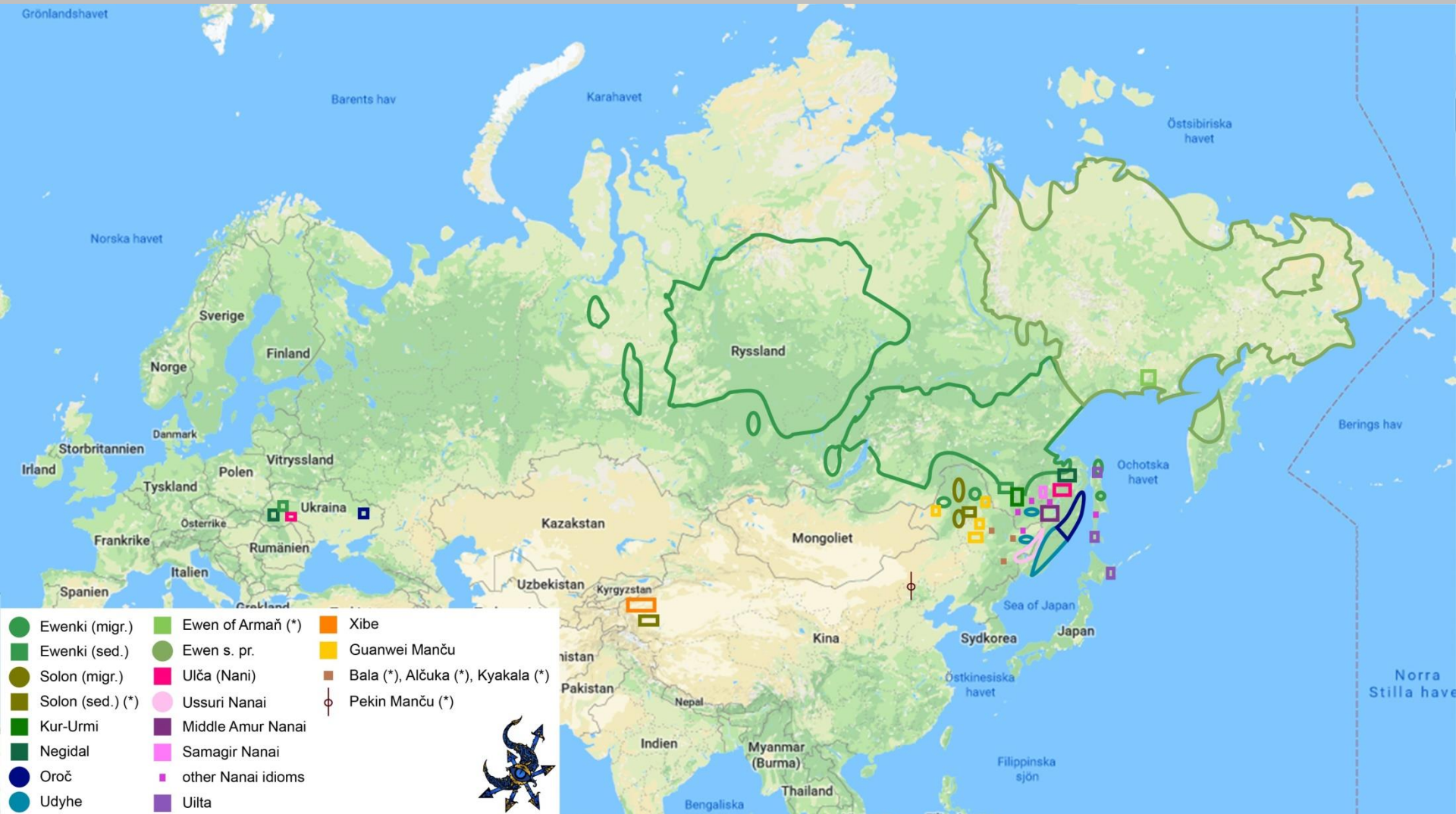


кластеризация тунгусских
языков по данным исторической
фонетики и реконструкция
промежуточных предков

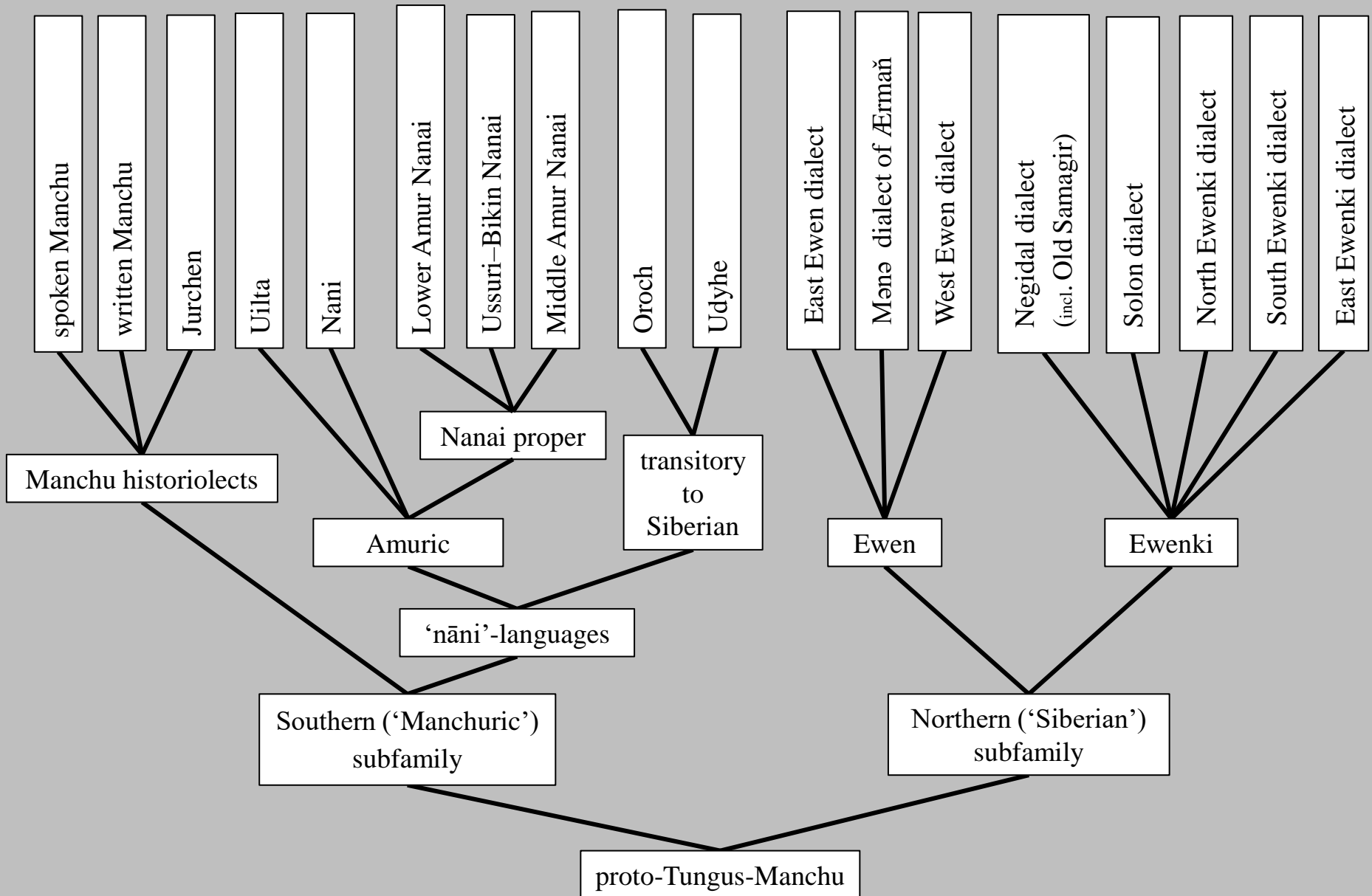
*am gyfer iw̄jen y
garun fi*

Tungus-Manchu languages in XXth century

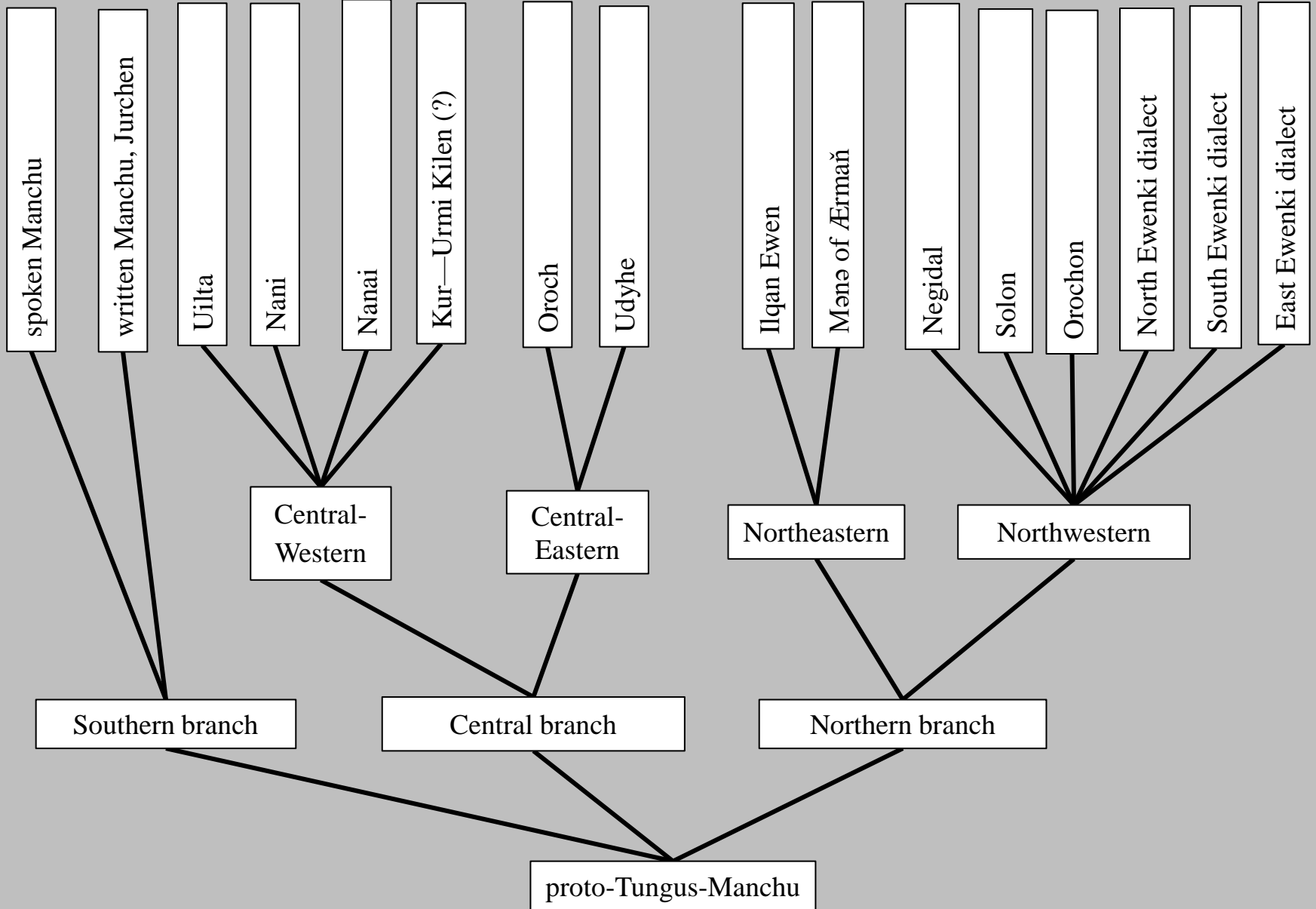


HYPOTHETICAL CLUSTERISATION

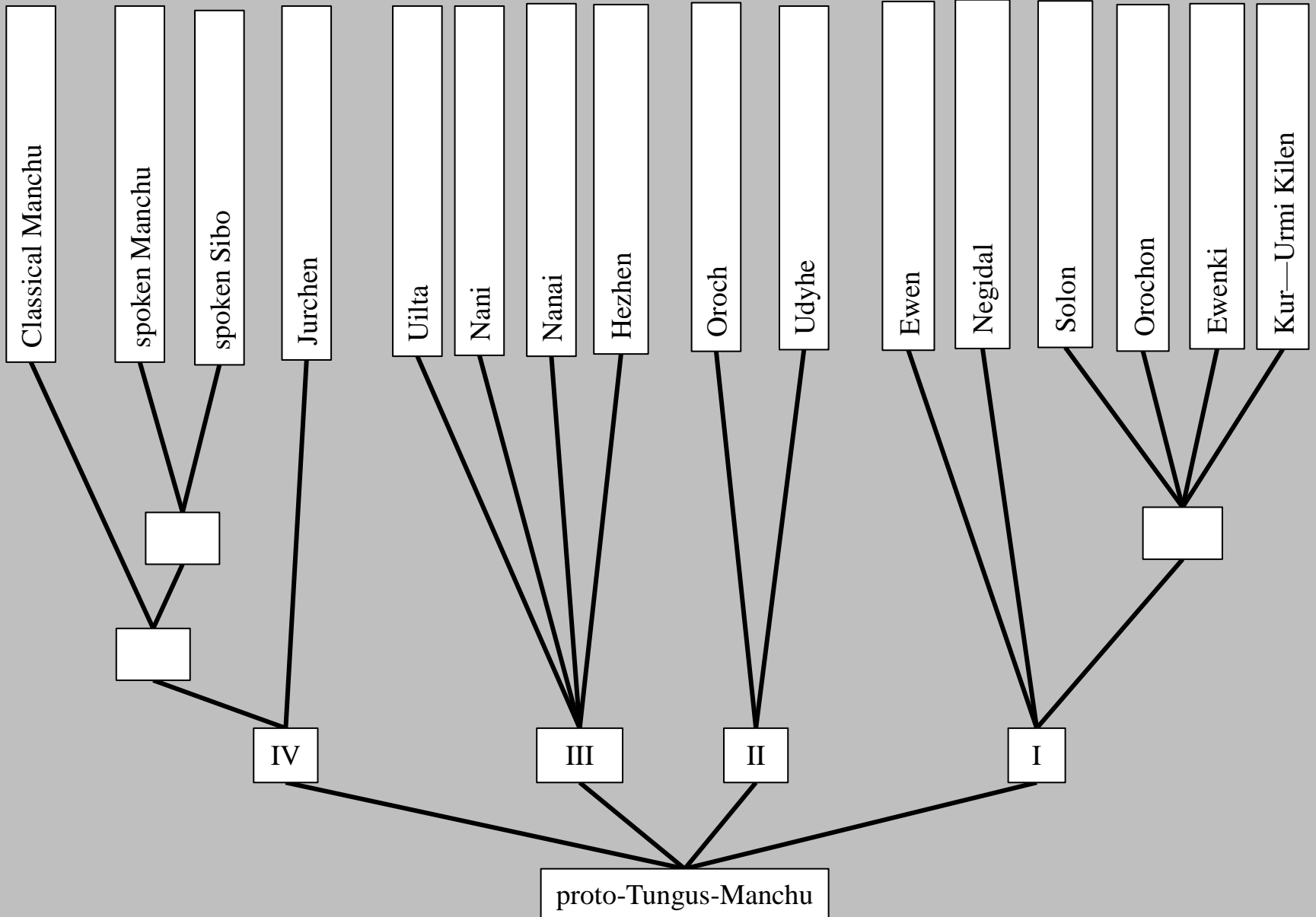
[Schrenckius 1883, Šternberg 1933: 7, Cincius 1949: 11, Benzing 1955]



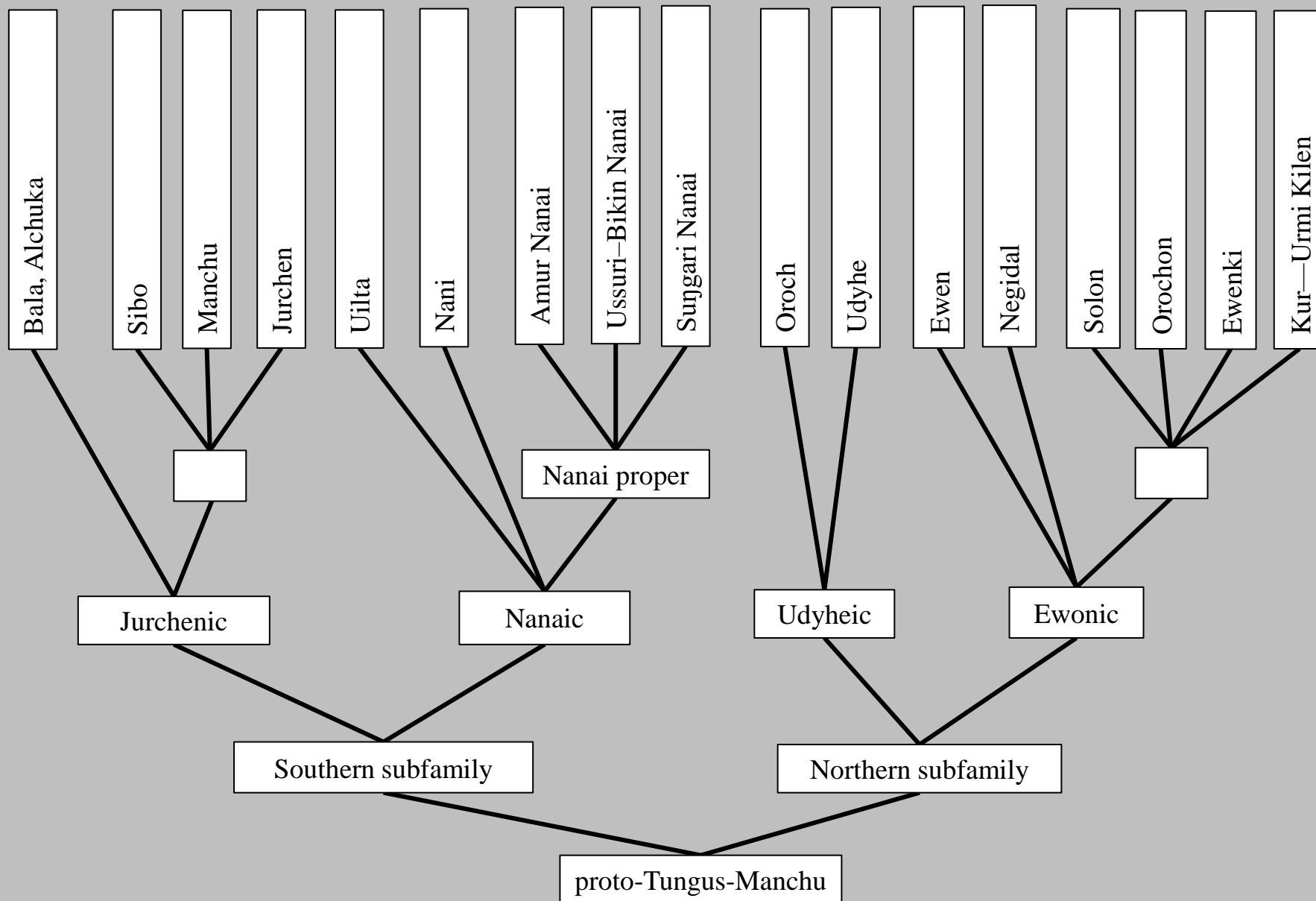
[Doerfer 1978]



[Ikegami 1974]

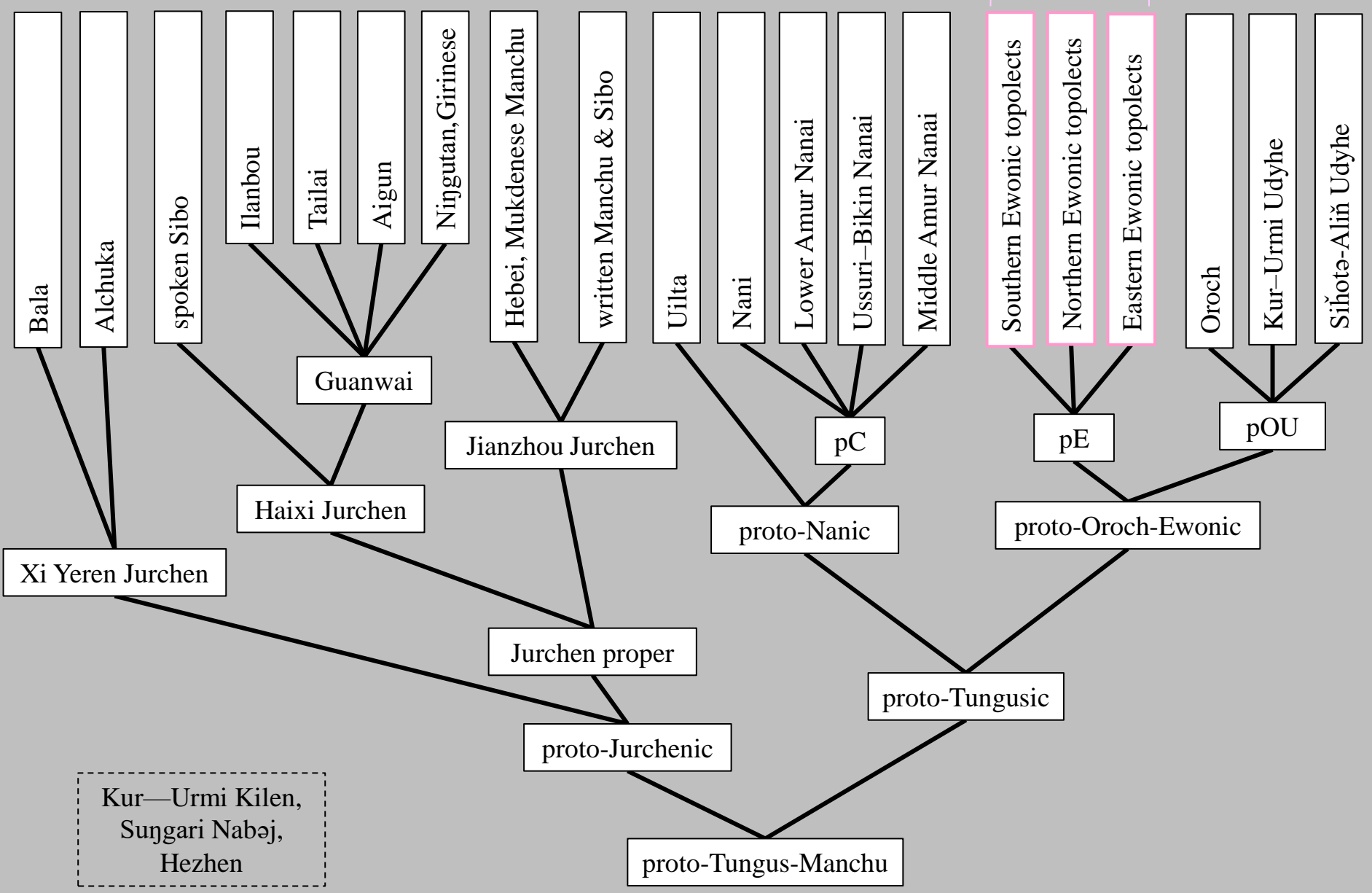


[George 2004, Janhunen 2012, Hölzl 2018]

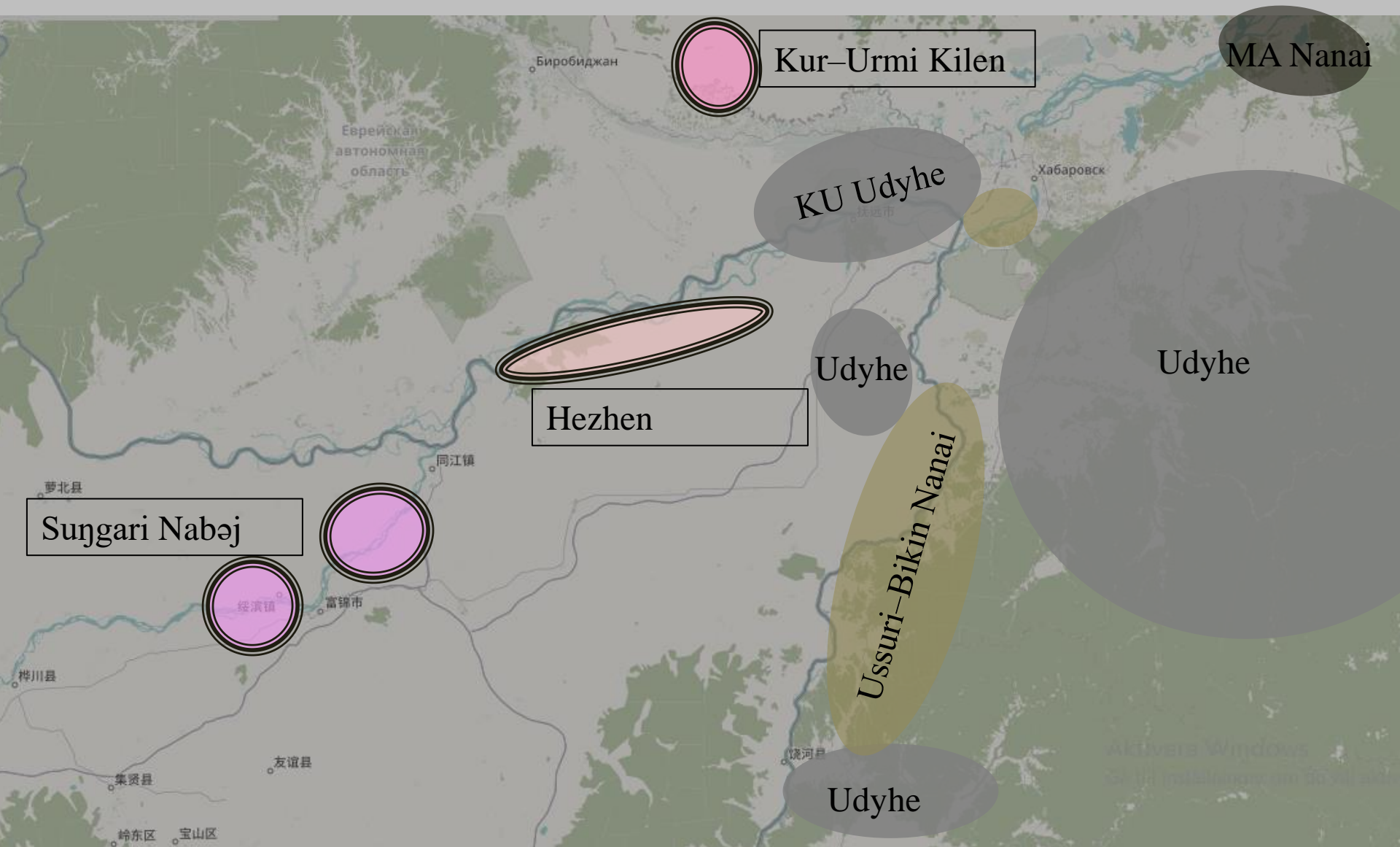


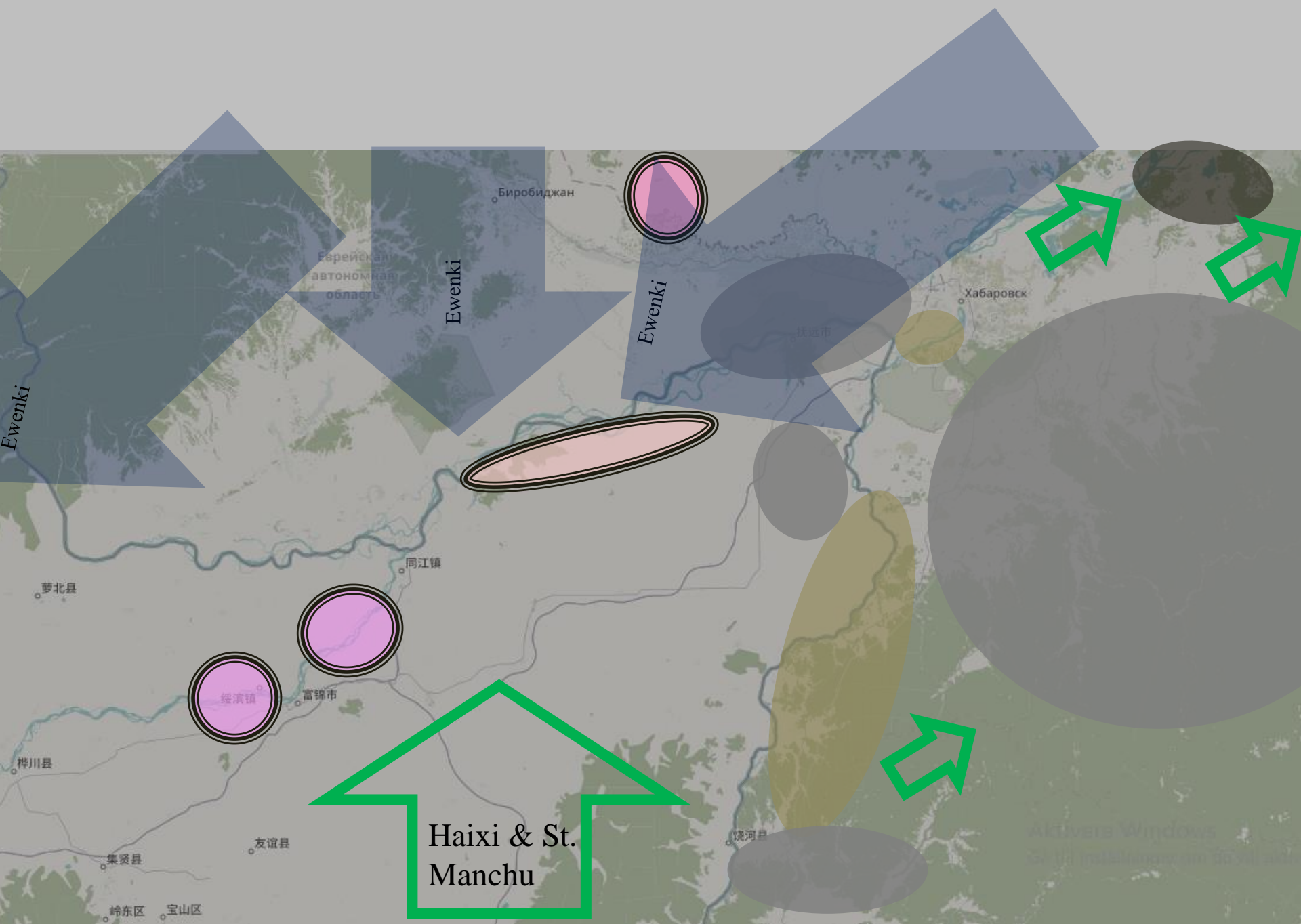
ACTUAL CLUSTERISATION

Negidal, Solon, Orochon,
Northern Ewenki, Southern Ewenki,
Eastern Ewenki, Western Ilqan Ewen,
Central Ilqan Ewen, Eastern Ilqan Ewen, Məna



mixed languages – «Upper Amur Nanai dialect group»



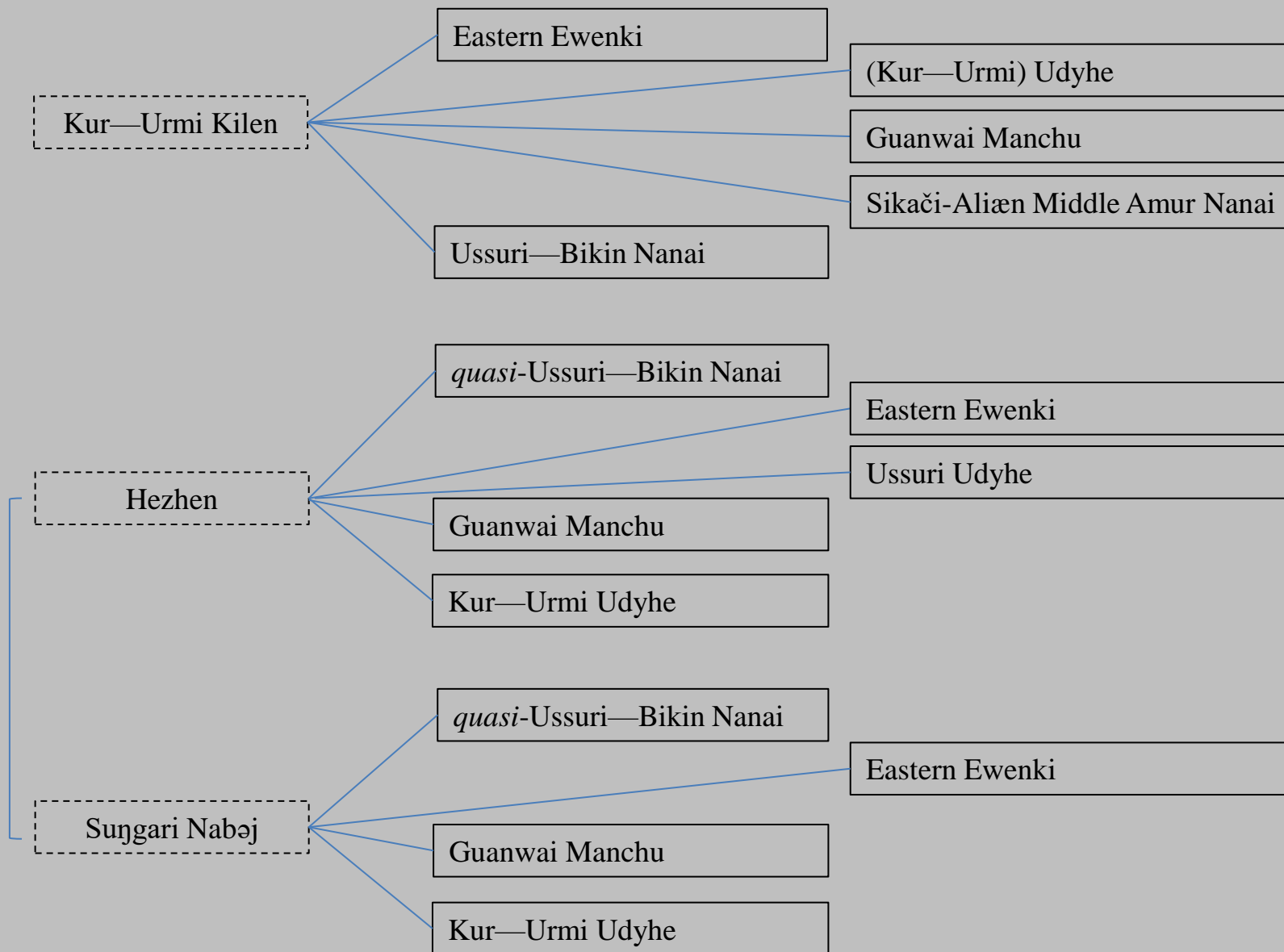


migratory and cultural influx

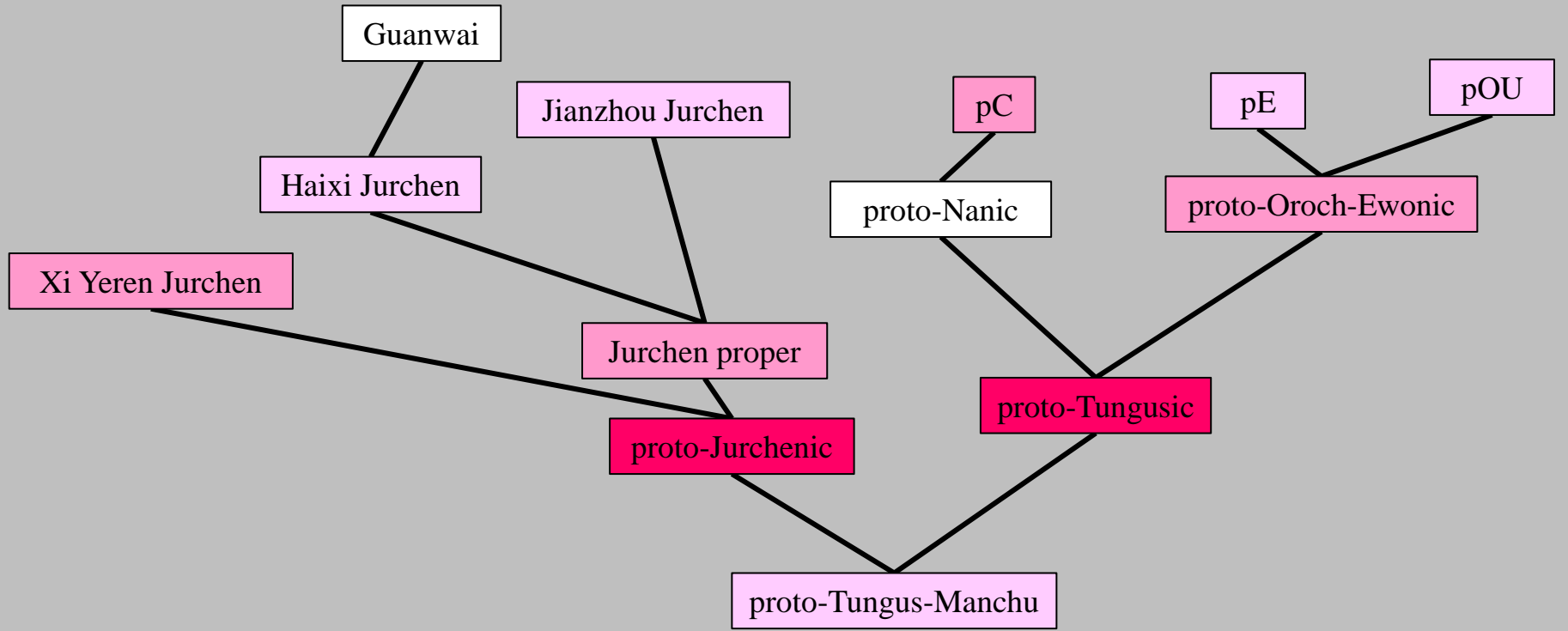
creolised idiom

main source

secondary/tertiary source



BRANCHING



pTM [mainly Dybo 1992, Mudrak 1985]

also based on Jurchenic dialectological publications and field data on the Tungusic dialects

		labial	anterio- coronal	posterior- coronal	palatal	palato- dorsal	dorsal	radical	nasopharyngeal	epilaryngeal	glottal
nasals		m	n	ɲ			(n)	ŋ			
medial	stops	p[ʔ] b~β	t[ʔ] ɕ		(tɕ) ɟ		k[ʔ] g~ɣ			ʔ	
	affricates	(ɸ)		(ʃ)	tɕ (ɟ)		(x)				
	fricatives	ɸ [pɸ] (b~β)	ɸ [s~ɕ]	ʃ [(t)ʃ]		(ɸ)	x [kx] (g~ɣ)			(x)	
	glides		r		j						
	taps										
	flaps										
	trills										(ʔ)
laterals (glides, taps, flaps, fricatives)			l		ʎ		(l)				

/p vs. ɸ/ > P/#_, V_t

CC/_# (C₁C₂, C₁C₁)

ʎ/V_V, _CV

ʔ/#_V, #_RV, #_NV

i, i, u, ɜ, ɔ, a

ī, ī, ū, ̄, ̄, ā

ij, uj, ɜj, ɔj, aj

īj, ūj, ̄j, ̄j, āj

iu, iɜ, iɔ, ia

īū, ī̄, ī̄, ī̄, ī̄

iV ≠ jV

traditional reconstructions. [Cincius 1949: 154, 218, 251—251]

		labial	anterio- coronal	posterioro- coronal	palatal	dorsal	radical	epilaryngeal	glottal
nasals		m	n	ň		ŋ			
medial	stops	p b	t d	(č)	č ž	k g			
	affricates	pf ^h				kx ^h			
	fricatives		s		j				
	glides	w	r						
	taps								
	flaps								
	trills								
laterals (glides, taps, flaps, fricatives)				l					

traditional reconstructions. S. Starostin [EDAL]

		labial	anterio- coronal	posterioro- coronal	palatal	dorsal	radical	epilaryngeal	glottal
nasals		m	n	ň		ŋ			
medial	stops	p b	t d			k g			
	affricates	(b)			č ž	(g)			
	fricatives		s	š	j	x			
	glides		r						
	taps								
	flaps								
	trills								
laterals (glides, taps, flaps, fricatives)				l					

pJurchenic

vs.

pTungusic

Jurchenic reflexes

Tungusic reflexes

***x/#_ > *ɦ**
 *x/V_V > *qχ, *k
 *x/V_*p, V_t > *qχ

pN *_H, *p/_*I, pOE Ø
 pN *_H, *k, pOE *x, *k
pN *k, **pEO *k**

*lC/_C > *lC
***lt > *ňč**
***lč > *ňč**
***lž > *ňč**
***lk > *Øč**
***lp > *Øpf**
***l/V_V > *l**
***l/_*žC > *j**
***l's > *qχ**
***r/_m > Ø**
***rč > *nč**
 *rž > rž
 *r/_*η > *r

pN ØCC, **pOE ØCC**
 pN *lt, pOE *lt
 pN *lč, pOE *lč
 pN *lž, pOE *lž
 pN *lk, pOE *lk
 pN *lp, pOE *lp
 pN *l', pOE *l'
pN *l, **pOE *l**
 pN *l't, pOE *lđ
 pN *r, pOE *r
pN *rč, **pOE *rk**
 pN *rž, pOE *rg
pN *d, **pOE *d**

***p/#_ > *pf**
***p/V_V > *pf**
***p/_*k, *_x > *pf**
***p/_*t, *_č > *pf**
 *φ/V_V > *pf
 *φ/V_N, V_R > *w
 φ/V_(V)s, *(V)š > *pfpfØ

pN *p, pOE *x
 pN *p, pOE *p
 pN *p, pOE *p
 pN *p, pOE *p
 pN *p, pOE *φ
 pN *p, pOE *w
 pN *(p)β, *pč, pOE *wV

*k/s(V)_t > *qχ
 *mk/V_ > *ηk

pN *k, pOE *k
 pN *mk, pOE *mk

***η/#_*i > *n**
***η/#_*ia, *iə > *w**
***η/#_*iu, *iɜ > *w**
***η/#_VN, #_ VCN > *g**
***ηž > nž**
***ηη/_# > *η**
***η/_# > *η**
***ň/#_*iV > *η**
***ň/_#_*u, *a, *ɔ, *ɜ > *n**
***ň/_# > *n**
***jng > ňž**

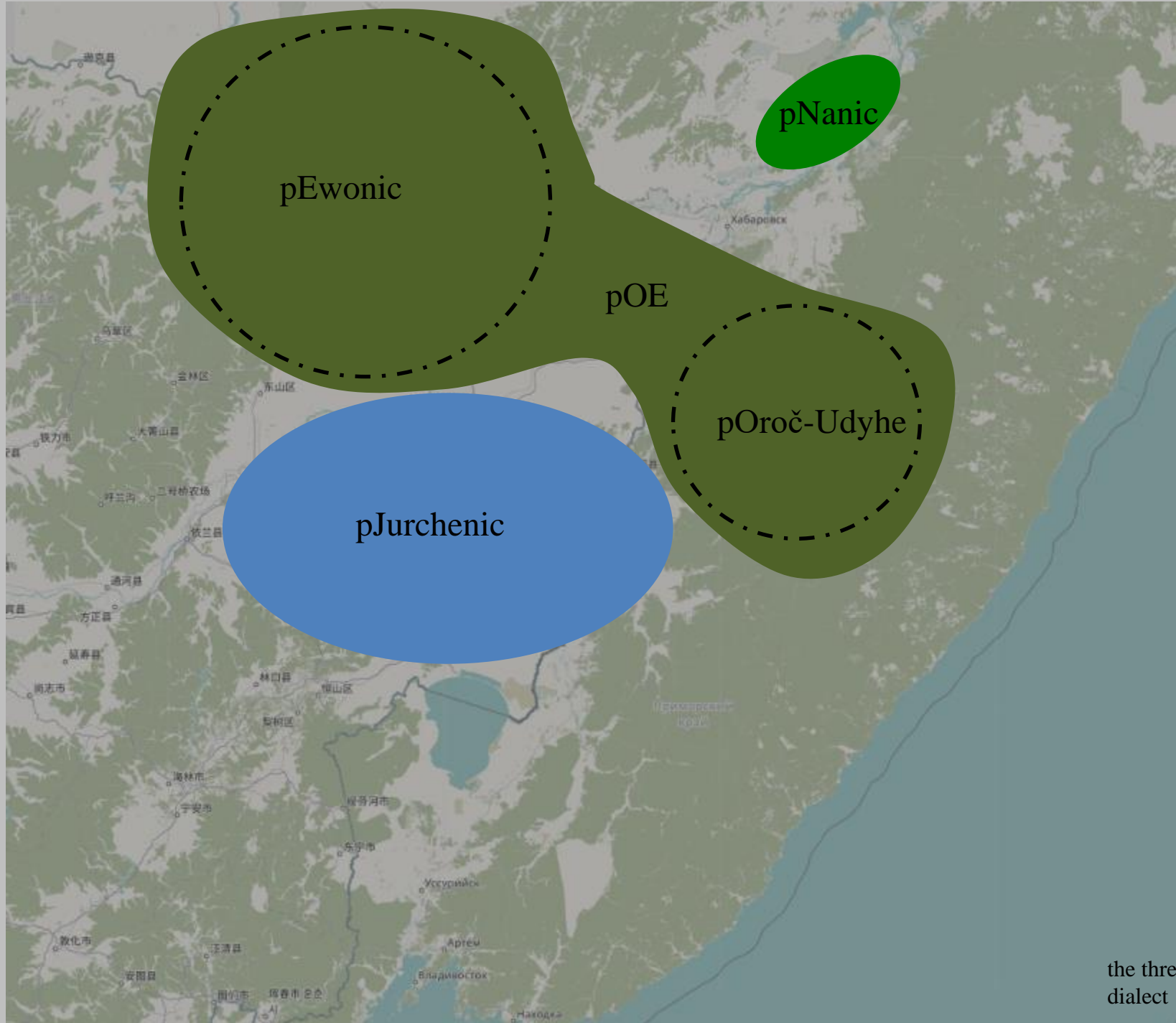
pN *ň, pOE *ň
pN *n, **pOE *n**
 pN *η, pOE *η
 pN *η, pOE *η
 pN *ηg, pOE *nη
 pN *ηη, pOE *η
 pN *Ņ, pOE *η
 pN *ň, pOE *ň
 pN *ň, pOE *ň
 pN *Ņ, pOE *ň
 pN *ňg, pOE *ňη

***V > *V**
 *i > *i
***ib/_C > *juj**
***uj/_C, _# > *u**
***iuj/#_ > *juj**
***iu/#_C > *i**
***iu/#C_C > *i**
***iu/C_# > *i**
***iu/VC_CV > *u**
***ia/#*b_ #*p_ > *ja**
***iɜ/#_ > jε**
***iɜ/#_*bC > jo**

pN *V̄, pOE *V̄
 pN *i, pOE *i
 pN *uj, pOE *ib
pN *i, **pOE *i**
pN *ʔi, **pOE *ʔi**
 pN *ʔu, ʔuj, ʔω, pOE *ʔi
 pN *u, uj, ω, pOE *i
 pN *u, uj, ω, pOE *i
 pN *uj, pOE *i
 pN *iæ, pOE *iæ
pN *i **pOE *i**
pN *ɜu, aω **pOE *ɜu, ɔ̄**

***š/#_ V_V > *š [č~š]**
***š/#_*Vs, *VCs > *s**
***š/*Vj_V > *s**
***t/#_jng > *š [č~š]**
***ls > *l(V)qχ**
***ns > *ηη**
***mks > *ηη**
 *ʔ > Ø [?]
 *#Ø > Ø [?]

pN *č, **pOE *č**
pN *č, **pOE *č**
pN *č, **pOE *č**
 pN t, pN t
 pN *lt, pOE *lđ
 pN *nt, pOE *nđ
 pN *mkβ, pOE *mđ
 pN *ʔ, pOE *ʔ
 pN *Ø, pOE *Ø



pEwonic

pNanic

pOE

pOroč-Udyhe

pJurchenic

the three pTM
dialect

reconstructions. pJurchenic

		labial	anterio- coronal	posterior- coronal	palatal	palato- dorsal	dorsal	radical	nasopharyngeal	epilaryngeal	glottal
nasals		m	n	ɲ			(n)	ŋ			
medial	stops	b	t[ʔ] d				k[ʔ] g~ɣ				[ʔ]
	affricates	pɸ	tʃ[ʔ] ɟʒ		(ʃ)		qχ				
	fricatives		ɸ		ʃ		(qχ) (g~ɣ)			(qχ)	ɦ
	glides	w	r		j						
	taps										
	flaps										
	trills										
laterals (glides, taps, flaps, fricatives)			l								

reconstructions. pTungusic

		labial	anterio- coronal	posterior- coronal	palatal	palato- dorsal	dorsal	radical	nasopharyngeal	epilaryngeal	glottal
nasals		ŋ	n	ɲ			(n)	N	(n)		
medial	stops	pʰ b̥~β	tʰ ɕ		ʃ		kʰ ɡ~ɣ			ʔ	
	affricates			ʧʰ				ɣ			
	fricatives	(b̥~β)	p̥ ɕ̥		j		(H) (ɡ~ɣ)			H	
	glides										
	taps		r							(ʔ)	
	flaps										
	trills										
laterals (glides, taps, flaps, fricatives)			l		ʎ						

Jurchenic branching

[Pallas et al I, Pallas et al II, Pallas et al III, Pallas et al IV, Amyot 1789a, Amyot 1789b, Amyot 1790, Захаровъ 1875, Захаровъ 1879, Mudrak 1985, Mu 1985, 1986a, 1986b, 1987a, 1987b, 1988a, 1988b, Zhao 1989, Aixinjueluo 1990, Enhebatu 1995, Ikegami 2002, Kiyose 2000, Aisin Gioro 1992, Kazama 2003, Wang 2005, Kim et al 2008, Wan 2011, Aixinjueluo 2014]

pTM	Xi Yeren	Jurchen proper, written Haxi	spoken Haixi	written Jianzhou
*x/#_u, *a, *ɔ, *ɜ	w	<h, w, j>, Ø [?], <qχ>	Ø [?], x~qχ	Ø
*x/#_VN	ň (Al.) Ø (Ba.)	<h, w>	n, ñ, Ø [?]	<n, ñ>, Ø
*x/*V_V	k	<ɣ, qχ>	n, ñ, Ø [?]	<g, x>
*x/*p_V	k	<qχ>	Ø, x, ɣ	<x>
*x/*t_V	l	<qχ>	Ø, k ^h ~qχ	<x>
*p/#_V	?	<f> [pf]	f, pf	<f>
*p/V_V	p	<f> [pf]	v	<f>
*p/V_#	?	<f> [pf]	f, pf	<f>
*pk	k	<fk> [pf]	fk ^h ~fq ^h , vg~vǰ	<fk>
*px	fk	<fk> [pf]	fk ^h ~fq ^h , vg~vǰ	<fk>
*p/k_V	p	<f> [pf]	p	<f>
*p/#_V	p	<f> [pf]	f, pf	<f>
*t/#_i	t ^h	<t>	č ^h ~c ^h ~č ^h	<č>
*t/#_iV	t ^h	<č>	č ^h ~c ^h ~č ^h	<č>
*š/#_V	s	*š (wHJ ê [č~ś])	s, c ^h	<š, s>
*š/#_Vč	?	<š/*i, s>	č ^h ~c ^h ~č ^h	<š/*I, s>
*š/#_Vs, VCs	?	<š/_*i, s>	s, c ^h	<š/_*I, s>
*š/V_V	?	<š/*i, s>	z, ʒ	<š/*I, s>
*k/V_V	?	<qχ>	ɣ, q(χ), q ^h	<x>
*k/V_#	?	<qχ>	ɣ, q(χ), q ^h	<x>
*g/#_V	k, h	<g>	g~ǰ~k~q(χ)	<g>
*g/b_V	?	Ø, <k>	Ø, k~q~g~ǰ	Ø, k
*g/ *ʒ	?	<g>	g	g

spoken Jianzhou and pJ forms are not included

pTM	Xi Yeren	Jurchen proper, written Haxi	spoken Haixi	written Jianzhou
*ň/#_iV	Ø	<ŋ>	Ø [?]	Ø
*ň/V_V	ŋ, n	<j, ñ, n>	j, ñ, n	<j, ñ, n>
*ň/V_V#	ŋ, n	<j, ñ, n>	j, ñ, n	<j, ñ, n>
*ň/NV_V	?	<j, ñ, n>	j, ñ, n	<j, ñ, n>
*ň/V_C	ŋ, n	<ň/_J, ŋ/_G, n/_D>	ň, ŋ, n	<ň, ŋ, n?>
*ň/V_#	ŋ, n	<ŋ/O_, n/E_>	ŋ, n	<ŋ, n>.
*g/*ŋ_V	ŋ	<g> [ŋ]	ŋ	<g>
*i _u /#_j	uj	<juj>	vɜ, vO, vO~vØ	<wɜ(j)>
*i _u /C_C	i, aj, u	<i>	i, ej, u~O	<i>
*i _u /VC_	i, aj, u	<u>	i, ej, u~O	<u>
*lm	?	<lm>	Øm	<lm>
*lb	?	<lw>	Øv	<Øb>
*nt	nš (Al.) nč ^h (Ba.)	<nč>	(j)z~ž	<js>
*ŋ/#_u, *a, *ɔ, *ɜ	?	<g>	g~ǰ~k~q(χ)	<g>
*ŋ/#_i	?	<ň>	ň	<ň>
ŋ/#_i _a , *i _o	?	<w>	v	<w>
*ŋ/#_i _ɜ	l	<w>	v	<w>
*ŋ/#_iVŋ	l	<w>	v	<w>
*ŋ/#_VN, VCN	?	<g>	g	<g>
*ŋ/#_iVj	ŋ	Ø [?]	Ø [?]	Ø
*ŋ/iV_VN	w	<n>	n	<n>
*ŋ/V_C	w	<ŋ, n, qχ>	ŋ, n, q ^h /_T	<ŋ, n, x/_T>



Ewonic

‘Heilongjian Yeren, Nuergan Yeren’: Nanic, Nivh, Oroč-Udyhe

Xi Yeren

Haixi

Jianzhou

pNanic vs. pOroč–Ewonic

pTungusic

*ŋ/iV_VN

*ŋg/V_V

*ln, *lŋ

*l'/V_V

*l'ð

*l'č

*l'-č

*l'ž

*rč

*rž

*jng

pNanic

∅

*mg

*ňŋ

*l

*t

*lč

*tč

*l

*rč

*rž

*ňg

pOroč–Ewonic

*ŋ

*mŋ

*ň

*l'

*l'ð

*č

∅

*l'ž

*rk

*rg

*ňŋ

reconstructions. pNanic

		labial	anterio- coronal	posterior- coronal	palatal	palato- dorsal	velar	uvular	nasopharyngeal	epilaryngeal	glottal
nasals		ɱ	n	ɲ				ɴ	ɳ		
medial	stops	ɸʔ ɸ	tʔ ɖ		ɟ		kʔ ɡ~ɣ	qʔ ɢ~ʕ		ʔ	
	affricates			teʔ							
	fricatives	w	ɸ				(ɡ~ɣ)	(ɣ) (ɢ~ʕ)	(ɴ)	ɣ	
	glides				j					(ʔ)	
	taps		r								
	flaps										
	trills										
laterals (glides, taps, flaps, fricatives)				l~ɭ							

reconstructions. pOroč–Ewonic

		labial	anterio-coronal	posterior-coronal	palatal	palato-dorsal	dorsal	radical	nasopharyngeal	epilaryngeal	glottal
nasals		ŋ	n	ɲ			(n)	N			
medial	stops	pʰ~ɸ b~β	tʰ d		ɟ		kʰ g~ɣ			ʔ	
	affricates			tʃʰ							
	fricatives	(pʰ~ɸ) (b~β)	p̥ ð		j		(H) (g~ɣ)			H	
	glides	w	r								(ʔ)
	taps										
	flaps										
	trills										
laterals (glides, taps, flaps, fricatives)			l		ʎ						

pEwonic vs. pOroč–Udyhe

pOE	pOU	pE
*x/_*i	*p	*x
*ϕ/V_V	*ϕ	*w
*lt	*kt	*lt
*lč	*kč	*lč
*lk	*kk	*lk
*lž	*gž	*lž
*lg	*gg	*lg
*lp	*kp	*lp
*lʰ/V_V	*l	*j
*lʰž	*ž	*jg
*rV_V	∅	*r
*rk, *rp, *rt	*kk, *kp, *kt	*rk, *rp, *rt
*rč, *rž	*č, *ž	*rč, *rž
*rg, *rb, *rd	*gg, *gb, *gd	*rg, *rb, *rd
*rm	*m	*rm
*r/_*n, *ŋ	*g	*r
*lð	*lp	*lð
*nð	*p (< **Np)	*nð
*mð	*mp	*mð
*md	*md	*mň
*mŋ	*ŋ	*mŋ
*ňŋ	*ŋ	*ňŋ

reconstructions. pOroč–Udyhe

		labial	anterio- coronal	posterioro- coronal	palatal	palato- dorsal	dorsal	radical	nasopharyngeal	epilaryngeal	glottal
nasals		ŋ	n	ɲ			N		Ņ		
medial	stops	pʔ b̥	tʔ d̥				kʔ q~ɣ			ʔ	
	affricates			tʃʔ dʒ							
	fricatives	ɸ (b̥)	ɸ		j		(H) (q~ɣ)		(N)	H	
	glides	w	r							(ʔ)	
	taps										
	flaps										
	trills										
laterals (glides, taps, flaps, fricatives)			l				L				

reconstructions. pEwonic

		labial	anterio- coronal	posterioro- coronal	palatal	palato- dorsal	dorsal	radical	nasopharyngeal	epilaryngeal	glottal
nasals		ŋ	n	ɲ			N		(n)		
medial	stops	pʰ b̥~β	tʰ d̥	tʃʰ	d̥ʃ	kʰ g̥~ɣ			ʔ		
	affricates										
	fricatives	(b̥~β)	p̥ d̥			x (g̥~ɣ)				(x)	
	glides	w	r		j						
	taps										
	flaps										
	trills										
laterals (glides, taps, flaps, fricatives)			l								

Uilta vs. continental Nanic

*b/ _*d _ *ž > m
g/ _*d, _ *ž > n~ŋ

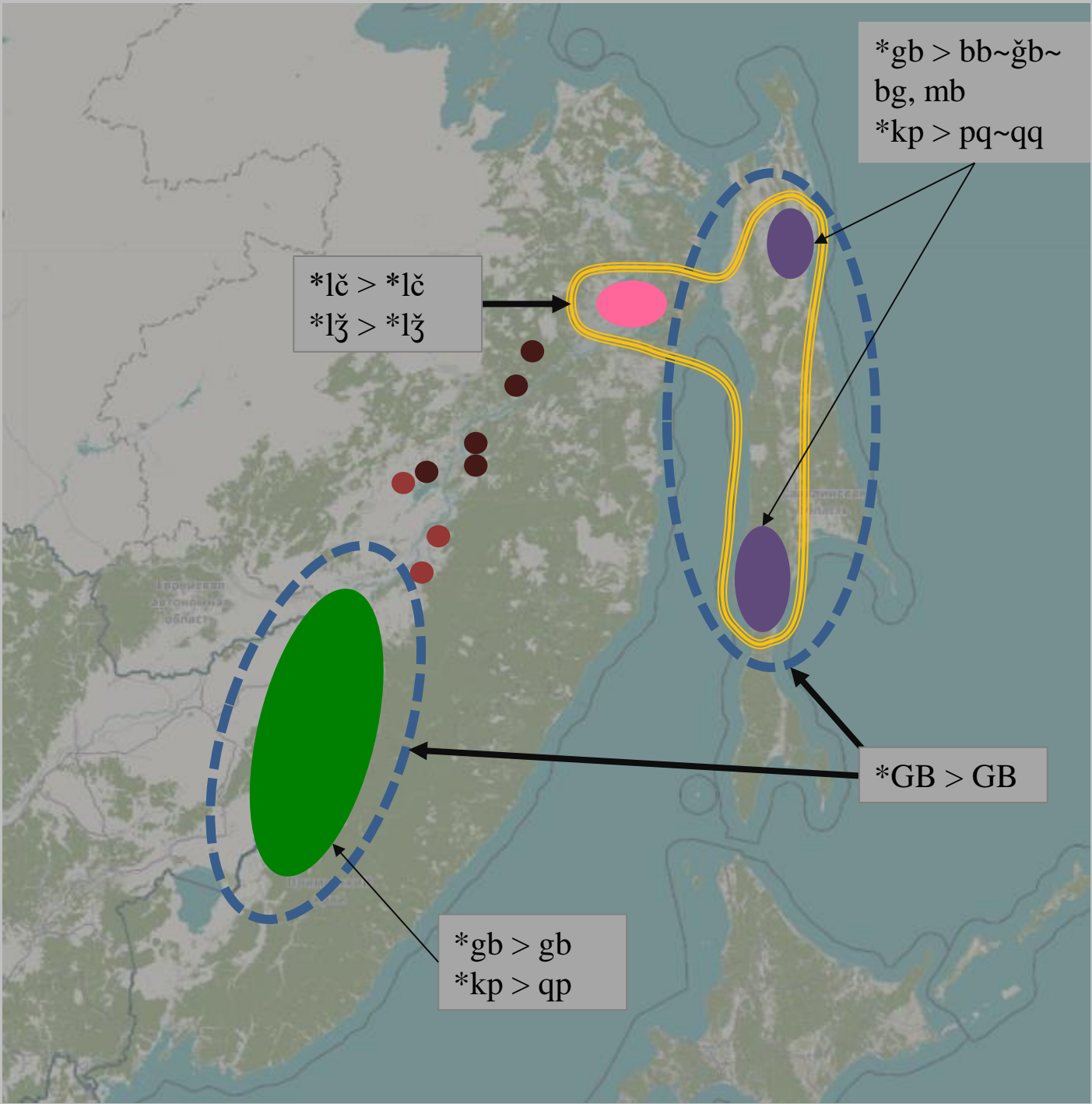
*ž/_*i, *ɫ, *iæ > ž, d otherwise
*d/_*i, *ɫ, *iæ > ž
*t/_*i, *ɫ, *iæ > č
*p/_*i, *ɫ, *iæ > p̣
*ň/_*i, *ɫ, *iæ > ŋ, n otherwise
*n/_*i, *ɫ, *iæ > ŋ

*C/V_Ṽ# > CC
*jw > ww

pN	Uilta	Nani	Lower Amur Nanai	Middle Amur Nanai	Ussuri–Bikin Nanai
*jk	ɣ	j	tk	jk	jk
*jd	dd	∅	dg	∅	∅
*k/m-_sV, l-_sV	∅	ʔ	p	Vqχ	Vχ
*k/s(V)_t	∅	ʔ	k	Vqχ	Vχ
*nŋ	ň	ɲ	ŋŋ	ŋ(g)	mb
*ňŋ	n~ň	ɲ	ŋŋ	jm (Torğon), rm (Sikači-Aliæn)	
*nč	tč	nč	nč	nč~nc (Torğon) nc (Sikači-Aliæn)	nc
*mk/V_V	qp	ŋp	?	mp (Torğon) mϕ (Sikači-Aliæn) (lexically allocated with nk)	mϕ (lexically allocated with nk)

primary areal features of Nanic

*iæ > e	Uilta	Nani							
*x/#_iɔ > Ø	Uilta	Nani							
ŋ/#_iVŋ > w	Uilta	Nani		Middle Amur					
*lk > lč	Uilta	Nani							
*lg > lž	Uilta	Nani							
*jŋg > ŋž	Uilta	Nani							
*l/(i)kV > r	Uilta	Nani							
*CYCa > CjaCa					Ussuri– Bikin	Hezhen, Sunğari		Guanwai, Jianzhou	
*b, *d, *g, *ğ > ḅ, ḍ, ğ̣, ɟ̣			Gərin Lower Amur	Sikači Aliæn	Ussuri– Bikin	Hezhen, Sunğari		Guanwai, Jianzhou	< Mongolic, «Xalxa phonation»
*ž, *č > dz, c				Sikači Aliæn, Torğon	Ussuri– Bikin (j/_i, ɮ)	Sunğari, Hezhen, Kilen (j/_i)	Bikin Udyhe	Aigun Manchu	
*p > φ always				Sikači Aliæn	Ussuri– Bikin	Sunğari Hezhen, Kilen			(NB: Guanwai – f-, fT~pT, Tp, -v-)



*gb > bb~gb~
bg, mb
*kp > pq~qq

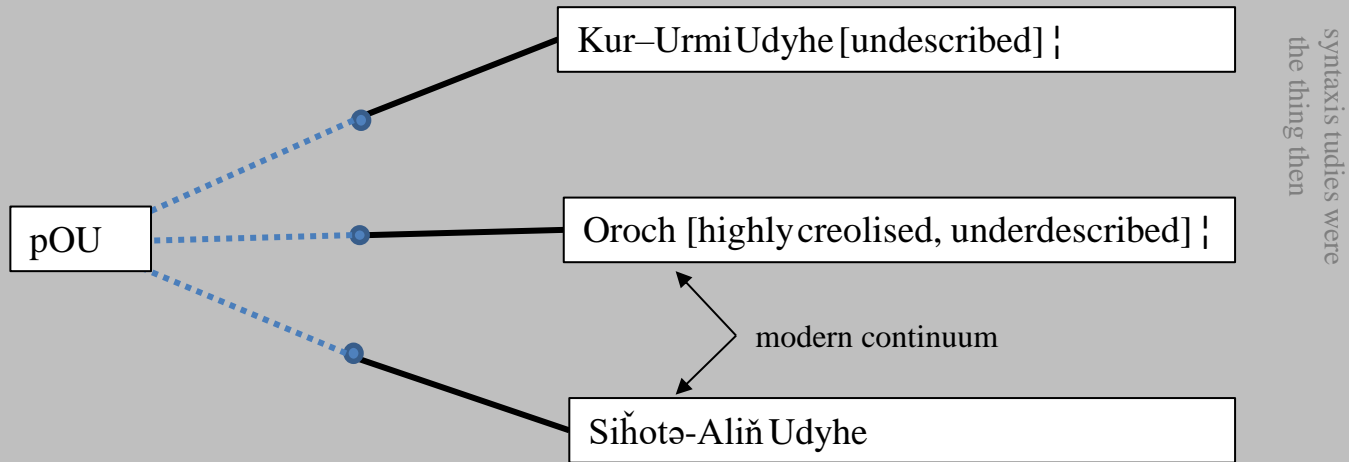
*l̄č > *l̄č
*l̄ž > *l̄ž

*GB > GB

*gb > gb
*kp > qp

archaic
periphery

problematic clades I. internal Oroč-Udyhe relationship



pOU	KUU	Oč	SAU	pOU	KUU	Oč	SAU
*č/V_V	?	č	ɸ	*pk	?	pp	pk~pq
*ňŋ	?	ŋŋ	ň	*kp	?	kk~qq	kp
*ŋm	?	mm	ŋ	*kk	?	kk~qq	k~q
*mŋ	?	m	ŋ	*bg	?	bb	gb
*k/V_V	?	k~q	ɸ, ?	*gb	?	gg~GG	gb
*lɸ	ls	lɸ	lVɸ	*gg	?	gg~GG	g
**ŋɸ/V_	s	ɸ, x	ɸ	*gm	?	mm	m
*ɸ/V_V	s	ɸ, x	ɸ	*jg	?	gg~GG	[ɣ] /g/
*iæ	?	iæ	æ	*i/_CU	?	i	y

problematic clades II. internal Ewonic relationship

***p** > x, š/#_, V_V – recent

***p** > č/#_, C_ – unclear geographical distribution

***ɟ** – highly variative

reflexation of ***ǰ**?

pTM *p		Džȳrčenic subfamily					Oroč-Ewonic (North Tungusic)							Nanic (South Tungusic)		
							Oroč-Udyhe		Ewonic							
		Häjšif Džȳrčen		Spoken Manču			Oroč	Sihotə- Aliñ Udyhe	Ewenki topolects	Ewen		Negidal	Uilta	continental		
				Šibe	Pekingese Manču	Gwanwaj Manču				Iłqan	Mənə			Nani	Nanai topolects	
1	/#_V	s š/_i	s, e/_i te ^h /_iT	s, ʃ/_i	s, e/_i ɸ ^h /_VT	ɸ ^h , ts ^h te ^h /_i	s~θ	s~θ	s~θ, x, ħ~ʙ~ʃ~Ø, ʃ, tʃ~cʃ	x~ħ~ʙ~ʃ~Ø	s	s~θ	s~θ~i̇	s~θ	s~θ, ʃ, x	
	/V_V	s š/_i	z z/_i ɸ ^h /_ØC	s~z ʃ~z/_i ɸ ^h /_ØC	s~z ɛ~z/_i ɸ ^h /_ØC	ɟ ɟ/_i	s~θ	Vfi~V̄	s~θ, x, ħ~ʙ~ʃ~j~w, ʃ, tʃ~cʃ	x~ħ~ʙ~ʃ~j~w	s/_V t/_Øt, l t/_ØC	s~θ	s~θ~i̇ ss~θθ~i̇i̇	s~θ	s~θ, ʃ, x (r)	
	/V_C	s	s~z ɛ~z/_i	s~z ʃ~z/_i	s~z ɛ~z/_i		s~θ	s~θ	s~θ, x, ħ~ʙ~ʃ~x, ʃ	s~θ, x~ħ~ʙ~ʃ	t, s/_k, q t/_t, l	s~θ	s~θ	s~θ	s~θ	
2	/K_V	s + Vqχ	zʙ	sχ~zʙ	sq ^h ~zʙ		q + s~θ	k~q + Ø	s~θ, ʃ, x	s~θ, x~ħ~ʙ~ʃ	s~t	s~θ	s~θ~i̇ + k k + s~θ~i̇	s~θ	s~θ, ʃ	
													t ² ~te ²	t ²		
3	/b_V	s	z	s~z	s~z	ɟ ɟ/_i	s~θ	fi	s~θ, x, ħ~ʙ~ʃ, ʃ, tʃ~cʃ	s~θ, x~ħ~ʙ~ʃ	s	s~θ	s~θ~i̇	s~θ	s~θ, ʃ	
	/g_V	s	z/_i	ʃ~z/_i	ɛ~z/_i	ɟ/_i	s~θ		s~θ, x, ħ~ʙ~ʃ, w, ʃ, tʃ~cʃ	s~θ, x~ħ~ʙ~ʃ	s	w	s~θ~i̇	s~θ	s~θ, ʃ	
4	/n_V	g	g~G	g~G	g~G		V + s~θ	Vfi~V̄	s~θ, x, ħ~ʙ~ʃ, ʃ, tʃ~cʃ	s~θ, x~ħ~ʙ~ʃ	t	s~θ	s~θ~i̇	s~θ	s~θ, ʃ	
									r, r, ɪ, dɪ, ð, d, d, n, j, Ø	r, r, ɪ, dɪ, d, n	t	Ø, d, dr	t ² ~te ²	t ²		
	/ŋ_V	s + Vqχ	zʙ	sχ~zʙ	sq ^h ~zʙ		-	-	s~θ, x, ħ~ʙ~ʃ, ʃ, tʃ~cʃ	s~θ x~ħ~ʙ~ʃ	-	s~θ	s~θ~i̇	s~θ	s~θ, ʃ	
		s	z, z/_i	s~z, ʃ~z/_i	z, z/_i				r, r, ɪ, dɪ, ð, d, d, n, j, Ø	r, r, ɪ, dɪ, d, n	t	Ø, d, dr	d	d	d, d	
4	/ñ_V	(sV)qχ	ʙ~ʃ	x~(s)χ	x~(s)χ~q ^h		-	-	s~θ, x, ħ~ʙ~ʃ, ʃ, tʃ~cʃ	s~θ ħ~ʙ~ʃ	t	Ø, d, dr	-	-	-	
									r, r, ɪ, dɪ, ð, d, d, n, j, Ø	r, r, ɪ, dɪ, d, n	t	s~θ				
	/m_V	m + s	m + z	m + s~z n + s~z	m + z~z		s~θ	Vfi~V̄	s~θ, x, ħ~ʙ~ʃ, ʃ, tʃ~cʃ	s~θ ħ~ʙ~ʃ	t	s~θ	ŋ~ɸ~n + s~θ~i̇	s~θ	s~θ, x, ʃ	
									r, r, ɪ, dɪ, ð, d, d, l, ʌ, Ø	r, r, ɪ, d, l	t	Ø, d, dr	s~θ~i̇	s~θ	s~θ, ʃ	
4	/Λ_V	l + Vqχ qχ	l + ʙ~ʃ ʙ~ʃ	l, ɬ + χ~ʙ~ʃ χ~ʙ~ʃ	ɬ + (V)χ~q ^h χ~q ^h		q + s~θ l + Vs~θ	l + Vfi~V̄	s~θ, x, ħ~ʙ~ʃ, ʃ, tʃ~cʃ	s~θ, ħ~ʙ~ʃ	t	s~θ	t ² ~te ²	t ²	s~θ, ʃ t ² ~tʃ ² ~ts ²	
									r, r, ɪ, dɪ, ð, d, d, l, ʌ, Ø	r, r, ɪ, d, l	t	Ø, d, dr	Ø + t ² ~te ²	Ø + t ²	Ø + t ² ~tʃ ² ~ts ²	
4	/r_V	Vqχ	(V)ʙ~ʃ	(V)x~ʙ~ʃ	ʙ		l + Vs~θ	l + Vfi~V̄	r, r, ɪ, dɪ, ð, d, d, l, , Ø ʌ	r, r, ɪ, d, l	t	Ø, d, dr	Ø + t ² ~te ²	Ø + t ²	Ø + t ² ~tʃ ² ~ts ²	
									s~θ, x, ħ~ʙ~ʃ, ʃ, tʃ~cʃ	s~θ, ħ~ʙ~ʃ	t	s~θ	s~θ~i̇	s~θ	s~θ, ʃ	
4	/r_V	s	z, z/_i	s~z, ʃ~z/_i	z, z/_i		Ø + s~θ	Ø + Vfi~V̄	s~θ, x, ħ~ʙ~ʃ, ʃ, tʃ~cʃ	s~θ, ħ~ʙ~ʃ	t	s~θ	s~θ~i̇	s~θ	s~θ, ʃ	
									r, r, ɪ, dɪ, ð, d, d, n, j, Ø	r, r, ɪ, dɪ, d	t	s~θ	t ² ~te ²	t ²	t ² ~tʃ ² ~ts ²	
5	/V_#	s	s	s	s		s~θ	s~θ	s~θ, x, ħ~ʙ~ʃ, ʃ	s~θ, ħ~ʙ~ʃ	s	s~θ	s~θ, ss~θθ	s~θ, ss~θθ	s~θ, x, ss~θθ	

pTM *xɔl-sÆ (*xol-sa, EDAL: 848) ‘1 fish 2 boiled fish’ > pE *olḡo

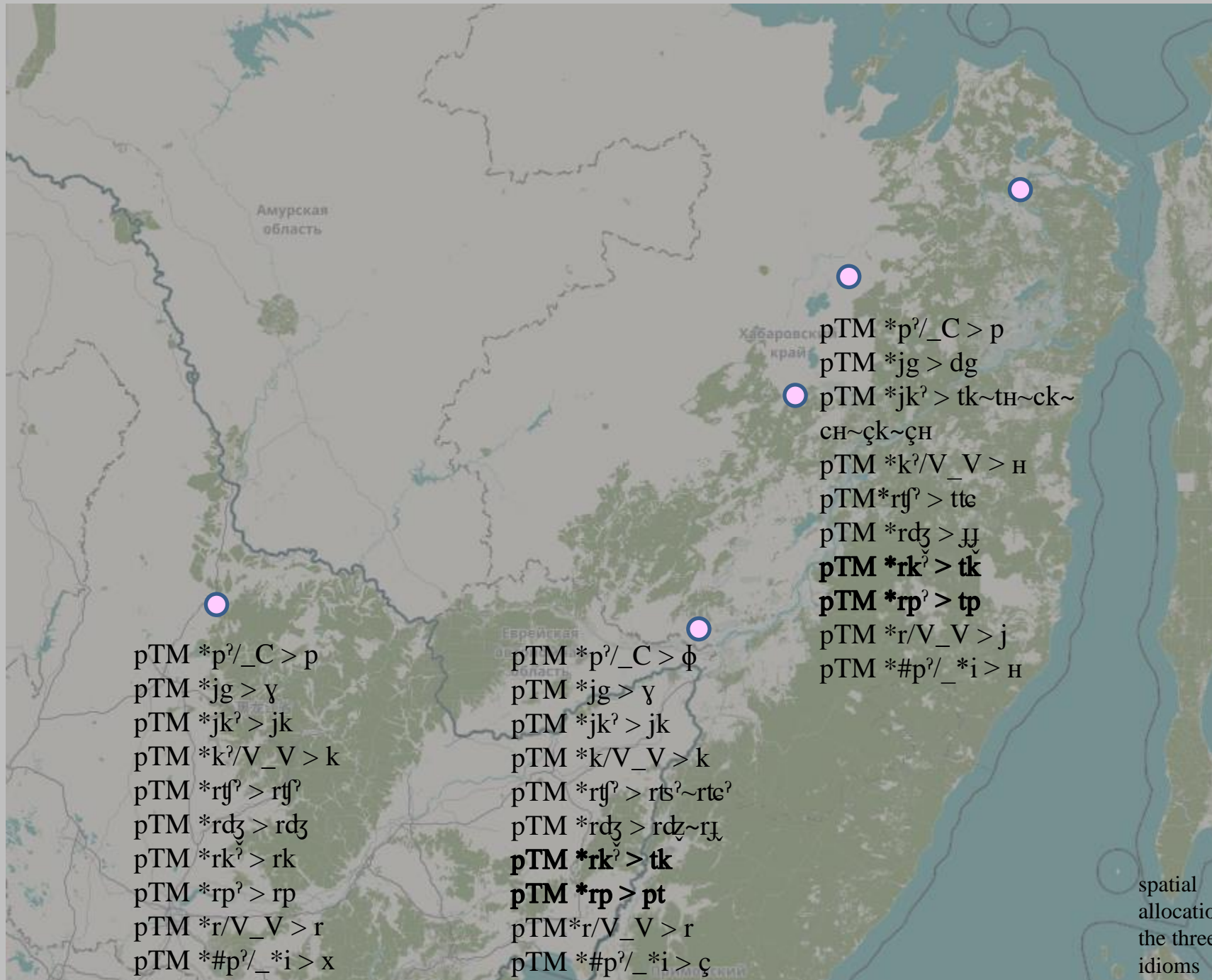
South Ewenki	ñepa	-
	Upper Lena	olḡo ollo
	Bajkat	-
	Baunt	-
	Barguzin	-
	Wanawara	-
	Podkamennaja Tunguska cluster	ollo
	Sym	olḡo
	Northern Bajkal	olḡo ollo
	Tokma	-
	Učam	-
	Hamnigan	ollo
	Áolu~gu~jä	olḡo
	Solon	-

North Ewenki	Agata & Bošoj Porog	olḡo ollo
	Aldan	-
	Dudinka	olḡo ollo
	Jerbogačën	-
	Iimpija	olḡo ollo
	Nakanna	-

Ewen	Məne of Āermañ		olḡt
	East Iłqan	Anadyr	-
		Bystraja	olle
		Kolyma—Omoloñ	olḡe
		Ola	olḡe
		Oħota (Oqat)	-
		Řenžina	olḡe
		North Ewen	-
		Allajihä	olḡe
	Middle Iłqan	Anŷj (Øñŷj)	-
		Moma	olḡs
		Tompon	olḡe
	West Iłqan	Sakkyrŷr	olḡo
		Tŷgəsir (tribolect)	-
		Lamuħin (tribolect)	olḡo
		Jŷkayir (tribolect)	olḡo

East Ewenki	Upper Amur cluster	-
	Džəltulaq	-
	Sələmdža	-
	Ajan	-
	Kačuga	olḡo ollo
	Maj	olḡo ollo
	ñerča	ollo olḡo
	Olėkma	-
	Karahuto-do	-
	Tokko	-
	Tommot	-
	Tungir	-
	Timpton	olḡo ollo
	Totta	olḡo ollo
	Urmi	-
	Učura	olḡo ollo
	Ĥingan	-
	Čulman—Gilŷj	olḡo ollo
	Čumikan	olḡo
	Wilŷj	-
Witim	-	
Žeja (Žiŷkiri)	-	
Oročon	-	
Kur—Urmi Kilen	olo	

Negidal	Upper Amguñ	olo
	Old Samagir	-
	Middle Amguñ	oldo olda
	Lower Amguñ	-
	Tyr	olḡo



pTM *pʰ/_C > p
 pTM *jg > ʏ
 pTM *jkʰ > jk
 pTM *kʰ/V_V > k
 pTM *rtʃʰ > rtʃʰ
 pTM *rdʒ > rdʒ
 pTM *rkʰ > rk
 pTM *rpʰ > rp
 pTM *r/V_V > r
 pTM *#pʰ/_*i > x

pTM *pʰ/_C > ф
 pTM *jg > ʏ
 pTM *jkʰ > jk
 pTM *k/V_V > k
 pTM *rtʃʰ > rtʂʰ~rteʰ
 pTM *rdʒ > rdʒ~rʒ
pTM *rkʰ > tk
pTM *rp > pt
 pTM *r/V_V > r
 pTM *#pʰ/_*i > ç

pTM *pʰ/_C > p
 pTM *jg > dg
 pTM *jkʰ > tk~tʰ~ck~
 cʰ~çk~çʰ
 pTM *kʰ/V_V > ʰ
 pTM *rtʃʰ > tte
 pTM *rdʒ > ʒ
pTM *rkʰ > tk
pTM *rpʰ > tp
 pTM *r/V_V > j
 pTM *#pʰ/_*i > ʰ

spatial
 allocation of
 the three
 idioms