deriving taps: [ɾ]
- is seen as sonorisation because the input can be voiceless (or ‘fortis’), and the output is ‘lenis’ and because a flap is typically considered to be more sonorous than a stop

We consider here only the effects of the fortis stop, as is common in lenition literature; this can be summarised as:

- t → ɾ

The classical description of English tapping is as follows:

- it occurs in intervocalic position, with the following caveats:
- cross-lexically, any intervocalic /t/ lenites
- lexically, the ‘stress parameter’ is in play: the [ v\_\_v ] environment triggers tapping (*petty* [p<sup>h</sup>ɛɾi]), but [ v\_\_v ] does not (*petite* [p<sup>h</sup>ɛ<sup>h</sup>t<sup>h</sup>i:t])
- highly sonorous consonants also trigger tapping, like vowels: *party* [p<sup>h</sup>aɾi]
- the length of the preceding vowel (or sonorous consonant) is irrelevant: *rating* [ɾaɾɪŋ] vs *writing* [ɾaɾɪŋ]

New Zealand English features a different pattern, however (Bye & de Lacy 2008):

- NZE Basilect tapping follows the ‘classical’ pattern
- NZE Acrolect tapping shows a different environmental patterning:

### NZE Acrolect flapping

#### a. Flapping after a short stressed vowel and before a vowel

[hæɾə]	‘hatter’	[kæɾi]	‘catty’
[ɾəgæɾə]	‘regatta’	[t <sup>h</sup> æɾəmægútʃi]	‘Tatamagouchee’

#### b. No flapping after a stressed long vowel or stressed diphthong

[bá:tə]	‘barter’	[mí:tə]	‘metre’
[kəmpjú:tə]	‘computer’	[ɾáitə]	‘writer’
[páutə]	‘pouter’		

#### c. No flapping after unstressed vowels

[hɔ́spətəl]	‘hospital’	[t <sup>h</sup> éɾətən]	‘Terreton’
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The crucial distinction for us is that between:

- *hatter* [hæɾə]
- *barter* [ba:tə]

In its lexical instantiation, NZE Acrolect tapping occurs:

- only foot-internally (so the forms in c. do not tap, as feet are maximally disyllabic)
- and only if the preceding vowel is short: long/complex nuclei block tapping

## 2.2 Sonorisation: (the origins of) Northern English T-to-R

A phonological pattern found in a number of British dialects of English also seems to fit well with the notion of sonorising lenition. This is the phenomenon known as T-to-R (see, for example, Wells 1982, Carr 1991, Broadbent 2008, Clark & Watson to appear, Buchstaller et al. forthcoming, Honeybone forthcoming). Carr (1991) explicitly describes it as ‘weakening’, for example. This phenomenon:

- occurs in dialects from the Midlands to the North of England
- affects only words with /t/, deriving the typical rhotic of the variety; for most varieties, this is [ɹ]
- is thus seen as sonorisation for much the same reason as tapping
- affects mostly only word-final occurrences of /t/
- is lexically-specific: it affects *not*, but not *knot*

In T-to-R, relevant words which end with obstruents pre-pausally or pre-consonantly are, instead, realised with a rhotic, thus:

- *shut down* [ʃʊtðaʊn]                      *shut up* [ʃʊɹʊp]
- *get down* [ɡetðaʊn]                      *get off* [ɡeɪɹɒf]

Wells (1982) describes T-to-R as a rule with the following form:

- $t \rightarrow r / [\text{short V}] \_ \# V$
- he claims that only words with short vowels (which are the penultimate segments in the first word) are involved in the phenomenon

This seems to fit our requirements perfectly. However:

- the phenomenon is *very* lexically restricted: is it most common in only these words: *it, not, what, but, let, get/got, at, that*
- there is also a tail of words in which it is possible, but less common: *fit, cut, hit*
- work on speaker intuitions (Buchstaller et al. forthcoming) has shown that it is possible with some words with long/complex vowels: *about, eat, caught*

Its current patterning is *not* a perfect fit as a phenomenon of the type that we are interested in

- however, its parent process *does* have the environmental patterning that we need
- contemporary T-to-R is best analysed as being due to the alternation of two underlying forms in the few words in which it occurs, one of which allows the rhotic to surface (Honeybone forthcoming)
- the reason why it is largely restricted to words with short vowels is that the current state is a reanalysis of a process which did have that patterning; it has since been cut loose from the environment (so some words with long vowels have been drawn in to the pattern); this is perfectly expected, as the phenomenon is lexically idiosyncratic and each speaker needs to acquire their lexical representations anew, so may analogise the pattern to new words

Broadbent (2008) provides a compelling account of the early history of T-to-R

- this is based on the discussion of nineteenth-century Northern English from Ellis (1889) and Wright (1892), with Ellis describing slightly earlier forms than Wright
- these texts are highly reliable early phonological descriptions of regional varieties of English in Britain

Ellis (1889: 395) writes: “t, d preceding a vowel and after a short vowel becomes very vulgarly (r)”

Wright (1892: 87) writes that “the **t** in all verbal forms ending in **t** preceded by a short vowel, appears as **r** when the next word begins with a vowel”

These texts are describing a productive, non-lexically-specific phonological process which affects coronal stops and derives what is transcribed as ‘r’; it may be that this represents a true rhotic, as in

contemporary T-to-R, or the tap [ɾ], because the rhotic was realised as a tap in the relevant varieties of English in the nineteenth century. This process

- occurs intervocalically
- but only if the preceding vowel is short: long/complex nuclei block it

This process has a simple environment, with all the hallmarks of a low-level, phrasal phenomenon

- it is the earliest stage of the process's life cycle (Bermúdez-Otero 2007)
- it has now undergone a reanalysis and fundamentally changed its character, so that much of what we now call T-to-R has been lexicalised and the restriction *requiring* short vowels has been lost -- it now just tends to happen in words with short vowels because it did historically, and has not been analogised too far to other words
- the short-vowel restriction was robust in the process in the nineteenth century
- it is similar to tapping in NZE Acrolect, but there is no reason to assume a diachronic link between the two processes

### 2.3 Lenisation: Scouse diddification

Phenomena which derive lenis obstruents from fortis segments are standardly recognised as cases of lenition. This is commonly referred to as 'voicing', but there is good reason to believe that this is not always a good name for the phenomenon because the derived segments are not always actively specified for voice (Iverson & Salmons 1995, 2007, Honeybone 2005), so we call it 'lenisation' here. One case of lenisation relevant to our concerns is that found in Scouse diddification (Honeybone 2010). This phenomenon:

- is found in the dialect of English spoken in Liverpool (aka 'Scouse')
- involves a pattern of templatic truncation which produces a 'diddified' prosodic morpheme, which replicates the initial syllable of the base and affixes *-i*
- the phenomenon is productive, and is able to derive diddified forms from common nouns
- only the first consonant of the base is preserved in the diddified form; if it is a fricative, lenisation can kick in
- the preserved consonant thus becomes intervocalic in the diddified form
- in a monosyllabic word, no obvious truncation need occur, but diddification can still occur
- this lenisation renders, for example, /s/ as [z], and this is uncontroversially a type of sonorising lenition

The following forms (attested in the corpus described in Honeybone 2010) illustrate the fricative lenisation involved (the first two show that underlyingly lenis forms remain lenis, too).

base form	base SR	SD SR
lavatory	<u>l</u> a.vətri	lavi
Crosby	<u>k</u> rɒz.bi	krɒzi
afternoon	<u>ɑ</u> f.tənu:n	avi
Sefton Park	<u>s</u> ɛf.tɪ	sɛvi
duffle coat	<u>d</u> ʊ.fl	dʊvi
Gossamer	<u>g</u> ɒ.səme	gɒzi
chestnut	<u>tʃ</u> ɛ.snʊt	tʃɛzi
hospital	<u>(h)</u> ɒ.spitɪ	(h)ɒzi
best friend/clothes	<u>b</u> ɛst	bɛzi
mustard	<u>m</u> ʊ.stəd	muzi
restaurant	<u>r</u> ɛ.strɒnt	rɛzi

In forms with a long/complex nucleus in the base, the fricative does not become lenis:

base written form	base SR	SD SR
Leece street	<u>li</u> :s	li:si
ice cream	<u>ai</u> s	aisi
loose cigarettes	<u>lu</u> :s	lu:si

The crucial distinction for us is that between

- bɛst → bɛzi
- lu:s → lu:si

The synchrony of Scouse diddification likely now involves a template imposing the truncation and the loss of laryngeal specification

- the origins of the lenisation must involve an intervocalic lenisation when diddification was first applied, which has since become grammaticalised into the template
- in any case, the pattern is clear and robust: lenisation only occurs in intervocalic position in Scouse, and only if the preceding vowel is short

## 2.4 Spirantisation: Wermelskirchen German

Spirantisation is one of the main forms of lenition that we have not yet addressed. Hasenclever (1905), Davis & Iverson (1995), Davis, Iverson & Salmons (1999), Iverson & Salmons (2006), and Holsinger (2008) describe a phenomenon which is relevant to our concerns. This involves the way in which the High German Consonant Shift patterns in the dialect of Wermelskirchen. The HGCS:

- affected all varieties of High German to some extent
- varies considerably in its patterning in different HG dialects, affecting northern varieties of HG least
- affected fortis stops, deriving first affricates which then developed into fricatives
- patterned differently in initial position and postvocalic position – we focus on the intervocalic environment here

The changes involved can be represented as follows:

- p > pf > f
- t > ts > s – the fricative was originally not a simple [s], but has since merged with [s]
- k > kx > x – the fricative is now subject to the *ich-laut~ach-laut* palatalisation

At their earliest stages, these changes would have been innovated as synchronic processes, deriving fricatives in certain environments.

In Wermelskirchen, the intervocalic HGCS reflexes pattern as in the following forms, based on Hasenclever (1905), through Iverson & Salmons (2006):

[ɔfən] ‘open’	[ʃarp] ‘sharp’ (postvocalic) + r-vocalisation, giving a long vowel
[vəsən] ‘to know’	[ʃtrɔ:tə] ‘street’
[brɛçən] ‘to break’	[zy:kən] ‘to seek’

In Wermelskirchen, the fricative stage was only reached if the preceding vowel was short.

This can even lead to alternations within a paradigm:

<i>Infinitive</i>	<i>Preterite</i>	<i>Perfect</i>	
[ʃi:tən]	[ʃʊs]	[jəʃʊsən]	'shoot'
[ɛsən]	[ɔ:t]	[jesən]	'eat'
[brɛçən]	[brɔ:k]	[jəbrɔxən]	'break'

The crucial distinction for us is that between

- brɛçən 'to break'
- zy:kən 'to seek'

The current stops and fricatives have long been lexicalised into underlying representations, but the HGCS was once a process which spirantised intervocalic stops only if the preceding vowel was short.

## 2.5 Related phenomena

We are aware of a number of other phenomena where the length or shortness of a preceding vowel is crucial to the patterning. These are not further cases of exactly the pattern that we are discussing, but they are related (e.g., lenition in Emsland German – Holsinger 2008: 293). These cases need a more thorough consideration of the extent to which they are relevant.

## 3. Theoretical considerations

The theoretical consequence of these observations is that phonological theory might be expected to be able to account for the post-short vs. post-long distinction in the form of a parametric representational difference.

### 3.1 Special status to the consonant: ambisyllabicity / resyllabification / Coda Capture / virtual geminates

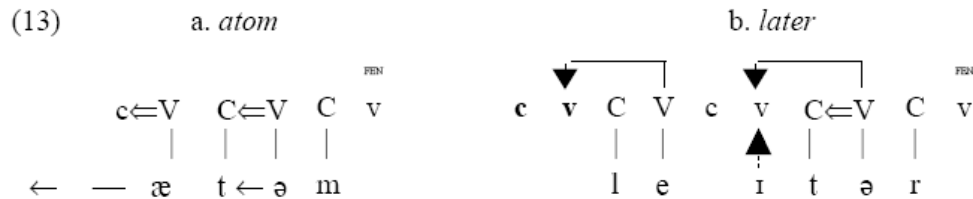
- cf. Motto 1
- only consonants following short/lax vowels are ambisyllabic
- to account for the distribution of tense/long and lax/short vowels (e.g., Wiese 1996: 36-37, also discussed in Jensen 2000): e.g., ambisyllabic in *Mitte* 'middle' but not in *Miete* 'rent'
- phonotactic bimoraicity and lenition separated
- OT account in Hammond (1997): covert gemination after lax vowels to achieve bimoraicity, plus foot-based account for flapping
- both ambisyllabicity and covert/virtual geminates are apparently supported by psycholinguistic evidence (e.g., Fallows 1981; questioned by Jensen 2000) – most powerfully after short/lax vowels, cf. Rubach (1996: 219)'s own observations
- 'coda capture' (~ 'Coda incorporation' in Bye & de Lacy 2008): a short V needs a following x-slot/mora to get enough weight to be stressed
- Bye & de Lacy (2008): in NZE-A, lenition affects intervocalic codas only (Coda-incorporation in *hatter* [(hæf.ə)] (not \*[hæ.tə])) but not in *meter* [(mí:).tə]
- ambisyllabicity / resyllabification or covert / virtual gemination – all debatable theoretical tools



### 3.2 Vowel length considered in a lateral framework: CVCV phonology

CVCV phonology: strictly alternating Consonantal and Vocalic skeletal positions, empty categories

- long vowels are considered to have the underlying structure Vcv, where the first V is lexically occupied by the melody of the vowel, but the second vocalic position must satisfy certain structural conditions to become available for the spreading of the first V's melody
- earliest versions of CV phonology (e.g., Lowenstamm 1996, Larsen 1995): that structural condition is the (proper) government of the following nonempty V
- Balogné Bérces (2008: Ch. 5.3.3): this readily explains tapping in *atom* and the lack thereof in words like *later*:



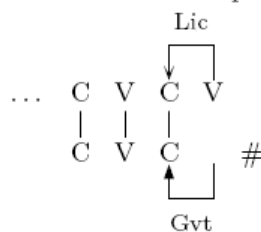
- government (single arrow) spoils, while licensing (double arrow) supports, the inherent properties of its target (Coda Mirror – Ségéral and Scheer 1999, Szigetvári 1999)
- how is tapping still possible for some speakers in words like *later*?

Coda Mirror v2 (Scheer & Ziková 2010): Coda Mirror modified with the very aim to rule out the possibility of a post-long/post-short distinction; cf. Motto 2

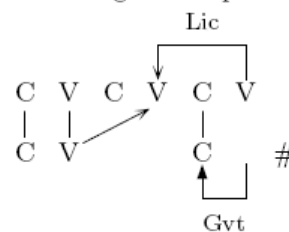
- second term of long vowel needs licensing
- this predicts that post-long C's are in the "nightmare position", i.e., superweak; consider the word-internal equivalent of their (6):

(6) Extrasyllabic languages (i.e., where FEN can license and govern)

(a) C# following a lexically short vowel: intervocalic position



(b) C# following a lexically long vowel: nightmare position



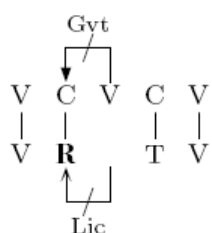
- modification: government over licensing
- result: all intervocalic C's are governed only, no difference between weak and super-weak, cf. their (8c) and (12):

(8) Coda Mirror v2

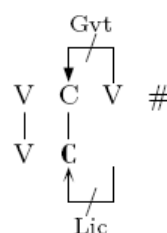
Consonants in codas: ungoverned and unlicensed

Intervocalic consonants: governed but unlicensed

(a) internal coda —.C



(b) final coda —#

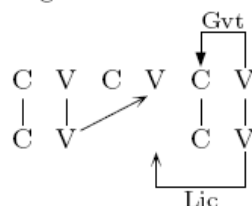


(c) intervoc. V—V

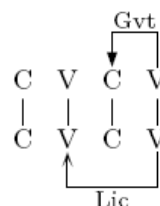


(12) Intervocalic licensing

(a) long vowels



(b) intervocalic consonants



The observations in Section 2 seem to refute their claim (Motto 2). Here we claim that there is parametric variation in which certain languages/varieties have weaker position after short vowels.

## 4. Conclusion

The present paper addresses the possibility of positing an additional parameter to lenition taxonomies: the length of the vowel preceding the site.

A number of frameworks have built (some of) the above observations into theory, in order to provide predictive/explanatory models, but they suffer from shortcomings.

Further work will be needed to establish whether the parameters discussed are independent or not

- can the [ vv\_\_v ] vs [ v\_\_v ] parameter hold only in systems with [ v\_\_v̂ ] vs [ v̂\_\_v ]
- all our examples for post-short vs. post-long come from stress sensitive lenition systems
  
- further cross-linguistic support is needed
- all the data collected so far exemplify the (word-internal or cross-word) intervocalic lenition site, so it is still a question whether their coda equivalent is also attested
- therefore, future research will have to decide if examples like the ones above are robust enough to produce the empirical echo Scheer and Ziková fail to find
- we believe that they are

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