

Asymmetric headedness and licensing constraints in English

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1 Aims

- Promote the theory of *Melody-to-Structure Licensing Constraints* (MLSC) as an analysis of segment to syllable structure interaction.
- Propose that English has a natural class of headed-H: aspirates and strident fricatives vs. the rest including plain (and phonetically voiced) stops and fricatives. This collapses *sib-sib and *s+aspirate.
- Propose that English has an MSLC banning branching/bipositionality of headed H.
- Address the counterexamples to the generalisation. They are derived. Our MSLC is located at the underlying ‘lexical’ level. Which is why this MSLC is still active in productive allomorph selection.
- Outcome: Dispute the underlying affricate status of *tr* in Current British English.

2 English: replacing fortis and lenis with headed-|H|

2.1 Ban on fortis-fortis?

Szigetvári (2017, to appear) proposes a new theory of obstruent-obstruent clusters. He separates obstruents into two classes:

(1)	Lenis	non-fortis		(v, z, b, d, g, dʒ..., n, m, l, r)
	Fortis	voiceless	H	(f, s, p, t, k, tʃ...)

He then effectively claims that English has a restriction on the branching of the element |H|. Obstruent clusters can contain at most a single fortis consonant (for the reasoning and arguments see *ibid.*).

This correctly rules out *st^h but it forces a highly unconventional reanalysis of voiceless-voiceless obstruent clusters. He states that one of the pair of voiceless obstruents (that he takes to be fortis-fortis) should be lenis.

(2) Obstruent clusters according to Szigetvári (2017, to appear)

a. *s+C^h

*sp	>	sbot	‘spot’
*st	>	sdick	‘stick’
*sk	>	sgool	‘school’

b. voiceless-voiceless clusters are all reanalysed

*ft	>	lifd	or	livt		‘lift’	
*pt	>	apd	or	abt		‘apt’	
*kt	>	akd	or	agt		‘act’	
*t/?θ	>	widθ	or	witð	or	??	‘width’

2.2 *fortis-fortis yes, but fortis *= voicelessness

We think Szigetvári is essentially correct, but he uses the wrong natural classes. There is no restriction on voiceless-voiceless clusters.

Point 1- voiceless-voiceless clusters are robustly attested

(3) /sf, ks, ps/

a. s+C

[sfɪə] ‘sphere’

b. VCC#

[fɒks] ‘fox’

[æps] ‘apse’

c. /ft/ (pre-stress)

[fɪft^hi:n] ‘fifteen’

Although the /t/ in the /ft/ cluster is phonetically a little reduced in its aspiration, it is by no means categorically/fully lenis: *[fɪfti:n] “fifteen”, and *neither* does the /f/ become lenis: *[fɪvt^hi:n] “fifteen”.

In AAVE (and similar US dialects). There seems to be a phonological contrast between lenis and fortis t after an ‘f’. For Szigetvári there should be no contrast here.¹

(4) Weak and Strong ‘t’ after ‘f’

(a) fifty ‘fiddy’

(b) fiftéen *‘fiddeen’

The fact that the ‘t’ lenites after ‘f’ in foot medial position suggests this is a lenis stop. Meanwhile, if the ‘t’ is found before stress it is aspirated (so surely fortis by any definition) and fittingly it does not lenite. Stress is the conditioning factor for fortis which is associated in English with aspiration (true fortis) not merely voicelessness (which is incidental).

This strongly suggests that when ‘t’ is before stress and after ‘f’ it is fortis (forming a fortis-fortis cluster). However, ‘t’ cannot be fortis in the same way before stress and following /s/.

(5) a. fift^héen

b. st*(^h)eeve

Therefore English allows f + aspirate sequences (which Szigetvári would take as fortis-fortis).

Point 2 – Precluster clipping cannot help us decide between analyses

Szigetvári (p.c.) proposes to reanalyse the (3b) counterexamples as:

(6) Either fogs or fokz

Either æbs or æpz

In fact, it’s impossible to decide if he’s correct from these forms. Because the vowels in (3b)-type words are pre-fortis clipped. In English, vowels have pre-fortis clipping *either* if C1 or C2 are fortis:

(7) sět vs. səd
‘set’ ‘said’

sěnt vs. sænd
‘sent’ ‘send’

But either way, there is no argument to be found from this data. **Pre-fortis clipping is also compatible with the hypothesis that the final cluster is fortis-fortis.**

Point 3 - sf and sv can contrast in at least some British English speakers

Finally, Szigetvári (p.c.) has to reanalyze the counterexample **sphere** (3a): [sf].

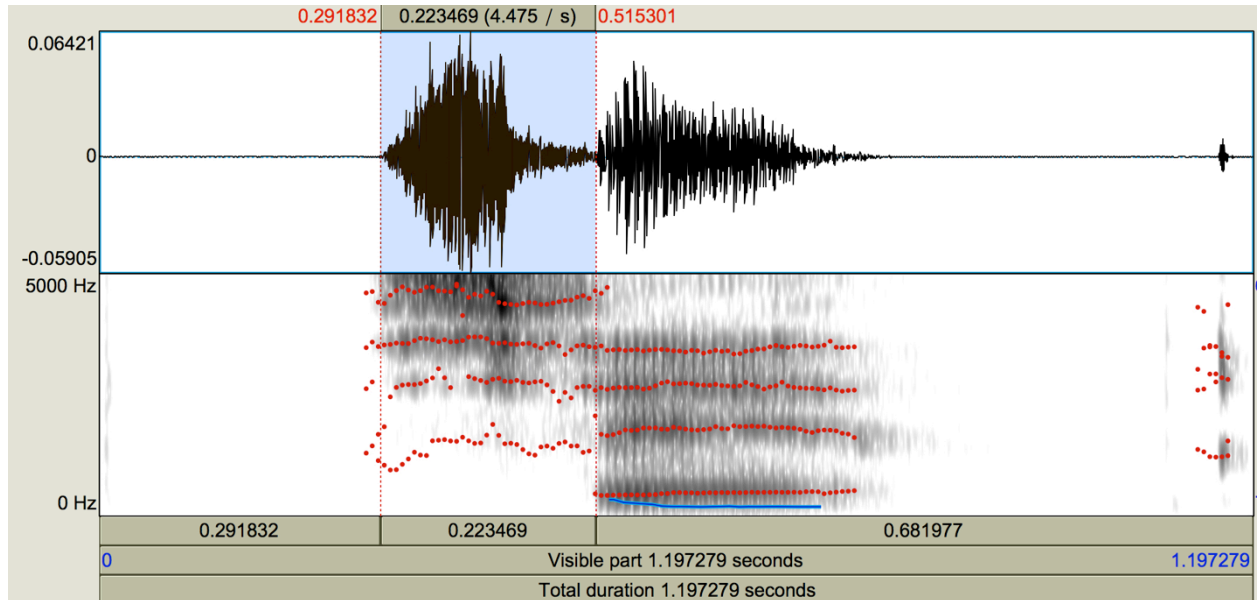
For Szigetvári there cannot be a phonological contrast between /sf/ and /sv/. Because all *sf* is fortis-fortis. Though it is phonetically pronounced [sf], he’d have to claim that it is phonologically ‘sv’.²

¹ And a contrast based on fd and vt (for the same root is surely improbable).

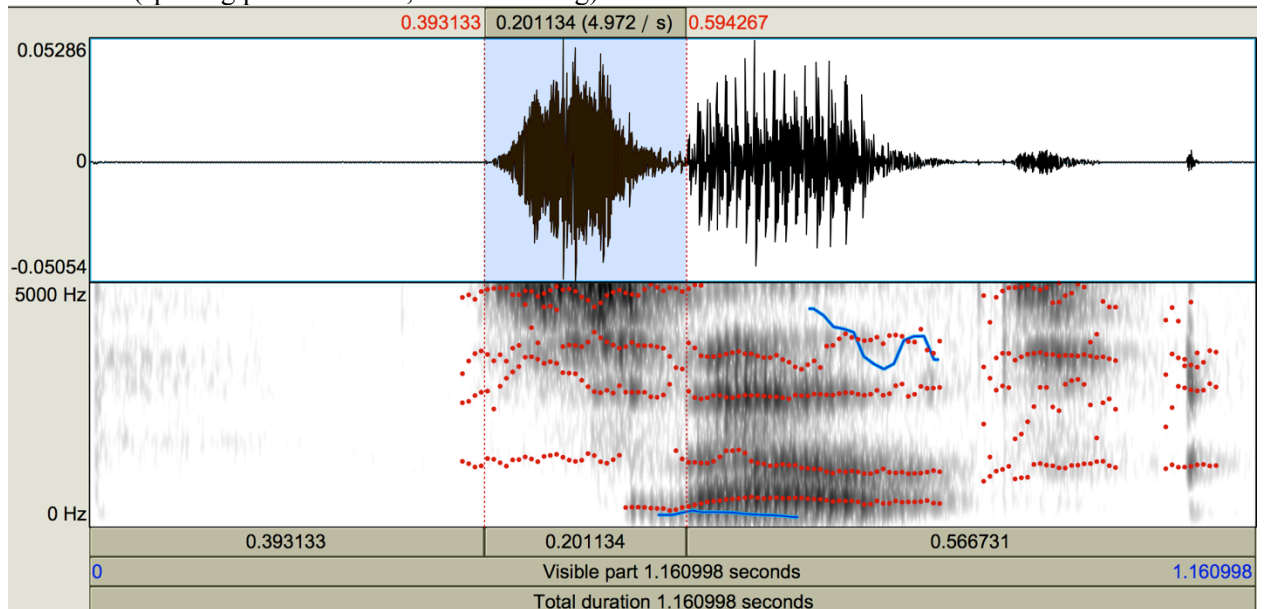
A *Youglish* survey confirms that most British speakers produce ‘svelte’ with an initial [sf], many others might pronounce it as [zv]. However, there are some who have a spelling pronunciation of the word. **This shows us how ‘sv’ would be pronounced if it was UR /sv/ (8).** Therefore, **sf-initial words cannot be phonologically fortis-lenis.**

(8) ‘sphere’ vs. ‘svelte’ contrast

a. sphere (voiceless all the way through)



b. ‘svelte’ (spelling pronunciation, mixed voicing)



2.3 Ban on Headed H

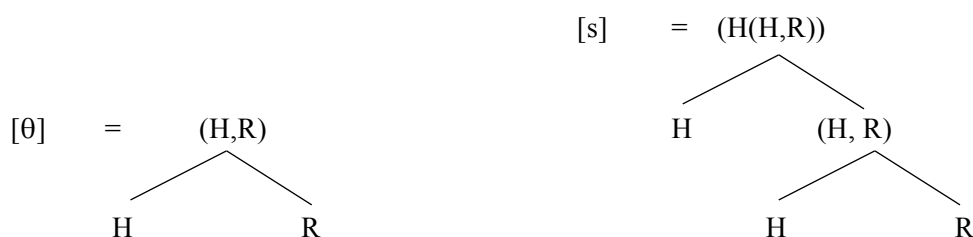
We propose to use an existing natural class to correctly rule out s+aspirates and sibilant-sibilant clusters, all the while leaving voiceless-voiceless clusters intact.

² Proposing it to be zf seems even less likely.

(9)	H Aspirates Strident fricatives (s, z, ʃ, ʒ)	H Non-aspirate stops Non-strident fricatives (f, v, θ, ð)
-----	-----------------------------------------------------	------------------------------------------------------------------

They're composed of the same material but the |H| is organized within the structure asymmetrically as a 'head'.

(10) a. non-strident fricative b. strident fricative



This distinction is independently and *phonologically* supported in English from the well-known patterns of past-tense and plural allomorphy:

(11) Regular plural allomorphy showing headed

-s (voiceless stops including voiceless fricatives)

- i. /kat + z/ [kats] 'cats'
- ii. /plʌf + z/ [plʌfs] 'bluffs'

-ɪz (for roots ending in |H|)

- i. /wɒtʃ + z/ [wɒtʃɪz] 'watches'
- ii. /ho:s + z/ [ho:sɪz] 'horses'

This natural class must be independently established in order to account for the allomorphy, and it is fully productive (for most speakers). Having established the natural classes, we will formalize the phonotactic.

3 MSLCs the basics

When elements interact with structure, it is tempting to attempt to reduce the element to a structure (GP2.0, Pöchtrager 2006). But is it the right approach?

To take a specific example, phonetic lowness (|A|) often seems to interact with vowel length/stress and syllable structure (Kaye & Pöchtrager 2013; Pöchtrager 2018). This leads GP2.0 to claim that: "since |A| consistently interacts with structure, it must be structural itself" (ibid:par8). We will call this an *Element is Structure* analysis.

However, *Element is Structure is an analytical choice, not a logical necessity*. Whenever we see an element interacting with structure, we actually have two choices: (a) assume *Element is Structure* (like GP2.0) or (b) assume a formal mechanism governing the interaction of melody and structure. We call this approach a *Melody-to-Structure Licensing Constraint* (Ulfsbjörninn & Lahrouchi 2016).

3.1 How to decide between Element is Structure and MSLC type analyses?

The logic of *Element is Structure* does not permit bidirectional statements. MSLC does.

The typology of the distribution of |ʔ| is bidirectional (top-down and bottom up) (Ulfsbjorninn & Lahrouchi 2016).

A particular element can be stated to be licensed by a structure **or** a structure can be licensed by an element (this ought to be impossible, if it were just: |ʔ| = bipositionality).

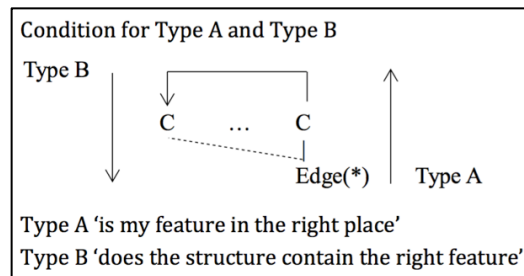
(12) MSLC on Edge (|ʔ| or |ʔ|)

- a. (Headed) Edge (stopness) must be licensed by Bipositionality

Effect: No singleton stops
 Geminates free to contain any consonant
 Example: Berber, Gadsup

- b. Bipositionality must be licensed by Edge (includes hard sonorants)

Effect: Singleton stops can be any consonant
 Geminates must contain edge
 Example: Kingi Soninké



- c. Summary:

Therefore, it's not the case that |ʔ| is bipositionality (*contra* Jensen 1994; GP2.0 Pöchtrager 2006 and subsequent). It's that some languages have grammaticalised an MSLC: a language specific phonotactic that relates segments to syllable structure.

The content of the MSLC is language specific, but the mechanisms by which an MSLC is established is part of phonological universal grammar (in the SPE (Chomsky & Halle 1968) sense).

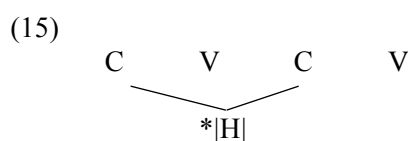
3.2 MSLC on branching headed |H|

We propose an MSLC, shown in (14) and its representational outcome shown in (15) bans headed |H| from bipositional structures.

Effectively this stops headed |H| from branching. In Element Theory stridency/sibilance and aspiration are an intuitive natural class (cf. spread glottis):

- | | | |
|------|----------------------------------|--------------------------------------|
| (13) | H | H |
| | Aspirates p ^h ... | Non-aspirate stops |
| | Strident fricatives (s, z, ʃ, ʒ) | Non-strident fricatives (f, v, θ, ð) |

- (14) MSLC on |H| (English)
 |H| cannot be contained by a bipositional structure



This MSLC immediately excludes strident fricatives from preceding or following aspirate stops. But crucially, unlike Szigetvari’s fortis-fortis claim, it allows non-sibilant fricatives and non-aspirate stops to be adjacent as shown in (16c).

(16) Sequences affected by our MSLC

- | | | | | |
|----|------|-----------------------------------------------------------------------|-------------------------|------------|
| a. | s+ | aspirated stop | | |
| | i. | [p ^h leɪs] | | ‘place’ |
| | ii. | mis- + p ^h leɪs/ → [misplɛɪs] | *misp ^h leɪs | ‘misplace’ |
| b. | s+ | strident fricatives and affricates | | |
| | i. | [sti:m] | | ‘steam’ |
| | ii. | *[stʃi:m] | | |
| c. | s+ | non-strident fricatives/non-aspirate voiceless stops permitted | | |
| | i. | fɪ[ft ^h]een | | ‘fifteen’ |
| | ii. | [sfɪə] | | ‘sphere’ |
| | iii. | [fɒks] | | ‘fox’ |
| | iv. | [æps] | | ‘apse’ |

4 What about counterexamples?

All the counterexamples come from precisely two sources, which are completely phonologically predictable.³

There are two (and only two) recent, non-categorical, ‘derived’ i.e. allophonic/contextual exceptions to the adjacent strident rule:

- (17) a. /t + (j)ʊ:/ [stju:], [stʃu:], [ftʃu:] ‘stew’
 [k^hɒstʃu:m] ‘costume’
 [əstʃu:t] ‘astute’ (Szigetvari p.c.)
- b. s + t before r: [æstʃrənɔ:t] ‘astronaut’, [tʃɪn] ‘train’ etc...

Firstly, the phonetic/phonological status as an affricate is far from clear: [stʃɪnkt], [stʃɪnkt] or [ftʃɪnkt] or is it [stɪnkt]? An affricate might not be the correct phonetic characterisation of this ‘t’ before ‘r’.

However, it is not obvious it matters given that native speakers can’t hear the difference (but can they unconsciously?? – would be interesting to find out).

Secondly, even if we accept they’re affricates. They’re clearly derived.

- (18) meter metrical
 enter entry
 filter filtration

5 Conclusion

We need a formal mechanism to establish interrelation conditions on melody to structure (and vice-versa): **Melody-to-Structure Licensing Constraints** (MSLC).

³ The only other counterexamples are transparently/consciously known loanwords: masjid ‘mosque’ (where the whole word receives a non-English pronunciation – look at the ‘a’).

In English, the MSLC applies to headed [H] in underlying forms.

Though there are surface phonetic counterexamples to the generalisation these are strictly demarcated in a certain phonological context and so are taken to be derived.

The fact that the so called s+affricate+r sequences emerge from largely transparent morphological alternations: fil[t]er :: fil[tʃ]ation further re-enforces this analysis.

The fact that the s+affricate counterexamples are either from clearly identifiable un-integrated loanwords, and from completely predictable phonological environments and that there are still quite transparent alternations in the lexicon. Probably allows learners to maintain the MSLC, despite surface counterexamples.

[H] cannot be contained by a bipositional structure

The fact that the condition is still active – and applies to underlying forms – is fully consistent with its application in a fully productive allomorphic process such as plural allomorphy: /plʌf + z/ → [plʌfs] ‘bluffs’ vs. /ho:s + z/ → [ho:sz] ‘horses’.

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