

Pink Floyd at Ulaanbaatar and Eyjafjallajökull

A diachronic and typological study of alveolar lateral fricatives: preliminary findings

Júda Ronén <<https://ac.digitalwords.net/>>

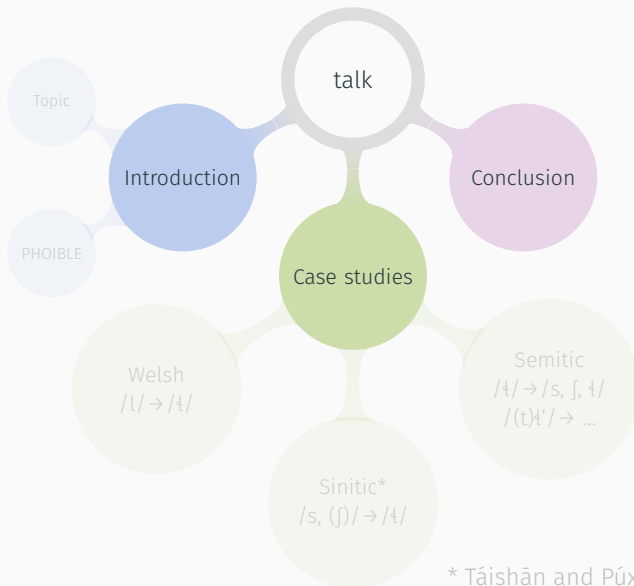
The Hebrew University of Jerusalem

Department of Linguistics

Phonological Typology (#41842)

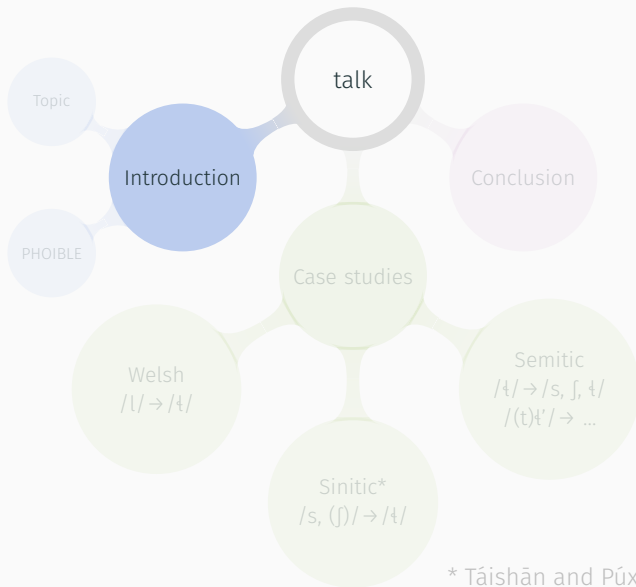
January 2019

Structure



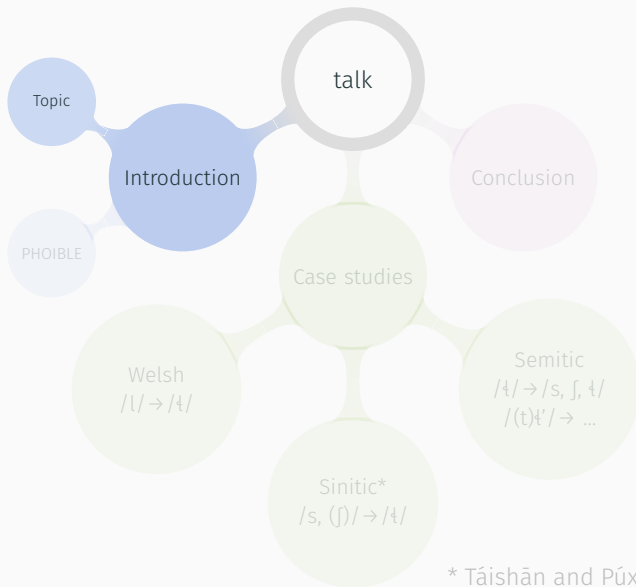
* Táishān and Púxiān dialects

Structure



* Táishān and Púxiān dialects

Structure



* Táishān and Púxiān dialects

/t/ and /ɬ/ within IPA's chart

	Bilabial	Labiodental	Dental	Alveolar	Postalveolar	Retroflex	Palatal	Velar	Uvular	Pharyngeal	Glottal
Plosive	p b		t d			ʈ ɖ	c ɟ	k ɡ	q ɢ		ʔ
Nasal	m	ɱ	n			ɳ	ɲ	ŋ	ɴ		
Trill	ʙ		r						ʀ		
Tap or Flap		ⱱ	ɾ			ɽ					
Fricative	ɸ β	f v	θ ð	s z	ʃ ʒ	ʂ ʐ	ç ʝ	x ɣ	χ ʁ	ħ ʕ	h ɦ
Lateral fricative			ɬ ɮ								
Approximant		ʋ	ɹ			ɻ	j	ɰ			
Lateral approximant			l			ɭ	ʎ	ʟ			

Research question: what?

- /t̥/ and /t̚/ are quite rare but not extremely rare.
Goldilocks zone.

/ŋʈʰx̚/	/t̥/	/m/
1 _{/2155}	113 _{/2155}	2053 _{/2155}

Research question: what?

- /t/ and /ɜ/ are quite rare but not extremely rare. Goldilocks zone.
- *Diachrony*: pathways leading to and away from these sounds.
- *Synchrony*: allophones, phonotactics and other structural relationships.

Research question: what?

- /t/ and /ʒ/ are quite rare but not extremely rare. Goldilocks zone.
- *Diachrony*: pathways leading to and away from these sounds.
- *Synchrony*: allophones, phonotactics and other structural relationships.
- ⇒ Generalization.
- Hypothesis: /t/ and /ʒ/ are inter-connected with the same sounds both in diachrony and in synchrony.

Research question: how?

diachrony	BDPROTO Reconstructions	MARSICO et al. 2018
synchrony	PHOIBLE PBase The World Phonotactics Database The Database of Eurasian Phonological Inventories DB of borrowed phonemes Grammars	MORAN et al. 2014 MIELKE 2008 DONOHUE et al. 2013 NIKOLAEV et al. 2015

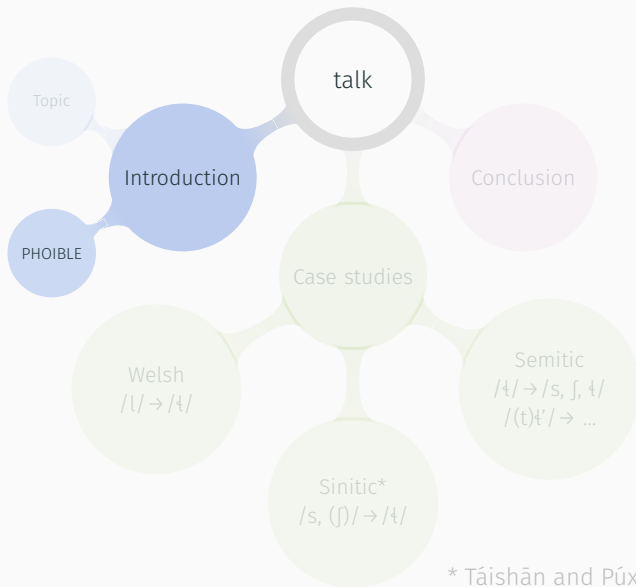
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	DB of borrowed phonemes	
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Research question: how?

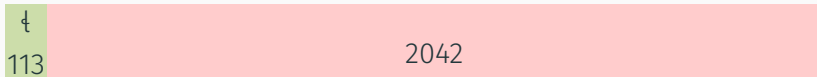
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Structure

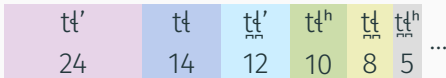
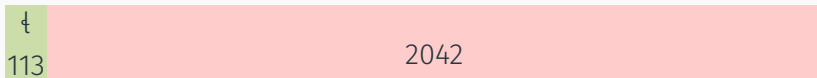


* Táishān and Púxiān dialects

/t/ in PHOIBLE: representation



/t/ in PHOIBLE: representation



⋮

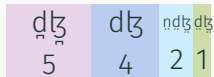
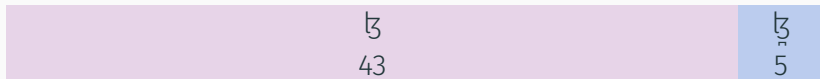
/t͡ʃ/ in PHOIBLE: representation

t͡ʃ

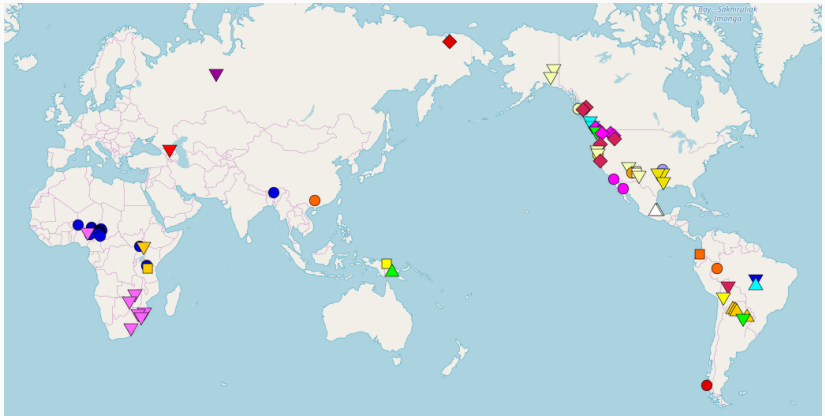
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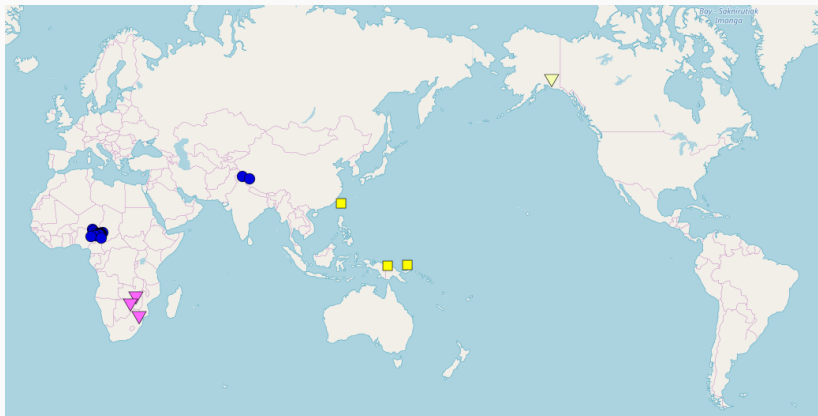
/t͡ʃ/ in PHOIBLE: representation



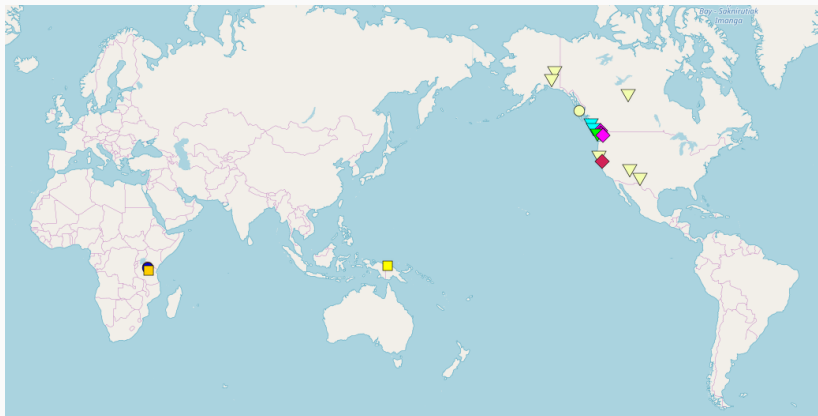
/ɬ/ in PHOIBLE: map



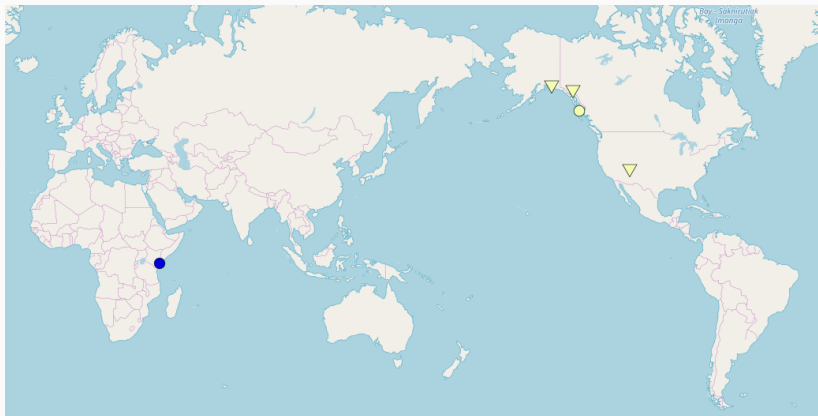
/ɬ/ in PHOIBLE: map



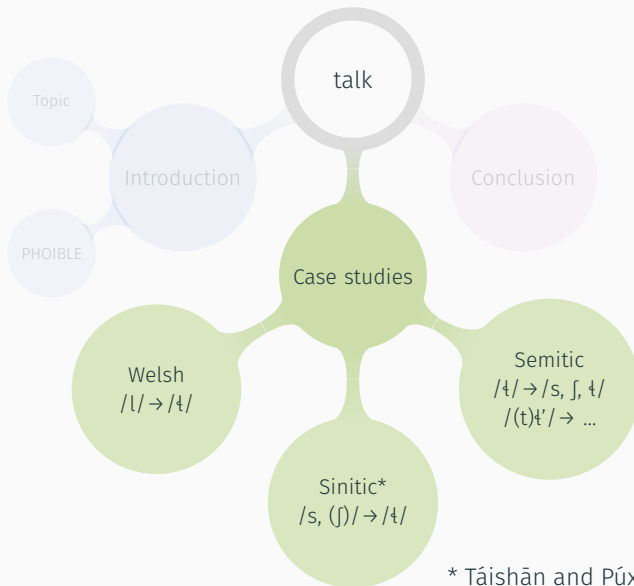
/tʰ/ in PHOIBLE: map



/d͡ʒ/ in PHOIBLE: map

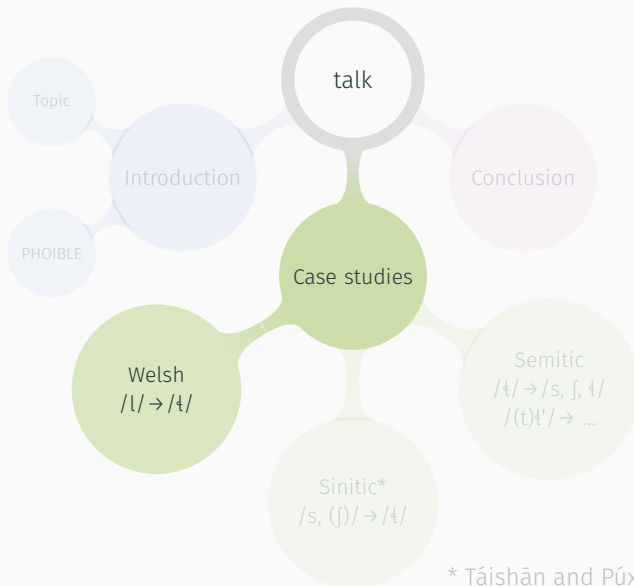


Structure



* Táishān and Púxiān dialects

Structure



* Táishān and Púxiān dialects

Welsh /t̪/ <ll> derives from earlier /l/

llygad /'t̪əɡad/ 'an eye'

< Proto-Brythonic **lugad* 'an eye'

< Proto-Celtic **lukato-* 'an eye'

< Proto-Indo-European **leuk-* 'bright, to shine, to see'

Cognates:

- Brythonic:
 - Cornish *lagas* 'an eye'
 - Breton *lagad* 'an eye, a look, a light'
- Indo-European:
 - Sanskrit लोचन (*locana*) 'an eye'
 - Proto-Germanic **leuhtaz* 'a light, bright'
 - Latin *lūx* 'a light'

(SCHRIJVER 1995, ch. 10)

Welsh consonant mutation system

Radical		Soft		Nasal		Aspirate	
p	/p/	b	/b/	mh	/m̥/	ph	/f/
t	/t/	d	/d/	nh	/n̥/	th	/θ/
c	/k/	g	/g/	ngh	/ŋ̥/	ch	/χ/
b	/b/	f	/v/	m	/m/		
d	/d/	dd	/ð/	n	/n/		
g	/g/	Ø		ng	/ŋ/		
ll	/l̪/	l	/l/				
rh	/r̪/	r	/r/				
m	/m/	f	/v/				
(ts)	/tʃ/	(j)	/dʒ/				

(see BALL 1990; BALL and MÜLLER 1992)

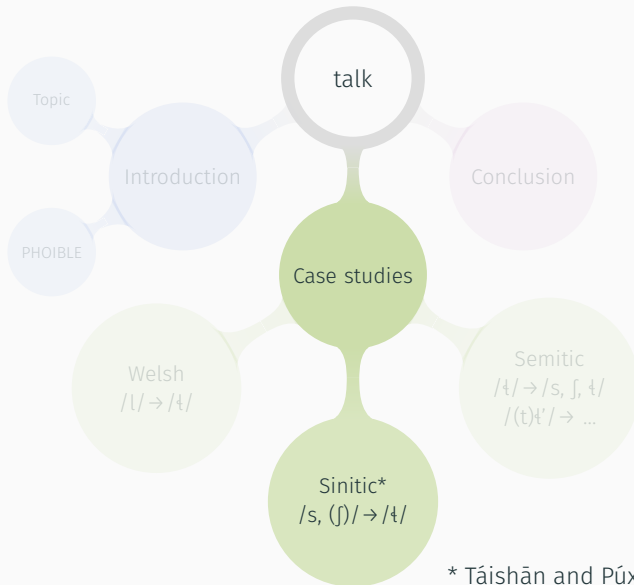
Welsh consonant mutation system

Radical		Soft		Nasal		Aspirate	
p	/p/	b	/b/	mh	/m̥/	ph	/f/
t	/t/	d	/d/	nh	/n̥/	th	/θ/
c	/k/	g	/g/	ngh	/ŋ̥/	ch	/χ/
b	/b/	f	/v/	m	/m/		
d	/d/	dd	/ð/	n	/n/		
g	/g/	Ø		ng	/ŋ/		
ll	/l̥/	l	/l/				
rh	/r̥/	r	/r/				
m	/m/	f	/v/				
(ts)	/tʃ/	(j)	/dʒ/				

<i>ei llygaid</i>	/i 'ləgaɪd/	'her eyes'
<i>ei lygaid</i>	/i 'ləgaɪd/	'his eyes'

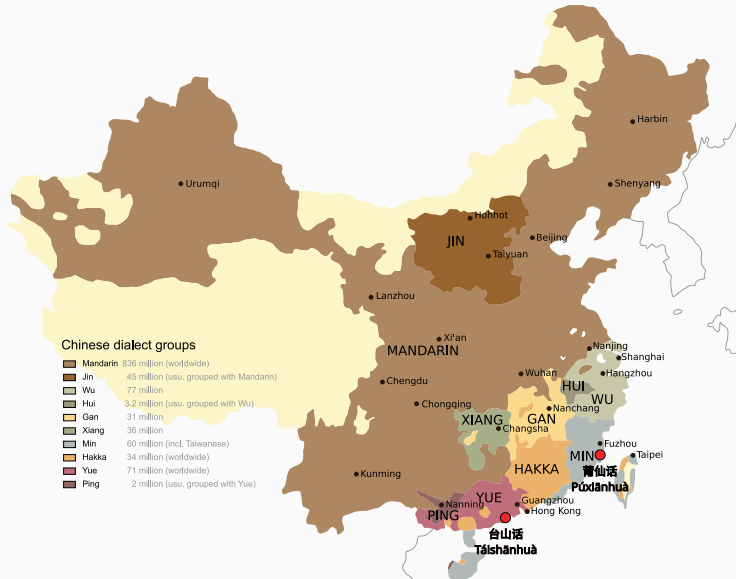
(see BALL 1990; BALL and MÜLLER 1992)

Structure



* Táishān and Púxiān dialects

Sinitic languages



Reflexes of Middle Chinese sibilants

	M. Chinese	Mandarin		Táishān	Púxiān	
three						
三	/sam/	sān	/sɑ̃n ⁵⁵ /	/tɬam ³³ /	/tɔ ³³ /	
four						
四	/siɪ ^H /	sì	/sɿ ⁵¹ /	/tɬi ³³ /	/tɬi ⁵² /	
new						
新	/siɪn/	xīn	/ɕin ⁵⁵ /	/tɬin ³³ /	/tɬiŋ/	
live, be born						
生	/ʃʷæŋ ^(H) /	shēng	/ɕʰɤŋ ⁵⁵ /	/saŋ ³³ /	/tɬǎ, tsʰǎ/ /tɬɤŋ ⁵⁵ /	(coll.) (lit.)
eat, ...						
食	/ʈɨk̚ ¹ /	(shí)	(/ɕɿ ³⁵ /)	/sɛt ³² /	/tɬie ²¹ /	
sit						
坐	/d͡ʒua ^X /	zuò	/t͡sʊɔ ⁵¹ /	/tɔ ³³ /	/tɔey ⁵² /	

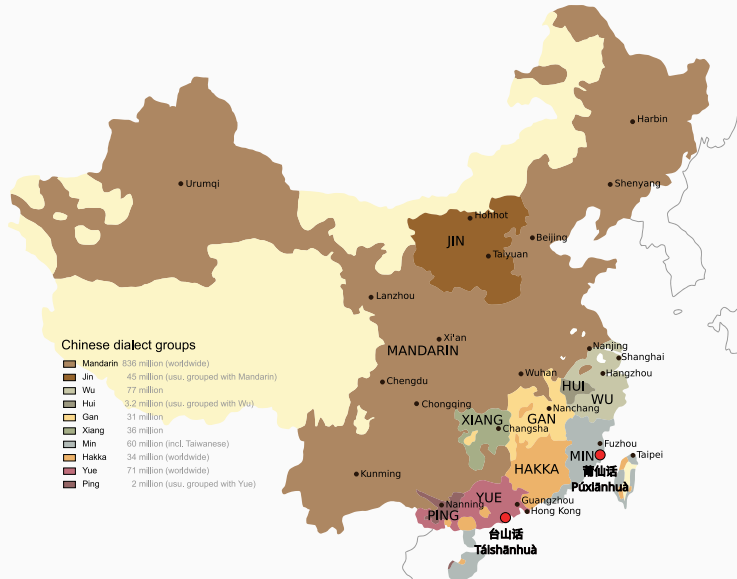
(Li (n.d.) and NAKAJIMA (1979))

Reflexes of Middle Chinese sibilants

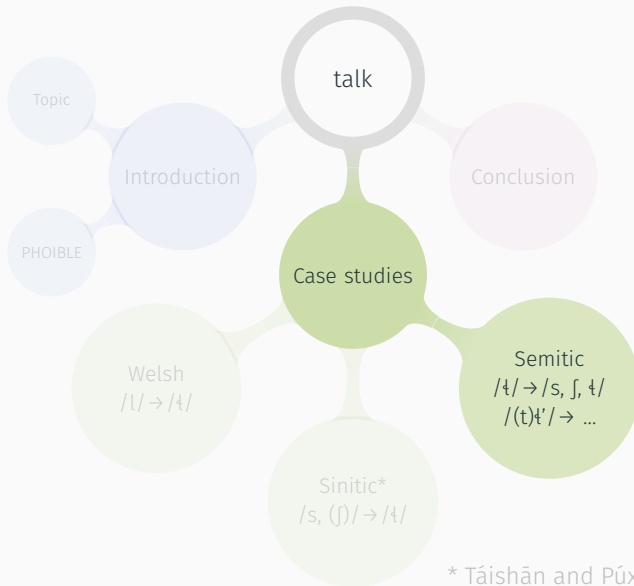
	M. Chinese	Mandarin		Táishān	Púxiān
three	/sam/	sān	/san ⁵⁵ /	/ɬam ³³ /	/ɬo ³³ /
三					
four					
四	/si ^H /	sì	/sɿ ⁵¹ /	/ɬi ³³ /	/ɬi ⁵² /
new	/siɪn/	xīn	/ɕin ⁵⁵ /	/ɬin ³³ /	/ɬiŋ/
新					
live, be born					
生	/ʃʰæŋ ^(H) /	shēng	/ʃʰŋ ⁵⁵ /	/saŋ ³³ /	/ɬǎ, ts ^h ǎ/ (coll.) /ɬɛŋ ⁵⁵ / (lit.)
eat, ...					
食					
sit	/d͡ʒua ^X /	zuò	/t͡suo ⁵¹ /	/tɔ ³³ /	/ɬœy ⁵² /
坐					

(Li (n.d.) and NAKAJIMA (1979))

Sinitic languages



Structure



* Táishān and Púxiān dialects

Regular correspondences of the Proto-Semitic consonants

Proto-Semitic	Akk.	Arabic	Paleo-Hebrew	Tiberian Hebrew	Aramaic	Gə'əz
	š	س s	w š	𐤑 š	𐤑 š	ሰ s
	s	س s	𐤍 s	𐤌 s	𐤌 s	ሰ s
	ṣ	ص ṣ	𐤎 ṣ	𐤌 ṣ	𐤌 ṣ	ሸ ṣ
	š	ش š	w š	𐤑 š	𐤑/𐤌 s	ሠ š
	ṣ	ض ḍ	𐤎 ṣ	𐤌 ṣ	𐤌 '	ፀ ṣ

Regular correspondences of the Proto-Semitic consonants

Proto-Semitic	Akk.	Arabic	Paleo-Hebrew	Tiberian Hebrew	Aramaic	Gə'əz
*š	š	س s	w š	𐤑 š	𐤑 š	ሰ s
*s	s	س s	𐤍 s	𐤌 s	𐤌 s	ሰ s
*ṣ	ṣ	ص ṣ	𐤎 ṣ	𐤌 ṣ	𐤌 ṣ	ሸ ṣ
*ś	ś	ش ś	w ś	𐤑 ś	𐤑/𐤌 s	ሠ ś
*ṣ̣	ṣ̣	ض ḏ	𐤎 ṣ̣	𐤌 ṣ̣	𐤌 'ṣ̣	ፀ ṣ̣

Regular correspondences of the Proto-Semitic consonants

Proto-Semitic	Akk.	Arabic	Paleo-Hebrew	Tiberian Hebrew	Aramaic	Gə'əz
*š /ʃ/	𐤱	س s	w š	𐤱 š	𐤱 š	ሰ s
*s /s/	s	س s	𐤳 s	𐤳 s	𐤳 s	ሰ s
*ṣ /(t)s'/	ṣ	ص ṣ	𐤮 ṣ	𐤮 ṣ	𐤮 ṣ	ሸ ṣ
*ś /t/	𐤱	ش ś	w ś	𐤱 s	𐤱/𐤳 s	ሠ ś
*ṣ̣ /(t)t'/	ṣ	ض ḍ	𐤮 ṣ	𐤮 ṣ	𐤮 'ṣ	ፀ ṣ̣

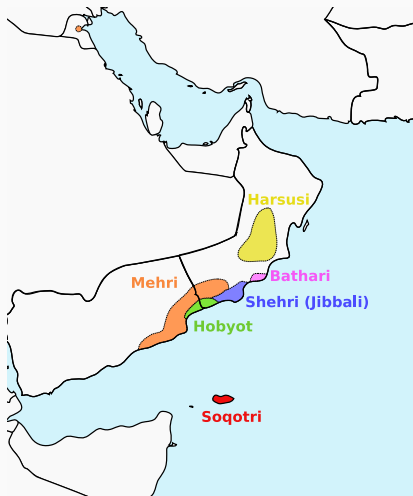
Why lateral fricatives?

- Evidence from several directions.
- STEINER (1977, 1991) were decisive for the hypothesis' wide recognition, although it was stated earlier (as early as 1861, by Richard Lepsius!).
- See KOGAN (2011, §1.3.3) for a short overview.

Why lateral fricatives?

Modern South Arabian languages

Modern South Arabian languages preserve the lateral fricative realization (/ɬ/, /ɬʳ~ɬ'/).



(STEINER 1977, ch. 2f. KOGAN 2011, § 1.3.3.1)

Regular correspondences of the Proto-Semitic consonants

Proto-Semitic	Akk.	Arabic	Paleo-Hebrew	Tiberian Hebrew	Aramaic	Gə'əz
*š /ʃ/	š	س s	w š	שׁ š	שׁ š	ሰ s
*s /s/	s	س s	𐤌 s	ס s	ס s	ሰ s
*ʃ /(t)s' /	š	ص š	𐤎 š	שׁ š	שׁ š	ሰ š
*ś /t/	š	ش š	w š	שׁ š	שׁ/ס s	ሠ š
*š /(t)t' /	š	ض ḏ	𐤎 š	שׁ š	שׁ ' /	θ š

Why lateral fricatives?

Native grammatical tradition

Sībawayhi (c. 760–796) on the articulation of ض (*ḍād*):
min bayni awwali ḥāffati l-lisāni wa-mā yalīhi mina l-
aḍrās
*‘between the beginning of the tongue’s edge and the
corresponding molars’*

(STEINER 1977, ch. 4; KOGAN 2011, § 1.3.3.2)

Why lateral fricatives?

Loanwords from Arabic words containing ض (*ḍād*)

language	loanword	gloss		Arabic form
Spanish	<i>alcalde</i>	'judge, mayor'	<	<i>al-qāḍī</i>
Malay	<i>dloha</i>	'morning'	<	<i>ḍuḥā</i>
Hausa	<i>haila</i>	'menstruation'	<	<i>ḥayḍ</i>
Somali	<i>ārli</i>	'country'	<	<i>arḍ</i>

Compare with the Anglicized Welsh name *Floyd* /flɔɪd/, from Welsh *Llwyd* /lʷɪd/.

(STEINER 1977, ch. 5–8; KOGAN 2011, § 1.3.3.4)

Why lateral fricatives?

Balsam

Greek	βάλαμον (<i>bálsamon</i>)
Hebrew	בֹּשֶׂם (<i>bōśem</i>)
Syriac	<i>besmā</i>
Arabic	<i>bašām-</i>
Neo-Babylonian	<i>ba-al-tam-mu</i>



Commiphora
opobalsamum

(STEINER 1977, ch. 16; KOGAN 2011, § 1.3.3.18)

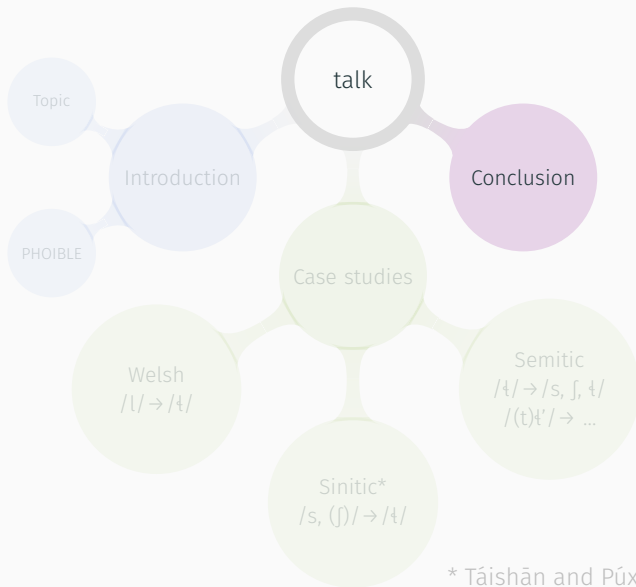
Why lateral fricatives?

Macro-family reconstruction

	OREL et al. (1995)			EHRET (1995)		
						
Proto-Afrasian	*ɬ	*tɬ	*tɬ'	*ɬ	*dɬɜ	*tɬ'
Proto-Semitic	*ɬ	*tɬ	*tɬ'	*ɬ	*dɬɜ	*tɬ'
Ancient Egyptian	š	š	ḏ	š	ḏ	ṯ
Proto-Berber	*s	*c	*ç			
Proto-Cushitic				*ɬ	*tɬ	*tɬ'
Proto-East Cushitic	*s	*s *š	*c'			
Proto-Southern Cushitic	*ɬ	*tɬ (?)	*tɬ'			
Proto-Chadic	*ɬ	*tɬ	*tɬ'	*ɬ	*dɬɜ	*tɬ'
Proto-OmotiC	*l	*d	*d			

(after BOMHARD (2008, §8); see also STEINER (1977, p. 159f.))

Structure



* Táishān and Púxiān dialects

Alveolar lateral fricatives

	Bilabial	Labiodental	Dental	Alveolar	Postalveolar	Retroflex	Palatal	Velar	Uvular	Pharyngeal	Glottal
Plosive	p b		t d			ʈ ɖ	c ɟ	k ɡ	q ɢ		ʔ
Nasal	m	ɱ	n			ɳ	ɲ	ŋ	ɴ		
Trill	ʙ		r						ʀ		
Tap or Flap		ⱱ	ɾ			ɽ					
Fricative	ɸ β	f v	θ ð	s z	ʃ ʒ	ʂ ʐ	ç ʝ	x ɣ	χ ʁ	ħ ʕ	h ɦ
Lateral fricative			ɬ ɮ								
Approximant		ʋ	ɹ			ɻ	j	ɰ			
Lateral approximant			l			ɭ	ʎ	ʟ			

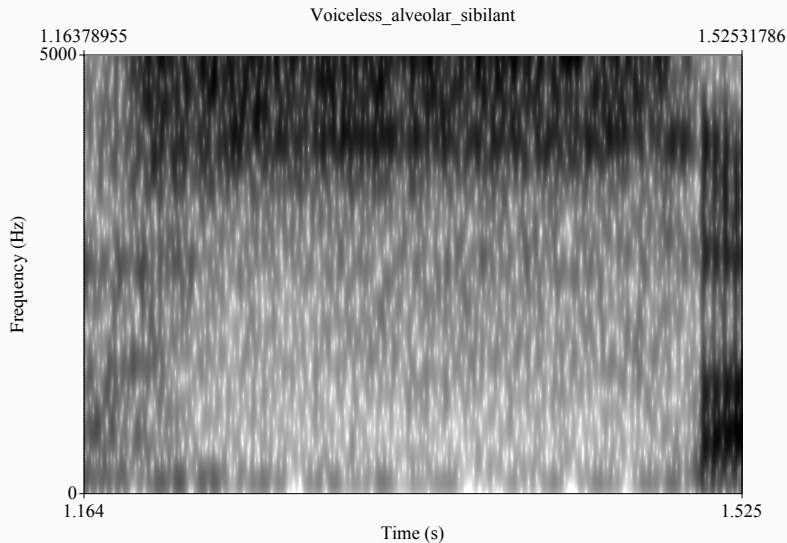
Alveolar lateral *fricatives* vs. alveolar lateral *approximants*

	Bilabial	Labiodental	Dental	Alveolar	Postalveolar	Retroflex	Palatal	Velar	Uvular	Pharyngeal	Glottal
Plosive	p b		t d			ʈ ɖ	c ɟ	k ɡ	q ɢ		ʔ
Nasal	m	ɱ	n			ɳ	ɲ	ŋ	ɴ		
Trill	ʙ		r						ʀ		
Tap or Flap		ⱱ	ɾ			ɽ					
Fricative	ɸ β	f v	θ ð	s z	ʃ ʒ	ʂ ʐ	ç ʝ	x ɣ	χ ʁ	ħ ʕ	h ɦ
Lateral fricative			ɬ ɮ								
Approximant		ʋ	ɹ			ɻ	j	ɰ			
Lateral approximant			l			ɭ	ʎ	ʟ			

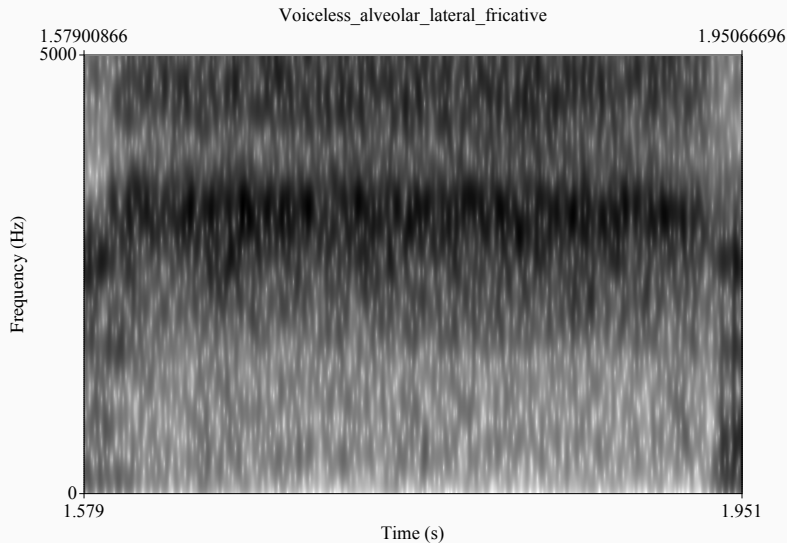
Alveolar *lateral* fricatives vs. alveolar *sibilant* fricatives

	Bilabial	Labiodental	Dental	Alveolar	Postalveolar	Retroflex	Palatal	Velar	Uvular	Pharyngeal	Glottal
Plosive	p b			t d		ʈ ɖ	c ɟ	k ɡ	q ɢ		ʔ
Nasal	m	ɱ		n		ɳ	ɲ	ŋ	ɴ		
Trill	ʙ			r					ʀ		
Tap or Flap		ⱱ		ɾ		ɽ					
Fricative	ɸ β	f v	θ ð	s z	ʃ ʒ	ʂ ʐ	ç ʝ	x ɣ	χ ʁ	ħ ʕ	h ɦ
Lateral fricative				ɬ ɮ							
Approximant		ʋ		ɹ		ɻ	j	ɰ			
Lateral approximant				l		ɭ	ʎ	ʟ			

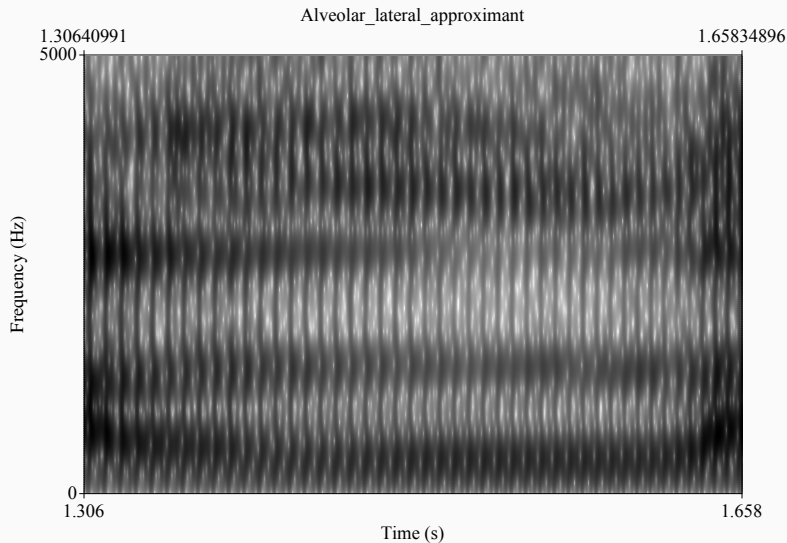
Voiceless alveolar sibilant [s]



Voiceless alveolar lateral fricative [ɬ]



Voiced alveolar lateral approximant [l]



What's next?

- /tɬ/: mostly in west coast of North America and in Tanzania
- /ɬ/
- /ɬ/? (MADDIESON et al. 1984)
- The question of orthography (extra-phonological)
- Dialectal variation

Dialectal variation

- Welsh ⟨ll⟩ is realized as /çj/ in some northern dialects (according to Wikipedia; needs to be checked in reliable sources).
- Norwegian *solgt* ‘sold’ is realized as [sæɫt] in Trondheim dialect (VANVIK 1979, p. 36).
- Swedish *kallt* ‘cold (N)’ is realized as [kaɫt] in Jämtland dialects.

Mae Llewellyn y llyfrgellydd o Lanelli
wedi llyfu llawer o lyfaint

Śara šara šir śame^aχ,
šir śame^aχ šara Śara

<https://ac.digitalwords.net>

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frame #	URL
4	https://linguistics.ucla.edu/people/keating/IPA/IPA_charts_2018.html
19	https://commons.wikimedia.org/wiki/File:Map_of_sinitic_languages_full-en.svg
25	https://commons.wikimedia.org/wiki/File:Modern_South_Arabian_Languages.svg
29	https://en.wikipedia.org/wiki/File:Balsamodendron_ehrenbergianum00.jpg

/t/ and /ɮ/ within IPA's chart

	Bilabial	Labiodental	Dental	Alveolar	Postalveolar	Retroflex	Palatal	Velar	Uvular	Pharyngeal	Glottal
Plosive	p b		t d			ʈ ɖ	c ɟ	k ɡ	q ɢ		ʔ
Nasal	m	ɱ	n			ɳ	ɲ	ŋ	ɴ		
Trill	ʙ		r						ʀ		
Tap or Flap		ⱱ	ɾ			ɽ					
Fricative	ɸ β	f v	θ ð	s z	ʃ ʒ	ʂ ʐ	ç ʝ	x ɣ	χ ʁ	ħ ʕ	h ɦ
Lateral fricative			ɬ ɮ								
Approximant		ʋ	ɹ			ɻ	j	ɰ			
Lateral approximant			l			ɭ	ʎ	ʟ			

[ɬ̚]:[ɬ] occurs, but it is very rare

In Mapuche (Araucanian; Chile, Argentina) /ɬ̚, l/ are realized as [ɬ̚, ɬ] in utterance-final position (SADOWSKY et al. 2013).

/kɛ̞'ɣəɬ̚/ [kɜ'ɣəɬ̚] 'phlegm that is spit'

/kɛ̞'əl/ [kɜ'əɬ̚] 'a different song'

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