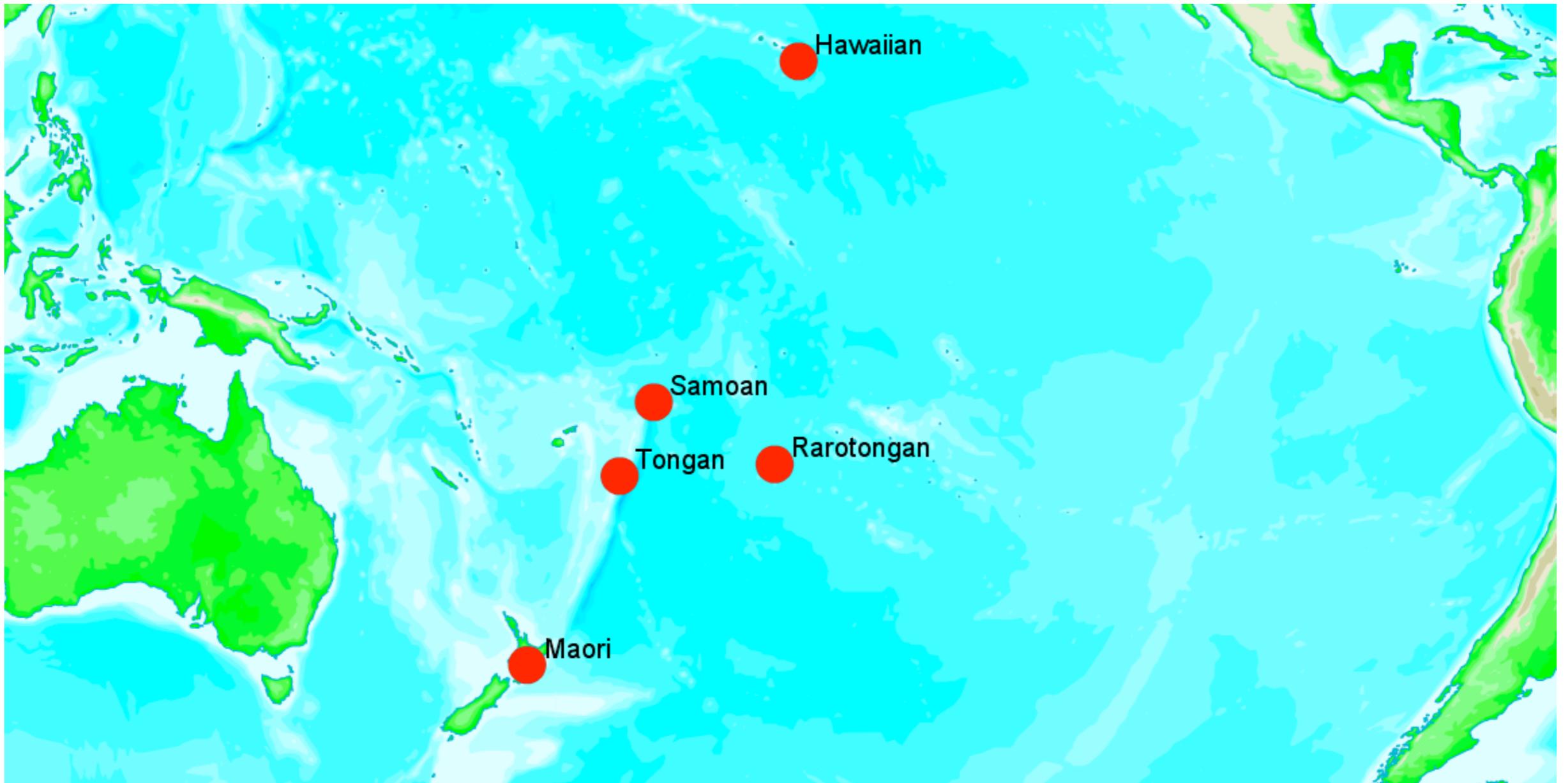# Komparative Methode und Baumerstellung

Michael Cysouw
LMU München, 25.10.2010

Comparative Method

- Cognate identification

- Regular sound correspondences

- Correspondence sets

- Reconstruction

- Subgrouping

Polynesian Languages

attention only on the nasals. What will you reconstruct for these? How many nasals do you postulate for Proto-Tulu? State your evidence.

NOTE: *j* = [ĵ], IPA [dʒ]; *ṇ* = IPA [ɳ].

	Shivalli	Sapaliga	gloss
1.	a:ṇɨ	a:nɨ	'male'
2.	uṇɨ	a:nɨ	'dine'
3.	maṇṇɨ	mannɨ	'soil'
4.	ko:ṇɛ	ko:nɛ	'room'
5.	e:ṇɨ	ya:nɨ	'I'
6.	niṇɛ	ninɛ	'wick'
7.	ja:nɛ	da:nɛ	'what'
8.	sanɛ	tanɛ	'conceiving'

(Bhat 2001: 11)

Exercise 5.3 Polynesian

The Polynesian languages of the Pacific form a subgroup of the Oceanic branch of the Austronesian family of languages. (1) What are the sound correspondences found in these data? What sound do you reconstruct for the proto-language to represent each sound correspondence set? (2) What sound change or changes have taken place in each of these languages? (3) What is the best reconstruction (proto-form) for 6, 16, 20 and 32? Show how your postulated sound changes apply to each of these to produce the modern forms.

NOTE: <'> = [ʔ].

	Māori	Tongan	Samoan	Rarotongan	Hawai'ian	gloss
1.	tapu	tapu	tapu	tapu	kapu	'forbidden', 'taboo'
2.	pito	pito	pito	pito	piko	'navel'
3.	puhi	puhi	—	pu'i	puhi	'blow'
4.	taha	tafa 'edge'	tafa	ta'a	kaha	'side'
5.	tae 'trash'	ta'e	tae	tae	kae	'excrement'
6.	taŋata	taŋata	taŋata	taŋata	kanaka	'man, person'
7.	tai	tahi	tai	tai	kai	'sea'
8a.	kaha	kafa	'afa	ka'a	'aha	'strong'
8b.	ma:rohi-	malohi	malosi	ma:ro'i	—	'strong'

	Māori	Tongan	Samoan	Rarotongan	Hawai'ian	gloss
9.	karo	kalo	'alo	karo	'alo	'dodge'
10.	aka-	aka	a'a	aka	a'a	'root'
11.	au	'ahu	au	au	au	'gall'
12.	uru	'ulu	ulu	uru	ulu	'head' 'tip of weapon' 'centre'
13.	uhi	ufi	ufi	u'i	uhi	'yam'
14.	ahi	afi	afi	a'i	ahi	'fire'
15.	ɸa:	fa:	fa:	'a:	ha:	'four'
16.	ɸeke	feke	fe'e	'eke	he'e	'octopus'
17.	ika	ika	i'a	ika	i'a	'fish'
18.	ihu	ihu	isu	puta-i'u	ihu	'nose' 'nostril' (puta 'hole')
19.	hau	hau	sau	'au	hau	'dew' 'wind' (hauku: 'dew' [-ku: 'showery weather'])
20.	hika	—	si'a	'ika	hi'a	'firemaking'
21.	hiku	hiku	si'u	'iku	hi'u	'tail' 'fishtail'
22.	ake	hake	a'e	ake	a'e	'up'
23.	uru	—	ulu	uru	ulu	'enter'
24.	maŋa	maŋa	maŋa	maŋa	mana	'branch'
25.	mau	ma'u	mau	mau	mau	'constant' 'fixed'
26.	mara	—	mala	mara	mala	'fermented food' 'marinated'
27.	noho	nofo	nofo	no'o	noho	'sit'
28.	ŋaru	ŋaru	ŋalu	ŋaru	nalu	'wave'
29.	ŋutu	ŋutu	ŋutu	ŋutu	nuku	'mouth'
30.	waka	vaka	va'a	vaka	wa'a	'canoe'
31.	wae	va'e	vae	vae	wae	'leg'
32.	raho	laho	laso	ra'o	laho	'scrotum' 'testicle'
33.	rou	lohu	lou	rou	lou	'fruit-picking pole' 'long forked stick'
34.	roŋo	(loŋo-)	loŋo	roŋo	lono	'hear' (loŋo-a:'a 'noise', loŋo-noa 'silence')
35.	rua	-lua	lua	rua	lua	'two' (in compounds)

	'taboo'	'side'	'trash'
Maori	*tapu*	*taha*	*tae*
Tongan	*tapu*	*tafa*	*ta'e*
Samoan	*tapu*	*tafa*	*tae*
Rarotongan	*tapu*	*ta'a*	*tae*
Hawai'ian	*kapu*	*kaha*	*kae*

	Maori	Tongan	Samoan	Rarot.	Hawai'i	ProtoP.
C1	t	t	t	t	k	*t
C2	p	p	p	p	p	*p
C3	h	h	s	ʔ	h	*s
C4	h	f	f	ʔ	h	*f
C5	ø	ʔ	ø	ø	ø	*ʔ
C6	ŋ	ŋ	ŋ	ŋ	n	*ŋ
C7	ø	h	ø	ø	ø	*h
C8	k	k	ʔ	k	ʔ	*k
C9	m	m	m	m	m	*m
C10	r	l	l	r	l	*L
C11	ɸ	f	f	ʔ	h	*f
C12	n	n	n	n	n	*n
C13	w	v	v	v	w	*V

	Maori	Tongan	Samoan	Rarot.	Hawai'i	ProtoP.
C1	t	t	t	t	k	*t
C2	p	p	p	p	p	*p
C3	h	h	s	ʔ	h	*s
C4	h	f	f	ʔ	h	*f
C5	ø	ʔ	ø	ø	ø	*ʔ
C6	ŋ	ŋ	ŋ	ŋ	n	*ŋ
C7	ø	h	ø	ø	ø	*h
C8	k	k	ʔ	k	ʔ	*k
C9	m	m	m	m	m	*m
C10	r	l	l	r	l	*L
C11	ɸ	f	f	ʔ	h	*f
C12	n	n	n	n	n	*n
C13	w	v	v	v	w	*V

Shared Innovation !

	Maori	Tongan	Samoan	Rarot.	Hawai'i	ProtoP.
C1	t	t	t	t	k	*t
C2	p	p	p	p	p	*p
C3	h	h	s	ʔ	h	*s
C4	h	f	f	ʔ	h	*f
C5	ø	ʔ	ø	ø	ø	*ʔ
C6	ŋ	ŋ	ŋ	ŋ	n	*ŋ
C7	ø	h	ø	ø	ø	*h
C8	k	k	ʔ	k	ʔ	*k
C9	m	m	m	m	m	*m
C10	r	l	l	r	l	*L
C11	ɸ	f	f	ʔ	h	*f
C12	n	n	n	n	n	*n
C13	w	v	v	v	w	*V

	Maori	Tongan	Samoan	Rarot.	Hawai'i	ProtoP.
C1	t	t	t	t	k	*t
C2	p	p	p	p	p	*p
C3	h	h	s	ʔ	h	*s
C4	h	f	f	ʔ	h	*f
C5	ø	ʔ	ø	ø	ø	*ʔ
C6	ŋ	ŋ	ŋ	ŋ	n	*ŋ
C7	ø	h	ø	ø	ø	*h
C8	k	k	ʔ	k	ʔ	*k
C9	m	m	m	m	m	*m
C10	r	l	l	r	l	*L
C11	ɸ	f	f	ʔ	h	*f
C12	n	n	n	n	n	*n
C13	w	v	v	v	w	*V

Shared Retention !

	Maori	Tongan	Samoan	Rarot.	Hawai'i	ProtoP.
C1	t	t	t	t	k	*t
C2	p	p	p	p	p	*p
C3	h	h	s	?	h	*s
C4	h	f	f	?	h	*f
C5	ø	?	ø	ø	ø	*?
C6	ŋ	ŋ	ŋ	ŋ	n	*ŋ
C7	ø	h	ø	ø	ø	*h
C8	k	k	?	k	?	*k
C9	m	m	m	m	m	*m
C10	r	l	l	r	l	*L
C11	ɸ	f	f	?	h	*f
C12	n	n	n	n	n	*n
C13	w	v	v	v	w	*V

	Maori	Tongan	Samoan	Rarot.	Hawai'i	ProtoP.
C1	t	t	t	t	k	*t
C2	p	p	p	p	p	*p
C3	h	h	s	ʔ	h	*s
C4	h	f	f	ʔ	h	*f
C5	ø	ʔ	ø	ø	ø	*ʔ
C6	ŋ	ŋ	ŋ	ŋ	n	*ŋ
C7	ø	h	ø	ø	ø	*h
C8	k	k	ʔ	k	ʔ	*k
C9	m	m	m	m	m	*m
C10	r	l	l	r	l	*L
C11	ɸ	f	f	ʔ	h	*f
C12	n	n	n	n	n	*n
C13	w	v	v	v	w	*V

	Tongan	Samoan	Rarot.	Maori	Hawai'i	ProtoP.
C5	ʔ	ø	ø	ø	ø	*ʔ
C7	h	ø	ø	ø	ø	*h
C3	h	s	ʔ	h	h	*s
C4	f	f	ʔ	h	h	*f
C11	f	f	ʔ	ɸ	h	*f
C8	k	ʔ	k	k	ʔ	*k
C10	l	l	r	r	l	*L
C13	v	v	v	w	w	*V
C1	t	t	t	t	k	*t
C6	ŋ	ŋ	ŋ	ŋ	n	*ŋ
C9	m	m	m	m	m	*m
C12	n	n	n	n	n	*n
C2	p	p	p	p	p	*p

Different approaches

- Historical-comparative approach

  ‣ First reconstruct proto-language

  ‣ Then establish subgrouping of languages

- 'Bioinformatics' approach

  ‣ First establish subgrouping (unrooted tree)

  ‣ Then locate proto-language (by outgroup)

Necessary analyses

- Subgrouping
  - ‣ Similarity-based approaches
  - ‣ Parsimony-based approaches

Necessary analyses

- Subgrouping

  ‣ **Similarity-based approaches**

  ‣ Parsimony-based approaches

Table 1. Polynesian consonants correspondence sets and reconstruction.

	Mao	Ton	Sam	Rar	Haw	PP
C1	t	t	t	t	k	*t
C2	p	p	p	p	p	*p
C3	h	h	s	ʔ	h	*s
C4	h	f	f	ʔ	h	*f
C5	ø	ʔ	ø	ø	ø	*ʔ
C6	ŋ	ŋ	ŋ	ŋ	n	*ŋ
C7	ø	h	ø	ø	ø	*h
C8	k	k	ʔ	k	ʔ	*k
C9	m	m	m	m	m	*m
C10	r	l	l	r	l	*L
C11	ɸ	f	f	ʔ	h	*f
C12	n	n	n	n	n	*n
C13	w	v	v	v	w	*V

Table 1. Polynesian consonants correspondence sets and reconstruction.

	Mao	Ton	Sam	Rar	Haw	PP
C1	t	t	t	t	k	*t
C2	p	p	p	p	p	*p
C3	h	h	s	?	h	*s
C4	h	f	f	?	h	*f
C5	ø	?	ø	ø	ø	*?
C6	ŋ	ŋ	ŋ	ŋ	n	*ŋ
C7	ø	h	ø	ø	ø	*h
C8	k	k	?	k	?	*k
C9	m	m	m	m	m	*m
C10	r	l	l	r	l	*L
C11	ɸ	f	f	?	h	*f
C12	n	n	n	n	n	*n
C13	w	v	v	v	w	*V

Table 2. 'Distance'-encoding of Polynesian languages

	Mao	Ton	Sam	Rar	Haw
Mao	0	6	6	4	5
Ton	6	0	4	5	8
Sam	6	4	0	5	6
Rar	4	5	5	0	8
Haw	5	8	6	8	0
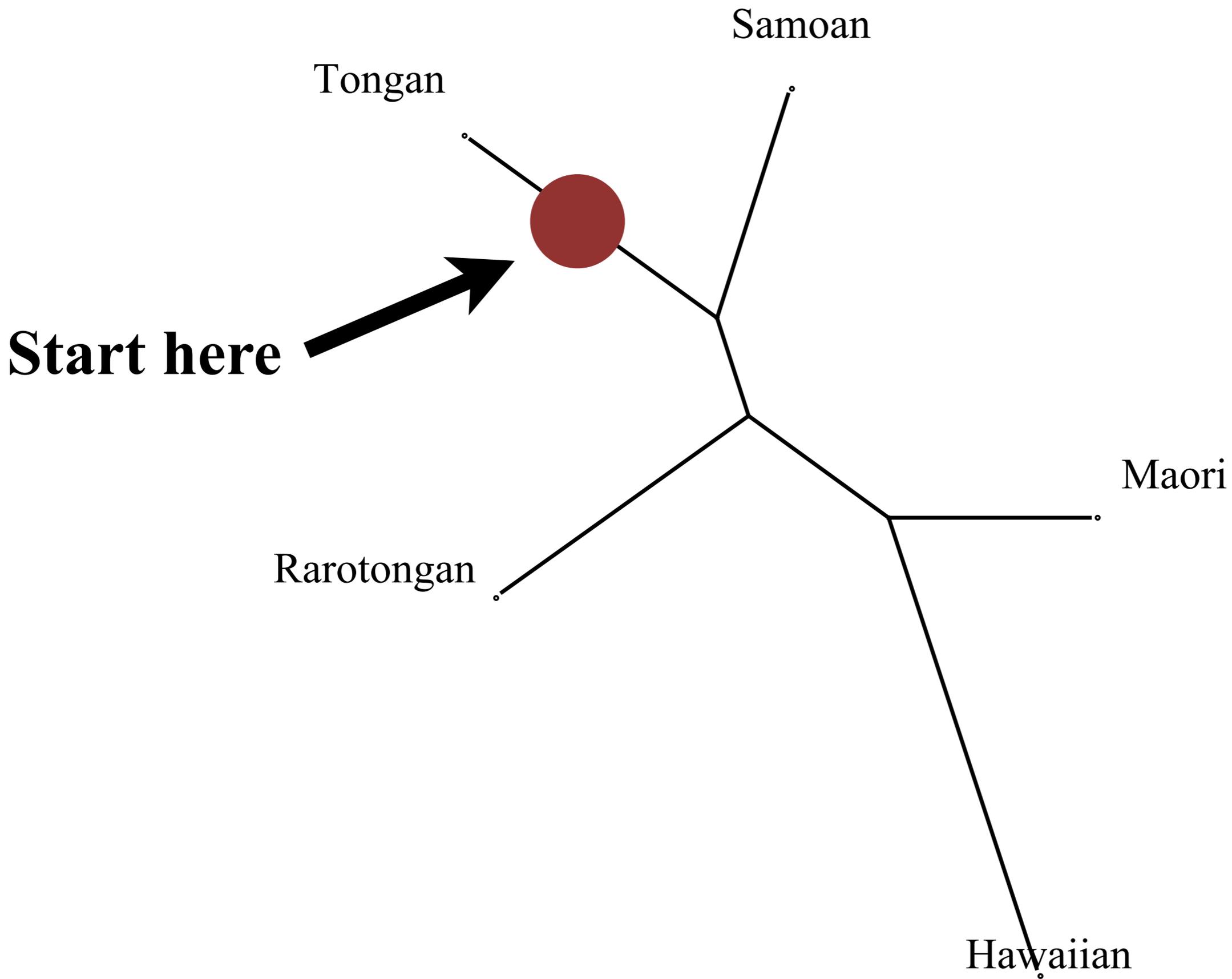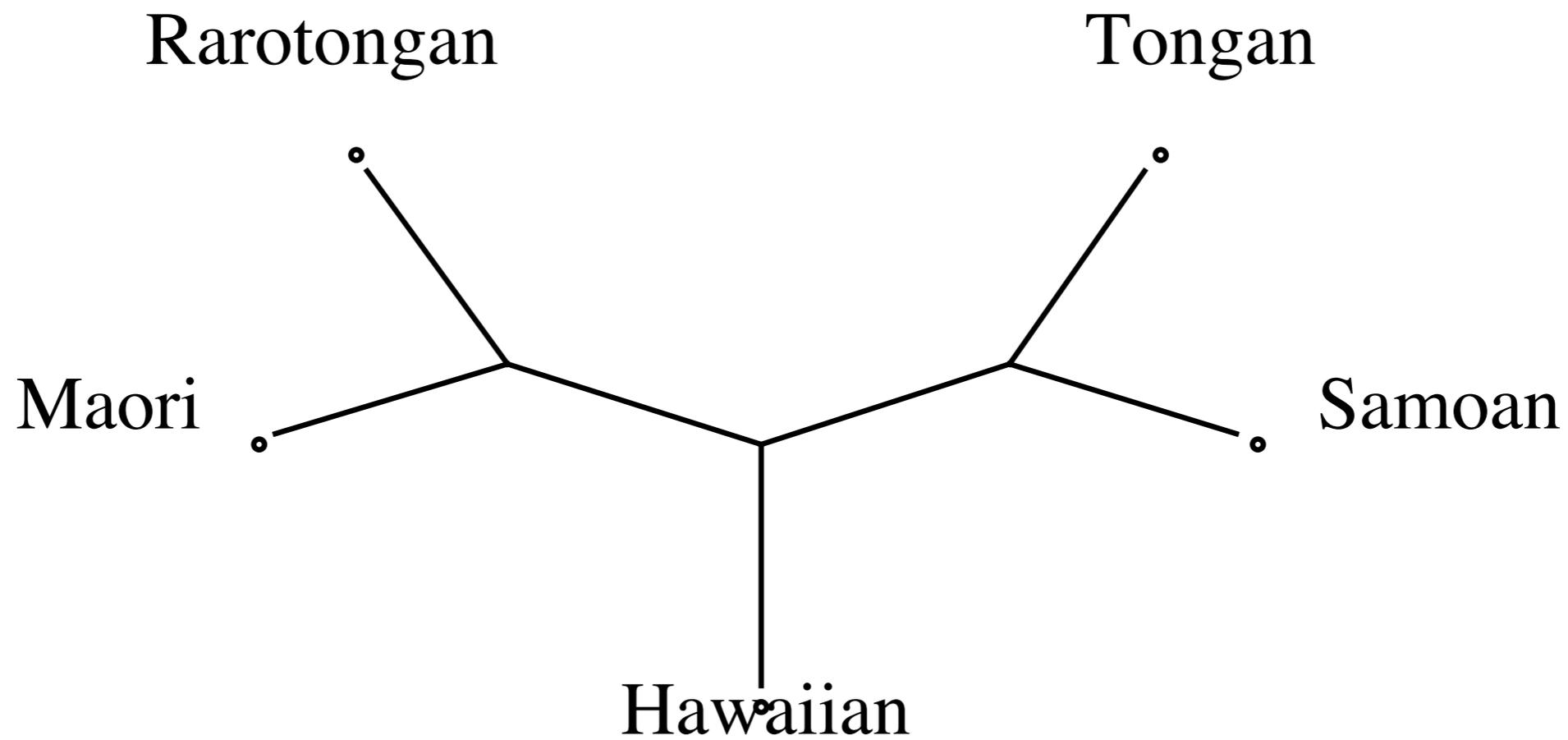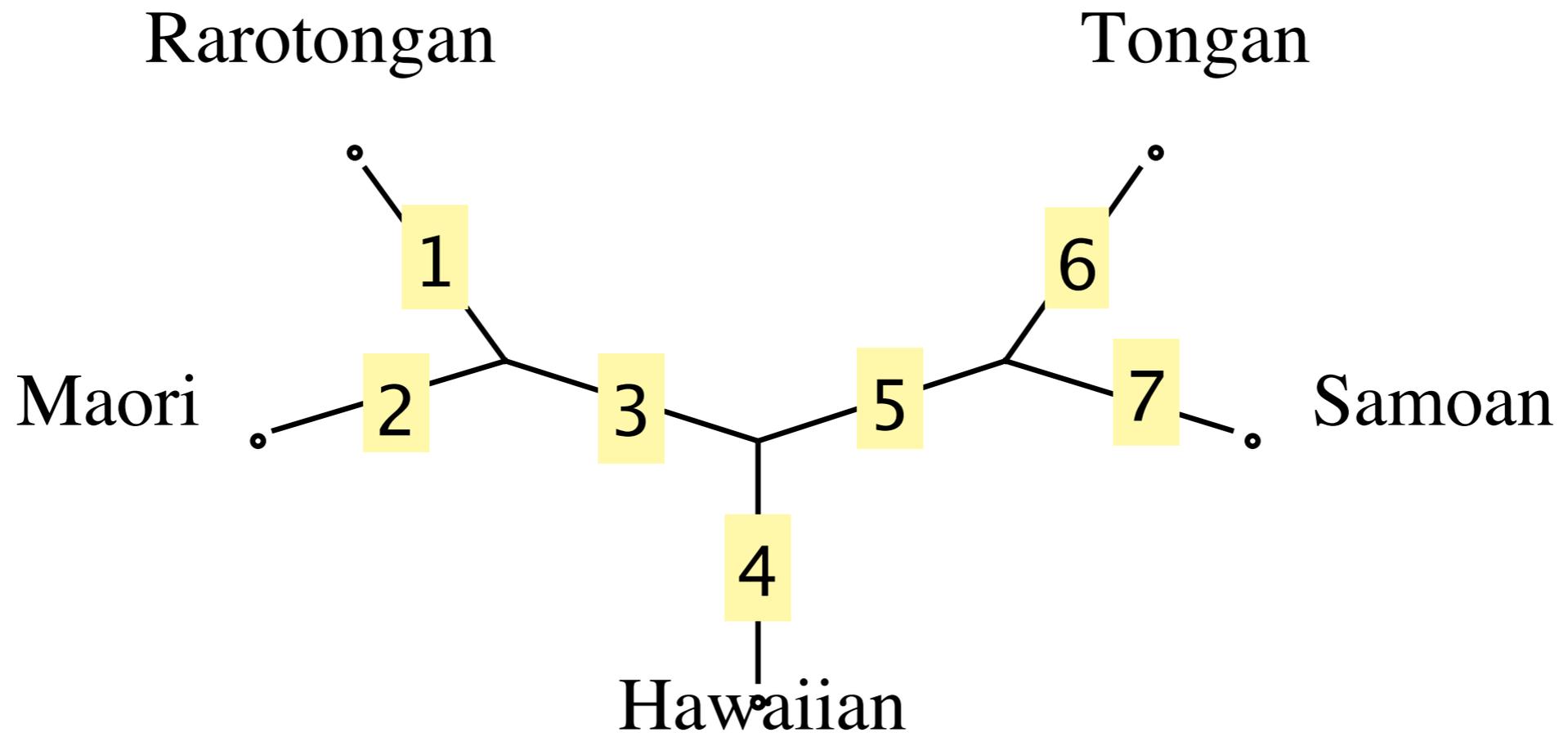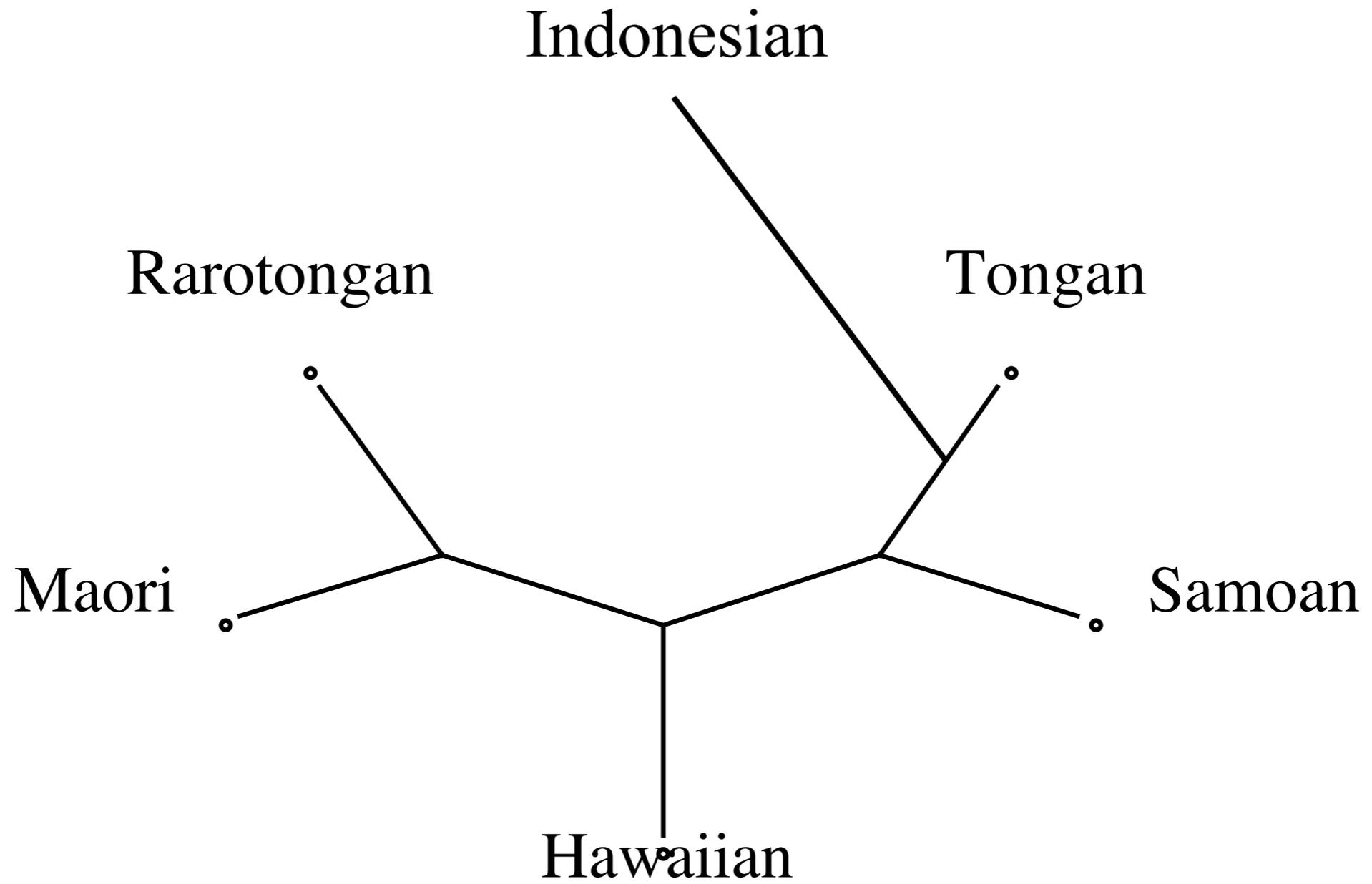
Necessary analyses

- Subgrouping
  - ‣ Similarity-based approaches
  - ‣ **Parsimony-based approaches**

Rarotongan

Tongan

Maori

Samoan

Hawaiian
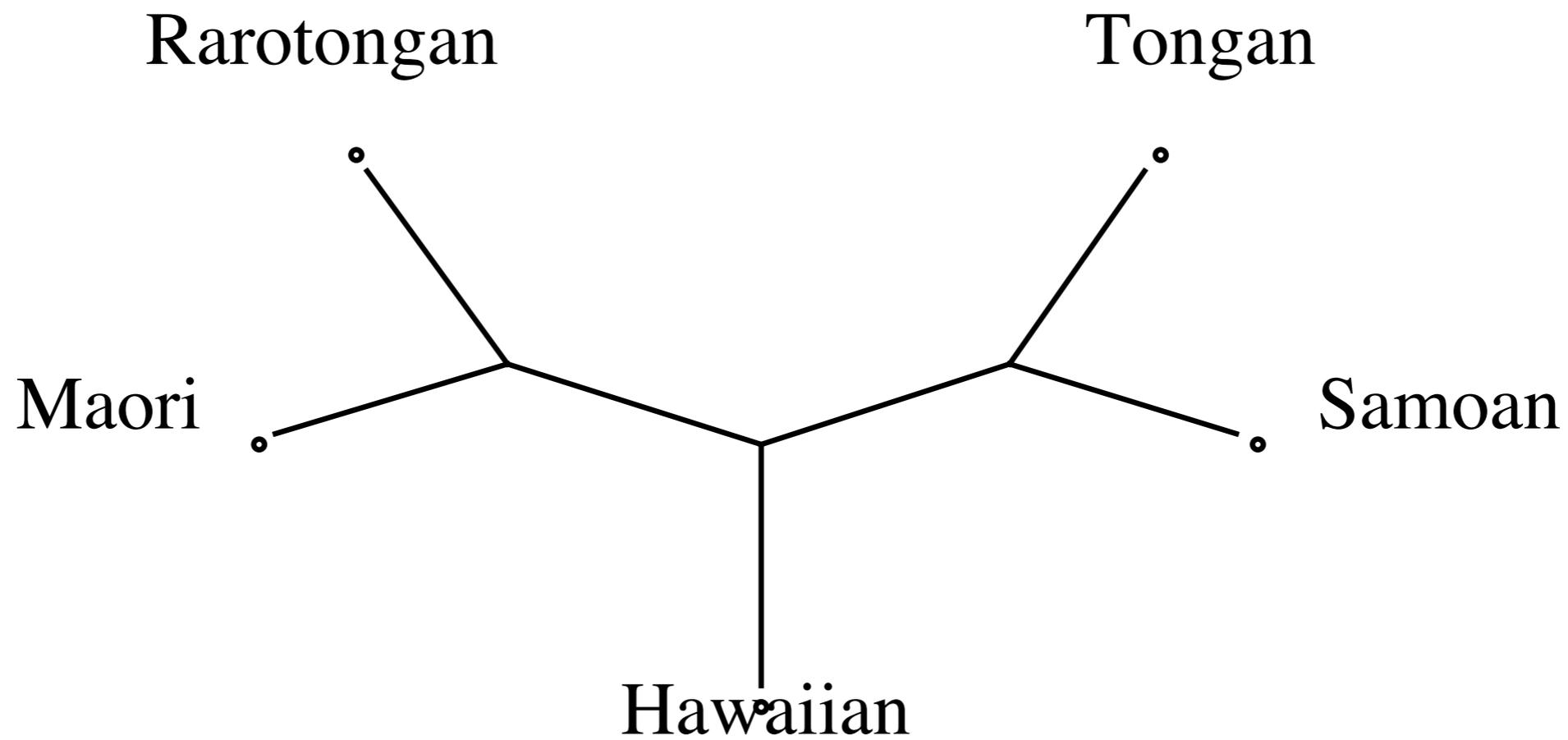
Number of Taxa	Number of unrooted trees	Number of rooted trees
3	1	3
4	3	15
5	15	105
6	105	945
7	945	10395
8	10395	135135
9	135135	2027025
10	2027025	34459425

Table 1. Polynesian consonants correspondence sets and reconstruction.

	Mao	Ton	Sam	Rar	Haw	PP
C1	t	t	t	t	k	*t
C2	p	p	p	p	p	*p
C3	h	h	s	ʔ	h	*s
C4	h	f	f	ʔ	h	*f
C5	ø	ʔ	ø	ø	ø	*ʔ
C6	ŋ	ŋ	ŋ	ŋ	n	*ŋ
C7	ø	h	ø	ø	ø	*h
C8	k	k	ʔ	k	ʔ	*k
C9	m	m	m	m	m	*m
C10	r	l	l	r	l	*L
C11	ɸ	f	f	ʔ	h	*f
C12	n	n	n	n	n	*n
C13	w	v	v	v	w	*V

Table 1. Polynesian consonants correspondence sets and reconstruction.

	Mao	Ton	Sam	Rar	Haw	PP
C1	t	t	t	t	k	*t
C2	p	p	p	p	p	*p
C3	h	h	s	?	h	*s
C4	h	f	f	?	h	*f
C5	ø	?	ø	ø	ø	*?
C6	ŋ	ŋ	ŋ	ŋ	n	*ŋ
C7	ø	h	ø	ø	ø	*h
C8	k	k	?	k	?	*k
C9	m	m	m	m	m	*m
C10	r	l	l	r	l	*L
C11	ɸ	f	f	?	h	*f
C12	n	n	n	n	n	*n
C13	w	v	v	v	w	*V

Table 3. 'Character'-encoding of correspondence sets. In total, there are 14 necessary changes. Parsimony results in needing minimally 16 changes

	Mao	Ton	Sam	Rar	Haw
C1	1	1	1	1	2
C2	1	1	1	1	1
C3	1	1	2	3	1
C4	1	2	2	3	1
C5	1	2	1	1	1
C6	1	1	1	1	2
C7	1	2	1	1	1
C8	1	1	2	1	2
C9	1	1	1	1	1
C10	1	2	2	1	2
C11	1	2	2	3	4
C12	1	1	1	1	1
C13	1	2	2	2	1