English is a purely [spread glottis] language

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"Boy, he must think we're pretty stupid to fall for that again."

Aims:

to show that:

- **the received view, that English has a phonological opposition between voiceless and voiced obstruents, is mistaken (spelling?? other (truly voice) languages??)**

- **the correct characterization of the opposition: aspirated ([spread glottis] – [sg] for short) vs. unaspirated**

- **using a privative [sg] feature**

- **not only for plosives, but fricatives, too**

Aims:

to account for:

- the "lack" of aspiration in tautosyllabic s+C$_{[obs]}$

- the devoicing of the sonorant in both C$_{[sg]}$+C$_{[son]}$ and s+C$_{[son]}$

- the "devoicing" of non-intersonorant lenis stops

- "bidirectional voice assimilation"

- the identical distribution of plosive aspiration and the segment /h/

Laryngeal systems

one-way contrast

	/p ~ b̥/	/b/	/pʰ/	/p'/
Hawaiian	[ ]			
K'ekchi	[ ]			[cst gl]
Spanish	[ ]	[voice]		
English	[ ]		[spr gl]	

two-way contrast

+ three/four-way contrast...

Two-way laryngeal contrast in obstruents:

[voice] vs. [spread glottis] languages*
("laryngeal realism" – Honeybone 2005):

$$b \sim p \text{ vs. } \underset{\circ}{b} \sim p^h \text{ (lenis } \sim \text{ fortis)}$$

in what follows: arguments that voice and aspiration ([sg]) are two totally different mechanisms defining the two types of system and incompatible within two-way systems

* cf. Iverson & Salmons 1995 (and subsequent publications), etc.

Two totally different mechanisms

"*The only source of phonological knowledge is phonological behaviour.*"
(Phonological epistemological principle, Jonathan Kaye, *p. c.*)

• **voice totally inactive in [sg] languages (English, German, etc.): no assimilation!**

• **instead: "bidirectional devoicing":**

obtain [əb̥ˈtʰeɪn]	*matchbox* [ˈmætʃb̥ɒks]
cheesecake [ˈtʃiːz̥kʰeɪk]	*baseball* [ˈb̥eɪsb̥ɔːɫ]
bigfoot [ˈb̥ɪgfʊt]	*cookbook* [ˈkʰʊkb̥ʊk]
egghead [ˈeghed̥]	*life gear* [ˈlaɪfgɪə(r)]
roadster [ˈrəʊd̥stə(r)]	*Shoot back!* [ˈʃuːt ˈb̥æk]

=> nothing happens! UR->SR

Two totally different mechanisms

"initial and final de-voicing":

nothing happens!

UR -> SR:

Utterance-initial	Utterance-final
(a)	(b)
Bravo! [ˈb̥rɑːvəʊ]	*Mad!* [ˈmæd̥]
Good! [ˈɡ̊ʊd̥]	*Go ahead!* [əˈhed̥]
Zany! [ˈz̥eɪnɪ]	*Think big!* [ˈb̥ɪɡ̊]
Damn! [ˈd̥æm]	*Bob!* [ˈb̥ɒb̥]
Very much! [ˈv̥erɪ]	*Leave!* [ˈliːv̥]

Two totally different mechanisms

- plus: intersonorant voicing of lenis:

  rea<u>d</u>ing, rea<u>ds</u> it, Gar<u>d</u>ner, ba<u>d</u>ly, bin<u>g</u>o,

  bi<u>g</u> name, gi<u>v</u>e it, Play <u>B</u>all

- **phonetics**: the influence of the spontaneous phonetic voicing of the flanking sonorants, surface string-adjacency is the only requirement, applies automatically irrespective of phon/morph/synt context/ structure

Two totally different mechanisms

"The only source of phonological knowledge is phonological behaviour."
(Phonological epistemological principle, Jonathan Kaye, *p. c.*)

As opposed to

- [voice] languages: "**Distinctive [voice] implies regressive voicing assimilation**" (van Rooy & Wissing 2001)*
- Spanish, French, Slavic, Hungarian, etc.

* Apparently countered by Swedish (Ringen & Helgason 2004) – but: phonetic realization of lenis; cf. Kaye's Phon. epist. principle.

Two totally different mechanisms

Hungarian:

rab̲tól ['rɒpto:l]	*matc̲h̲box* ['mɛdʒboks]
réz̲karc ['re:skɒrts]	*bas̲eball* ['be:zbo:l]
hangfal ['hɒŋkfɒl]	*tök̲bő̲l* ['tøgbø:l]
ég̲hez ['e:khɛz]	*af̲gán* ['ɒvga:n]
road̲show ['ro:tʃo:]	*kert̲bő̲l* ['kɛrdbø:l]
(glosses: 'from prisoner'	(glosses: 'toy car'
'copper etching'	'ibid.'
'loudspeaker'	'from pumpkin'
'to sky'	'Afghan'
'ibid.')	'from garden')

Two totally different mechanisms

"The only source of phonological knowledge is phonological behaviour."
(Phonological epistemological principle, Jonathan Kaye, *p. c.*)

As opposed to

- [voice] languages: "Distinctive [voice] implies regressive voicing assimilation" (van Rooy & Wissing 2001)

- **true laryngeal activity!**

Why Government Phonology?*

- to achieve a maximally constrained theory of subsegmental organization

- privativity

- the "One Mouth Principle"

- the Phonological epistemological principle (see above)

- forces driving suprasegmental organization: government and licensing

* Kaye et al. 1985, Harris 1994, Backley & Takahashi 1998, etc.

Classical GP's Element Theory

- **L, H (e.g., Harris 1994)**

- **doesn't capture the fact that there are two different mechanisms! (see above)**

Classical GP's Element Theory

- L, H

- two different mechanisms!

- L: the AUTONOMOUS INTERPRETATION HYPOTHESIS: primes of phonological representations should all enjoy 'stand-alone phonetic interpretability' (Harris & Lindsey 1995:34) (noted in Szigetvári (1996), de Carvalho (2002), Sóskuthy (2008))

Classical GP's Element Theory

- L, H
- two different mechanisms!
- L: the AUTONOMOUS INTERPRETATION HYPOTHESIS
- /h/ -- the interpretation of [H] or [h]? – redundancy

Classical GP's Element Theory

- L, H
- two different mechanisms!
- L: the AUTONOMOUS INTERPRETATION HYPOTHESIS
- /h/ -- the interpretation of [H] or [h]? – redundancy
- let's throw away both! :-)

Voice

- (detailed discussion beyond the scope of the present talk)

- ~ **nasality**

- e.g., GP's Revised Element Theory (Jonathan Kaye, p.c.): nasality=low tone > L is low tone, nasality and voicing

- here: Nasukawa (1997 and subsequent publications): [voice] and nasality expressed by {N}

- (may turn out to be merely notational variants)

Aspiration

= **fortisness**: English: all (?) fortis obstruents:

pit	*prim*		*spit*	*spray*
sit	*slit*			
ship	*shrink*			

(*fling*? *throb*? -- no data; prediction: devoiced sonorant)

(NOT phonetic: *I slip* vs*. ice lip)*

Aspiration

plus: lenis obstruents take on passive voicing between sonorants: lenis ~ sonorant

=> fortis is more obstruent than lenis

==> aspiration is dominant obstruency ([h])

Theoretical framework

Activate α (Backley & Takahashi 1996, 1998)

- worked out for vocalic representation only (harmony processes specifically)

- it assumes *all melodic elements* (I, U, A) to be present *in all positions*

- it respects the strict Structure Preservation Principle

- it introduces ACTIVATION (and tier complement): it is a lexical instruction to activate an element lying dormant on its tier (or on the tier complement)

Theoretical framework
Activate α (Backley & Takahashi 1996, 1998)

```
tier complement  >      [comp]               [ ]
                          /                    /
melodic tier     >      [I]                  [I]
                          |                    |
aperture tier    >      [A]                  [A]

                         [e]                  [ɛ]
```

Theoretical framework

***Leiden paper model* (Nasukawa & Backley 2005)**

- elements are grouped into EDGE, SOURCE, RESONANCE and FUNDAMENTAL sets:
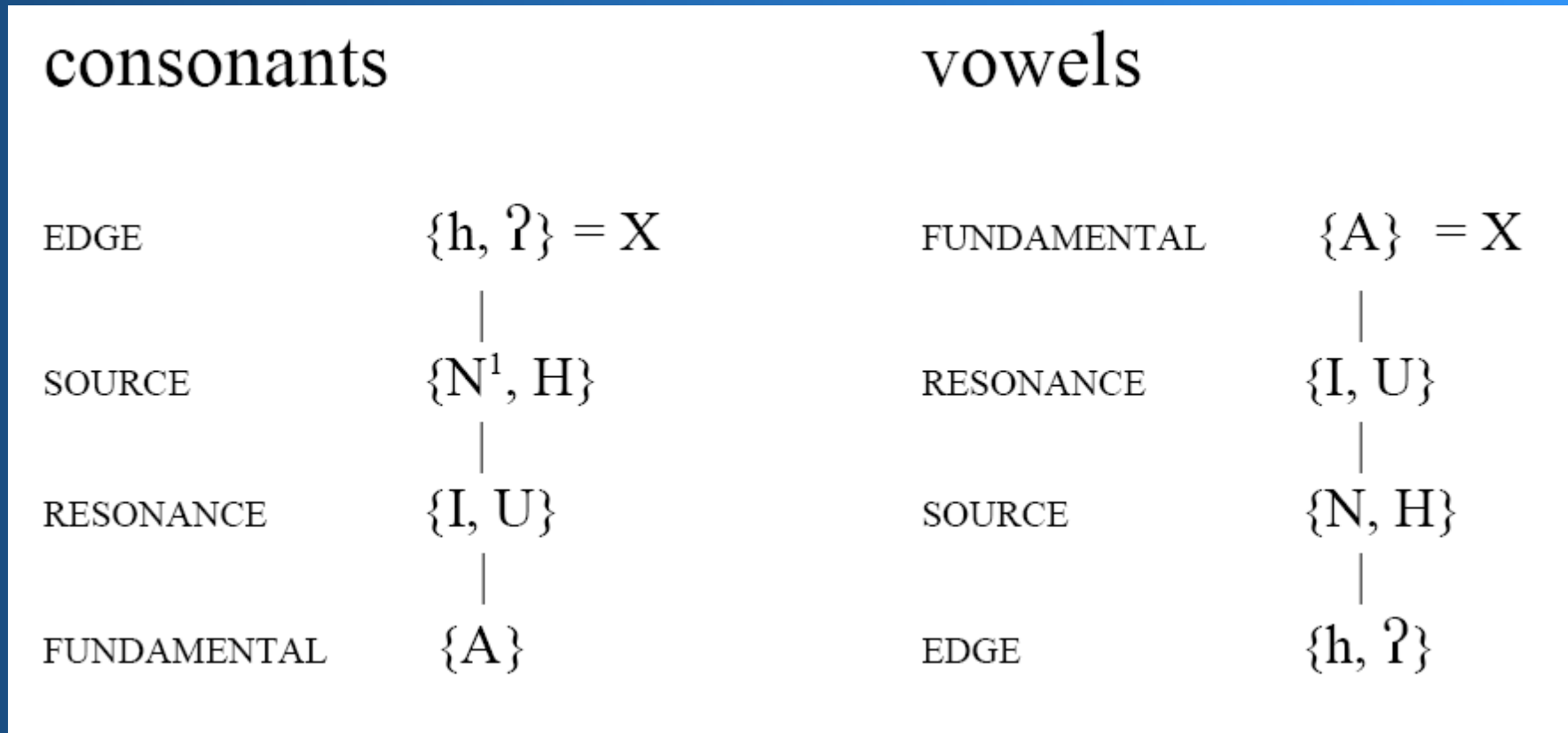
> EDGE {?, h} SOURCE {L, H}
>
> RESONANCE {I, U} FUNDAMENTAL {A}

- *all elements* are present *in all positions ->* "vowels" and "consonants" are composed of exactly the same elements…

- …in the reverse order of dominance:

Theoretical framework

Leiden paper model **(Nasukawa & Backley 2005)**

consonants		vowels	
EDGE	$\{h, ʔ\} = X$	FUNDAMENTAL	$\{A\} = X$
	|		|
SOURCE	$\{N^1, H\}$	RESONANCE	$\{I, U\}$
	|		|
RESONANCE	$\{I, U\}$	SOURCE	$\{N, H\}$
	|		|
FUNDAMENTAL	$\{A\}$	EDGE	$\{h, ʔ\}$

[1] **This representation already has {N} for Nasukawa and Backley's {L}.**

Theoretical framework

Modifying the Leiden Model

we have proposed two important modifications (for details, see Huber & Balogné 2009 (MFM)) (mostly irrelevant to the present argument):

- the dependent group, SOURCE and FUNDAMENTAL, can maximally contain one single element

- {N} to replace {L} in all its functions

Analysis

- **aspiration (in the form of a "dominant" {h} element):** **part of the underlying representation** **of fortis plosives (-> when it surfaces it is default rather than result of fortition process – cf. Vaux 2002)** *tick* [tʰɪk]

- **but: allowed to surface only when it is** **licenced** **to be realized (= in a strong phonological position)**

- **lenis obstruents: no source/voice element, no dominant {h} (=> phonologically inert); no obstruent devoicing or voice assimilation of any kind in the analysis!** *matchbox* [ˈmætʃb̥ɒks] *bad* [b̥æd̥]

Analysis

the representation of consonants in a [sg] system:

[pʰ]	[fʰ]	[p] = [b̥]	[f] = [v̥]	[m]
[U]	[U]	[U]	[U]	[U]
[ʔ]	[ ]	[ʔ]	[ ]	[ʔ]
[h]	[h]	[h]	[h]	[ ]
[h]	[h]	[ ]	[ ]	[ ]

recall: if there is no evidence for the presence of an element, it must not be assumed in the system – in this case, there is no {N} if there is no evidence of its being active

Analysis

- **aspiration as agreement (~ harmony):**
- **Activate {h} in licenced position**

<p style="text-align:center">plus:</p>

- **transmitted to the next (nonempty) C or V (~ Backley's (1998) PEx)**

PRINCIPLE OF EXTENSION (PEx)
Extend the domain of ACTIVATE [α] to enhance element interpretability.

Analysis

- **aspiration as agreement (~ harmony):**

	Pete		*tea*	
	p^h	i …	t^h	i …
RESONANCE	[U]	[I]	[ ]	[I]
EDGE	[ʔ]	[ ]	[ʔ]	[ ]
	[h] >>> [h]		[h] >>> [h]	
comp	[h]	[I]	[h]	[I]

Analysis

- **aspiration as agreement (~ harmony):**

$$
\begin{array}{lll}
 & \textit{play} & \\
 & p^{h} & \mathring{l} \ldots \\
\text{RESONANCE} & [U] & [\ ] \\
\text{EDGE} & [?\ ] & [?\ ] \\
 & [h\ ] \ggg & [h\ ] \\
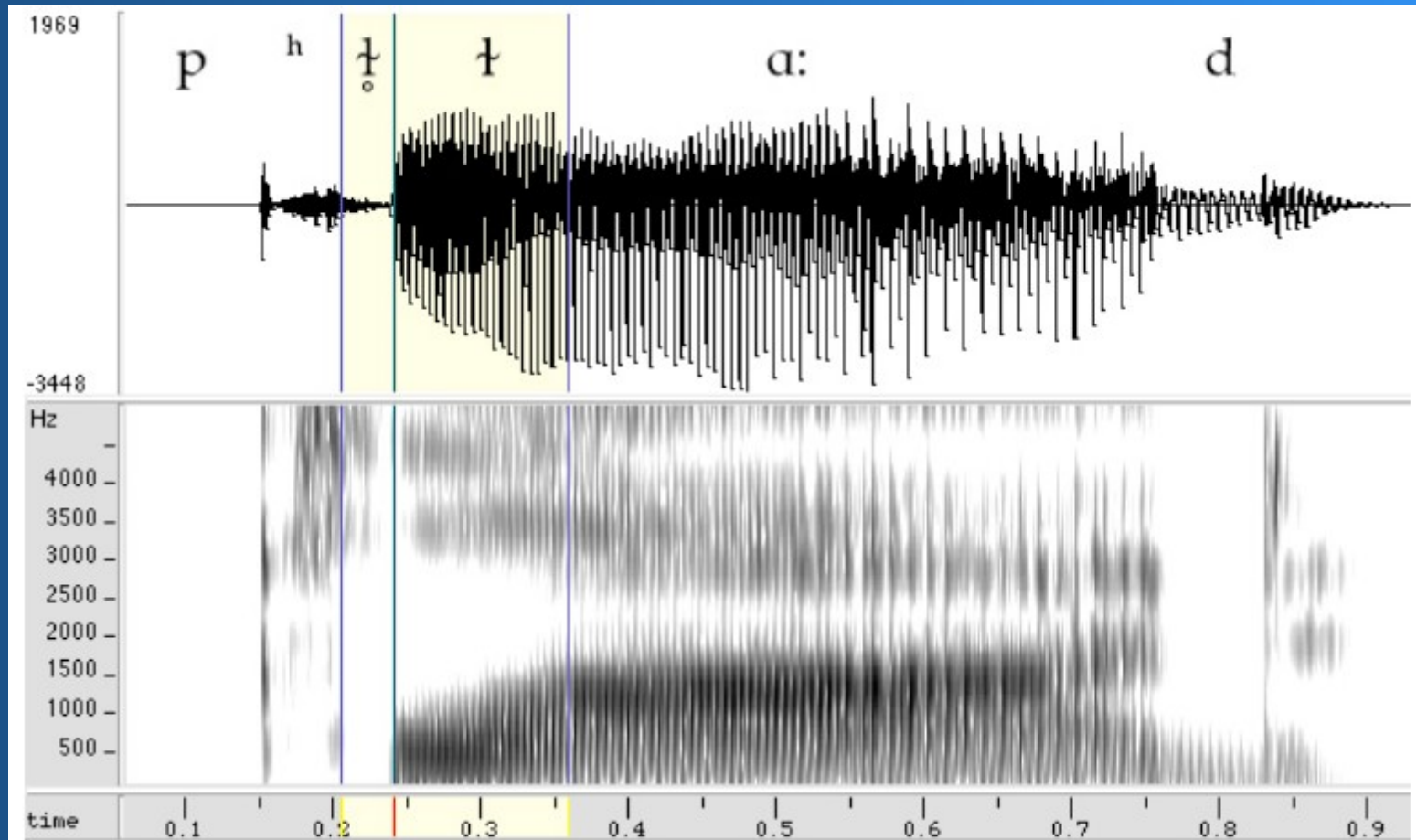\text{comp} & [h\ ] & [\ ]
\end{array}
$$

Analysis

- similarly: fortis fricatives have a dominant {h} element, too, which explains their ability to devoice sonorants analogously to aspiration*:
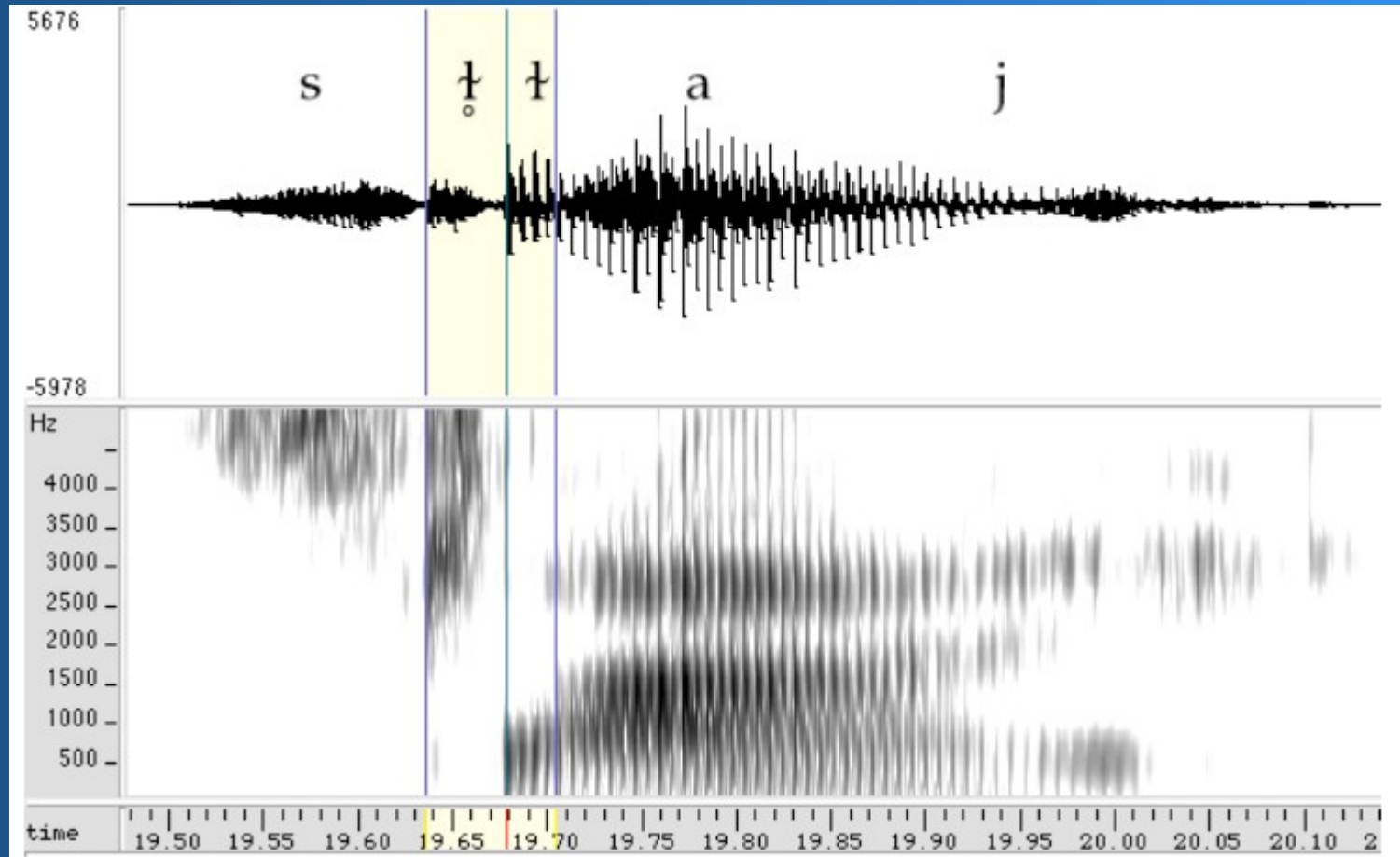
lay [leɪ] versus *play* [pl̥eɪ] and *slay* [sl̥eɪ]

* Cf. Vaux (1998), Beckman & Ringen (2009)

Sonorant devoicing in English initial /pl/ cluster: *plod*

(Beckman & Ringen 2009: 2)

Sonorant devoicing in English initial /sl/ cluster: *sly*

(Beckman & Ringen 2009: 2)

Analysis

- **similarly: fortis fricatives have a dominant {h} element, too, which explains their ability to devoice sonorants analogously to aspiration:**

$$lay\ [\text{leɪ}]\ \text{versus}\ play\ [\text{pl̥eɪ}]\ \text{and}\ slay\ [\text{sl̥eɪ}]$$

- **recall: aspiration is dominant obstruency: all obstruents are expected to follow the same pattern**

Analysis

- **similarly: fortis fricatives have a dominant {h} element, too:**

	play			*slay*		
	p^h		$\overset{\circ}{l}$ ...	s^h		$\overset{\circ}{l}$ ...
RESONANCE	[U]		[ ]	[ ]		[ ]
EDGE	[ʔ]		[ʔ]	[ ]		[ʔ]
	[h]	>>>	[h]	[h]	>>>	[h]
comp		[h]	[ ]		[h]	[ ]

Analysis

- **no aspiration in tautosyllabic s+C[obs]:**

$$stick$$

	s^h	$t \ldots$
RESONANCE	[ ]	[ ]
EDGE	[ ]	[?]
	[h] >>> [h]	
comp	[h]	([h])

- **/s/ vacuously activates [h] in /t/**
- **only /s/ is in strong position, /t/ is not licenced***

* NOT an OCP effect (contra Kim (1970), Iverson & Salmons (1995), etc.)

Conclusions

- **in [sg] systems: {h} alone is active, SOURCE is "rejected/suppressed". This explains:**

- **why there is no (true) laryngeal activity, no (true) voice assimilation**

- **why the distribution of aspiration and the segment /h/ coincide (at least in English)**

Conclusions

- VOICE and ASPIRATION: two totally different mechanisms!! which cannot combine in a language *with a two-way contrast*:

- if SOURCE present with its {N} → active → [voice] lang.

- if Activate {h} present → [sg] lang.

- if neither → one-way contrast: voiceless unasp.

- and: the inventory of elements utilized is reduced, which desirably constrains the generative power of the model

Conclusions

"THIS GUY IS FALLING! THIS GUY IS FALLING!"

"Boy, he must think we're pretty stupid to fall for that again."

English is a purely [sg] language:

• **"devoiced voiced" = unaspirated:**

$$... \text{s\r{g}aɪ} ... = ... \text{sk}^{=}\text{aɪ} ...$$

• **no voice assimilation (as in [voice] languages): *zg**

Questions remaining, e.g.:

- **Do sibilant and non-sibilant fricatives behave in the same way?**

- **Difference between pre- and post-aspiration**

- **Representation of consonant clusters: cf.** *Tom/atom* **vs.** *prill/April*

- **Representation of consonant clusters: sC**

- **Languages with 3/4-way laryngeal contrast, [constr gl] systems...**

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