Vowel Fronting in Daakie (Ambrym, Vanuatu)

Manfred Krifka
krifka@leibniz-zas.de

Current Aspects of Preference Theory
A Symposium on Occasion of Theo Vennemanns 80th Birthday
Ludwig-Maximilians-Universität München
December 9, 2017

Some background

The language Daakie:

◆ an Austronesian (Oceanic) language

◆ spoken by about 1000 persons

◆ on the south coast of the island of Ambrym in Vanuatu

◆ also known as Port Vato

Research based on

◆ Field work starting 2008

◆ funded by VolkswagenStiftung,
   Dokumentation bedrohter Sprachen (DobeS), 2009 – 2013

◆ further funded by DFG,
   Tense, Modality, Aspect, Polarity in Melanesian languages (MelaTAMP)

◆ collaboration with Kilu von Prince (HU Berlin / U Saarbrücken)

Focus of work on

◆ audiovisual corpora (> 15h), general grammatical description

◆ materials for local use (orthography, dictionary, collection of stories, books)

◆ special focus on syntax, semantics, pragmatics

Ambrym, Vanuatu

Languages of Ambrym

About 9000 inhabitants, 5 major languages, 3 small / endangered languages
adapted from Michael Franjieh, 2017
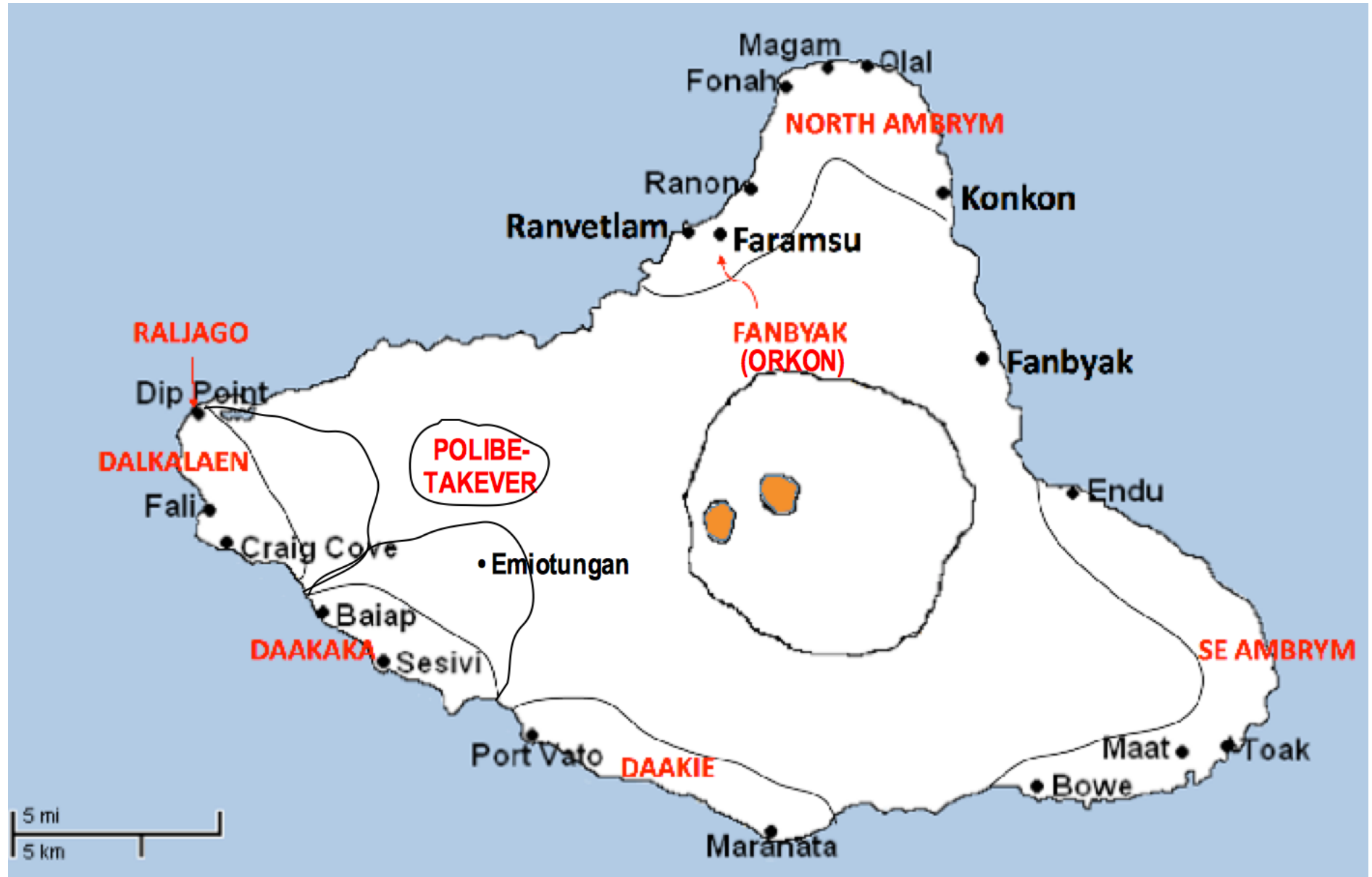
Classification

Classification after Glottolog

- ▼ Oceanic (522)
  - ▶ Admiralty Islands (32)
  - ▶ Central Pacific linkage (45)
  - ▶ Loyalty Islands (3)
  - ▶ Micronesian (21)
  - ▼ North and Central Vanuatu (105)
    - ▼ Central Vanuatu (56)
      - ▼ Ambrym (6)
        - Lonwolwol
        - ▶ North Ambrym
        - ▼ Orkon-Port Vato-Dakaka (3)
          - Orkon-Fanbak
          - ▼ Port Vato-Dakaka (2)
            - Daakie 🟢
            - ▶ Dakaka
        - ▶ Southeast Ambrym
      - ▶ Epi-Efate (10)
      - ▶ Malakula (34)
      - ▶ Namakura
      - ▶ Paama
      - ▶ South Pentecost (4)
  - ▶ Northern Vanuatu (49)

Areal distribution NC Vanuatu, Tryon 1976
10,000 km^2, 100 lg -- highest density in the world?

Les langues du Vanuatu

1	Hiw	15	Maewo centre
2	Toga	16	Baetora
3	Lehali	17	Ambae nord-est
4	Lehalurup	18	Nduindui
5	Motlav	19	Raga
6	Mota	20	Apma
7	Vatrata	21	Sowa
8	Mosina	22	Seke
9	Nume	23	Sa
10	Wetamut	24	Ambrym nord
11	Koro	25	Lonwolwol
12	Lakona	26	Dakaka
13	Merlav	27	Port Vato
14	Marino	28	Ambrym sud-est
		29	Paama
		30	Valpei
		31	Nokuku
		32	Vunapu
		33	Piamatsina
		34	Tolomako
		35	Tasmate
		36	Wusi
		37	Akei
		38	Malmariv
		39	Navut
		40	Lametin
		41	Morouas
		42	Roria
		43	Fortsenal
		44	Amblong
		45	Wailapa
		46	Araki
		47	Tangoa
		48	Narango
		49	Malo
		50	Aore
		51	Tutuba
		52	Tambotalo
		53	Polonombauk
		54	Mafea
		55	Shark Bay
		56	Butmas-Tur
		57	Lorediakarkar
		58	Sakao

60	Atchin
61	Uripiv-Wala-Rano
62	Lingarak
63	Litzlitz
64	Katbol
65	Unua
66	Pangkumu
67	Niolenien (Repanbitip)
68	Aulua

Phonemes of Daakie

Krifka, Manfred. 2012. Notes on Daakie (Ambrym, Vanuatu): Sounds and modality. Proceedings of AFLA 18 (Austronesian Formal Linguistics Association). Cambridge, Mass.: Harvard University, 46-65.

	Labial	Labiovelar	Labio-dental	Alveolar	Palatal	Velar	Glottal
Voiceless	p	pʷ ⟨pw⟩		t		k	
Prenasalized	ᵐb⟨b⟩	bʷ⟨bw⟩		ⁿd⟨d⟩		ᵑg⟨g⟩	
Nasal	m	mʷ⟨mw⟩		n		ŋ⟨ng⟩	
Fricative			v	s			h
Trill				r			
Lateral				l			
Approximant	ʋ⟨w⟩				j⟨y⟩		

Short vowels			Long vowels	
i ⟨i⟩	[y] ⟨u⟩	u ⟨u⟩	iː ⟨ii⟩	uː ⟨uu⟩
e ⟨é⟩	[ø] ⟨ó⟩	o ⟨ó⟩	eː ⟨éé⟩	oː ⟨óó⟩
ɛ ⟨e⟩	[œ] ⟨o⟩	ɔ ⟨o⟩	ɛː ⟨ee⟩	ɔː ⟨oo⟩
⁽ʲ⁾æ ⟨á⟩		a ⟨a⟩		aː ⟨aa⟩

Development from NC-Vanuatu: Consonants

◆ Clark, Ross. 2009. *Leo Tuai. A comparative lexical study of North and Central Vanuatu languages*. Canberra: Pacific Linguistics.

NC Vanuatu

	t	k	ʔ
ᵐb	bʷ	ⁿd	ᵑg
m	mʷ	n	ŋ
v	vʷ	s	
	r	R	
	l		
ʋ	j		

Daakie

p	pʷ	t	k
ᵐb	bʷ	ⁿd	ᵑg
m	mʷ	n	ŋ
v		s	h
	r		
	l		
ʋ	j		

early loss

unclear,
Paton 1971: p or w?
candidates:
*vora – pah- 'to spear'
*vi,visi 'wrap, bind' -- pih 'fasten'
*vaga – pyang 'fire'
*vwa – pa 'bear fruit'
*bava – pepa 'carry child'

in non-initial position,
recent sound change
* tasi – teh 'sea'
* leʔosi – lɛsɛ, lɛhɛ 'look'

Development from NC Vanuatu: Vowels

- ◆ Austronesian, Oceanic, NC Vanuatu:
  standard five vowel system /i e a o u/

- ◆ Northern Vanuatu languages: larger systems
  Alexandre, François. 2005. Unraveling the History of the Vowels of
  Seventeen Northern Vanuatu Languages. Oceanic Linguistics 44: 443-504.

- ◆ Ambrym languages: Diverse systems
  - Daakaka (von Prince 2012):
    short / long vowels,
    no rounded front vowels, [y] in three words only
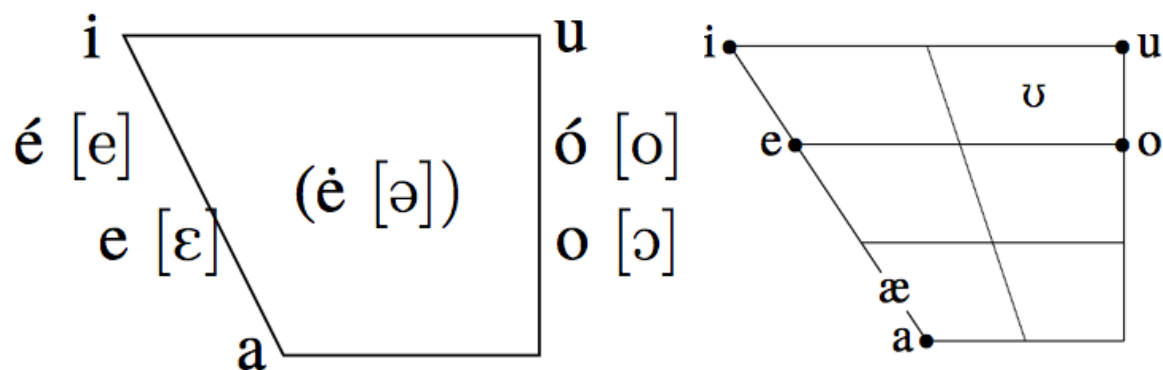
  - West Ambrym (Franjieh 2012): smaller system,
    no length contrast
  - Paton [1956] 1971 p.3 on /ø/: "The sound is rare in Lonwolwol
    but common in Port Vato and adjacent districts".
    Paton also mentions ü /y/ without further comment.

VOWEL INVENTORY

Daakie Consonants: Voiced Stops

Table 2   Minimal pairs for voiceless and voiced stops

Minimal pair	Example 1	Example 2
/p/ vs. /b/	[pa] 'to be in flower' [pih] 'fastened' [peh] 'fish sp.' [-pjen] 'to shoot'	[ba] 'liana sp.' [bih] 'man that follows women' [beh] 'bald-headed' [bjen] 'because'
/pʷ/ vs. /bʷ/	[pʷeŋeh] 'to hurt' [pʷih] 'to be full' [pʷili] 'to bake'	[bʷeŋeh] 'coconut branch' [bʷih] 'to pass under' [bwili] 'to fold'
/t/ vs. /d/	[tisi] 'to write' [towɛ] 'belly of s.th./s.o.'	[disi] 'to withdraw' [dowɛ] 'juice of s.th.'
/k/ vs. /g/	[kahɛ] 'to wash' [kolø] 'to be fat'	[gahɛ] 'to pull out' [golø] 'dry, barren'

/p/ and /pʷ/ well established, even though not reconstructed for NC Vanuatu

Daakie consonants: Labiovelars

Table 4   Minimal pairs for stops and their labiovelar counterparts

/p/ vs. /pʷ/	[petpet] 'to fasten'	[pʷet] 'to stay'
	[pih] 'to be tied'	[pʷih] 'to be full'
/b/ vs. /bʷ/	[be] 'where'	[bwe] 'cover'
	[bih] 'man following women'	[bʷih] 'to pass under'
	[bi:] 'together'	[bʷi:] 'to fold, butterfly'
	[bili] 'time, when'	[bʷili] 'to bent, fold'
	[biri] 'head of'	[bʷiri] 'stem of'
/m/ vs /mʷ/	[me:] 'dragonplum'	[mʷe:] 'namele palm'
	[mere] 'core of'	[mʷere] 'break'
	[met] 'to die'	[mʷet] 'to be short'
	[mihmih] 'to be wet'	[mʷih] 'to be dirty'

-- can be reconstructed for North-Central Vanuatu and before
-- labiovelars only preceding high front vowels /i/ or /e/
-- few cases of /pʷ/

Daakie consonants: Voiced stops / nasals

Table 3   Minimal pairs for voiced stops and nasals

/b/ vs. /m/	[bæt] 'bed'	[mæt] 'stupid', 'eye'
	[bon] 'smell'	[mon] 'also'
/bʷ/ vs. /mʷ/	[bʷih] 'to pass under'	[mʷih] 'to be dirty'
	[bʷiː] 'butterfly'	[mʷiː] 'left side'
/d/ vs /n/	[diri] 'other half of s.th.'	[niri] 'child, of animal'
	[døn] 'to drown'	[nøn] 'to be surprised, shocked'
/g/ vs. /ŋ/	[gahe] 'pull out'	[ŋahe] 'to chew'
	[giri] 'to skin'	[ŋiri] 'to clench one's teeth'

Consonants: Fricatives, tap, laterals

Table 5   Alveolar fricative, tap, and lateral

/s/ vs. /h/	[kasɛ] 'due to, because of' [basɛ:] 'bird'	[kahɛ] 'to wash' [bahɛ:] 'penis'
/s/ vs. /r/	[mɛsɛ] 'to be sick' [sok] 'my'	[mɛrɛ] 'eye of s.o.' [rok] 'far away'
/r/ vs. /l/	[gili] 'to carve' [ru:] 'to move'	[giri] 'to skin' [lu:] 'swamp hen'

Frequent change /s/ → /h/
in medial and final position
-- Daakaka *lese*,
   Daakie *lese* or *lehe* 'see'
-- Daakaka *tes*
   Daakie *teh* 'sea'
-- very few minimal pairs
   /s/ vs. /h/
-- Empty onsets often realized
   with [h], cf. *em* [hem] 'house'

Table 6   The status of /h/ in the coda

/CVh/ vs. /CV/	[lah] 'to steal' [uhtahɛ] 'to ask back'	[la] 'there' [utahɛ] 'to take again'
/-Vh/ vs. /-Vk/	[pjak] 'to choose' [ɔk] 'my (edible)'	[pjah] 'smell good' [ɔh] 'rain'
/-Vh/ vs. /V:/	[lah] 'to steal' [sih] 'to swell (sea)'	[la:] 'to be sore' [si:] 'to hunt'

Consonants: labial fricatives

Table 7   Labial fricative vs. glide vs. empty onset

/v/ vs. /ʋ/	[væt] 'wood borer insect'	[ʋat] 'to tell'
	[vele] 'land'	[ʋele] 'on top'
	[vesa] 'to decorate'	[ʋesa] 'to pound'
	[vini] 'to shoot'	[ʋini] 'nest'
/ʋɔ/ vs. /ɔ/	[ʋɔp] 'fence'	[ɔp] 'firewood'

Daakie *va-* corresponds to Daakaka *vja-*,
influence on realization of following vowel: *væ-*,
va- only in loan words: *Vanuatu, Vatu* (currency), *Port Vato*

Daakaka *pja-* corresponds Daakie *pja-*, cf. *pjaŋ* 'fire'

Daakie Vowels

The vowels of Daakie and their orthographic representations

Short vowels			Long vowels	
i ⟨i⟩	[y] ⟨u⟩	u ⟨u⟩	iː ⟨ii⟩	uː ⟨uu⟩
e ⟨é⟩	[ø] ⟨ó⟩	o ⟨ó⟩	eː ⟨éé⟩	oː ⟨óó⟩
ɛ ⟨e⟩	[œ] ⟨o⟩	ɔ ⟨o⟩	ɛː ⟨ee⟩	ɔː ⟨oo⟩
(j)æ ⟨á⟩		a ⟨a⟩		aː ⟨aa⟩

- Rather complex system
- 4 height distinctions
  contrast /e/ vs. /ɛ/ not well established
- Length distinction: short vowels, long vowels
- Vowel /æ/ originating from /ja/ after labials
  - cf. Daakaka *vjan* Daakie *væn* 'go'
  - blocked before velars, cf. *pjaŋ* 'fire'
- Back short vowels: fronted allophones: /u, o, ɔ/ → [y, ø, œ]

Daakie Vowels: Length

Table 9 Vowel length distinction

/i/ vs. /iː/	[si] 'juice of' [ʋisi] 'to squeeze'	[siː] 'to hunt', 'to itch' [ʋisiː] 'to ask'
/e/ vs. /eː/	[le] distal demonstrative [teːteː] 'to look out'	[leː] 'to be broken' [teːtaː] 'tight'
/ɛ/ vs. /ɛː/	[mɛrɛ] 'eye of'	[mɛrɛː] 'rooster's tail'
/a/ vs. /aː/	[ba] 'to plant' [da] 'blood'	[baː] 'to fight' [daː] 'to talk'
/ɔ/ vs. /ɔː/	[kɔ] 'to look out for' [tœ] 'behind'	[kɔːkɔ] 'water yams' [tɔː] 'garden'
/o/ vs. /oː/	[soŋo] 'to hold' [sø] 'to catch'	[soŋoː] 'together' [soː] 'be pregnant'
/u/ vs. /uː/	[kuku] 'to carry' [tyty] 'to knead'	[kuːkuː] 'move' (redupl.) [tuːtuː] 'mother-in-law'

Notice vowel quality change with /ɔ, o, u/

Daakie Vowels: Height

Table 10   Vowel height distinctions, front vowels

/iː/ vs. /eː/	[liː] 'owl', 'cry', 'tree' [siː] 'scratch'	[leː] 'to break' [seː] 'to blow'
/i/ vs. /e/	[si] 'juice of' [li] 'tree of'	[se] 'lukim of' [le] 'to take, to marry'
/eː/ vs. /ɛː/	[seː] 'to blow' [teːteː] 'look out after'	[sɛː] 'to move' [tɛːtɛː] 'pig'
/e/ vs. /ɛ/	[le] 'to take', 'to marry' [eh] 'blue'	[lɛ] 'to let go, to wield' [ɛh] 'black ant'
/a/ vs. /æ/	[mat] 'our' (incl.) [pan] 'to branch'	[mæt] 'eye' [pæn] 'under'
/e/ vs. /æ/	[met] 'to die'	[mæt] 'eye'

Daakie Vowels

Table 11   Vowel height distinctions, back vowels

| /uː/ vs. /oː/	[uː] 'mountain' [kuːkuː] 'move' (redup.)	[oː] 'coconut' [koːkoː] 'to shut'
/u/ vs. /o/	[up] 'crab sp.' [dy] 'to stay' [ly] 'to hide' [sy] 'to stick, to comb' [ty] 'to beat'	[op] 'to yearn for' [dø] 'lichi' [lø] 'leaf of' [sø] 'to catch' [tø] 'chicken'
/oː/ vs. /ɔː/	[soː] 'be pregnant' [toː] 'reeds'	[sɔː] 'a, one' [tɔː] 'garden'
/o/ vs. /ɔ/	[op] 'to yearn for' [lø] 'leaf of' [sø] 'to catch' [tø] 'chicken'	[ɔp] 'firewood' [lœ] 'foot, footprint' [sœ] 'reef' [tœ] 'behind, second'

Vowel fronting: Triggering contexts

Table 12   Fronting of short back vowels

After alveolar consonants	[ty] 'to beat', [tø] 'chicken', [tœ] 'behind' [dy] 'to stay', [dølœ] 'voice of', [dœ] 'slow' [nyny] 'to fold', [nø] 'face of' [sy] 'to remove with stick', [sø] 'to hit', [sœ] 'reef' [ly] 'to hide', [lø] 'to vomit', 'two', [lœ] 'foot, footprint' [mury] 'short', [sørø] 'to talk', [sœrœn] 'far', [vørøt] 'spittle'
After labial consonants	[pø], [pøpø] 'white', [pøpœ] 'to carry', **but** [punɛ] 'to narrate' **no shift** after /b/: [buly] 'hole', [bo] 'stink', [bɔ] 'big' [møt] 'straight', [møne] 'forhead', **but** [mo] 'in front', [mury] 'short' [vy] 'introduced', [vøt] 'stone', [vøløn] 'his hair', **but** [von] 'quiet'
After glides /j/, /ʋ/	[jø] 'knive', [jøvø] 'turtle' [ʋø] 'ray', [ʋœ] 'heap of', [ʋærœlø] 'two', **but** [ʋuʋuœ] 'bredfruit'
Diphthong /uo/	[buœ] 'boar', [kuœ] 'to run', [ŋuŋuœ] 'yellow', [ʋuø] 'good'
After velars	**no shift:** [kuly] 'dog', [kɔlø] 'fat', [gɔlø] 'dry', [ŋɔrœ] 'eat'
no onsets	**no shift:** [ut] 'louse', [un] 'burnt', [ot] 'place', [ose] 'enough'

Vowel fronting: Restrictions
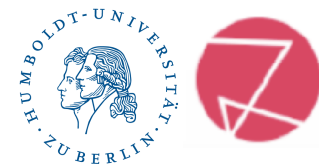
◆ Vowel fronting stopped by non-alveolar coda

non-alveolar codas	[loh] 'to move', [toŋ] 'to light fire', [lop] 'clear' [luh] 'swamphen' [luk] 'grow sideways', [sup] 'shell'
morphological paradigms	[løn], [løt] 'his/her, our heart', **but** [lok], [lom] 'my, your heart' [nøn], [nøt] 'his/her, our face' **but** [nok], [nom] 'my, your face' [søn] 'he/she and' **but** [sok], [som] 'I and', 'you and'

◆ Effect of following syllable:
  • [tuluh] 'slippery', non-fronting effect of -h spreads to beginning of word,
   possibly assimilation from [teluh]
◆ Special cases:
  • [lœ'nøt] 'in the bush' from [lœn ɔt] 'in terrestrial place', analyzed as word
  • [du'ut] 'nature, bush', possibly from [dy ɔt] 'stay in terrestrial place'
  • [tɔ'ot], 'man of bush', possibly from [te ɔt], 'man of terrestrial place'
  • [so'a:] 'emerge', not [sø'a:]
◆ Vowel of modal marker (assimilation) is not fronted
  [to lø] 'he/she vomited (distal)', [nu ly] 'he/she (not) dives (dep. negation)'

Why vowel fronting?
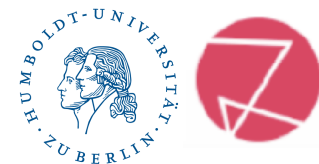
- Effect of alveolar (coronal) consonants on vowels is well known:
  - Flemming, Edward. 2003. The relationship between coronal place and vowel backness. Phonology 20: 335-373.
  - Example: Cantonese: /u, o/ do not occur in between coronals, only /y, ø/

i	y	u	. kʰyt̪ 'decide'	kʰut̪ 'bracket'
e	ø	o	hø 'boots' ho	'river'
	a,aː			

. t̪ʰyt 'to take off' *t̪ʰut̪ t̪ʰʊk 'bald head'

t̪ʰøn̪ 'a shield' *t̪ʰon̪ t̪ʰok 'to carry (on shoulders)'

- Effect of alveolar consonants on tongue dorsum, resulting in fronting as a result of coarticulation
- Experimental evidence
  - Harrington, Jonathan et al. 2011. The physiological, acoustic, and perceptual basis of high back vowel fronting: Evidence from German tense and lax vowels. Journal of Phonetics 39: 121-131
  - Harrington, Jonathan. 2012. The coarticulatory basis of diachronic high back vowel fronting. In: Solé, M.-J. & D. Recasens, (eds), The initiation of sound change. Perception, production and social factors. 103-122.

Why vowel fronting?

◆ Ongoing sound changes in British and Australian English:
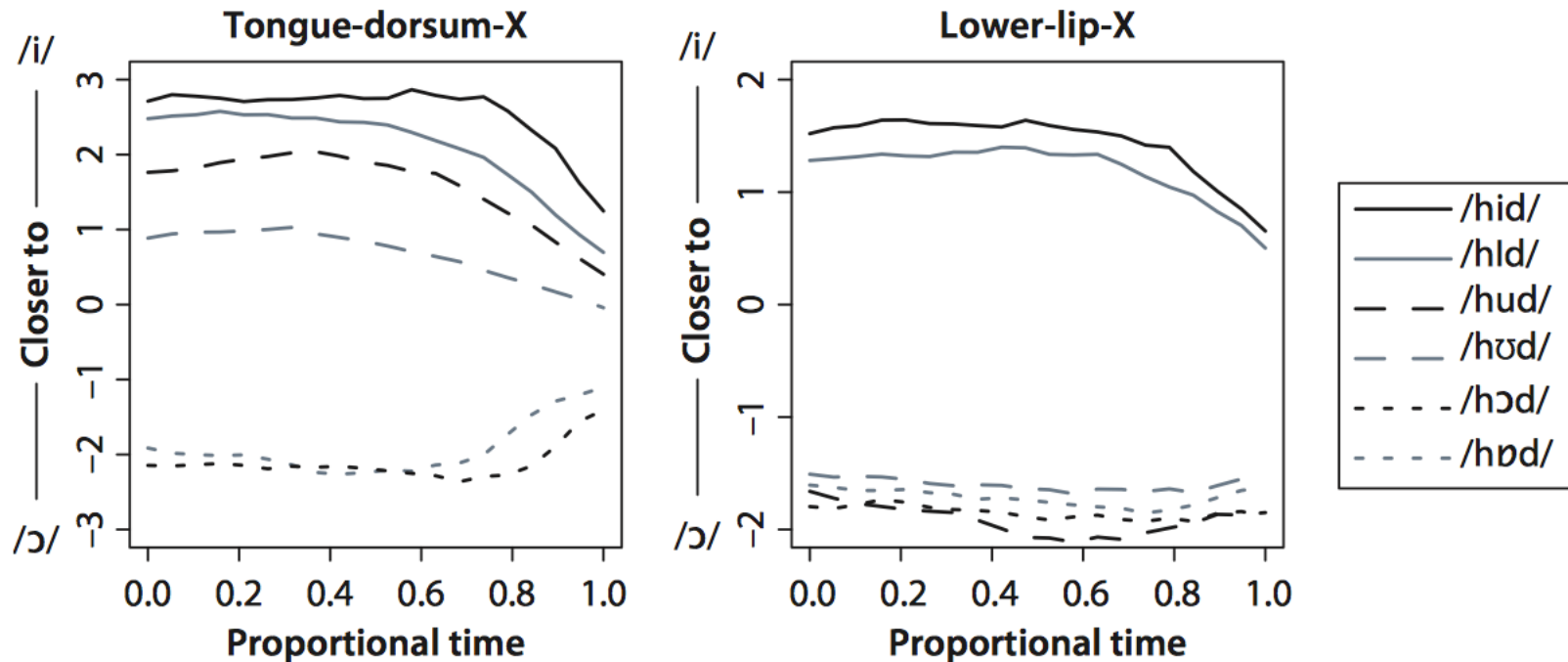Younger speakers: tongue dorsum at /u, ʊ/ closer to /i, ɪ/

Figure 4. Linearly time-normalized trajectories of the horizontal movement of the tongue dorsum (left) and of the lower-lip (right) averaged across 10 tokens per category each produced by five young female SSB speakers in five /hVd/ words

◆ In Daakie:
- Triggered by preceding coronal consonant
- Applies to /ɔ/ and /o/ similar as to /u/

Why vowel fronting?

Another effect of vowel fronting in Daakie:

◆ Length distinction: Short / Long

◆ No perceptible effect of vowel fronting on long vowels
  - Only evidence of long /y:/: Realization of /mju:len/ 'life' as /my:len/

◆ Fronting of /u o ɔ/ to /y ø œ/ for short vowels only
  creates an additional spectral difference for long / short distinction
  in the frequent contexts where vowel fronting happens
  - Note: There are six alveolar consonants, plus /u/, that trigger fronting.

◆ This might be a reason why fronting affects /u o ɔ/ uniformly,
  and not just /u/, or /u o/

And yet another effect ("fashion" – social reasons):

◆ Speak different from your neighbours!

◆ Cf. sound change /s/ → /h/:
  general preference for /h/ forms as citation forms in the lexicon

◆ No sound change without language contact?
  We should also reckon with "let's be different!" as a change

Vowel fronting as preference

A Preference-theoretic approach?

◆ Preference theory
- Vennemann, Theo (1993). Language change as language improvement. In *Historical Linguistics: Problems and Perspectives*, Ch. Jones (ed.), 319-344. London: Longman.
- Sound change as (local) improvement

◆ Preference motivation of back vowel fronting in Daakie
- Coarticulatory simplification of production of back vowels by assimilation of tongue dorsum position to preceding vowel
- Blocked by following velar consonants, which have retracting effect on dorsum
- Especially for short vowels – simplification of short tongue movement, long vowels allow tongue more time to reach target position
- Leading to a spectral difference of long and short vowels after the very frequent alveolar consonants and after /u/

◆ Disadvantage:
- Realization of typologically rare sounds /y ø œ/, rare also in the languages of North Central Vanuatu.

Vowel fronting in Daakie

Research question:

◆ Differences in the age of speakers?
But probably not a very recent sound change, different from /s/ → /h/

◆ Differences in the region?
Contact area Daakaka – Daakie, e.g. village of Saanesup

◆ Differences in linguistic contexts?
Same effect of all triggering alveolar consonants, /p/ and /u/?
Same effect on all vowels /u, o, ɔ/?
Same effect in rapid / slow speech?

◆ Research alert:
High quality recording (ca. 90 min) of read speech by one speaker!
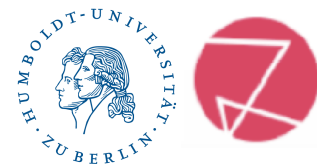
In case you are interested: Syllable structures

Table 14 Syllable structures; C_i excludes /h/, C_f: /p, t, k, m, n, ŋ, h/; J: /j/

/V/	[a] 'my', [a'rɛ] 'to bite', [ɛtɛp] 'post', [i'li] 'to dig', [u'ta'hɛ] 'take again'
/V:/	[a:] 'nettle', 'their', [l:'ɔ] 'casuarine tree', [o:] 'coconut', [u:] 'hill', 'blow'
/CᵢV/	[da] 'blood', [jœ] 'knife', [ka] 'to fly', [ŋa] 'now', [tɛ] 'cut', [ʋɛ] 'water'
/CᵢV:/	[da:] 'word', [ja:] 'sun', [la:] 'sore', [te:] 'look', [a'ro:'ʋo] 'basket'
/VC_f/	[ap] 'crab sp.', [ɛt] 'we', [ɔk] 'my', [ɛh] 'blue', [am] 'your', [un] 'burnt'
/CᵢV/	[lok] 'laplap', [ŋap] 'arrow', [pʷet] 'stay', [ʋip] 'pigeon', [yah] 'strong'
/CᵢJV/	[bjɛ] 'shark', [kjɛ] 'to call', [ŋjɛ] 'he', [sja] 'fast', [tjɛ'nɛm] 'home',
/CᵢJV:/	[mju:] 'grow', [tje:] 'grasshopper', [vja:] 'hand', [ŋje:] 'they', [sja:] 'sleep'
/CᵢJVC_f/	[djuŋ] 'mat', [gjɛh] 'work', [kjɛn] 'sharp', [pjaŋ] 'fire', [vjɛt] 'four',