

# Index Diachronica v.7.7

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# 1 Preface

On September 18, 2003, jburke created a topic on the Zompist Bulletin Board with the aim of allowing conlangers to examine trends in sound changes within natlang families. It has since expanded to provide conlangers with a general gist of plausible sound changes in general. The thread, in its current iteration, is available here: <http://www.incatena.org/viewtopic.php?f=10&t=1533>. Many of the compilations of sound changes have either come from pages in the thread or from pages on the KneeQuickie Correspondence Library archives (available at [http://kneequickie.com/archive/The\\_Correspondence\\_Library](http://kneequickie.com/archive/The_Correspondence_Library); the page at [http://www.kneequickie.com/kq/The\\_Correspondence\\_Library](http://www.kneequickie.com/kq/The_Correspondence_Library) has not yet been updated with subpages for sound changes); if an entry in this list has no known contributor listed, it is from KneeQuickie's Correspondence Library.

The intended purpose of this document is to provide a tool in PDF form for conlangers interested in diachronic conlanging and linguistic change to be able to get a feel for what sorts of changes might plausibly occur. To that end, this document features a compilation of various historical series of diachronic sound changes (and on occasion some synchronic processes as well) that have occurred in natural languages. It is hoped that the changes featured within this document will be of use in these endeavors.

No warrant is made that the entirety of the information herein is complete or correct. The ZBB was migrated over to a different setup some years back causing many special characters to disappear. Further, not all sources use IPA transcription, and may be unclear or missing information. Additionally, when listing sources, Wikipedia pages may be given with `https:\\` instead of `http:\\`, even though the page may have been accessed using `http:\\` instead of `https:\\`; this is for security, although doing so may in reality be pointless.

Due to the limits of the L<sup>A</sup>T<sub>E</sub>X software (and the skills of its user), full nesting is not possible. It is hoped that readers will understand and it is one of the goals of this project to provide correct nesting as far as is possible. Additionally, some overlap or multiple versions of changes may be present due to the nature of submitted sound-change lists.

Finally, many thanks to all individuals who contributed to the Library. Without you, this document would not exist.

# 2 Licensing and Legal Information

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### 3 Contact Information

Questions, comments, corrections, suggestions, missing authors for those changes taken from KneeQuickie, or other feedback may be sent to Pogostick Man at the Zompist Bulletin Board or the New Conlang Bulletin Board, Pan Pogostick at Polskie Forum Językowe, the CONLANG mailing list, or to `mailto:satorarepotenetoperarotas3@gmail.com`. Submitting corrections or lists of sound changes, preferably sourced, is encouraged.

## 4 Changelog

- **v.1.0** (2013/11/26) – Initial public release.
- v.1.1 (2013/11/26) – Small amendment to the preamble.
- v.1.2 (2013/11/26) – Small amendment to the preamble including a link to the KQ category where some of the changes were taken from.
- v.1.3 (2013/11/26) – Added omitted attribution on Wales Iñupiaq changes; alteration to changelog layout and amendment to Contact Information.
- v.1.4 (2013/11/26) – Forgot to update the version information in the title.
- v.1.5 (2013/12/01) – Added changes from Proto-Slavic to Polish, which I forgot to include in the original release. Also, added a Proto-Salish phonology I also forgot to include in the original release.
- v.1.6 (2013/12/03) – Added the California Vowel Shift.
- v.1.7 (2013/12/03) – Fixed the California Vowel Shift.
- v.1.8 (2013/12/06) – Credited Macska for the Pre-Slavic Vowel Changes.
- **v.2.0** (2014/03/11) – Added Yokuts and Lakes Plain correspondences.
- v.2.1 (2014/03/11) – Forgot to change version number on the first page.
- v.2.2 (2014/03/11) – Moved Yokuts to the Penutian group; fixed some errors.
- **v.3.0** (2014/03/27) – Added Northwest Caucasian, fixed Yokuts nesting errors.
- v.3.1 (2014/03/27) – Notes per Tropylium’s request and some formatting cleanup/explanation in the section on Northwest Caucasian.
- v.3.2 (2014/04/03) – Added considerable information on developments in West Germanic.
- v.3.3 (2014/04/03) – Cross-listed some of the West Germanic developments under the Vowel Shifts section; minor fixes.
- **v.4.0** (2014/04/03) – Replicated the “Most wanted sound changes” article from Knee-Quickie.
- v.4.1 (2014/04/03) – Minor fixes.
- v.4.2 (2014/04/04) – Minor correction.
- **v.5.0** (2014/04/28) – Added some Macro-Pama-Nyungan correspondences.

- v.5.1 (2014/04/30) – Correction of formatting errors; change of all remaining instances of “Linguifex” and “Rorschach” to “Pogostick Man”; amendment to contact info; other minor changes; addition of Proto-Tuparí consonantal reconstruction.
- v.5.2 (2014/05/13) – Added Qiangic, Proto-Lolo-Burmese final -i(C) and -u(C) sequences, Paiwan, Rukai, and changes to Old Provençal.
- v.5.3 (2014/05/13) – Added changes to Rhaeto-Romance.
- v.5.4 (2014/05/28) – Added Austronesian, Turkic, and Italic.
- **v.6.0** (2014/06/21) – Added Northeast Caucasian and Vasconic; clarified the situation with regards to sources without a known author (these are mostly from KneeQuickie); explained policy with regards to URLs when dealing with Wikipedia pages; corrected the description of the shorthand symbol ⟨%⟩; added a note from Tropylium on the Finno-Ugric changes.
- v.6.1 (2014/07/18) – Added some Austronesian changes; corrected Avestan according to comments from Alex Fink on CONLANG-L.
- **v.7.0** (2015/01/31) – Added some changes to the Austronesian section (including Proto-Ongan); added some changes regarding the Bantu languages and related groups; added changes for Standard German and Gothic; added correspondences for Monde languages; added Trans-New Guinea section. Cleaned up the Key to Abbreviations.
- v.7.1 (2015/01/31) – Corrected an accidentally omitted attribution.
- v.7.2 (2015/01/31) – Corrected a typo in the changelog.
- v.7.3 (2015/01/31) – Corrected an oversight in formatting.
- v.7.4 (2015/02/01) – Formatting and attribution fixes. Added reconstructed Proto-Trans New Guinea phonology.
- v.7.5 (2015/02/03) – Correcting omissions, including an acknowledgment that a quote from Whimemsz is sourced from KneeQuickie.
- v.7.6 (2015/02/25) – Fixed misspelling of “Falsican”; fixed an alphabetical ordering error in the Indo-European section.
- v.7.7 (2015/06/02) – Added missing section on the development of Cheyenne that I forgot to add to the document originally; added a lot of potential Bantu correspondences (see the note in the introduction to the Niger-Congo section regarding said correspondences); added Faroese vowel shift information; added correspondences for some Kalamian languages; added changes from Proto-Oceanic to Hiw.

## 5 Key to Abbreviations

Unless otherwise noted, the symbols below stand for:

” = Stress  
! = Except when...  
(...X) = For any number of X remaining  
 $X_0$  = The same/an identical X  
 $X^n$  = X with a given tone  
 $X_n$  = The  $n$ th X of a sequence or series  
 $X_x$  = All X of a sequence or series  
 $\dot{X}$  = Retroflex/emphatic X  
# = Word boundary  
\$ = Stem boundary  
% = Syllable boundary (or if X is one syllable away, or just representing a syllable in some changes from KneeQuickie or the ZBB)  
 $\emptyset$  = Nothing/Null/Zero  
A = Affricate  
B = Back vowel  
C = Consonant  
D = Voiced plosive  
E = Front vowel  
F = Fricative  
H = Laryngeal  
J = Approximant  
K = Velar  
 $\acute{K}$  = Palatovelar  
L = Liquid  
M = Diphthong  
N = Nasal  
O = Obstruent  
P = Labial/Bilabial  
Q = Click  
R = Resonant/Sonorant  
S = Plosive  
T = Voiceless plosive  
U = Syllable  
V = Vowel  
W = Semivowel  
Z = Continuant

## 6 Afro-Asiatic

For these Afro-Asiatic changes,  $s_1$ ,  $s_2$ ,  $s_3$ ,  $h_1$ , and  $h_2$  are consonants, believed to have most likely been fricatives, of indeterminate reconstruction. Dashes denote stem boundaries. What is given here as  $*q$  is described by Ehret as a “voiceless pharyngeal plosive”.

The phonemic inventory of Proto-Afro-Asiatic has been reconstructed as follows:

	Labial	Alveolar	Palatal	Velar	Pharyngeal	Glottal
Nasal	m	n				
Plosive	p p' b	t t' t <sup>h</sup> d d <sup>h</sup>	c c' ʃ	k k <sup>w</sup> k' k <sup>w</sup> ' g g <sup>w</sup>		ʔ
Fricative	f	s s' z		x x <sup>w</sup> ɣ ɣ <sup>w</sup>	ħ ʕ	h
Lat. Fric.		ɬ				
Affricate		ts dz				
Trill		r				
Approximant		l	j	w		
			Front	Central	Back	
		Close	i		u	
		Open		a		

(From Fallon, Paul D. (2009), “The Velar Ejective in Proto-Agaw”. In *Selected Proceedings of the 39th Annual Conference on African Linguistics*, Ojo, Akinloye and Lioba Moshi (Eds.), 10 – 22. Sommerville, MA: Cascadilla Proceedings Project. <http://www.lingref.com>, document #2182, citing Ehret, Christopher (1995), *Reconstructing Proto-Afroasiatic (Proto-Afrasian): Vowels, Tone, Consonants, and Vocabulary (Voices from Asia)*; and from [http://starling.rinet.ru/cgi-bin/response.cgi?root=config&morpho=0&basename=\delimiter"026E30Fdata\delimiter"026E30Fsemham\delimiter"026E30Fafaset&first=1](http://starling.rinet.ru/cgi-bin/response.cgi?root=config&morpho=0&basename=\delimiter))

### 6.1 Proto-Afro-Asiatic to Proto-Omoti

*Mecislau*, from Ehret, Christopher (1995), *Reconstructing Proto-Afroasiatic (Proto-Afrasian): Vowels, Tone, Consonants, and Vocabulary (Voices from Asia)*

$dz \int tʃ \rightarrow ʒ s_1 s_2$

$dʒ \rightarrow tʃ \rightarrow ʃ$

$t \rightarrow \emptyset / .s\#$

$ɬ \rightarrow l$

$f \rightarrow p$

$a(:) \rightarrow e(:) / -\{ʕ,q\}-$



$q \text{ } \text{f} \rightarrow \text{? } h$   
 $a \rightarrow o / \#Cw_{-}\{(d)l,s_3\}$   
 $w \rightarrow \emptyset / \#C_{-}V, \text{ except } i(:)$   
 $\int \rightarrow s_2 / \{i,j\}_{-}$   
 $VNC \rightarrow V:C[+voiced]$

### 6.1.1 Proto-Omotic to North Omotic

*Mecislau*, from Ehret, Christopher (1995), *Reconstructing Proto-Afroasiatic (Proto-Afrasian): Vowels, Tone, Consonants, and Vocabulary (Voices from Asia)*

$u \text{ } o \rightarrow i \text{ } e$   
 $e \rightarrow i / \#N_{-}C$   
 $e \rightarrow i / \#l_{-}\{P,C[+voiced]\}$   
 $e \rightarrow i / \#b_{-}$   
 $e \rightarrow i / p_{-}r$   
 $e \rightarrow i / \#\{s,f,ts'\}_{-}\{k(w),?\}$   
 $e \text{ } o \rightarrow i \text{ } u / \#C_{-}P$   
 $e \text{ } o \rightarrow i \text{ } u / \#(?)_{-}C$   
 $e \text{ } o \rightarrow i \text{ } u / \#\{k('),x\}_{-}\{t('),ts'\}$   
 $e \text{ } o \rightarrow i \text{ } u / \#(?)_{-}C_{-}$   
 $e \text{ } o \rightarrow i \text{ } u / \#P_{-}\{ts',t\}'\}$   
 $a \rightarrow o / \#\{z,d_3\}_{-}P$   
 $e(:) \rightarrow i(:) / \#C[+sibilant]_{-}\{d,n,r\}$   
 $Cw \rightarrow C$   
 $V: \rightarrow V / \#K[-voice]_{-}C$   
 $u \rightarrow u: / \#S[+voice]_{-}P[-voice]$   
 $V: \rightarrow V / \#C_{-}C_{-} + -(V)C_{-} \text{ suffix}$   
 $N \rightarrow \emptyset / V_{-}\{C[+sibilant],p\}$

**6.1.1.1 North Omotic to Bench** *Mecislau*, from Ehret, Christopher (1995), *Reconstructing Proto-Afroasiatic (Proto-Afrasian): Vowels, Tone, Consonants, and Vocabulary (Voices from Asia)*

$x_1 \rightarrow k$   
 $x_2 \rightarrow k / \#_{-}$   
 $x_2 \text{ } s_3 \rightarrow \emptyset \int / V_{-}V$   
 $t\int \rightarrow ts$   
 $s_x \rightarrow \int$   
 $\{?,h_x\} \rightarrow \emptyset$

$l \rightarrow d / \#\_VC$   
 $l \rightarrow n / \#\_VN$   
 $d' \rightarrow t'$

**6.1.1.2 North Omotic to Dizin** *Mecislau*, from Ehret, Christopher (1995), *Reconstructing Proto-Afroasiatic (Proto-Afrasian): Vowels, Tone, Consonants, and Vocabulary (Voices from Asia)*

$p' \rightarrow b$   
 $z \rightarrow d / Vj\_$   
 $ts' \rightarrow ʒ / V\_$   
 $x_1 \rightarrow k$   
 $x_2 \rightarrow k / \_ \#$   
 $x_2 \rightarrow \emptyset / V\_V$   
 $ʒ \rightarrow \{tʃ, ts\} \quad ts \rightarrow tʃ / \_ i$   
 $s_x \rightarrow tʃ$   
 $s_1 \rightarrow ʃ$   
 $? \rightarrow \emptyset$   
 $\{h_1, h_2\} \rightarrow h$   
 $d' \rightarrow t'$

**6.1.1.3 North Omotic to Kafa** *Mecislau*, from Ehret, Christopher (1995), *Reconstructing Proto-Afroasiatic (Proto-Afrasian): Vowels, Tone, Consonants, and Vocabulary (Voices from Asia)*

$b \rightarrow w / \_ \#$   
 $p \rightarrow f / V\_$   
 $z \quad z: \rightarrow j \quad dʒ: / \_$   
 $s \rightarrow ʃ / !V\_$   
 $ts' \rightarrow tʃ'$   
 $x_1 \rightarrow k$   
 $x_2 \rightarrow k / \#\_$   
 $x_2 \rightarrow \emptyset / V\_V$   
 $\{s_3, ʒ\} \rightarrow ʃ / \#\_$   
 $\{ts, ʒ\} \rightarrow tʃ / V\_$   
 $s_3 \rightarrow ʃ / V\_V$   
 $s_3 \rightarrow s / V\_ \#$   
 $ts' \rightarrow tʃ'$   
 $ɲ \rightarrow n$   
 $h_2 \rightarrow w / \#\_$

$l \rightarrow d / \#\_VC$   
 $l \rightarrow n / \#\_Vb$   
 $d' \rightarrow t'$

**6.1.1.4 North Omotic to Maale** *Mecislau*, from Ehret, Christopher (1995), *Reconstructing Proto-Afroasiatic (Proto-Afrasian): Vowels, Tone, Consonants, and Vocabulary (Voices from Asia)*

$b \rightarrow w / V\_V$   
 $p \rightarrow f / V\_$   
 $z \rightarrow d / V\_$   
 $z \rightarrow ts / Vj\_$   
 $x_1 \rightarrow k$   
 $x_2 \rightarrow h / \#\_$   
 $x_2 \rightarrow g / V\_V$   
 $ts\ ts: \rightarrow s\ ts / V\_$   
 $s_x \rightarrow \int$   
 $ts' \rightarrow t\int' / \#\_$   
 $ts' \rightarrow s / V\_$   
 $\mu \rightarrow n$   
 $h_2 \rightarrow w / \#\_$

**6.1.1.5 North Omotic to Shekkacho** *Mecislau*, from Ehret, Christopher (1995), *Reconstructing Proto-Afroasiatic (Proto-Afrasian): Vowels, Tone, Consonants, and Vocabulary (Voices from Asia)*

$b \rightarrow w / V\_V$   
 $p' \rightarrow p / V\_$   
 $p' \rightarrow b$   
 $z \rightarrow j / \{\#, V\}\_$   
 $z \rightarrow d\mathfrak{z}: / Vj\_$   
 $z: \rightarrow d\mathfrak{z}:$   
 $s \rightarrow \int / !V\_$   
 $ts' \rightarrow t\int'$   
 $x_1 \rightarrow k$   
 $x_2 \rightarrow \emptyset / V\_V$   
 $\mathfrak{z} \rightarrow \int / \#\_$   
 $\{s_3, ts, \mathfrak{z}\} \rightarrow s / \_-\#$   
 $ts \rightarrow \int / V\_$   
 $s_3 \rightarrow \int / \#\_$

$s_3 \rightarrow s / V_- \#$   
 $s_2 \rightarrow \int$   
 $s_2 \rightarrow \{s, t\int\} / V_-$   
 $h_1 \rightarrow \{h, \emptyset\} / \#_-$   
 $h_2 \rightarrow w / \#_-$   
 $l \rightarrow d / \#_- VC$   
 $l \rightarrow n / \#_- Vb$   
 $d' \rightarrow t'$

**6.1.1.6 North Omotic to Wolaytta** *Mecislau*, from Ehret, Christopher (1995), *Reconstructing Proto-Afroasiatic (Proto-Afrasian): Vowels, Tone, Consonants, and Vocabulary (Voices from Asia)*

$b \rightarrow w / V_- V$   
 $p \rightarrow f$   
 $x_1 \rightarrow k$   
 $x_2 \rightarrow \emptyset / V_- V$   
 $x_2 s_3 \rightarrow k \int / V_- \#$   
 $s \rightarrow s_3 / V_- (V)$   
 $s_1 \rightarrow \int$   
 $s_2 \rightarrow s / V_-$   
 $\eta \rightarrow n$   
 $l \rightarrow n / \#_- VN$   
 $d' \rightarrow t' / \#_-$

**6.1.1.7 North Omotic to Yemsa** *Mecislau*, from Ehret, Christopher (1995), *Reconstructing Proto-Afroasiatic (Proto-Afrasian): Vowels, Tone, Consonants, and Vocabulary (Voices from Asia)*

$b \rightarrow w / V_- V$   
 $p \rightarrow f$   
 $p' \rightarrow b$   
 $z \rightarrow d / V_-$   
 $x_1 \rightarrow k$   
 $x_2 \rightarrow k / \#_-$   
 $x_2 \rightarrow \emptyset / V_- V$   
 $k' \rightarrow k / \#$   
 $t\int \int \rightarrow \int j s$   
 $ts \rightarrow s / \#_-$   
 $s_x \rightarrow \int$

$tʃ' \rightarrow tʃ$   
 $ɲ \rightarrow n$   
 $h_1 \rightarrow \{h, \emptyset\} / \#_-$   
 $h_2 \rightarrow w / \#_-$   
 $l \rightarrow n / \#_-VC$   
 $d' \rightarrow t$   
 $r \rightarrow \{r, l\} / V_-$

**6.1.1.8 North Omotic to Zayse-Zergulla** *Mecislau*, from Ehret, Christopher (1995), *Reconstructing Proto-Afroasiatic (Proto-Afrasian): Vowels, Tone, Consonants, and Vocabulary (Voices from Asia)*

$b \rightarrow w / V_-V$   
 $p' \rightarrow ʔp$   
 $z \rightarrow ts / Vj_-$   
 $ts' \rightarrow s'$   
 $x_1 \rightarrow k$   
 $x_2 \rightarrow h / \#_-$   
 $x_2 \rightarrow \emptyset / V_-V$   
 $x_2 \rightarrow g / n_-$   
 $x_3 \rightarrow g / V_- \#$   
 $tsɿ \rightarrow ts / V_-$   
 $\{s_1, s_3\} \rightarrow ʃ$   
 $s_2 \rightarrow tʃ / V_-$   
 $ts' \rightarrow \{tʃ', s\}$   
 $ɲ \rightarrow n$   
 $l \rightarrow n / \#_-VN$

## 6.1.2 South Omotic

**6.1.2.1 South Omotic to Aari** *Mecislau*, from Ehret, Christopher (1995), *Reconstructing Proto-Afroasiatic (Proto-Afrasian): Vowels, Tone, Consonants, and Vocabulary (Voices from Asia)*

$p' \rightarrow \{b, p\}'$   
 $z \rightarrow \{d, z\} / V_-$   
 $\{x_1, x_2\} \rightarrow g$   
 $k' \rightarrow q$   
 $tʃ \rightarrow ts$   
 $s_1 s_2 s_3 \rightarrow ʃ z tʃ$

$h_1 \rightarrow \emptyset$

**6.1.2.2 South Omotic to Dime** *Mecislau*, from Ehret, Christopher (1995), *Reconstructing Proto-Afroasiatic (Proto-Afrasian): Vowels, Tone, Consonants, and Vocabulary (Voices from Asia)*

$p \rightarrow f$   
 $z \rightarrow \{d, z\} / V_-$   
 $k' \rightarrow g' / \#_-$   
 $tʃ \rightarrow ts$   
 $ts \rightarrow ʃ / \_i$   
 $s_1 \rightarrow ʃ$   
 $s_2 s_3 \rightarrow tʃ: tʃ / V_-$

## 6.2 Proto-Afro-Asiatic to Proto-Erythrean

*Mecislau*, from Ehret, Christopher (1995), *Reconstructing Proto-Afroasiatic (Proto-Afrasian): Vowels, Tone, Consonants, and Vocabulary (Voices from Asia)*

$tʃ dʒ \rightarrow ts dz$

### 6.2.1 Proto-Erythrean to Proto-Cushitic

*Mecislau*, from Ehret, Christopher (1995), *Reconstructing Proto-Afroasiatic (Proto-Afrasian): Vowels, Tone, Consonants, and Vocabulary (Voices from Asia)*

$b \rightarrow m / \#_V n$   
 $g \rightarrow k / \#\{d, w\} V_-$   
 $\gamma \rightarrow g / \#_V x_-$

#### 6.2.1.1 Agaw

**6.2.1.1.1 Proto-Agaw to Awngi** *Pogostick Man*, from Fallon, Paul D. (2009), “The Velar Ejective in Proto-Agaw”. In *Selected Proceedings of the 39th Annual Conference on African Linguistics*, Ojo, Akinloye and Lioba Moshi (Eds.), 10 – 22. Sommerville, MA: Cascadilla Proceedings Project. <http://www.lingref.com>, document #2182, citing Appleyard, David L. (2006), *A comparative dictionary of the Agaw languages*. (Cushitic Language studies, 24.) Cologne: Rüdiger Köppe Verlag.

*NB: Does not include vowel developments.*

$\{x, g\}^{(w)} \rightarrow \emptyset$  / at word boundaries  
 $z \ dz \ g \rightarrow g \ \{z, dz\} \ g^{(w)}$   
 $\{x, g\}^{(w)} \rightarrow y^{(w)}$   
 $k' \ k^{w'} \rightarrow \{y, q\} \ y^w$   
 $ʔ \rightarrow \emptyset$

**6.2.1.1.2 Proto-Agaw to Blin** *Pogostick Man*, from Fallon, Paul D. (2009), “The Velar Ejective in Proto-Agaw”. In *Selected Proceedings of the 39th Annual Conference on African Linguistics*, Ojo, Akinloye and Lioba Moshi (Eds.), 10 – 22. Sommerville, MA: Cascadilla Proceedings Project. <http://www.lingref.com>, document #2182, citing Appleyard, David L. (2006), *A comparative dictionary of the Agaw languages*. (Cushitic Language studies, 24.) Cologne: Rüdiger Köppe Verlag.

*NB: Does not include vowel developments.*

$\{x, g\}^{(w)} \rightarrow \emptyset$  / at word boundaries  
 $g^{(w)} \rightarrow x^{(w)}$  / else  
 $\{ts, tf\} \ z \ dz \rightarrow \int \ d \ d_3$   
 $t \rightarrow r$  / medially

**6.2.1.1.3 Proto-Agaw to Kemantney** *Pogostick Man*, from Fallon, Paul D. (2009), “The Velar Ejective in Proto-Agaw”. In *Selected Proceedings of the 39th Annual Conference on African Linguistics*, Ojo, Akinloye and Lioba Moshi (Eds.), 10 – 22. Sommerville, MA: Cascadilla Proceedings Project. <http://www.lingref.com>, document #2182, citing Appleyard, David L. (2006), *A comparative dictionary of the Agaw languages*. (Cushitic Language studies, 24.) Cologne: Rüdiger Köppe Verlag.

*NB: Does not include vowel developments.*

$\{x, g\}^{(w)} \rightarrow \emptyset$  / at word boundaries  
 $x \rightarrow \emptyset \ x^w \ g^w \rightarrow w \ y^w$   
 $\{ts, tf\} \ dz \rightarrow \int \ d_3$   
 $t \rightarrow j$  / medially  
 $k' \rightarrow \chi^w$  / #-  
 $k^{w'} \rightarrow \chi^w$   
 $ʔ \rightarrow \emptyset$

**6.2.1.1.4 Proto-Agaw to Xamtanga** *Pogostick Man*, from Fallon, Paul D. (2009), “The Velar Ejective in Proto-Agaw”. In *Selected Proceedings of the 39th Annual Conference on African Linguistics*, Ojo, Akinloye and Lioba Moshi (Eds.), 10 – 22. Sommerville, MA: Cascadilla Proceedings Project. <http://www.lingref.com>, document #2182, citing

Appleyard, David L. (2006), *A comparative dictionary of the Agaw languages*. (Cushitic Language studies, 24.) Cologne: Rüdiger Köppe Verlag.

*NB: Does not include vowel developments.*

$\{x, g\} \rightarrow \emptyset$   
 $\{x^w, g^w\} \rightarrow \emptyset$  / at word boundaries  
 $\{x^w, g^w\} \rightarrow w$  / else  
 $ts \ tʃ \ dz \rightarrow s' \ tʃ' \ z$   
 $k \rightarrow \{k('), q\}$   
 $k' \rightarrow \{\chi^w, q^w\}$  / #-  
 $k' \rightarrow q$  / else  
 $ʔ \rightarrow \emptyset$

### 6.2.2 Proto-Erythrean to Proto-North Erythrean

*Mecislau*, from Ehret, Christopher (1995), *Reconstructing Proto-Afroasiatic (Proto-Afrasian): Vowels, Tone, Consonants, and Vocabulary (Voices from Asia)*

$V\{j, w\} \rightarrow V:$  / C\_C  
 $e: \ o: \rightarrow i \ u$   
 $\{e, o\} \ \{i, u\} \rightarrow a \ \emptyset$   
 $-VC- \rightarrow -CV-$  “(This last rule turned all VC roots into CV)”  
 $in \rightarrow \eta$  / #-C

#### 6.2.2.1 Proto-North Erythrean to Proto-Chadic *Mecislau*, from Ehret, Christopher (1995), *Reconstructing Proto-Afroasiatic (Proto-Afrasian): Vowels, Tone, Consonants, and Vocabulary (Voices from Asia)*

$a: \rightarrow a$   
 $\hbar \ \text{ʔ} \rightarrow h \ \text{ʔ}$   
 $ts \ dz \ \{t, ts\}' \ tʃ' \rightarrow s \ z \ s' \ ʃ'$   
 $\eta \rightarrow \emptyset$  / V\_{-}\{ts, q\}

##### 6.2.2.1.1 Proto-North Erythrean to Proto-Boreafasian *Mecislau*, from Ehret, Christopher (1995), *Reconstructing Proto-Afroasiatic (Proto-Afrasian): Vowels, Tone, Consonants, and Vocabulary (Voices from Asia)*

$s' \rightarrow s$   
 $h \rightarrow \hbar$  / #-Vs



$z \rightarrow d$  / “when another sibilant is in the word nearby” and (word-finally?) when “noun-stem final”

$\{n, \eta w\} \rightarrow n$

$V \rightarrow \emptyset$  /  $_{-}\#$  “in nominals”

$\eta \rightarrow \emptyset$  /  $\#_{-}CV$

**6.2.2.1.2 Proto-Boreafrasian to Egypto-Berber** *Mecislau*, from Ehret, Christopher (1995), *Reconstructing Proto-Afroasiatic (Proto-Afrasian): Vowels, Tone, Consonants, and Vocabulary (Voices from Asia)*

$\emptyset \rightarrow i$

$h \rightarrow \hbar$  /  $_{-}Vz$

$l \rightarrow \emptyset$  /  $\#\{d, t'\}_{-}VC$

$\ddot{l} \rightarrow s$  /  $\#_{-}VC$

$\{\ddot{l}, ts, z\} dz \text{ t}\ddot{l} \{t', t'\ddot{l}\} d\ddot{z} \rightarrow s z ts ts' d\ddot{z}$

$f \rightarrow p$  /  $\#_{-}V\{Z, C[-\text{voice}], r\}$   $p' \rightarrow p$

$p \rightarrow b$  /  $\#dlV_{-}$

$xw \rightarrow yw \rightarrow \hbar$

$k \rightarrow g$  /  $_{-}\{w, j\}$

$CV\text{?} \rightarrow \hbar\text{?}$  /  $! C = gw$

$gwVq \rightarrow \text{?}$

$k(w) \rightarrow t\ddot{l}$  /  $\#_{-}Vt$

$g(w) \rightarrow d\ddot{z}$  /  $\#_{-}Vd$

$xV \rightarrow k$  /  $_{-}h$

$K^w \rightarrow K$

$q \rightarrow \emptyset$   $_{-}i$

$q \rightarrow i$  /  $\#_{-}V\{Z, C[+\text{dental}]\}$

$\text{?} \rightarrow i$  /  $\#_{-}VR$

$qu \rightarrow w$  /  $_{-}\{f, s\}$  (sporadic)

$\text{?} \rightarrow \text{?}$  /  $_{-}V\{n, r, g\}$

$\{h, \hbar, q\} \rightarrow \text{?}$  /  $C[+\text{voice}]_{-}V$

$q \rightarrow \text{?}$  /  $_{-}C[+\text{dental}]$

$\{h, \hbar\} \rightarrow \text{?}$  /  $KV_{-}$

$q \rightarrow \text{?}$  /  $_{-}h$

$qh \rightarrow \text{?}\hbar$

$y \rightarrow \text{?}$  /  $_{-}\hbar$

$tl' \rightarrow dl$  /  $\#_{-}V\hbar r$

$O[+\text{lateral}] \rightarrow O[+\text{palatal}]$

$r \rightarrow l$  /  $\#_{-}V(V)O[+\text{labial}]$

$r \rightarrow \text{?}$  /  $C_{-}\{t, w, j\}\# ! C = \{g, m, n, r, w, \ddot{l}, x\}$

$l \rightarrow j$  /  $\#_{-}iC \text{?}$

l → r / #nV\_C  
l → n

**6.2.2.1.3 Ancient Egyptian to Coptic** *Mecislau*, from Ehret, Christopher (1995), *Reconstructing Proto-Afroasiatic (Proto-Afrasian): Vowels, Tone, Consonants, and Vocabulary (Voices from Asia)*

n → l / #\_Vb  
n → l / #\_(V){s,f,h}V{m,b}#  
n → l / #\_V{m,b}{s,f,h}  
n → l / #\_Vk  
n → l / mV\_C  
n → l / CV\_m  
r → l / #(C)\_c(C)# ?  
r → l / #o\_#

**6.2.2.1.4 Proto-Boreafrasian to Proto-Semitic** *Mecislau*, from Ehret, Christopher (1995), *Reconstructing Proto-Afroasiatic (Proto-Afrasian): Vowels, Tone, Consonants, and Vocabulary (Voices from Asia)*

q → ʕ  
{i,u} → ə  
tl' → ʔ / \_C[+sibilant]  
ɣ → g / #\_VCH  
ɣ(w) → g / #\_Vx  
k'(w) → k / #dlV\_  
w → Ø / \_C  
ʔ → ʕ / #K\_r#

**6.2.2.1.5 Proto-Semitic to Classical Arabic** *Khavaragh*

p → f  
θʕ kʕ → ʔʕ q  
g → gʲ → dʒ  
s → {ʃ,h} / in “anaphora and certain derivational prefixes. . .[t]his is common to many other Semitic languages as well”  
ʃ → s  
ʔ → ʕ  
ʔʕ → dʔʕ → dʕ  
m → n / “in certain contexts, notably in the nunation”

$V\{j,w\}V \rightarrow a:$  / some sequences  
 “assimilation in some of the longer vowels”

**6.2.2.1.6 Classical Arabic to Egyptian Arabic** *Pogostick Man*, from Brustad, Kristen, Mahmoud Al-Batal, and Abbas Al-Tonsi (2010), *Alif Baa: Introduction to Letters and Sounds*, 3rd. Ed.; [http://en.wikipedia.org/wiki/Egyptian\\_Arabic](http://en.wikipedia.org/wiki/Egyptian_Arabic); At-Tonsi, Abbas, Heba Salem, and Nevenka Korica Sullivan (2013), *Umm al-Dunya: Advanced Egyptian Colloquial Arabic*; and from correspondence with my own Arabic professor, who is a native speaker of this dialect

$\theta \delta \rightarrow t d$  / “usually in numbers or cases where a short vowel has been deleted and it’s in contact with another stop, e.g. CA/MSA *ka’θir* → EA *ktir*”

$\theta \delta \rightarrow s z$

$\delta^f \rightarrow z^f$ , occasionally  $t^f$

$d^f \rightarrow z^f$  (seems to be a sporadic change only affecting a few words, e.g. CA/MSA *’d<sup>f</sup>a:bit<sup>f</sup>* → EA *’z<sup>f</sup>a:bit<sup>f</sup>*)

$d\bar{z} \rightarrow g$

$i u \rightarrow e o$  / only when short, !  $_{-}\#$

$u \rightarrow \{o,u\}$  / short only,  $_{-}\#$

$aj aw \rightarrow e: o:$  / in  $U[+closed]$

$V: \rightarrow V$  /  $C\_C\{:,C\}V$

$V \rightarrow V:$  /  $C\_CV$  in  $U[-stress]$

$V \rightarrow V:$  /  $_{-}\#$  + suffix

$\{i,u\} \rightarrow \emptyset$  /  $VC\_CV$  when unstressed (short only)

Some other short-vowel deletions

$\emptyset \rightarrow e$  /  $CVCC\_CVCV$  (applies across word boundaries)

Resyllabification across word boundaries to prevent vowel-initial syllables

$r$  gains emphatic status except when next to  $i$ , and even then it’s becoming more common in that environment

$a(:) \rightarrow a(:)$  / near emphatics

$a(:) \rightarrow a(:)$  / if  $a(:)$  is elsewhere in the word

$a(:) \rightarrow \ae(:)$  / else (sometimes it seems more like  $\varepsilon(:)$  to me)

$q \rightarrow ?$  / except in several words, two of which are *al-Qâhira* and *musîqâ*

Two consecutive consonants assimilate to the voicing of the second (obstruents only?)

$\{\{s,z\}^f, \bar{z}\} \rightarrow f:$

$\bar{f} \rightarrow \{\bar{f}, \bar{h}\} / \_h$

Final short vowel loss

$h \rightarrow \emptyset$  / in coda

**6.2.2.1.7 Classical Arabic to Coastal Hadhrami Arabic** *Pogostick Man*, from Wikipedia Contributors (2013), “Hadhrami Arabic”. *Wikipedia, the Free Encyclopedia*. <[http://en.wikipedia.org/w/index.php?title=Hadhrami\\_Arabic&oldid=580700095](http://en.wikipedia.org/w/index.php?title=Hadhrami_Arabic&oldid=580700095)>

dʒ → j, occasionally ʝ or dʒ in educated speech

θ ð ðʕ → t d dʕ

q → g

a: → e: / in Form VI (*tafāʿala*) verbs, though these apparently coexist with forms having the original vowel as well, with semantic distinctions

a: → æ: / when not near emphatics

Epenthesis (it seems i is preferred) breaking up final consonant clusters

V[-long] → Ø / #C\_C, in some words

**6.2.2.1.8 Classical Arabic to Wādī Hadhrami Arabic** *Pogostick Man*, from Wikipedia Contributors (2013), “Hadhrami Arabic”. *Wikipedia, the Free Encyclopedia*. <[http://en.wikipedia.org/w/index.php?title=Hadhrami\\_Arabic&oldid=580700095](http://en.wikipedia.org/w/index.php?title=Hadhrami_Arabic&oldid=580700095)>

dʒ → j, occasionally ʝ or dʒ in educated speech

θ ð ðʕ → t d dʕ

dʕ q → ðʕ g

a: → e: / in Form VI (*tafāʿala*) verbs, though these apparently coexist with forms having the original vowel as well, with semantic distinctions

a: → æ: / when not near emphatics

Epenthesis (it seems i is preferred) breaking up final consonant clusters

V[-long] → Ø / #C\_C (sporadic?)

**6.2.2.1.9 Classical Arabic to Hassāniyya Arabic** *Pogostick Man*, from <http://en.wikipedia.org/wiki/Hass%C4%81n%C4%ABya>

*NB: Words borrowed directly from CA/MSA seem to be immune to these changes. Also, unless otherwise noted, changes also apply to geminate consonants.*

dʕ q → ðʕ g

f θ → v ʒ (the article isn't exactly clear on what this second phone is)

? → {Ø, j, w} / depending on the environment; again, the article is unclear

x → χ (conjectured based upon the following but not outright stated in the article)

ʁ: → ʁ: → q:

ʁ → {ʁ, q}

V[-long] → Ø / C\_{C, #} (except for the feminine marker)

aj aw → e:(<sup>j</sup>) o:(<sup>w</sup>) (sometimes, the article is unclear)

The conditioning on these next two changes is conjectured based upon the source:

- j w → i u / #\_CV
- j w → i: u: / #\_CC

**6.2.2.1.10 Classical Arabic to Iraqi Arabic** *Pogostick Man*, from [http://en.wikipedia.org/wiki/Varieties\\_of\\_Arabic](http://en.wikipedia.org/wiki/Varieties_of_Arabic)

k q → tʃ {g,q} (g is more common)  
gʲ → j / in southern regions  
ʕ → ʔ<sup>ʕ</sup>  
aj aw → e: o:

**6.2.2.1.11 Classical Arabic to Eastern Libyan Arabic** *Pogostick Man*, from [http://en.wikipedia.org/wiki/Libyan\\_Arabic](http://en.wikipedia.org/wiki/Libyan_Arabic)

d<sup>ʕ</sup> dʒ q → ɖ<sup>ʕ</sup> ʒ g  
aj aw → e(ɪ,j) o(ɪ,w)  
Ø → ə / C\_CV(ɪ,V)CC

**6.2.2.1.12 Classical Arabic to Western Libyan Arabic** *Pogostick Man*, from [http://en.wikipedia.org/wiki/Libyan\\_Arabic](http://en.wikipedia.org/wiki/Libyan_Arabic)

q dʒ → g ʒ  
θ ɖ<sup>(ʕ)</sup> → t d<sup>(ʕ)</sup>  
aj aw → e: o:  
Ø → ə / CCV(ɪ,V)C\_C

**6.2.2.1.13 Classical Arabic to Moroccan Arabic** *Pogostick Man*, from [http://en.wikipedia.org/wiki/Moroccan\\_Arabic](http://en.wikipedia.org/wiki/Moroccan_Arabic)

t → t̪ / plain t only, distinguishable from the sequence ts  
{a,i} → ə / short only; the change of short a blocked for some speakers before h ʕ  
u → ə / short only, except near “a labial or velar consonant”  
C[+labial/+velar] → w / adjacent to short u  
{u,ə} → Ø / ! C\_C(C)#  
ə → a / near h ʕ  
ə → ɐ / near emphatics  
ə → ɪ / else  
u → ʊ / short only  
a: i: u: → ɑ: e: o: / near emphatics

$a: \rightarrow \text{æ}:$  / else  
 $C_1^f C_2 \rightarrow C_1 C_2^f$   
 $C^f \rightarrow C$  /  $\{\#, V\}$ -V  
 $q \rightarrow \{q, g\}$   
 $d_3 \rightarrow \{d, g\}$  / if s or z occur somewhere else in the word  
 $d_3 \rightarrow \text{z}$  / else  
 $s \rightarrow \int$  / if  $\int$  is somewhere in the stem after it  
 $z \rightarrow \text{z}$  / if  $\text{z}$  is somewhere in the stem after it

**6.2.2.1.14 Classical Arabic to Sa‘idi Arabic** *Pogostick Man*, from [http://en.wikipedia.org/wiki/Sa%27idi\\_Arabic](http://en.wikipedia.org/wiki/Sa%27idi_Arabic)

*NB: This is probably highly incomplete*

$q \times \text{y} \rightarrow g \chi \text{ʁ}$

**6.2.2.1.15 Classical Arabic to Sudanese Arabic** *Pogostick Man*, from [http://en.wikipedia.org/wiki/Sudanese\\_Arabic](http://en.wikipedia.org/wiki/Sudanese_Arabic)

$d_3 q \rightarrow g^j g$   
 $u(:) \rightarrow \{e, o\}(:)$

**6.2.2.1.16 Classical Arabic to Tunisian Arabic** *Pogostick Man*, from [http://en.wikipedia.org/wiki/Tunisian\\_Arabic](http://en.wikipedia.org/wiki/Tunisian_Arabic)

$a \rightarrow \alpha$  / near emphatics  
 $a \rightarrow \varepsilon$  (sometimes)  
 $d^f q \rightarrow \delta^f \{g, q\}$   
 $d_3 \times \text{y} \rightarrow \text{z} \chi \text{ʁ}$   
 $aj \text{ aw} \rightarrow \{aj, e, i: \text{ aw}, o, u:\}$   
 $V: \rightarrow V[\text{-long}]$  /  $\text{-\#}$  (except as below)  
 $V(:) \rightarrow V:$  / in accented or stressed monosyllables

**6.2.2.1.17 Proto-Semitic to Biblical Hebrew** *Maknas*, from [http://www.adath-shalom.ca/history\\_of\\_hebrew.htm](http://www.adath-shalom.ca/history_of_hebrew.htm) “and other sources”

*NB: ə could be realized as an ultrashort [a], [e], or [o] depending on its surroundings*

$\theta \theta^f \delta \text{ ʔ } \text{ ʔ }^f \rightarrow \int \int^f \text{ z s } s^f$   
 $x \text{ y } k^f \rightarrow \text{h } \text{ ʔ } q$  Some mergers involving j and w  
 Frequent h-dropping

Stressed-vowel correspondences:

- a: → o: / ! \_#
- i i: u u: → eə i:ə oə u:ə / \_R
- i: → e: / \_#
- a → a: / \_\$
- a → {a,ε} (not common)
- i u → e a / \_R{ \$, # } (in verbs)
- i u → e o / \_C{ \$, # } (in verbs)
- i → e: o: / else
- aw → a:w
- aj → e: / \_\$
- aj → ε: / \_#

Unstressed-vowel correspondences:

- {o,u}(:) → i: / \_\$%o:
- o: → u:
- a → Ø / \_#
- a → \_\$%%(...)"
- a → ə / \_R if ə in an adjacent syllable
- a → ə / R\_ if ə in an adjacent syllable
- i → ə / \_R if a frontal allophone of ə in an adjacent syllable
- i → ə / R\_ if a frontal allophone of ə in an adjacent syllable
- u → ə / \_R if a backed allophone of ə in an adjacent syllable
- u → ə / R\_ if a backed allophone of ə in an adjacent syllable
- i → a / \_R
- i → a / R\_
- a i → a: e: / \_%"
- u → ɔ / \_C{ \$, # }
- u → Ø / ! \_C:
- aj aw → e: o:

p b t d k g → b v θ ð x ɣ / non-initial singletons

ʔ → Ø / \_{ \$, # }

j → Ø / E\_ (not clear whether only short E or long also)

at → a: / \_# (in feminine noun endings)

**6.2.2.1.18 Biblical Hebrew to Modern Israeli Hebrew** *Maknas*, from [http://www.adath-shalom.ca/history\\_of\\_hebrew.htm](http://www.adath-shalom.ca/history_of_hebrew.htm) “and other sources”

*NB: These aren't all true sound changes per se, since Modern Israeli Hebrew was artificially revived and is an amalgamation of dialects*

$\{e(:), \varepsilon\} \rightarrow \varepsilon$   
 $V: \rightarrow V[-\text{long}]$   
 $\text{ə} \rightarrow \text{a} / \text{near gutturals}$   
 $\text{ə} \rightarrow \varepsilon / \#R\_C$  or when breaking up what would otherwise be a three-consonant cluster; in the case of two schwas, only the first one is dropped  
 $\text{ə} \rightarrow \emptyset / \text{else}$   
 $w \ \theta \ \eth \ \gamma \rightarrow v \ t \ d \ g$  (sometimes)  
 $x \ \imath \rightarrow \chi \ \text{ʔ}$   
 $s^{\text{ʔ}} \ t^{\text{ʔ}} \ h \ q \rightarrow s \ t \ \chi \ k$   
 $h \rightarrow \emptyset / \_ \#$   
 $\text{ʔ} \rightarrow \emptyset / \text{! in onset of } U[+\text{stress}]$  (colloquial)  
 $h \rightarrow \emptyset$  (colloquial)  
 $C: \rightarrow C[-\text{long}]$   
 $r \rightarrow \mathfrak{R}$



## 7 Algonquian

Proto-Algonquian is believed to have had the following phonology, as provided for by the Wikipedia:

	Labial	Alveolar	Palatal/Postalveolar	Velar	Glottal
Nasal	m	n			
Plosive	p	t		k	ʔ
Fricative		θ s	ʃ		h
Affricate			tʃ		
Rhotic		r			
Approximant	w		j		

  

	Front	Central	Back
Close	i i:		
Mid	e e:		o o:
Open		a a:	

The phoneme denoted as /θ/ may well have been actually /ɬ/ instead. Also, some debate exists as to whether or not /r/ was originally an /l/.

(From Wikipedia contributors (2011), “Proto-Algonquian language”. *Wikipedia, The Free Encyclopedia*. [http://en.wikipedia.org/w/index.php?title=Proto-Algonquian\\_language&oldid=440788532](http://en.wikipedia.org/w/index.php?title=Proto-Algonquian_language&oldid=440788532))

### 7.1 Proto-Algonquian to Proto-Arapaho-Atsina

*Whimemsz*, from Goddard, Ives (1974), “An Outline of the Historical Phonology of Arapaho and Atsina”. *International Journal of American Linguistics*, 40:102 – 116

(W)V → ∅ / -#

we → o

o(:) → i(:)

W → ∅ / C i(:)

e → i / #-

θ → ʃ / C-

θ h {s,m,n,r} → ʃ ∅ ʔ / -C

tʃ → ʃ / -p

W → j / C-

W → n / {#,V}-

p k → k ∅

s → n / #-

$s \rightarrow h / \{V, C\}_-$   
 $r \rightarrow n / \{\#, V\}_-$   
 $r \rightarrow h / C_-$   
 $tʃ \rightarrow \theta$   
 $V: \rightarrow V[-\text{long}] / \_CC$   
 $a(:) \rightarrow o(:)$

### 7.1.1 Proto-Arapaho-Atsina to Arapaho

*Whimemsz*, from Goddard, Ives (1974), “An Outline of the Historical Phonology of Arapaho and Atsina”. *International Journal of American Linguistics*, 40:102 – 116

$h? \rightarrow ?h$   
 $(\{C, \#\}V)? \rightarrow (\{C, \#\}V:) \emptyset / \_C$   
 $i(:) \rightarrow u(:) / o(:)(C[-\text{dental}](C[-\text{dental}] )_-$   
 $\emptyset \rightarrow ? / CV[-\text{long}]_\#$   
 $\int m \rightarrow x w / \_B$   
 $\int m \rightarrow x w / B_\#$   
 $\int m \rightarrow x b / o(:)_e(:)$   
 $\int k m \rightarrow s tʃ b / \_{\{E, j\}}$   
 $\int k m \rightarrow s tʃ b / E_\#$   
 $(V[-\text{long}])N \rightarrow \emptyset / \_ \#$   
 $\emptyset \rightarrow h / \#_V$   
 $e: \rightarrow ei / j_-$   
 $o(:) \rightarrow e(:) / Cj_-$  (sporadic)  
 $n \rightarrow \emptyset / \_j$   
 $j \rightarrow \emptyset / C_-$   
 $h \rightarrow \emptyset / \_ \#$

### 7.1.2 Proto-Arapaho-Atsina to Gros Ventre

*Whimemsz*, from Goddard, Ives (1974), “An Outline of the Historical Phonology of Arapaho and Atsina”. *International Journal of American Linguistics*, 40:102 – 116

$h? \rightarrow ?h$   
 $(\{C, \#\}V[-\text{long}])? \rightarrow (\{C, \#\}V:[+\text{falling tone}]) \emptyset / \_C$   
 $j \rightarrow \emptyset / \{ʃ, \theta\}$   
 $i \rightarrow u / o(:)_-$   
 $\int \theta m \rightarrow \theta t w / \_o(:)$   
 $\int \theta m k \rightarrow \theta t b tʃ / \_e(:)$

$\int \{\theta, t\} m k \rightarrow s ts t^j b^j / \_ \{i(:), j, \#\}$   
 $(V[-long])N \rightarrow \emptyset / \_ \#$   
 $\emptyset \rightarrow ? / \# \_ V$   
 $n \rightarrow \emptyset / \_ j$

## 7.2 Proto-Algonquian to Blackfoot

*Whimemsz*, from Proulx, Paul (1989), “A Sketch of Blackfoot Historical Phonology”. *International Journal of American Linguistics*, 55:43 – 82

$\{\theta, t, \int, r\} \rightarrow t / \text{ unless adjacent to another consonant}$   
 $\emptyset \rightarrow x / \_ s ! \{ \_ C \{ C, \# \} \}$   
 $j \rightarrow s / ! C \_$   
 $h \rightarrow \emptyset / ! \_ C$   
 $\{\int, t\} \rightarrow s / \# \_$   
 $\{\int \theta, \int r\} \rightarrow \{\int, j, \emptyset\}$   
 $nr \rightarrow s$   
 $h \rightarrow x / \_ \{p, k\}$   
 $hkw \rightarrow \int k$   
 $n\theta hs \rightarrow s:t s:$   
 $m \rightarrow ? / \_ p$   
 $nk w \rightarrow \int:$   
 $\{n, s\} \rightarrow x / \_ t$   
 $nt\int \rightarrow \int t$   
 $ns sk \rightarrow \{x, s\} \{x, s:\}$   
 $\theta p t\int p \int p \rightarrow \{x, s:\} \int p s:p$   
 $\int \rightarrow x / \_ k$   
 $x \rightarrow s: / \{i, \#e, ja, ke\} \_$   
 $x \rightarrow s: / e(:) \_ s$   
 $\emptyset \rightarrow s / \{i(:), \#e\} \_ t$   
 $t \rightarrow ts / \_ \{i, e(:), a\}$   
 $\emptyset \rightarrow s / k.i(:)$   
 $s:: \rightarrow s:$   
 $e \rightarrow i / \{\#, k\} \_$   
 $\{a, e, i\} \rightarrow o / \_ k^w$   
 $\emptyset \rightarrow j / \{orw, i:j\} i\#$   
 $w \rightarrow j / \{r, k\} i\#$   
 $\emptyset \rightarrow i / r \_ w$   
 $w \rightarrow \emptyset / C \_$   
 $\{jir, ja, ahi\} \{owa:, awa, awe\} awi \{i:wa, erwa, aji, aje, ani\} \rightarrow i o: o(ji) i: / C \_ C$   
 $hi \rightarrow \emptyset / a: \_$

$\emptyset \rightarrow i / \# \_j C$   
 $\emptyset \rightarrow i / C \_j V \#$   
 $a \rightarrow o / \_w$   
 $eLwi \rightarrow i:$   
 $i(:)wi \rightarrow i: / \text{medially}$   
 $i(:)wi \rightarrow i / \_ \#$   
 $j \rightarrow s$   
 $w \rightarrow j / \_ i$   
 $\{i:,ij,j\} \rightarrow j / C \_ B$   
 $iji \rightarrow i:$   
 $w \rightarrow \emptyset / \{a,o\} \_ i C$   
 $on \rightarrow u / \_ i C$   
 $tem \{ken,pen\} \rightarrow m: n:$   
 $ket \rightarrow t: (\rightarrow s:?)$   
 $ke(h) \rightarrow t: ?$   
 $\{k^{(w)}es,ke\theta\} \rightarrow s:$   
 $e \rightarrow \emptyset / O \_ \text{in } \#U \text{ (not universal)}$   
 $\{me,ne\} \rightarrow \emptyset / \# \_ O \text{ “(followed by truncation of following x)”}$   
 $\{we,wi:\} \rightarrow o / \# \_$   
 $tsi \rightarrow \emptyset / \$ \_ OO \text{ “(before a prefix; the first obstruent of the follow[ing] cluster then becomes } ? \text{)”}$   
 $a: \rightarrow aa / W \_ ! \text{ when } \_ \{C\{C,: \}, \# \}$   
 $a: \rightarrow a / \text{else}$   
 $o: \rightarrow o$   
 $a \rightarrow i / ! \text{ at word boundaries}$   
 $e \rightarrow a / \_ \#$   
 $\{e:,i:\} \rightarrow i$

### 7.3 Proto-Algonquian to Cheyenne

*jburke*, from “Bloomfield and Leman”

$o a \rightarrow e o$   
 $e i \rightarrow a e$   
 $p t k \rightarrow \{hp, \emptyset\} ht \{hk, \emptyset\}$   
 $\{(t)l, \theta\} \rightarrow t$   
 $s \rightarrow h$   
 $\int t\int \rightarrow \{\int, x\} s$   
 $w j \rightarrow \{v, o\} \{t, e\}$   
 $\{kC, Ck\} \rightarrow ?$   
 $C[- \text{nasal}] \rightarrow \emptyset / \text{near nasals}$

$m \rightarrow \emptyset$  / near nasals  
 $p \rightarrow \{t, \emptyset\}$  / near consonants  
 $W \rightarrow \emptyset$  / near nasals or t

## 7.4 Proto-Algonquian to Munsee Delaware

*Pogostick Man*, from Goddard, Ives (1982), “The Historical Phonology of Munsee”. *International Journal of American Linguistics*, 48:16 – 48

$tʃ \rightarrow t$  / in nouns  
 $t \ s \rightarrow tʃ \ ʃ$  / in diminutives  
 $\{\emptyset, l\} \rightarrow r \rightarrow l$   
 $\{\emptyset, ʃ\} \rightarrow \{r, l\}$   
 $w \rightarrow \emptyset$  / m.C  
 $w \rightarrow \emptyset$  /  $\{p, m\} \_ \#$   
 $w \rightarrow \emptyset$  / !  $\{k, p, m\} \_$   
 $C^w \rightarrow C$  /  $\_ \emptyset \{ (C) \{p, k^w\}, m, w \}$   
 $kw \ pw \ mw \rightarrow k^w \ p^w \ m^w$   
 $we \rightarrow w\emptyset \rightarrow o:$  / ! adjacent to  $\{p, m, k\}$   
 $j \rightarrow \emptyset$  / C.  
 $ʔ \rightarrow h$  /  $\_ C$  !  $C = l$ , or when reduplicated  
 $h \rightarrow \emptyset$  /  $\_ \{s, x\}$   
 $\{n\emptyset, nl\} \rightarrow hl$   
 $k \rightarrow \emptyset$  / h. (sometimes restored via analogy, e.g., in verbs)  
 $\emptyset \ ʃ \ x \rightarrow x \ s \ h$  /  $\_ \{p, k\}$   
 $\{tʃ, ʃ\} \rightarrow h$  /  $\_ k$   
 $i \ o \rightarrow i: \ o:$   
 $V: \rightarrow V[-\text{long}]$  /  $\_ hC$   
 $V \rightarrow \emptyset$  /  $\_ \#$  ! some monosyllables and analogical developments, in the latter of which long vowels were shortened  
 $\{a, \emptyset\} \rightarrow \emptyset$  /  $\_ \{x, h\}$  “in the odd-numbered of any sequence of one or more short-vowel open syllables”; such vowels are considered “weak”  
 $\emptyset[+\text{weak}] \rightarrow \emptyset$  /  $\_ \# \_ C$   
 $\emptyset[+\text{weak}] \rightarrow \emptyset$  /  $\_ C[+\text{voiced}]$  (sporadic)  
 $a[+\text{weak}] \ \emptyset[+\text{weak}] \rightarrow \emptyset \ \emptyset$  /  $a\_Z[+\text{voiced}]$   
 NC sequences assimilate the nasal to the POA of the following consonant, which is then voiced

Synchronic alterations:

$\emptyset \rightarrow o$  /  $\_ h\{p, k^w, w, m\}$   
 $\emptyset \rightarrow i$  /  $\_ hC$

$\text{ə} \rightarrow \text{o} / \_x\{\text{p}, \text{k}^w, \text{V}[+\text{round}]\}$   
 $\text{ə} \rightarrow \text{o} / \{\text{p}, \text{m}\} \_x$   
 $\text{x} \rightarrow \chi^w / \text{o}(\text{:}) \_ \{\text{V}, \#\}$   
 $\text{ə} \rightarrow \text{a} / \_x$  “[i]n a nonrounding environment”  
 $\text{ə} \rightarrow \text{o} / \_ \eta \text{k}^w$   
 $\text{V}[+\text{high}] \rightarrow \text{ə} / \_ \text{j}$   
 $\text{V}[+\text{high}] \rightarrow \text{ə} / \_ \text{w}$  (sporadic)

## 7.5 Proto-Algonquian to Menominee

*Whimemsz*, from Hockett, C. F. (1981), “The Phonological History of Menominee”. *Anthropological Linguistics* 23(2): 51-87; and Miner, Kenneth L. (1979), “Theoretical Implications of the Great Menominee Vowel Shift”. *Kansas Working Papers in Linguistics* 4(1): 7-25.

$\text{we je} \rightarrow \text{o i} / \_ \text{C}$   
 $\text{we} \rightarrow \text{o} / \# \_$   
 $\theta \rightarrow \text{s} / \_ \text{O}$   
 $\theta \rightarrow \text{r}$   
 $\text{V}[\text{-long}] \rightarrow \emptyset / \_ \#$  “[does not apply in disyllabic words containing two short vowels]”  
 $\emptyset \rightarrow \text{h} / \text{V}[\text{-long}] \_ \#$   
 $\text{H} \rightarrow \emptyset / \_ \text{m}$   
 $\{\text{s}, \text{r}\} \rightarrow \text{h} / \_ \text{O}$   
 $\text{w} \rightarrow \emptyset / \text{h} \_ \text{V}$   
 $\text{a} \rightarrow \text{o} / \text{m} \_ \text{w}$  “[in the suffix **\*-amaw**]”  
 $\text{V} \rightarrow \text{V}$ : “when V is the second vowel of a word and follows a short-vowel syllable. Does not apply in glottal words”  
 $\text{e} \rightarrow \text{i} / \text{V}:\% \_ ! \_ \text{H}$   
 $\text{N} \rightarrow \text{h} / \_ \{\text{O}, \text{r}\}$   
 $\text{e} \rightarrow \text{i} / \#(\text{C}) \_ ! \_ \text{H}$   
 $\text{e} \rightarrow \text{i} / \_ \{\text{k}, \text{m}\}$  “when in the second syllable of glottal words”  
 $\{\text{w}, \text{j}\} \rightarrow \emptyset / \text{C} \_ \#$   
 $\text{C} \rightarrow \emptyset / \text{C} \_ \#$   
 $\text{wi}(\text{:}) \rightarrow \text{o}(\text{:}) / \text{C} \_ \text{w}$   
 $\int \text{tj} \rightarrow \text{s ts}$   
 $\text{V} \rightarrow \text{V}[\text{-long}] / \text{CC}(\text{G}) \_ \text{C}\{\text{V}, \#\}$  “[i.e., when following a cluster but not followed by a cluster. Only applies ‘after the first long vowel of a nonglottal word, and everywhere in a glottal word’]”  
 $\text{V} \rightarrow \text{V} / \_ \text{CC}$  in even syllables  
 $\text{V} \rightarrow \text{V}[\text{-long}] / \_ \text{C}\{\text{V}, \#\}$  in even syllables; “does not apply in the second syllable of a

non-glottal word”

e(:) i → æ(:) e

i: o: o? → e: u: u? “[blocked when i: or a C+G sequence follows anywhere in the word, but *does* apply if æ(:) intervenes before any following i: or C+G]”

{wi:,ji:,we:,je:,wæ:,jæ:} {wi,ji,we,je,wæ,jæ} → i: i / C<sub>-</sub>

æ → e / in odd syllables ! \_{w,j,H}

r → n

wa ja → uə iə / C<sub>-</sub>

## 7.6 Proto-Algonquian to Miami-Illinois

*Pogostick Man*, from Costa, David J. (1991), “The Historical Phonology of Miami-Illinois Consonants”. *International Journal of American Linguistics*, 57:365 – 393

tʃ → t / in nominal suffixes

t → tʃ / in diminutives

s → ʃ / \_i (not universal)

s → ʃ / \_iV

{θ,l} → r → l / V<sub>-</sub>V

{θ,l} → r → n / #<sub>-</sub> (and possibly in other places as well)

{θ,l} → r → l

mV[-long] → Ø / #<sub>-</sub>{<sup>h</sup>C,s,ʃ} (allophonic, “optional”)

{ʔ,h}{ʔ,l} → hs

{θ,l} → t / n<sub>-</sub>

{θ,ʃ,tʃ,ç,x,ʔ} → h / \_C

C[-nas] → h / \_k

h → ʔ / \_{s,ʃ}

hs hʃ → s: ʃ: / sporadic, usually {#,V[+front]}<sub>-</sub>

C[-voiced] → C[+voiced] / N<sub>-</sub>

VNs VNʃ → V[+nas]z V[+nas]ʒ / not universal?

S → <sup>n</sup>S / #NV<sub>-</sub> (sporadic)

s ʃ → <sup>n</sup>s <sup>n</sup>ʃ / U[-nas] (*highly* sporadic)

{h,ʔ} → Ø / \_m

## 7.7 Proto-Algonquian to Ojibwe

*Whimemsz*, from his own work; <http://home.kpn.nl/cvkolmes/ojibwe/corrCr0j.htm>; Bloomfield, Leonard (1946), “Algonquian”; and “various asides and statements in dozens of different journal articles and conference papers dealing with Ojibwe or PA”

NB: For this sound-change set, *H* is “either an \*/h/ or \*/ʔ/, but we don’t know which”.

we e → o i  
w → Ø / {t,r}\_i  
{θ,s,h,ʔ} → Ø / -{p,t,tʃ,k}  
θ → r  
{ʔ,h}{s,r} → s  
{ʔ,h} → Ø / \_ʃ  
{n,r} → Ø / \_r  
H → Ø / \_m  
r → s / \_k  
{j,w}V[-long] → Ø / C\_# in disyllables with V: or in tri(-plus-)syllables  
{w,j}V[-long] → Ø / V:\_# (Whimemsz is unsure if this change is across-the-board or not)  
V[-long] → Ø / V[-long]{w,j}\_# (Whimemsz is unsure if this change is across-the-board or not)  
je: → i: / C\_  
ja → i: / C\_C  
j → Ø / C\_  
r → n

## 7.8 Proto-Algonquian to Shawnee

*Whimemsz*, from bin Muzaffar, Towhid, *Computer Simulation of Shawnee Historical Phonology*, plus “other corrections based on a few other papers plus my limited knowledge of comparative Algonquian”

we → o  
θ r / ! \_O  
r → s / H\_  
r → Ø / n\_  
N → Ø / \_O  
{h,s,tʃ,θ} → ʔ / \_O  
r → ʃ / \_O  
e → i / #(C)\_ “(but remains e in a few cases?)”  
i: → i / \_j  
j → Ø / C\_i(:)  
je → i / C\_  
j → Ø / {tʃ,ʃ}\_e:  
j → Ø / {tʃ,ʃ,w}\_a:  
w → Ø / t\_i



$wa \rightarrow o / \#_-$   
 $V[-long] \rightarrow \emptyset / \_ \{fp, fk\}$   
 $V[-long] \rightarrow \emptyset / C\_?C$   
 $V[-long] \rightarrow \emptyset / \_hV$   
 $V: \rightarrow V[-long] / \_ \#$   
 $V: \rightarrow V[-long] / \_ \{?C, fp, fk, hV\}$   
 $? \rightarrow \emptyset / C\{v, l, s\}\_C$   
 $? \rightarrow \emptyset / \_CC$   
 $\emptyset \rightarrow ? / C\{v, d\}\_ \{fp, fk, hV\}$   
 $\emptyset \rightarrow h / \#\_V$   
 $s \rightarrow \theta$   
 $r \rightarrow l$   
 $\emptyset \rightarrow i / \#C\_jV: \text{“(for some speakers)”}$   
 $\int \rightarrow s \text{“(for many speakers)”}$

## 8 Altaic

The Wikipedia gives the following reconstruction, slightly adapted, for a hypothetical Proto(-Macro)-Altaic language, citing Blažek (2006) citing Sarostin *et al.* (2003) and porting over into IPA:

	Bilabial	Alveolar/Dental	Alveolopalatal	Postalveolar	Palatal	Velar
Nasal	m	n	n <sup>j</sup>			
Plosive	p p <sup>h</sup> b	t t <sup>h</sup> d				k k <sup>h</sup> g
Fricative		s z				
Affricate				ʃ tʃ <sup>h</sup> dʒ		
Trill		r	r <sup>j</sup>			
Approximant		l	l <sup>j</sup>			

  

	Front	Central	Back
Close	i y		u
Mid	e ø		o
Near-Open	æ		
Open		a	

\*z would only have ever existed word-initially; \*r and \*j would only have been medial. In addition, Proto-(Macro)-Altaic also is thought to have had a bitonal pitch-accent system, with the syllable carrying the tone.

NB: The Altaic grouping is highly controversial and is not accepted by many mainstream linguists.

(From Wikipedia contributors (2011), “Altaic languages”. *Wikipedia, the Free Encyclopedia*. [http://en.wikipedia.org/w/index.php?title=Altaic\\_languages&oldid=453651228](http://en.wikipedia.org/w/index.php?title=Altaic_languages&oldid=453651228))

### 8.1 Proto-Altaic to Proto-Japonic

*Pogostick Man*, from Wikipedia contributors (2011), “Altaic languages”. *Wikipedia, the Free Encyclopedia*. [http://en.wikipedia.org/w/index.php?title=Altaic\\_languages&oldid=453651228](http://en.wikipedia.org/w/index.php?title=Altaic_languages&oldid=453651228), citing Sarostin, Sergei A., Anna V. Dybo, and Oleg A. Mudrak (2003), *Etymological Dictionary of the Altaic Languages*. Leiden: Brill Academic Publishers

NB: Does not include clusters.

a → ə / \_Ce  
a → i / \_Ci

$a \rightarrow u / \_Cu$   
 $V \rightarrow a / \_Ca$   
 $u \rightarrow a / P\_Ce$   
 $\{a,e,o,\ae\} i u y \emptyset \rightarrow \emptyset i ua \{u,\emptyset\} \{\emptyset,u\} / \_Ce$   
 $\{a,\ae,e,\emptyset,i,y\} o \rightarrow i u / \_Ci$   
 $e i \{o,u\} \ae \emptyset y \rightarrow \{\emptyset,a\} \{i,\emptyset\} \emptyset a \{\emptyset,u\} \{u,\emptyset\} / \_Co$   
 $V \rightarrow u / \_Cu$   
 $p^h t^h k^h \rightarrow p t k$   
 $b \rightarrow p / \#\_$   
 $b \rightarrow w / ! \_ \{a,\emptyset,Vj\}$   
 $t_j^h \rightarrow t$   
 $t_j d_3 \rightarrow t d / \#\_$   
 $t_j \rightarrow s / \text{maybe} ! \_ \#?$   
 $d_3 \rightarrow j$   
 $g \rightarrow \emptyset / iV\_$   
 $g \rightarrow k / \text{else}$   
 $\{j,z\} \rightarrow s$   
 $n \rightarrow m / \#\_$   
 $\eta \rightarrow m / \#\_ \{ \ae, \emptyset, y \}$   
 $\eta \rightarrow \{\emptyset, n\} \#\_ \text{else}$   
 $N \rightarrow \{m, n\}$   
 $r \rightarrow t / \_ \{i, u\}$   
 $r^j \rightarrow \{r, t\}$   
 $l^{(j)} \rightarrow n / \#\_$   
 $l l^j \rightarrow r s / \text{else}$   
 $j \rightarrow \{j, \emptyset\}$   
 $U[+long] \rightarrow U[-long]$

### 8.1.1 Early Middle Japanese to Modern Japanese

*Zhen Lin*

*NB: The ordering of these changes may be slightly anachronic.*

$p \rightarrow \phi$   
 $\phi \rightarrow w / V\_V$   
 $(w)e \rightarrow je$   
 $\emptyset \rightarrow w / \_o$   
 $w \rightarrow \emptyset / ! \_ \{a,o\}$   
 $au iu uu eu ou \rightarrow \text{ɔ} \text{ju} \text{u} \text{jo} \text{o}$   
 $j \rightarrow \emptyset / \_e$

$w \rightarrow \emptyset / \_o$   
 $w \rightarrow \emptyset / k\_a$   
 $\phi \rightarrow h / \_! \_u$   
 $\alpha \rightarrow \alpha$

“Affrication of /tʰ di/ probably happened very early. Denasalization of the prenasalized stops happened relatively later. Final /m/ merged with /n/ at some point, and [dʒ] (from \*/dj/) and [ʒ] (< \*/zj/) also merged.”

## 8.2 Proto-Altaic to Proto-Korean

*Pogostick Man*, from Wikipedia contributors (2011), “Altaic languages”. *Wikipedia, the Free Encyclopedia*. [http://en.wikipedia.org/w/index.php?title=Altaic\\_languages&oldid=453651228](http://en.wikipedia.org/w/index.php?title=Altaic_languages&oldid=453651228), citing Sarostin, Sergei A., Anna V. Dybo, and Oleg A. Mudrak (2003), *Etymological Dictionary of the Altaic Languages*. Leiden: Brill Academic Publishers

*NB: Does not include clusters.*

$\{t^h, d\} \{k, g\} \rightarrow r \{h, \emptyset\} / \{C, V\} \_ \{C, V\}$   
 $p^h t^h k^h \rightarrow p t \{k, h\}$   
 $b \rightarrow p / \# \_$   
 $d \rightarrow t$   
 $\{tʃ^h, dʒ\} \rightarrow tʃ$   
 $g \rightarrow k / \# \_$   
 $\{ʃ, z\} \rightarrow s$   
 $\{n^j, ɲ\} \rightarrow n / \# \_$   
 $ɲ \rightarrow \{ɲ, \emptyset\}$   
 $r^j \rightarrow r$   
 $l^{(j)} \rightarrow n / \# \_$   
 $l^{(j)} \rightarrow r / \text{else}$   
 $j \rightarrow \{j, \emptyset\}$   
 $U[+long] \rightarrow U[-long]$   
 Syllable pitches reverse, basically, for whatever reason

## 8.3 Proto-Altaic to Proto-Mongolic

*Pogostick Man*, from Wikipedia contributors (2011), “Altaic languages”. *Wikipedia, the Free Encyclopedia*. [http://en.wikipedia.org/w/index.php?title=Altaic\\_languages&oldid=453651228](http://en.wikipedia.org/w/index.php?title=Altaic_languages&oldid=453651228), citing Sarostin, Sergei A., Anna V. Dybo, and Oleg A. Mudrak (2003), *Etymological Dictionary of the Altaic Languages*. Leiden: Brill Academic Publishers

*NB: Does not include clusters.*

$a \rightarrow \{a,i\} / \_Ce$   
 $a \rightarrow \{a,e\} / \_Ci$   
 $a \rightarrow \{a,i,e\} / \_Co$   
 $a \rightarrow \{a,o,u\} / \_Cu$   
 $e o u \text{ } \text{æ} \text{ } \text{ø} \text{ } y \rightarrow \{a,e\} \{o,u\} \{a,o,u a \{a,o,u\} \{o,u,i\} / \_Ca$   
 $a e i o u \text{ } \text{æ} \text{ } \text{ø} \text{ } y \rightarrow \{a,i\} \{e,ja\} \{e,i\} \{\text{ø},y,o\} \{o,u,y\} \{i,a,e\} \{e,\text{ø}\} \{\text{ø},y,o,u\} / \_Ce$   
 $i \rightarrow e / P\_Ci$   
 $a e u \text{ } \text{æ} \text{ } \text{ø} \text{ } y \rightarrow \{a,e\} \{e,i\} \{y,\text{ø}\} \{i,e\} \{i,e,\text{ø}\} \{\text{ø},y,o,u\} / \_Ci$   
 $e \rightarrow \{y,\text{ø}\} / P\_Co$   
 $e \rightarrow \{y,\text{ø}\} / C\_Po$   
 $e \rightarrow o / P\_Cu$   
 $e \rightarrow o / C\_Pu$   
 $a e o i \text{ } \text{æ} \text{ } \text{ø} \text{ } y \rightarrow \{a,i,e\} \{a,e\} u \{o,u\} e \{\text{ø},y,o,u\} \{o,u\} / \_Co$   
 $a e \{o,u\} \text{ } \text{æ} \text{ } \text{ø} \text{ } y \rightarrow \{a,o,u\} \{e,a\} \{o,u\} \{a,o,u\} \{e,i,u\} \{i,o,u,y,\text{ø}\} / \_Cu$   
 $b \rightarrow h / \text{medially, ! } \{r^{(j)},l^{(j)}\}\_ - \text{ or } \_g$   
 $p^h \rightarrow \{h,j\} / \#\_$   
 $p^h \rightarrow \{b,h\} / \text{medially}$   
 $p^h \rightarrow b / \# \_U[+\text{high pitch}]$   
 $p \rightarrow h \text{ (sporadic)}$   
 $p \rightarrow b$   
 $t^h \rightarrow d / \_ \#$   
 $t^{(h)} d \rightarrow t f d \text{ } \text{ } \text{ } / \_ i$   
 $t^h \rightarrow t / \text{else}$   
 $t f \rightarrow d \text{ } \text{ } \text{ } / \# \_ i$   
 $t f \rightarrow d / \#$   
 $t f^h \rightarrow t f$   
 $g \rightarrow h / ! \{C,V\} \_ h$   
 $k \rightarrow g / ! \#\_$   
 $k^h \rightarrow g / \{C,V\} \_ h$   
 $k^h \rightarrow k / \text{else}$   
 $z \rightarrow s$   
 $f \rightarrow t f / \# \_ a$   
 $f \rightarrow s / \text{else}$   
 $n^j \rightarrow d \text{ } \text{ } \text{ } / \#\_$   
 $n^j \rightarrow \{j,n\} / \text{else}$   
 $\eta \rightarrow g / \# \_ u$   
 $\eta \rightarrow n / \# \_ \{a,o,e\}$   
 $\eta \rightarrow \{\text{ø},j\} / \#\_$   
 $\eta \rightarrow \{m,n,\eta,h\}$   
 $r^j \rightarrow r$   
 $l \rightarrow \{n,l\} / \#\_$

$\text{ɮ} \rightarrow \text{dʒ} / \# \text{.i}$

$\text{ɮ} \rightarrow \text{d} / \# \text{.}$

$\text{ɮ} \rightarrow \text{l}$

$\text{j} \rightarrow \{\text{j}, \text{h}\}$

Loss of syllable pitch and length

## 8.4 Proto-Altaic to Proto-Tungusic

*Pogostick Man*, from Wikipedia contributors (2011), “Altaic languages”. *Wikipedia, the Free Encyclopedia*. [http://en.wikipedia.org/w/index.php?title=Altaic\\_languages&oldid=453651228](http://en.wikipedia.org/w/index.php?title=Altaic_languages&oldid=453651228), citing Sarostin, Sergei A., Anna V. Dybo, and Oleg A. Mudrak (2003), *Etymological Dictionary of the Altaic Languages*. Leiden: Brill Academic Publishers

*NB: Does not include clusters.*

$\text{o} \rightarrow \{\text{o}, \text{u}\} / \text{.CV}$

$\text{æ} \rightarrow \text{i} / \{\text{s}, \text{f}, \text{x}\} \text{.Ca}$

$\{\text{u}, \text{ø}, \text{y}\} \text{æ} \rightarrow \{\text{o}, \text{u}\} \text{ia} / \text{.Ca}$

$\text{y} \rightarrow \text{u} / \text{P.C}\{\text{e}, \text{i}\}$

$\text{æ} \text{ø} \rightarrow \text{i} \{\text{o}, \text{u}\} / \text{.Ce}$

$\text{æ} \rightarrow \text{i} / \{\text{s}, \text{f}, \text{x}\} \text{.Ci}$

$\text{æ} \text{ø} \text{y} \rightarrow \text{ia} \{\text{o}, \text{u}\} \text{i} / \text{.Ci}$

$\{\text{u}, \text{æ}\} \text{ø} \rightarrow \{\text{o}, \text{u}\} \text{i} / \text{.Co}$

$\text{ø} \rightarrow \text{i} / \{\text{s}, \text{f}, \text{x}\} \text{.Cu}$

$\{\text{u}, \text{æ}, \text{y}\} \text{ø} \rightarrow \{\text{o}, \text{u}\} \text{ia} / \text{.Cu}$

$\text{p} \rightarrow \text{b} / \text{medially}$

$\text{p}^{\text{h}} \rightarrow \text{p}$

$\text{t} \rightarrow \text{dʒ} / \# \text{.}\{\text{æ}, \text{ø}, \text{y}\}$

$\text{t} \rightarrow \text{d} / \# \text{.}$

$\text{t}^{\text{h}} \text{t}^{\text{f}} \rightarrow \text{t} \text{t}^{\text{f}}$

$\text{k} \rightarrow \{\text{k}, \text{g}\} / \# \text{.}$

$\text{k} \rightarrow \text{g}$

$\text{k}^{\text{h}} \rightarrow \text{x} / \# \text{.}$

$\text{k}^{\text{h}} \rightarrow \{\text{x}, \text{k}\}$

$\text{z} \rightarrow \text{s}$

$\text{r}^{\text{j}} \text{ɮ} \rightarrow \text{r} \text{l}$

$\text{U}[\text{-long} \text{ +low pitch}] \text{U}[\text{+long} \text{ -low pitch}] \rightarrow \text{U}[\text{+long}] \text{U}[\text{-long}]$

## 8.5 Proto-Altaic to Proto-Turkic

*Pogostick Man*, from Wikipedia contributors (2011), “Altaic languages”. *Wikipedia, the Free Encyclopedia*. [http://en.wikipedia.org/w/index.php?title=Altaic\\_languages&oldid=453651228](http://en.wikipedia.org/w/index.php?title=Altaic_languages&oldid=453651228), citing Sarostin, Sergei A., Anna V. Dybo, and Oleg A. Mudrak (2003), *Etymological Dictionary of the Altaic Languages*. Leiden: Brill Academic Publishers

*NB: Does not include clusters.*

$a \emptyset \rightarrow \{a, \Lambda\}$  a / P\_Ca  
 $a \ e \ i \ u \ \text{æ} \ \emptyset \ y \rightarrow a \ \{a, \Lambda, e\} \ \{\text{u}, i\} \ \{u, o\} \ \{ia, ja, \varepsilon\} \ \{ia, ja\} \ \text{u} / \text{_-Ca}$   
 $y \rightarrow i / \{r^{(j)}, l^{(j)}\}_{-e}$   
 $e \rightarrow ja / \#_{-C}\{e, i\}$   
 $\emptyset \rightarrow \Lambda / P_{-Ce}$   
 $i \rightarrow e / \{r^{(j)}, l^{(j)}\}_{-e}$   
 $a \ \{e, i\} \ o \ u \ \text{æ} \ \emptyset \ y \rightarrow \{\varepsilon, a\} \ \varepsilon \ \{\emptyset, o\} \ \{y, u\} \ \{ia, ja, \varepsilon\} \ \{ia, ja\} \ \{y, \emptyset\} / \text{_-Ci}$   
 $\text{æ} \rightarrow a / P_{-Co}$   
 $\text{æ} \rightarrow \Lambda / P_{-Cu}$   
 $a \ e \ i \ \text{æ} \ \emptyset \ y \rightarrow \{o, ja, aj\} \ \{\Lambda, 3\} \ \text{u} \ \{ia, ja\} \ \{o, u\} \ \{u, o\} / \text{_-Co}$   
 $e \ i \ \text{æ} \ \emptyset \ y \rightarrow \{\varepsilon, a, \Lambda\} \ \{\text{u}, i\} \ \{e, a\} \ \{u, o\} \ \text{u} / \text{_-Cu}$   
 $\{p^h, \eta\} \rightarrow \{\emptyset, j\} / \#_{-}$   
 $p^h \rightarrow p$   
 $t^h \rightarrow d / \#_{-(V)}\{l, r^{(j)}\}$   
 $t^h \rightarrow t$   
 $\{t, t_f\} \rightarrow d / \#_{-}$   
 $k \rightarrow g / \text{_-(V)r}$   
 $k^h \rightarrow k$   
 $\int \rightarrow t_f / \#_{-a}$   
 $\int \rightarrow s$   
 $m \ n^{(j)} \rightarrow b \ j / \#_{-}$   
 Loss of syllable pitch

The wiki at Firespeaker.org gives the following alternate list of sound changes from Proto-Altaic to (Pre-)Proto-Turkic.

*Pogostick Man*, from Firespeaker.org wiki contributors (2014), “Turkic sound changes”. [http://wiki.firespeaker.org/Turkic\\_sound\\_changes](http://wiki.firespeaker.org/Turkic_sound_changes)

$\{3, d3\} \rightarrow j / \#_{-}$  (marked as to Pre-Proto-Turkic)  
 $\{d, n\} \rightarrow j / \#_{-}$  (?) (marked as to Pre-Proto-Turkic)  
 $\{N, l, r, f, z\} \rightarrow \emptyset / \#_{-}$   
 $p \rightarrow \phi \rightarrow h / \#_{-}$   
 $d \ g \rightarrow t \ k$  (may have been part of a more sweeping merger; Firespeaker calls it “lenis-

fortis”)  
 $\{d,n\}^j s^j \rightarrow j \int / \#_-$   
 $r^j \rightarrow z$

### 8.5.1 Proto-Turkic to Proto-Kypchak

*Pogostick Man*, from Firespeaker.org wiki contributors (2014), “Turkic sound changes”.  
[http://wiki.firespeaker.org/Turkic\\_sound\\_changes](http://wiki.firespeaker.org/Turkic_sound_changes)

$V[-\text{long}] \rightarrow \emptyset$  (shared with Old Turkic)  
 $h \rightarrow \emptyset$  (shared with Old Turkic)  
 $n^j \rightarrow j$   
 $b \dots n \rightarrow m \dots n$   
 $d \ y \rightarrow t \ x / \#_-$   
 $d \rightarrow t / \#_-$  (“kind of”, something about evidence from borrowings)  
 $V \rightarrow V[-\text{round}] / U_-$   
 $b \rightarrow v / V_-$   
 $v \rightarrow w$   
 $gm \ rg \rightarrow mg \ gr$  (this second one is listed as  $\rightarrow rg$  but it might be a typo)  
 $rd \rightarrow dr$  (possibly sporadic and/or confined to Kazakh)  
 $y \rightarrow w / \{a,u,i,o\}_-$   
 $\{e,\ae\}b \ ub \rightarrow ew \ uw$   
 $\{d,g\} \rightarrow j / \emptyset_-$   
 $d \rightarrow \delta \rightarrow j / V_-$   
 $g \rightarrow w / V_-$   
 $ew (\rightarrow \emptyset j) \rightarrow yj$   
 $\ae \rightarrow e$   
 $s \rightarrow tʃ / \_Vtʃ$   
 $s \rightarrow \zeta / \_V\zeta$   
 $a \rightarrow \ae / ! \_B$   
 $f \rightarrow w / \_V$   
 $f \rightarrow p / \text{else}$   
 $\eta \rightarrow g / \text{syllable-final}$

**8.5.1.1 Proto-Kypchak to Kazakh** *Pogostick Man*, from Firespeaker.org wiki contributors (2014), “Turkic sound changes”. [http://wiki.firespeaker.org/Turkic\\_sound\\_changes](http://wiki.firespeaker.org/Turkic_sound_changes)

*NB: Most likely incomplete; all changes listed are stated as being “[s]hared with Nogay and Karakalpak”*



$tʃ \rightarrow ʃ$   
 $j \rightarrow dʒ / \#_-$  (did not occur in Qara Nogay)  
 $dʒ \rightarrow ʒ$  (did not occur in Qara Nogay or Central Nogay)  
 $w \rightarrow \emptyset / \text{w}_-$

#### 8.5.1.2 Proto-Kypchak to Kyrgyz *Pogostick Man*, from Firespeaker.org wiki contributors (2014), “Turkic sound changes”. [http://wiki.firespeaker.org/Turkic\\_sound\\_changes](http://wiki.firespeaker.org/Turkic_sound_changes)

$j \rightarrow \emptyset / \text{ɭ}$  (sporadic?)  
 $b \rightarrow m / \text{V}_-\text{V}$  (sporadic?)  
 $\{u, \text{u}\}w \{i, y\}w \text{aw} \{\text{æ}, e\}w \rightarrow u: y: o: \emptyset:$   
 $\gamma \rightarrow \emptyset / \text{V}_-\text{V}$   
 $\text{æ} \text{Vh} \{\text{ɰ}, h\} \rightarrow \alpha: \text{V}: \emptyset$  (seems to have largely been confined to loanwords from Persian)  
 $j \rightarrow dʒ / \#_-$   
 $x \rightarrow q$   
 $nj \rightarrow jn$   
 $\emptyset \rightarrow U / \#_{-\{l, r\}}$  (not sure what  $\langle U \rangle$  represents here; maybe just some sort of back vowel?)  
 $e \rightarrow i / \text{_-g}$   
 $e \rightarrow i / k_{\text{.y}}$  (maybe they mean  $k_{\text{.j}}$ ?)

#### 8.5.2 Proto-Turkic to Sakha

*Pogostick Man*, from Firespeaker.org wiki contributors (2014), “Turkic sound changes”.  
[http://wiki.firespeaker.org/Turkic\\_sound\\_changes](http://wiki.firespeaker.org/Turkic_sound_changes)

$\{e, \text{ɤ}\}: \rightarrow je$  (the second one is conjectured based on my admittedly sparse knowledge of Turkish; I can only guess that  $\langle \text{ɤ} \rangle$  is some sort of back unrounded vowel)  
 $o \text{og} \emptyset \text{og} i\text{g} \rightarrow wo \text{u}\emptyset o: \emptyset: i:$   
 $a\{\text{ɟ}(\text{u}), b\} \{o\{\text{ɟ}, b\}, a\text{ɟu}\} u\{\text{ɟ}, b\} \rightarrow \text{uqa wo u:}$   
 $i\text{ɟ} \rightarrow \text{u:} \rightarrow i:$  (but original  $\text{u:}$  unaffected?)  
 $eg \rightarrow \{je, i:, ji\}$   
 $d s \{ʃ, z \rightarrow t \emptyset s / \text{V}_-\text{V}$   
 $s \rightarrow \emptyset / \#_-$   
 $\{z, ʃ\} \rightarrow h$   
 $j \rightarrow s$  (possibly only initially?)

## 9 Athabaskan

Wikipedia gives the following reconstructions, adapted from Cook (1981), Krauss & Golla (1981), Krauss & Leer (1981), and Cook & Rice (1981) for the consonants and from Leer (2005:284) for the vowels; the vowel phonemes in parentheses are reduced.

	Bilabial	Alveolar	Postalveolar	Velar	Uvular	Glottal
Nasal	m	n	ɲ			
Plosive		t t <sup>h</sup> t'		k k <sup>h</sup> k'	q q <sup>w</sup> q <sup>h</sup> q <sup>wh</sup> q' q <sup>w</sup> '	ʔ
Fricative		s z	ʃ ʃ <sup>w</sup> ʒ ʒ <sup>w</sup>	x ɣ	χ χ <sup>w</sup> ʁ ʁ <sup>w</sup>	h
Lat. Fric.		ɬ ɬ <sup>h</sup> ɬ'				
Affricate		ts ts <sup>h</sup> ts'	tʃ tʃ <sup>w</sup> tʃ <sup>h</sup> tʃ <sup>wh</sup> tʃ' tʃ <sup>w</sup> '			
Lat. Aff.		tɬ tɬ <sup>h</sup> tɬ'				
Approximant			j		w	

  

	Front	Back
High	i:	u:
Mid	(ə)	(ʊ)
Low	e:	(ɑ) ɑ:

In addition, though it is not encountered in these changes, there is a phoneme that crops up in forms of the first-person singular pronoun which has various reflexes in many Athabaskan languages; Krauss (1976b) represents it as \*\$. Leer transcribed it as \*š<sup>y</sup> in 2005:284 but in 2008 opted to use the \*\$ transcription.

NB: The great majority of changes in this section are for the respective *series* of consonants, not for individual ones; therefore, changes specific to single consonants are marked so, and the reader should assume that unless explicitly stated, all of the following changes apply to the entire consonantal series. Whimemsz gives the following abbreviations, derived from the voiceless members of each series:

1. t, dental stops
2. tɬ, laterals
3. ts, dental affricates and fricatives
4. tʃ, palatals
5. tʃ<sup>w</sup>, labialized palatals
6. k, front (palatalized) velars
7. q, uvulars

## 8. q<sup>w</sup>, labialized uvulars

Whimemsz was unsure of the abbreviation of the glottal series. In addition, there also exist a series of (inter-?)dentals, abbreviated tθ, and one of retroflexes, abbreviated tɕ. Changes marked with an asterisk, \*, apply to the individual phone(me)s. These series will be referred to in this document by their respective numbers as per the above; the (inter)dental series and the retroflex series will here be treated as (9) and (10), respectively.

(From Whimemsz's statements from the TCL thread and Wiki, and from Wikipedia contributors (2011), "Athabaskan languages". *Wikipedia, The Free Encyclopedia*. [http://en.wikipedia.org/w/index.php?title=Athabaskan\\_languages&oldid=454112398](http://en.wikipedia.org/w/index.php?title=Athabaskan_languages&oldid=454112398))

## 9.1 Proto-Athabaskan to Ahtna

Whimemsz, from Krauss, Michael and Victor Golla (1981), "Northern Athapaskan Languages". *Handbook of North American Indians*, Vol. 6 (Subarctic), 67 – 85

{4,5} → 3  
6 → 4 / in Mentasta Ahtna  
{ʃ<sup>(w)</sup>,x} → s  
ɑ ə ʊ → a e o  
V<sup>ʔ</sup> → V[-glottalized]

## 9.2 Proto-Athabaskan to Babine

Whimemsz, from Krauss, Michael and Victor Golla (1981), "Northern Athapaskan Languages". *Handbook of North American Indians*, Vol. 6 (Subarctic), 67 – 85

{4,5} → 3  
u ɑ ʊ → {o,u} ə u  
V<sup>ʔ</sup> → V[-glottalized]

## 9.3 Proto-Athabaskan to Beaver

Whimemsz, from Krauss, Michael and Victor Golla (1981), "Northern Athapaskan Languages". *Handbook of North American Indians*, Vol. 6 (Subarctic), 67 – 85

3 → 9 (most often back to 3, however)  
{4,5} → 3  
6 7 → 4 6

$l \rightarrow 4 / \_ \{i, e, u\}$ , in the British Columbian dialect  
 $\{n, \eta\} \rightarrow d / \$ \_ V[-nas]$  ( $\rightarrow d\zeta$  in the British Columbian dialect)  
 $a \rightarrow \emptyset$   
 $V^? \rightarrow V[+high \text{ tone}]$

#### 9.4 Proto-Athabaskan to Chilcotin

*Whimemsz*, from Krauss, Michael and Victor Golla (1981), “Northern Athapaskan Languages”. *Handbook of North American Indians*, Vol. 6 (Subarctic), 67 – 85

Series 3 desibilantizes

$V \rightarrow \{V^?, V[+RTR]\}$

$\{4, 5\} 6 \rightarrow 3 \ 4$

Series 7 incompletely moves to series 6, the latter being more common

$e \{a, \emptyset\} \rightarrow i \{e, i\}$

$V^? \rightarrow V[+high \text{ tone}]$

#### 9.5 Proto-Athabaskan to Chipewyan

*Whimemsz*, from Krauss, Michael and Victor Golla (1981), “Northern Athapaskan Languages”. *Handbook of North American Indians*, Vol. 6 (Subarctic), 67 – 85

$3 \{4, 5\} 6 \ 7 \rightarrow 9 \ 3 \ 4 \ 6$

$t \rightarrow k$  (not for all speakers)

$\{A, O'\} \rightarrow F / \_ \$$

$a \ \bar{u} \rightarrow a \ o$

$V^? \rightarrow V[+high \text{ tone}]$

#### 9.6 Proto-Athabaskan to Dakelh

*Whimemsz*, from Krauss, Michael and Victor Golla (1981), “Northern Athapaskan Languages”. *Handbook of North American Indians*, Vol. 6 (Subarctic), 67 – 85

$\{4, 5\} 6 \ 7 \rightarrow 3 \ 4 \ 6$

$u \{a, \bar{u}\} \rightarrow \{o, u\} \ \emptyset$

$V^? \rightarrow V[-glottalized]$

## 9.7 Proto-Athabaskan to Deg Hit'an

*Whimemsz*, from Krauss, Michael and Victor Golla (1981), “Northern Athapaskan Languages”. *Handbook of North American Indians*, Vol. 6 (Subarctic), 67 – 85

3 4 → 9 3  
5 → 10 (→ 3 in Kuskokwim dialect)  
6 → {6,4}  
w → v (→ w in Shageluk dialect)  
ɲ → ŋ  
R F → R[-voiced] F[-voiced] / -# in suffixes  
e u a {ɑ,ʊ} → a i u ə  
C' → C / -\$\_  
Vʔ → V[-glottalized]

## 9.8 Proto-Athabaskan to Dena'ina

*Whimemsz*, from Krauss, Michael and Victor Golla (1981), “Northern Athapaskan Languages”. *Handbook of North American Indians*, Vol. 6 (Subarctic), 67 – 85

{4,5} → 4 (→ 3 in Upper Inlet dialect)  
e a u {ə,ʊ} → a u i ə  
{ʃ(<sup>w</sup>),x {z,ʒ(<sup>w</sup>),ʃ} → s j  
Vʔ → V[-glottalized]

## 9.9 Proto-Athabaskan to Dogrib

*Whimemsz*, from Krauss, Michael and Victor Golla (1981), “Northern Athapaskan Languages”. *Handbook of North American Indians*, Vol. 6 (Subarctic), 67 – 85

C → h / -\$\_  
ɑ ə ʊ u → a e o i  
{4,5} 6 7 → 3 4 6  
ts ts<sup>h</sup> ts' s z → k<sup>w</sup> k<sup>wh</sup> k<sup>w'</sup> ʌ w

## 9.10 Proto-Athabaskan to Easter Gwich'in

*Whimemsz*, from Krauss, Michael and Victor Golla (1981), “Northern Athapaskan Languages”. *Handbook of North American Indians*, Vol. 6 (Subarctic), 67 – 85

NB: Here, ⟨3⟩ represents a sound that *Whimemsz* says “is between” series 3 and 4 POA-wise.

3 6 → 4 **3** / \_E

3 6 → 9 4 / else

4 5 7 → 3 10 6

j w → ʒ v

{n,ɲ} → <sup>n</sup>dʒ / \_E[-nas]

{n,ɲ} → <sup>n</sup>d / \_V[-nas]

{i,e} → {i,ja} (this latter due to the loss of final consonants within the stem)

a u {ɑ,ə} ʊ → {i,e} ju a o

V<sup>?</sup> → V[+low tone]

“An ‘extensive reduction’ of stem-final consonants; however, reflexes of final \*-ɲ and \*-n after PA \*a and \*e are kept distinct”

## 9.11 Proto-Athabaskan to Han

*Whimemsz*, from Krauss, Michael and Victor Golla (1981), “Northern Athapaskan Languages”. *Handbook of North American Indians*, Vol. 6 (Subarctic), 67 – 85

3 4 5 6 7 → 9 3 10 4 6

Occasional palatalization in front of high vowels

n → (<sup>n</sup>)d / \$\_V[-nas]

j → ʒ / \$\_

a ɑ ə ʊ → æ a {ə,ë} o

Acquisition of vowel length, but how this occurs is not described

V<sup>?</sup> → V[+low tone]

Majority of stem-final consonants lost; the only stem-finals permitted in contemporary Han are /t k w j r n h ʔ/, with the addition of /l/ in Dawson Han

## 9.12 Proto-Athabaskan to Holikachuk

*Whimemsz*, from Krauss, Michael and Victor Golla (1981), “Northern Athapaskan Languages”. *Handbook of North American Indians*, Vol. 6 (Subarctic), 67 – 85

3 → 9

e → a / in prefixes

i e a u {ɑ,ʊ} → e a ɔ o ʊ

3 {4,5} → 2 3

C' → C / \_\$

V<sup>?</sup> → V[+low tone]

$w (\rightarrow b?) \rightarrow m$   
 $\emptyset \rightarrow \emptyset / \{R, F\} - \#$

### 9.13 Proto-Athabaskan to Lower Koyukon

*Whimemsz*, from Krauss, Michael and Victor Golla (1981), “Northern Athapaskan Languages”. *Handbook of North American Indians*, Vol. 6 (Subarctic), 67 – 85

$e a \alpha \upsilon \rightarrow a o \ddot{o} \ddot{u}$   
 $3 \{4, 5\} \rightarrow 2 \ 3$   
 $C' \rightarrow C / \_ \$$   
 $V^? \rightarrow V[+low \ tone]$   
 $w (\rightarrow b?) \rightarrow m$   
 $\emptyset \rightarrow \emptyset / \{R, F\} - \#$

### 9.14 Proto-Athabaskan to Upper Koyukon

*Whimemsz*, from Krauss, Michael and Victor Golla (1981), “Northern Athapaskan Languages”. *Handbook of North American Indians*, Vol. 6 (Subarctic), 67 – 85

$e a \alpha \upsilon \rightarrow a o \ddot{o} \ddot{u}$   
 $3 \{4, 5\} \rightarrow 2 \ 3$   
 Stem-final/suffixal consonant clusters lost in Minchumina-Bearpaw Upper Koyukon  
 $6 \rightarrow 4$   
 $C' \rightarrow C / \_ \$$   
 $V^? \rightarrow V[+low \ tone] \rightarrow V[-tone]$   
 $w \rightarrow m / \_ Vn \text{ (sporadic)}$   
 $w \rightarrow b$

### 9.15 Proto-Athabaskan to Upper Kuskokwim Kolchan

*Whimemsz*, from Krauss, Michael and Victor Golla (1981), “Northern Athapaskan Languages”. *Handbook of North American Indians*, Vol. 6 (Subarctic), 67 – 85

$4 \ 5 \ 6 \ 7 \rightarrow 3 \ 10 \ 4 \ 6$   
 $e a \{\alpha, \upsilon\} \rightarrow a o \ddot{u}$   
 $V^? \rightarrow V[-glottalized]$

### 9.16 Proto-Athabaskan to Sarcee

*Whimemsz*, from Krauss, Michael and Victor Golla (1981), “Northern Athapaskan Languages”. *Handbook of North American Indians*, Vol. 6 (Subarctic), 67 – 85

$\{4,5\}$  6 7  $\rightarrow$  3 4 6  
 $\acute{a} \acute{o} \acute{u} \rightarrow \bar{a} \bar{o} \bar{u}$   
 $\{e, \emptyset\}$   $\bar{u} \rightarrow$   $\alpha$  u  
 $V^?$   $\rightarrow$  V[+low tone]

### 9.17 Proto-Athabaskan to Sekani

*Whimemsz*, from Krauss, Michael and Victor Golla (1981), “Northern Athapaskan Languages”. *Handbook of North American Indians*, Vol. 6 (Subarctic), 67 – 85

3  $\rightarrow$  9 ( $\rightarrow$  3 again in some areas)  
 $\{4,5\}$  6 7  $\rightarrow$  3 4 6  
1  $\rightarrow$  4 /  $\_ \{i, e, u\}$  ! in Ware Sekani  
 $\bar{u} \rightarrow$  o  
 $V^?$   $\rightarrow$  V[+high tone]

### 9.18 Proto-Athabaskan to Bearlake Slavey-Hare

*Whimemsz*, from Krauss, Michael and Victor Golla (1981), “Northern Athapaskan Languages”. *Handbook of North American Indians*, Vol. 6 (Subarctic), 67 – 85

C  $\rightarrow$  {h, ?} /  $\_ \#$   
 $\alpha \emptyset \bar{u} \rightarrow$  a  $\epsilon$  o  
 $\{4,5\}$  6 7  $\rightarrow$  3 4 6  
ts ts<sup>h</sup> ts' s z  $\rightarrow$  k<sup>w</sup> k<sup>wh</sup> k<sup>w'</sup>  $\Delta$  w

### 9.19 Proto-Athabaskan to Hare Slavey-Hare

*Whimemsz*, from Krauss, Michael and Victor Golla (1981), “Northern Athapaskan Languages”. *Handbook of North American Indians*, Vol. 6 (Subarctic), 67 – 85

t<sup>h</sup> t<sup>f(w)</sup> k<sup>h</sup>  $\rightarrow$  t s f  
 $\{4,5\}$  6  $\rightarrow$  3 4 (with exceptions)  
7  $\rightarrow$  6  
 $\emptyset \rightarrow$  j /  $\_ e$



$\text{ɬ} \rightarrow \text{l}$   
 $\text{ts ts}^{\text{h}} \text{ ts}' \{ \text{s}, \text{z} \} \rightarrow \{ \text{k}^{\text{w}}, \text{p} \} \text{ f w}^{\text{ʔ}} \text{ w}$

## 9.20 Proto-Athabaskan to Mountain Slavey-Hare

*Whimemsz*, from Krauss, Michael and Victor Golla (1981), “Northern Athapaskan Languages”. *Handbook of North American Indians*, Vol. 6 (Subarctic), 67 – 85

$\text{C} \rightarrow \{ \text{h}, \text{ʔ} \} / \_ \#$   
 $\text{ɑ ɔ ʊ} \rightarrow \text{a e o}$   
 $\{ 4, 5 \} \text{ 6 7} \rightarrow \text{3 4 6}$   
 $\text{ts ts}^{\text{h}} \text{ ts}' \text{ s z} \rightarrow \text{p p}^{\text{h}} \text{ p}' \text{ f v}$

## 9.21 Proto-Athabaskan to Slavey Slavey-Hare

*Whimemsz*, from Krauss, Michael and Victor Golla (1981), “Northern Athapaskan Languages”. *Handbook of North American Indians*, Vol. 6 (Subarctic), 67 – 85

$\text{C} \rightarrow \{ \text{h}, \text{ʔ} \} / \_ \#$   
 $\text{ɑ ɔ ʊ} \rightarrow \text{a e o}$   
 $\{ 4, 5 \} \text{ 6 7} \rightarrow \text{3 4 6}$

## 9.22 Proto-Athabaskan to Tahltan-Kaska-Tagish

*Whimemsz*, from Krauss, Michael and Victor Golla (1981), “Northern Athapaskan Languages”. *Handbook of North American Indians*, Vol. 6 (Subarctic), 67 – 85

$\text{ɑ ɔ ʊ} \rightarrow \text{a } \{ \text{i}, \text{e} \} \text{ u}$   
 $\text{C}' \rightarrow \text{C} / \_ \$$   
 $7 \rightarrow 6$

### 9.22.1 Tahltan-Kaska-Tagish to Kaska

*Whimemsz*, from Krauss, Michael and Victor Golla (1981), “Northern Athapaskan Languages”. *Handbook of North American Indians*, Vol. 6 (Subarctic), 67 – 85

$\text{V}^{\text{ʔ}} \rightarrow \text{V}[\text{+high tone}]$   
 $3 \{ 4, 5 \} \rightarrow 9 \text{ 3}$   
 $6 \rightarrow 4$  (although  $/\text{x}^{\text{j}}/$  stays as such in a few dialects)

### 9.22.2 Tahltan-Kaska-Tagish to Tagish

*Whimemsz*, from Krauss, Michael and Victor Golla (1981), “Northern Athapaskan Languages”. *Handbook of North American Indians*, Vol. 6 (Subarctic), 67 – 85

{4,5} 3 → 3 3<sup>j</sup>

### 9.22.3 Tahltan-Kaska-Tagish to Tahltan

*Whimemsz*, from Krauss, Michael and Victor Golla (1981), “Northern Athapaskan Languages”. *Handbook of North American Indians*, Vol. 6 (Subarctic), 67 – 85

{5,6} → 4 (although /x<sup>j</sup>/ stays as such in a few dialects)

## 9.23 Proto-Athabaskan to Tanacross

*Whimemsz*, from Krauss, Michael and Victor Golla (1981), “Northern Athapaskan Languages”. *Handbook of North American Indians*, Vol. 6 (Subarctic), 67 – 85

6 → 4 / ! \_\$

3 4 5 7 → 9 3 10 6

S' → S / \_\$

V<sup>?</sup> → V[+high tone]

Acquisition of phonemic length in some unreduced vowels, though exactly how is not explored

V<sub>n</sub> → V[+nas]

{n, n̥} → <sup>n</sup>d

F[+voiced] → F[-voiced] / \_\$

ɟ → h / in the “1sg subject prefix”

ɬ → h / in the grammatical classifier

ɑ ə ʊ → {æ, ǣ} æ ǿ

## 9.24 Proto-Athabaskan to Lower Tanana

*Whimemsz*, from Krauss, Michael and Victor Golla (1981), “Northern Athapaskan Languages”. *Handbook of North American Indians*, Vol. 6 (Subarctic), 67 – 85

6 → 4 / ! \_\$

3 4 5 7 → 9 3 10 6

S' → S / \_\$

V<sup>?</sup> → V[+low tone] (“since then partially neutralized in noun and verb stems, but ‘still

*clear in verbal prefixes”*)  
 $e\ a\ \{\alpha, \upsilon\} \rightarrow \text{æ}\ \text{ɔ}\ \text{ũ}$

## 9.25 Proto-Athabaskan to Upper Tanana

*Whimemsz*, from Krauss, Michael and Victor Golla (1981), “Northern Athapaskan Languages”. *Handbook of North American Indians*, Vol. 6 (Subarctic), 67 – 85

$6 \rightarrow 4\ /\ \text{!}\ \_ \$$

$3\ 4\ 5\ 7 \rightarrow 9\ 3\ 10\ 6$

$S' \rightarrow S\ /\ \_ \$$

Acquisition of phonemic length in some unreduced vowels, but this is not explored

$Vn \rightarrow V[+\text{nas}]$

$\{n, \text{ɲ}\} \rightarrow \text{ʰn}$

$\{A, F\} \rightarrow \emptyset\ /\ \_ \$$ ; diphthongs sometimes lengthen in comparison

$\text{ɟ} \rightarrow h\ /\ \text{in the “1sg subject prefix”}$

$\text{ɬ} \rightarrow h\ /\ \text{in the grammatical classifier}$

$\{a, \alpha\}\ e\ i\ u\ \upsilon \rightarrow e(a)\ \{i, ea\}\ ju\ \{a, i\}\ o$

$\text{ə} \rightarrow \{a, i\}\ (\rightarrow \emptyset \text{ in the Northway dialect})$

$V^? \rightarrow V[+\text{low tone}]\ (\rightarrow V[-\text{tone}] \text{ in “young speakers by 1980”})$

## 9.26 Proto-Athabaskan to Tsetsaut

*Whimemsz*, from Krauss, Michael and Victor Golla (1981), “Northern Athapaskan Languages”. *Handbook of North American Indians*, Vol. 6 (Subarctic), 67 – 85

*NB: Whimemsz indicates that the following are to be taken with a grain of salt, as not all of the correspondences are clear due to a lack of detailed sources*

$4 \rightarrow 3$

Series 5 apparently moved its POA to the labiodental or bilabial position

$6\ 7 \rightarrow 4\ 6$

$C \rightarrow \emptyset\ /\ \_ \$$  in many cases

$\upsilon \rightarrow o$

## 9.27 Proto-Athabaskan to Northern Tutchone

*Whimemsz*, from Krauss, Michael and Victor Golla (1981), “Northern Athapaskan Languages”. *Handbook of North American Indians*, Vol. 6 (Subarctic), 67 – 85

3 {4,5} → 9 3

6 → 4 (although /x<sup>j</sup>/ remained as such in a few dialects)

7 → 6

{ɑ,ə,ʊ} → {a,o}

Most stem-final consonants lost, though some plain and labialized palatal reflexes have developed differently

V<sup>?</sup> → V[+high tone]

Acquisition of nasalized vowels and diphthongs

/o/ somehow develops

## 9.28 Proto-Athabaskan to Southern Tutchone

*Whimemsz*, from Krauss, Michael and Victor Golla (1981), “Northern Athapaskan Languages”. *Handbook of North American Indians*, Vol. 6 (Subarctic), 67 – 85

3 {4,5} → 9 3

6 → 4 (although /x<sup>j</sup>/ remained as such in a few dialects)

7 → 6

e a → i e

{ɑ,ə,ʊ} → {a,o}

Most stem-final consonants lost, though some plain and labialized palatal reflexes have developed differently

V<sup>?</sup> → V[+low tone]

Acquisition of nasalized vowels and diphthongs

/i/ somehow develops

A → F (some slight POA changes; alveolars become dentals, for instance)

## 10 Austroasiatic

### 10.1 Vietic

Thompson reconstructs the following phonetic system for Proto-Viet-Muong:

	Bilabial	Alveolar	Palatal	Velar	Glottal
Nasal	$\text{ṁ m}$	$\text{ṇ n}$	$\text{ṃ ɲ}$	$\text{ŋ ɳ}$	
Plosive	$\text{p b}$	$\text{t t}^* \text{ d d}^*$	$\text{c ɟ}$	$\text{k g}$	ʔ
Liquid	$\text{ṹ w}$	$\text{ṷ l ṷ r}$	$\text{Ṷ j}$		

  

	Front	Center	Back
High	$\text{i iə}$	$\text{i iə}$	$\text{u uə}$
High-Mid	$\text{e}$	$\text{ə əː}$	$\text{o}$
Low-Mid	$\text{ɛ}$		$\text{ɔ}$
Low		$\text{a aː}$	

Further, Thompson reconstructs Proto-Vietic as having had four tones, \*A, \*B, \*C, and \*D. In the development of Vietnamese, \*B and \*D merged.

Thompson lists a few occasional alterations between Muong Khen and Vietnamese, but I'm not sure exactly which two languages were being compared, so I'm shunting the alterations here.

-o	:	*-əw
-u	:	*-əw
-i	:	*-əj
-e	:	*-əj
a	:	ia

The -e : \*-əj correspondence was listed as being rarer than the others.

(From Thompson, Laurence C. (1976), "Proto-Viet-Muong Phonology". *Oceanic Linguistics Special Publications* 13, Austroasiatic Studies II:1113 – 1203; Wikipedia contributors (2012). "Hanoi". *Wikipedia, the Free Encyclopedia*. <http://en.wikipedia.org/w/index.php?title=Hanoi&oldid=509052974>; Wikipedia contributors (2012), "Vietnamese Language". *Wikipedia, the Free Encyclopedia*. [http://en.wikipedia.org/w/index.php?title=Special:Cite&page=Vietnamese\\_language&id=509331797](http://en.wikipedia.org/w/index.php?title=Special:Cite&page=Vietnamese_language&id=509331797); Gage, William W. (1985), "Glottal Stops and Vietnamese Tonogenesis". *Oceanic Linguistics Special Publications* 20:21 – 36; and Thompson, Laurence C. (1979?), "More on Viet-Muong Tonal Developments")

### 10.1.1 Proto-Vietic to Muong Khen

*Pogostick Man*, from Thompson, Laurence C. (1976), “Proto-Viet-Muong Phonology”. *Oceanic Linguistics Special Publications* 13, Austroasiatic Studies II:1113 – 1203; Wikipedia contributors (2012). “Hanoi”. *Wikipedia, the Free Encyclopedia*. <http://en.wikipedia.org/w/index.php?title=Hanoi&oldid=509052974>; Wikipedia contributors (2012), “Vietnamese Language”. *Wikipedia, the Free Encyclopedia*. [http://en.wikipedia.org/w/index.php?title=Special:Cite&page=Vietnamese\\_language&id=509331797](http://en.wikipedia.org/w/index.php?title=Special:Cite&page=Vietnamese_language&id=509331797); Gage, William W. (1985), “Glottal Stops and Vietnamese Tonogenesis”. *Oceanic Linguistics Special Publications* 20:21 – 36; and Thompson, Laurence C. (1979?), “More on Viet-Muong Tonal Developments”

#### Tonogenesis

Reg	A	B	C	d
1	mid level	low rising <sup>1</sup>	high rising	high rising
2	low falling	high-mid <sup>2</sup>	high-mid <sup>2</sup>	high-mid <sup>2</sup>

1. “Constricted” (laryngealized?)
2. Terminates in a glottal stop if no final stop

Presyllables don’t seem to have affected Muong much.

#### Initials:

s → h  
c<sup>h</sup> → s  
t<sup>h</sup> → h (Only seems to have occurred with first-register tones)  
{k<sup>h</sup>,g<sup>h</sup>} → x (Presyllables don’t seem to have affected this much)  
m n → b d (Only seems to have occurred with first-register tones)  
{p,j,b,j} {t,j,d,j} {c,j,ɲ,j} → b d j  
ʃ d f → b d (Only seems to have occurred with first-register tones)  
{ɲ,j,ɲ,j,ɲ,j,ɲ,j} → ɲ j  
N[-voiced] W[-voiced] → N[+voiced] W[+voiced]  
(h)ə{p,b} → t / ɿ  
m → Ø / ɿ  
t.ɿ → t<sup>h</sup>

#### Miscellanea:

w → Ø / t<sup>h</sup>V\_k (conjectured)

### 10.1.2 Proto-Vietic to Middle Vietnamese

*Pogostick Man*, from Thompson, Laurence C. (1976), “Proto-Viet-Muong Phonology”.

*Oceanic Linguistics Special Publications* 13, Austroasiatic Studies II:1113 – 1203; Wikipedia contributors (2012). “Hanoi”. *Wikipedia, the Free Encyclopedia*. <http://en.wikipedia.org/w/index.php?title=Hanoi&oldid=509052974>; Wikipedia contributors (2012), “Vietnamese Language”. *Wikipedia, the Free Encyclopedia*. [http://en.wikipedia.org/w/index.php?title=Special:Cite&page=Vietnamese\\_language&id=509331797](http://en.wikipedia.org/w/index.php?title=Special:Cite&page=Vietnamese_language&id=509331797); Gage, William W. (1985), “Glottal Stops and Vietnamese Tonogenesis”. *Oceanic Linguistics Special Publications* 20:21 – 36; and Thompson, Laurence C. (1979?), “More on Viet-Muong Tonal Developments”

#### Initials:

$b^{\text{fi}} \{t^{\text{h}}, d^{\text{fi}}\} \{t^{*\text{h}}, d^{*\text{super fi}}\} \{k^{\text{h}}, g^{\text{fi}}\} \rightarrow p^{\text{h}} t^{\text{h}} k^{\text{h}}$  (after  $*k^{\text{h}} *g^{\text{fi}}$ , only first-register tones may occur)

$(h)\text{ə}\{p, b\} (h)\text{ə}\{t, d\} (h)\text{ə}\{c, ʃ\} (h)\text{ə}\{k, g\} \rightarrow \beta d^{\text{j}} ʃ g$

$\{p_j, b_j\} \{t_j, d_j\} \{c_j, ʃ_j\} \rightarrow \beta/w d^{\text{j}} ʃ$

$\text{ḃ} \text{ḍ} \rightarrow m \text{ṇ}$  (For some reason it seems that only first-register tones can occur in this environment)

$\{\text{ṇ}_j, \text{n}_j, \text{ɲ}_j, \text{ɳ}_j\} \rightarrow \text{ɲ}$  (Thompson appears to me to have hedged a bit on the last one; based on other evidence in the paper I’m sticking this one as a palatal nasal)

$tʃ \rightarrow \Omega$  (This is my own notation. I don’t have a clue what the intermediate form was; became something else in different dialects)

$N[-\text{voiced}] W[-\text{voiced}] \rightarrow N[+\text{voiced}] W[+\text{voiced}]$

$((h)\text{ə})p \text{ḍ} \rightarrow b t / \_ \text{ɿ}$

$t \rightarrow \emptyset / \_ \text{ɿ}$  (only first-register tones can occur in this environment)

$t^{*\text{h}} \text{ḍ} g \rightarrow t^{\text{h}} t k / \_ w$

$s \rightarrow t^{(\text{h}?)}$

$\{\text{ə}k^{\text{h}}, \text{ə}g^{\text{fi}}\} \rightarrow ʃ$  (I think Thompson implied this was just a bit of a kludge)

#### Finals:

$l \rightarrow \emptyset / \{i, e\}_-$

$l \rightarrow j / \text{else}$

$c \text{ṇ} \rightarrow t \text{ṇ} / ! E_-$  (apparently the precursor to Vietnamese short  $*a$  was treated as a short vowel here)

Thompson seems to list some changes as affecting Modern Vietnamese but I was unsure of where to put them so they’ll go here:

$a \text{ṇ} \rightarrow i\text{ə} u\text{ə}$

In the original those first vowels were underlined.

**10.1.2.1 Middle Vietnamese to Hanoi Vietnamese** *Pogostick Man*, from Thompson, Laurence C. (1976), “Proto-Viet-Muong Phonology”. *Oceanic Linguistics Special Publications* 13, Austroasiatic Studies II:1113 – 1203; Wikipedia contributors (2012). “Hanoi”.

*Wikipedia, the Free Encyclopedia*. <http://en.wikipedia.org/w/index.php?title=Hanoi&oldid=509052974>; Wikipedia contributors (2012), “Vietnamese Language”. *Wikipedia, the Free Encyclopedia*. [http://en.wikipedia.org/w/index.php?title=Special:Cite&page=Vietnamese\\_language&id=509331797](http://en.wikipedia.org/w/index.php?title=Special:Cite&page=Vietnamese_language&id=509331797); Gage, William W. (1985), “Glottal Stops and Vietnamese Tonogenesis”. *Oceanic Linguistics Special Publications* 20:21 – 36; and Thompson, Laurence C. (1979?), “More on Viet-Muong Tonal Developments”

## Tonogenesis

Reg	A	B/D	C
1	mid trailing	high rising	dipping
2	low trailing	low dropping <sup>1</sup>	high rising <sup>2</sup>

1. Tense before  $\_S\#$ ; laryngealized elsewhere
2. Laryngealized

### Initials:

$p^h \rightarrow f$

$k^h \rightarrow x$  (only seems to have occurred with first-register tones)

$\{\beta, w\} \{d^j, j\} \rightarrow v \ z$

$\_r \rightarrow z$  (only seems to have occurred with first-register tones)

$bl \rightarrow z$

$ml \rightarrow mp \rightarrow \_p$  (Thompson seems to indicate that this may have become  $[l]$  as well; only seems to have occurred with second-register tones)

$\Omega \ c^h \rightarrow s \ t\epsilon$

### Vowels:

$i \rightarrow i \ / \ \_(\partial)w$

$\epsilon \rightarrow a \ / \ \_C[+palatal]$

### Miscellanea:

$w \rightarrow \emptyset \ / \ tV\_wk$  (conjectured)

**10.1.2.2 Middle Vietnamese to Saigon Vietnamese** *Pogostick Man*, from Thompson, Laurence C. (1976), “Proto-Viet-Muong Phonology”. *Oceanic Linguistics Special Publications* 13, Austroasiatic Studies II:1113 – 1203; Wikipedia contributors (2012). “Hanoi”. *Wikipedia, the Free Encyclopedia*. <http://en.wikipedia.org/w/index.php?title=Hanoi&oldid=509052974>; Wikipedia contributors (2012), “Vietnamese Language”. *Wikipedia, the Free Encyclopedia*. [http://en.wikipedia.org/w/index.php?title=Special:Cite&page=Vietnamese\\_language&id=509331797](http://en.wikipedia.org/w/index.php?title=Special:Cite&page=Vietnamese_language&id=509331797); Gage, William W. (1985), “Glottal Stops and Vietnamese Tonogenesis”. *Oceanic Linguistics Special Publications* 20:21 – 36; and Thompson, Laurence C. (1979?), “More on Viet-Muong Tonal Developments”



## Tonogenesis

Reg	A	B/D	C
1	mid trailing	high rising	mid rising
2	low trailing	low <sup>1</sup>	high rising <sup>2</sup>

1. Level before  $\_S\#$ ; dipping otherwise
2. Laryngealized

### Initials:

$p^h \rightarrow f$

$k^h \rightarrow x$  (only seems to have occurred with first-register tones)

$\{\beta, w\} \rightarrow bj \sim vj \sim v$

$\{bl, tl\} \rightarrow t$  (?)

$d^j \rightarrow z$

$m \rightarrow \emptyset$  /  $\_l$

$\Omega \ c^h \rightarrow s$

$\_r \rightarrow z$  (sometimes?)

### Finals:

$c \_n \ t \ n \rightarrow t \ n \ k \ \eta$  /  $a\_-$  (short  $/a/$  only)

$c \_n \rightarrow t \ n$  /  $\{i, e\}\_-$

$\{c, \_n\} \rightarrow \emptyset$  / else

### Vowels:

$\emptyset \rightarrow \emptyset$  /  $\{i, i\}\_- \{p, m, w\}$

$\emptyset \rightarrow \emptyset$  /  $i\_-j$

$\emptyset \rightarrow \emptyset$  /  $u\_- \{m, j\}$

The contrast between short  $/a/$  and short  $/\emptyset/$  is neutralized when  $\_w \{k, \eta\}$

$a \rightarrow a:$  /  $\_ \{w, j\}$

$\emptyset(\text{:}) \ \varepsilon \rightarrow i \ \varepsilon \emptyset$  /  $\_K$

$\varepsilon \rightarrow a$  /  $\_C[+\text{palatal}]$

### Miscellanea:

$w \rightarrow \emptyset$  /  $tV\_wk$  (conjectured)

## 11 Austronesian

Wikipedia gives the following reconstruction of Proto-Austronesian created by Robert Blust:

	Labial	Alveolar	Palatal	Retroflex	Velar	Glottal
Nasal	m	n	ɲ		ŋ	(q,ʔ)
Plosive	p b	t d		ɳ	k g gʲ	
Fricative		s	ç			h
Affricate		ts	cç jʝ			
Lateral		l	ɭ			
Tap/Trill		(ɾ,r,R)				
Approximant	w		j			

  

	Front	Central	Back
Close	i		u
Mid		ə	
Open		a	

  

	Front	Central	Back
Close	iw		uj
Open		aj aw	

Points of this phonology are in great dispute; Blust himself states this.

(From Wikipedia contributors (2011), “Proto-Austronesian language”. *Wikipedia, The Free Encyclopedia*. [http://en.wikipedia.org/w/index.php?title=Proto-Austronesian\\_language&oldid=453318098](http://en.wikipedia.org/w/index.php?title=Proto-Austronesian_language&oldid=453318098))

### 11.1 Proto-Austronesian to Proto-Malayo-Polynesian

*Pogostick Man*, from Wikipedia contributors (2011), “Proto-Austronesian lanuage”. *Wikipedia, the Free Encyclopedia*. [http://en.wikipedia.org/w/index.php?title=Proto-Austronesian\\_language&oldid=453318098](http://en.wikipedia.org/w/index.php?title=Proto-Austronesian_language&oldid=453318098)

$e \rightarrow a / \_s$   
 $s \text{ ts } \mathfrak{l}^j \rightarrow h \text{ t } n$

#### 11.1.1 Proto-Malayo-Polynesian to Proto-Bali-Sasak-Sumbawan

*TinyMusic*, from Adelaar, Alexander (2005), “Malayo-Sumbawan”. *Oceanic Linguistics* 44(2):357 – 388

$j \rightarrow \{d, t\} / \#\_$   
 $j \ z \rightarrow d \ j$   
 $w \rightarrow \emptyset / \#\_$   
 $R \rightarrow r$   
 $q \rightarrow h / \_ \#$   
 $\{q, h\} \rightarrow \emptyset$   
 $iw \ uj \rightarrow \{i, ?\} i / \_ \#$   
A:  
 $\_ \ aj \ aw \rightarrow ej \ ow / \_ \#$   
B:  
 $\_ \ aj \ aw \rightarrow e \ ow / \_ \#$   
 $C[+ \text{ voice}] \rightarrow C[- \text{ voice}] / \_ \#$   
 $H\emptyset S \rightarrow (h)\emptyset(N)S / \#\_$

**11.1.1.1 Proto-Bali-Sasak-Sumbawan to Balinese** *TinyMusic*, from Adelaar, Alexander (2005), “Malayo-Sumbawan”. *Oceanic Linguistics* 44(2):357 – 388

$r \rightarrow \{r, h\} \rightarrow \{\emptyset, h\}$   
 $h \rightarrow \{\emptyset, h\}$   
 $w \rightarrow b / i\_ \#$   
 $ej \ ow \rightarrow i \ u$   
“ $\emptyset$  assimilated to the following vowel after the loss of \*-r-”  
 $a \rightarrow \emptyset$

**11.1.1.2 Proto-Bali-Sasak-Sumbawan to Sasak** *TinyMusic*, from Adelaar, Alexander (2005), “Malayo-Sumbawan”. *Oceanic Linguistics* 44(2):357 – 388

$h \rightarrow q / \_ \#$  (might’ve been a retention?)  
 $h \rightarrow \emptyset$   
 $iw \ ow \ ej \rightarrow i \ o \ e / \_ \#$   
“\*i and \*u often become mid-vowels”  
 $V(h) \rightarrow V(q) / \_ \#$  (again, might’ve been a retention?)  
 $a \rightarrow \emptyset / \_ \#$  (Meno-mene and Mriak-mriku only)  
 $d \rightarrow r / \text{medial}$  (Meno-mene and Mriak-mriku only)  
 $r \rightarrow h / \_ \#$  (Meno-mene and Mriak-mriku only)

**11.1.1.3 Proto-Bali-Sasak-Sumbawan to Sumbawan** *TinyMusic*, from Adelaar, Alexander (2005), “Malayo-Sumbawan”. *Oceanic Linguistics* 44(2):357 – 388



$C[+ \text{ voice}] \rightarrow C[- \text{ voice}] / \_ \#$   
 $l \ n \rightarrow r \ l / \_ \#$  (sporadic)  
 $d \ j \rightarrow r \ l$  (sporadic)  
 “Sometimes a reduction of [the] penultimate vowel”  
 $a \rightarrow a: / \_ C \#$  (sometimes)

### 11.2.2 Proto-Malayo-Polynesian to Chamorro

*Whimemsz*, from Blust, Robert (2000), “Chamorro Historical Phonology”. *Oceanic Linguistics* 39(1):83 – 122

$\text{ə} \rightarrow u$   
 $\text{ə} \rightarrow \emptyset / VC\_CV$   
 $V \rightarrow \emptyset / VC\_CV$  (sporadic)  
 $i \ u \rightarrow e \ o / \_ C \{C, \#\}$   
 $i \ u \rightarrow e \ o / CC \#$  (sporadic)  
 $a \rightarrow \text{æ}$  “(in some forms; environment and conditioning unclear)”  
 $uj \rightarrow \{i, u\}$   
 $iw \rightarrow u$   
 $p \ c \ q \rightarrow f \ s \ ?$   
 $k \rightarrow \emptyset / \_ \#$  (sporadic)  
 $k \rightarrow h / ! \_ \#$   
 $h \rightarrow \emptyset$   
 $V_0 V_0 \rightarrow V_0$   
 $b \ dz \rightarrow p \ ts$   
 $d \rightarrow \emptyset / \_ \#$   
 $\text{ʃ} \rightarrow ?$   
 $l \rightarrow d / \_ \{C, \#\}$   
 $r \rightarrow g$   
 $O \rightarrow O[-\text{voiced}] / \_ \{C, \#\}$   
 $\emptyset \rightarrow j / i\_a$   
 $\emptyset \rightarrow w / u\_a$   
 $\emptyset \rightarrow w / a\_u$   
 $\emptyset \rightarrow w / \#\_V$   
 $j \ w \rightarrow dz \ g^w$   
 $g^w \rightarrow g / \_ V[+\text{round}]$

### 11.2.3 Proto-Malayo-Polynesian to Proto-Malayic

*TinyMusic*, from Adelaar, Alexander (2005), “Malayo-Sumbawan”. *Oceanic Linguistics*

44(2):357 – 388

j → t / -#

j → d

z → j

w → Ø / #-

R → r

h → ? / -# (sometimes)

h → Ø / else

{iw,u} → i / -#

A:

— aj aw → i u / -#

B:

— aj aw → aj aw / -#

C<sub>1</sub>C<sub>2</sub> → C<sub>2</sub>

C[+ A POA]C[+ B POA] → C[+ B POA]C[+ B POA]

C[+ voice] → C[- voice] / -#

H → {Ø,h} / əNS / #-

**11.2.3.1 Proto-Malayic to (Standard) Malay** *TinyMusic*, from Tryon, Darrell (1995), *Comparative Austronesian Dictionary*

V → ə / -(C...)UU#

ə → a / -(C...)#

n → ɲ / “in the environment of *i* (sporadic)”

h → Ø / ! -# (sporadic)

#### 11.2.4 Proto-Malayo-Polynesian to Proto-Malayo-Javanic

*TinyMusic*, from Adelaar, Alexander (2005), “Malayo-Sumbawan”. *Oceanic Linguistics* 44(2):357 – 388

j → l

q h → h Ø

A:

— aw aj → əw əj / -#

B:

— aw aj → aw aj / -#

**11.2.4.1 Proto-Malayo-Javanic to Javanese** *TinyMusic*, from Adelaar, Alexander

(2005), “Malayo-Sumbawan”. *Oceanic Linguistics* 44(2):357 – 388

$\{l,d\} z \rightarrow r d$   
 $b \rightarrow w / ! \text{ adjacent to another consonant}$   
 $\text{ə} \rightarrow u / \_h\#$   
 $R \rightarrow \emptyset$   
 $h \rightarrow \emptyset / \#\_$   
 $h \rightarrow \{o,h,w\} / V\_V$   
 $iw uj \rightarrow ju i / \_ \#$   
 A:  
 $\text{— əw əj} \rightarrow i u / \_ \#$   
 B:  
 $\text{— aw aj} \rightarrow e \acute{o} / \_ \#$   
 $C_1 C_2 \rightarrow C_2$   
 Nasal + stop clusters “become homorganic”  
 $H\text{ə}S \rightarrow (h)\text{ə}NS$

**11.2.4.2 Proto-Malayo-Polynesian to Madurese** *TinyMusic*, from Adelaar, Alexander (2005), “Malayo-Sumbawan”. *Oceanic Linguistics* 44(2):357 – 388

$l \rightarrow l\text{ʔ} / \_ \#$   
 $l \rightarrow l$   
 $z \rightarrow j^h$   
 $w j$  fortite when non-final  
 $b \rightarrow \{w,\emptyset\} / \#\_$   
 $R \rightarrow \text{ʔ} / \_ \#$   
 $R \rightarrow r$   
 $h \rightarrow \text{ʔ} / V_0 V_0 h \rightarrow \emptyset$   
 “Aspiration of initial and intervocalic voiced stops and \*z”  
 $\{p,t,k\} b d g \rightarrow \text{ʔ} p t k / \_ \#$   
 $ij uw \rightarrow uj \{uj,\acute{o}j\} / \_ \#$   
 $V \rightarrow V\text{:} / \text{ə}(C \dots \text{ʔ})\_$   
 $C[+ \text{voice}] \rightarrow C[- \text{voice}] / \_ \#$   
 $H\text{ə}S \rightarrow (h)\text{ə}NS / \#\_$

**11.2.4.3 Proto-Malayo-Javanic to Sundanese** *TinyMusic*, from Adelaar, Alexander (2005), “Malayo-Sumbawan”. *Oceanic Linguistics* 44(2):357 – 388

$\{l,j\} z \rightarrow r j$   
 $w \rightarrow \{\emptyset,c\} / \#\_$   
 $R \rightarrow \{\emptyset,r,j\}$

iw uj → {ju,i} oj / -#

A:

— əw əj → o e / -#

B:

— aw aj → o aj / -#

### 11.2.5 Proto-Malayo-Polynesian to Palauan

*Whimemsz*, from Blust, Robert (2009), “Palauan Historical Phonology: Whence the Intrusive Velar Nasal?”. *Oceanic Linguistics* 48(2):307 – 336

aj aw uj → e o i

∅ → w / u\_V

∅ → j / i\_V

ə → ∅ / #\_

∅ → ə / C\_C “(for certain consonant combinations, which the paper doesn’t specify)”

h → ∅

ə → {e,o} / stressed; “(result of /e/ or /o/ unpredictable)”

p → w

wa → o / #\_ when unstressed

V → ə / unstressed

{aw,əw} → o / -#

wə → u / #\_

j l → r j

ə → ∅ / \_j

j → ∅ / C\_i

ə → ∅ / -#

ə → ∅ “(sporadic)”

t → ð / ! adjacent to S

s → t

r → r / \_C[+dental]

r → s

d → r

ɖ → ɽ “(only one example)”

ɲ → n (except possibly to n when #\_)

n dz → l r

rl → l:

ʃ → k / \_C#

ʃ → s

ŋ → ∅ / C\_#

t → {s,ð} / “unpredictably, to eliminate sV(C)t and tV(C)s sequences”



$\emptyset \rightarrow \eta / \#\_V$   
 $q \rightarrow \chi (\rightarrow \text{ʔ})$

### 11.2.6 Proto-Malayo-Polynesian to Proto-North Sarawak

*Whimemsz*, from Blust, Robert (2002), “Kiput Historical Phonology”. *Oceanic Linguistics* 41(2):384 – 438; and Blust, Robert (2007), “Òma Lóngh Historical Phonology”. *Oceanic Linguistics* 46(1):1 – 53

$q \rightarrow \text{ʔ}$   
 $\{\text{ʔ}, h\} \rightarrow \emptyset / \#\_$   
 $\{\text{ʔ}, h\} \rightarrow \emptyset / V_1[+\text{high}]\_V2$   
 $h \rightarrow \emptyset / \_ \#$   
 $h \rightarrow \text{ʔ} / V_0\_V0$   
 $h \rightarrow \text{ʔ} / a\_ \{i, u\}$   
 $\text{ə} \rightarrow \emptyset / \text{adjacent to a vowel}$   
 $a \rightarrow \text{ə} / \_UU(U \dots) \#$   
 $\text{ə} \rightarrow \emptyset / \_V$   
 $\text{ə} \rightarrow \emptyset / VC\_CV$

Nasal assimilation to following stops in some words; in other words it results in a geminate stop

Postvocalic obstruents with different POAs become geminates of the second when “in reduplicated monosyllabic roots” and “in non-reduplicated bases which had undergone the change of schwa syncope in medial syllables”

$C \rightarrow C: / \text{ə}\_V (?)$   
 $\text{ʃ}(:) \rightarrow d(:)$   
 $b: d: dz: g: \rightarrow b^{\text{fi}} d^{\text{fi}} dz^{\text{fi}} g^{\text{fi}}$  (*Whimemsz* says these become “voiced stops with voiceless releases. . . treated as unit phonemes, not clusters”)  
 $\text{ə} \rightarrow \emptyset / \#\_UU(U \dots) \#$  “(i.e., in word-initial position in prepenultimate syllables)”  
 $p: t: c: k: \rightarrow p \ t \ c \ k$   
 $c \rightarrow s$

#### 11.2.6.1 Proto-North Sarawak to Kiput *Whimemsz*, from Blust, Robert (2002), “Kiput Historical Phonology”. *Oceanic Linguistics* 41(2):384 – 438

Stress reassignment to the final syllable

$\text{ʔ} \rightarrow \emptyset / V\_V$   
 $k \rightarrow \emptyset / V\_V$  “(in some forms)”  
 $a\dot{\text{i}} \text{ au} \rightarrow a\dot{\text{i}} \text{ au} / \_ \#$   
 $\text{ə} \rightarrow a / \_ \text{ʔ} \#$

$a\ddot{u} \rightarrow \varepsilon \text{ } \circ \text{ } / \text{ } \_ \dots \#$   
 $i \text{ } u \rightarrow \ddot{a}\ddot{i} \text{ } \ddot{a}\ddot{u} / \text{ } \_ \#$   
 $\emptyset \rightarrow h / \text{ } \ddot{a} \_ \#$   
 $s \rightarrow \emptyset / \text{ } V \_ V$  (sporadic)  
 $V_0 V_0 \rightarrow V_0$   
 $\text{ə} \rightarrow \emptyset /$  adjacent to a vowel  
 $V[+\text{stress}] \rightarrow V\text{:} / \text{ } \_ C \#$  !  $V = \text{ə}$  and/or  $C = h$  “(applies to diphthongal nuclei as well a[s] monophthongs)”  
 $r \rightarrow \{l, r\} /$  !  $\_ \#$  (the latter is more common)  
 $l \rightarrow \emptyset /$  !  $\_ \#$  (irregular)  
 $u \rightarrow \text{əw} / \text{ } \_ V$  “(also cases of  $(C)u \rightarrow w / \text{ } \_ \_ V$ )”  
 $i \rightarrow \text{əj} / \text{ } \_ V$  “(also cases of  $(C)i \rightarrow j / \text{ } \_ \_ V$ )”  
 $w \text{ } j \rightarrow v \text{ } \text{ʃ}$   
 $i\ddot{u} \rightarrow u\ddot{i}$   
 $s \rightarrow \emptyset / \text{ } \_ \#$   
 $i \text{ } u \rightarrow \varepsilon \text{ } \circ / \text{ } \_ C \#$  !  $\_ P$  (sporadic)  
 $r \rightarrow \text{ʔ} / \text{ } \_ \#$  “(in a handful of forms)”  
 $r \rightarrow r$   
 $a \rightarrow i / O[+\text{voiced}] \dots \_ (C) \#$  “(blocked if there was an intervening nasal, and sometimes if there was an intervening voiceless stop or liquid)”  
 $i \text{ } u \rightarrow \ddot{a}\ddot{i} \text{ } \ddot{a}\ddot{u} / \text{ } \_ (\text{ʔ}) \#$   
 $\ddot{a}\ddot{i} \text{ } \ddot{a}\ddot{u} \rightarrow \ddot{a}\ddot{i} \text{ } \ddot{a}\ddot{u} /$  !  $O[+\text{voiced}]$  earlier in the word  
 $b^{\text{h}} \{d^{\text{h}}, dz^{\text{h}}\} g^{\text{h}} \rightarrow f \text{ } s \text{ } k$   
 $f \rightarrow s$   
 $v \text{ } \text{ʃ} \text{ } g \rightarrow f \text{ } c \text{ } k / \text{ } V \_ V$   
 $v \text{ } \text{ʃ} \rightarrow f \text{ } c / \text{ } \# \_$   
 $\{i, \varepsilon\} \{u, \circ\} \rightarrow i\text{ } \text{ } \text{ } u\text{ } \text{ } / \text{ } \_ \{k, \eta\} \#$  “(and also sporadically before final  $*t$  and  $*n$  and some other consonants)”  
 $k \text{ } \eta \rightarrow \text{ʔ} \emptyset / \text{ } V \text{ } \_ \#$   
 $\text{ə} \rightarrow \{\text{ə}, a\} / \text{ } \_ C \#$  “(free variants)”  
 $NS[-\text{voice}] \rightarrow S\text{:}$   
“Numerous different possible reflexes of  $NS[+\text{voice}]$  clusters”  
 $(C)V \rightarrow \emptyset / \text{ } \# \_ C \dots$  “(irregular)”  
 $n \rightarrow l / \text{ } \# \_$   
 $\text{ə} \rightarrow \emptyset / \text{ } \# \_$   
 $\{l, r\} \rightarrow n / \text{ } \_ \#$   
 $dz \rightarrow d / \text{ } \# \_$  (though sometimes  $\rightarrow \{s, \text{ʃ}\}$ )  
 $\{s, c\} \rightarrow t / \text{ } \_ V \{s, c\} V$   
 $b \text{ } d \rightarrow p \text{ } t / \text{ } \_ \#$

**11.2.6.2 Proto-North Sarawak to Proto-Kenyah** *Whimemsz*, from Blust, Robert (2007), “Òma Lóngh Historical Phonology”. *Oceanic Linguistics* 46(1):1 – 53

$d \rightarrow l / \#_-$  (sporadic)

$r \rightarrow h / V\_V(C)\#$

$r \rightarrow h / \_ \#$

$\text{ɹ} \rightarrow \emptyset$

$s \rightarrow h / \_ \#$

$i\ u \rightarrow e\ o / \_ h\ \#$

$h \rightarrow \emptyset / \_ \#$

$S \rightarrow S[-\text{voice}] / \_ \#$

$l \rightarrow n / \_ \#$

$s \rightarrow t / \_ VsVC$

$CV \rightarrow \emptyset / \_ NCVC$  “(in reduplications)”

Word-initial nasals assimilate to the POA of a following consonant

**11.2.6.2.1 Proto-Kenyah to Òma Lóngh** *Whimemsz*, from Blust, Robert (2007), “Òma Lóngh Historical Phonology”. *Oceanic Linguistics* 46(1):1 – 53

$b^{\text{fi}}\ d^{\text{fi}}\ dz^{\text{fi}}\ g^{\text{fi}} \rightarrow p\ t\ c\ k$

$i \rightarrow e / \_ k\ \#$

$i \rightarrow i\text{ə} / \_ \eta\ \#$

$p \rightarrow k / \_ u\ \#$

$u \rightarrow o / \_ k\ \#$

$u \rightarrow o / \_ \eta\ \#$  “(sporadically failed to occur)”

$u \rightarrow \text{ʉ} / \_ (C)\ \# \ !\ ?\ \#$

$a \rightarrow o / \_ \#$  “(not in all forms)”

$\text{ʔ} \rightarrow \emptyset / \_ \#$  “(but  $a\text{ʔ} \rightarrow \text{əʔ}$  in some forms)”

$k \rightarrow \text{ʔ} / \_ \#$

$a \rightarrow \varepsilon / \{t, n\}\_ \#$

$\{p, t\}\ n \rightarrow c^{\text{ʔ}}\ \text{ɲ} / \{i, \varepsilon\}\_ \#$

$m \rightarrow \text{ɲ} / \_ i\ \#$

$a\text{ᵢ}\ a\text{ᵤ} \rightarrow \varepsilon\ \text{ɔ}$

$\{u\text{ᵢ}, i\text{ᵤ}\} \rightarrow e$

$i\ u \rightarrow e\ o / \_ CV[+\text{close-mid}](C)\ \#$  “(iə is treated as close mid for this change)”

$i\ u \rightarrow \varepsilon\ \text{ɔ} / \_ CV[+\text{open-mid}](C)\ \#$

$i\ u \rightarrow e\ o / \_ C\text{ʉ}\ \#$

$\eta \rightarrow \text{ᵑ} / \_ \#$

$\{p, t\}\ \{m, n\} \rightarrow k\ \eta / \_ \text{ʉ}\ \#$

$i\ u \rightarrow \text{əj}\ \text{əw} / \_ V(C)\ \#$

$j\ w \rightarrow z\ v$

$p \rightarrow f / \#\_$   
 $\text{ə} \rightarrow \emptyset / \#\_$   
 $p \ k \rightarrow f \ y / V\_V ! \text{”ə\_V}$   
 $d \rightarrow r / V\_V \text{ “(irregular)”}$   
 $dz \rightarrow j / V\_V$   
 $b \ d \ dz \ g \rightarrow p \ t \ c \ k / N\_$   
 $N \rightarrow \emptyset / \_S \text{ “(sporadic)”}$   
 $h \rightarrow \emptyset / V\_V$

### 11.2.6.3 Proto-Malayic to Minangkabau *TinyMusic*, from Tryon, Darrell (1995), *Comparative Austronesian Dictionary*

$n \rightarrow \eta / \text{“in the environment of } i \text{”}$   
 $h \rightarrow \emptyset / ! \_ \# \text{ (some exceptions)}$   
 $a \rightarrow o / \_ (C \dots) \#$   
 $u \ i \rightarrow o \ e \text{ (sporadic)}$   
 Chronologically-ordered changes:  
 —  $\text{ə} \rightarrow a / \_ (C \dots) \# \text{ (eventually spread to everywhere)}$   
 —  $m \ p \rightarrow n \ t / \{u, i\} \_$   
 —  $a \ u \rightarrow e \ uj / \_ \{t, s\} \#$   
 —  $a \rightarrow o / \_ p \#$   
 —  $u \ i \rightarrow u\text{ə} \ i\text{ə} / \_ \{k, \eta, h, l, r\} \#$   
 —  $\{p, t, k\} \ s \rightarrow ? \ h / \_ \#$   
 —  $\{l, r\} \rightarrow \emptyset / \_ \# \text{ (retained across morpheme boundaries)}$

## 11.3 Proto-Austronesian to Proto-Oceanic

*Pogostick Man*, from Wikipedia contributors (2011), “Proto-Austronesian language”. *Wikipedia, the Free Encyclopedia*. [http://en.wikipedia.org/w/index.php?title=Proto-Austronesian\\_language&oldid=453318098](http://en.wikipedia.org/w/index.php?title=Proto-Austronesian_language&oldid=453318098)

$mb \rightarrow p$   
 $\{nts, ns, nz, ng^j\} \{ts, z, g^j\} \rightarrow g^j \ s$   
 $\{\eta k, \eta g\} \ g \rightarrow g \ k$   
 $d \rightarrow r$   
 $e \{uj, iw\} \rightarrow o \ i$   
 $aw \rightarrow o / \_ \#$

### 11.3.1 Proto-Oceanic to Hawai'ian

Chris Zoller, from Trask, R.L. (1996), *Historical Linguistics*

NB: Zoller states that these changes are “[s]implified”

$\{h, \varnothing\} \rightarrow \emptyset$   
 $\{s, f\} \rightarrow h$   
 $k \ t \rightarrow \varnothing \ k$   
 $\eta \ r \ v \rightarrow n \ l \ w$

### 11.3.2 Proto-Oceanic to Hiw

Theta, from François, Alexander, “Unraveling the history of the vowels of seventeen north Vanuatu languages”; and François, Alexander, “Phonotactics and the prestopped velar lateral of Hiw”

$p^{(w)} \{c, \text{ɟ}\} \ k \ q \rightarrow \beta^{(w)} \ s \ \gamma \ \emptyset$   
 $\beta \ b \ m \rightarrow \beta^w \ b^w \ m^w$  / sporadic, typically near \*u  
 $dr \ R \rightarrow d \ r$   
 $C \rightarrow \emptyset$  /  $-\#$   
 $\eta \rightarrow n$   
 $b \ d \ g \rightarrow p \ t \ k$   
 $\beta^w \ b^w \ m^w \rightarrow w \ k^w \ \eta^w$   
 $l \rightarrow j$   
 $s \ (\rightarrow h) \rightarrow \emptyset$  (sporadic)  
 $r \rightarrow g_L$   
 $\gamma \ g_L$  do a lot of changing with and into each other  
“[O]ccasional metathesis”  $V \rightarrow \emptyset$  /  $-(C)''V$  if the second vowel is lower or if both are high  
 $V \rightarrow \text{ə}$  /  $-(C)''V$  if the first vowel is of equal or lesser height  
 $a \rightarrow e$  /  $-(C)\{o, e, i\}$  (occasionally)  $\text{ə} \rightarrow V$  /  $-(C)V$  (sporadic)  
 $u(C)V[+ \text{high}] \ u(C)o \ u(C)e \ u(C)a \rightarrow \{u, i\}(C) \ e(C)\text{ə} \ u(C)\text{ə} \ \{u, \text{ə}\}(C)\text{ə}$   
 $o(C)V[+ \text{high}] \ o(C)V[+ \text{mid}] \ o(C)a \rightarrow \text{ə}(C) \ o(C) \ \text{ɔ}(C)\text{ə}$   
 $a(C)V[+ \text{high}] \ a(C)V[+ \text{mid}] \ a(C)a \rightarrow \text{ɔ}(C) \ a(C) \ \{a, \text{ɔ}\}(C)\text{ə}$   
 $e(C)V[- \text{low}] \ e(C)a \rightarrow e(C) \ e(C)\text{ə}$   
 $i(C)V[+ \text{high}] \ i(C)V[+ \text{mid}] \ i(C)a \rightarrow i(C) \ i(C)\text{ə} \ \{e, i\}(C)\text{ə}$   
 $u \rightarrow \text{u} / ! \ (C)w_-$   
 $E \rightarrow \text{ɪ}$  (sporadic)  
 $V_0 V_0 \rightarrow V_0$   
u before the accent tended to transfer its labialness to the preceding consonant when it dropped

### 11.3.3 Proto-Oceanic to Proto-Reefs/Santa Cruz

*Pogostick Man*, from Ross, Malcolm, and Åshlid Næss (2007), “An Oceanic Origin for Äiwoo, the Language of the Reef Islands?”. *Oceanic Linguistics* 46(II):456 – 498

$p \rightarrow \emptyset / \_B$   
 $p \rightarrow v$   
 $r \rightarrow \emptyset / d\_$   
 $r \rightarrow l$   
 $C \rightarrow \emptyset / \_ \#$

**11.3.3.1 Proto-Reefs/Santa Cruz to Äiwoo** *Pogostick Man*, from Ross, Malcolm, and Åshlid Næss (2007), “An Oceanic Origin for Äiwoo, the Language of the Reef Islands?”. *Oceanic Linguistics* 46(II):456 – 498

$\{t,k\} \rightarrow \emptyset / V\_V$   
 $k \rightarrow \{k,\emptyset\} / \#\_$   
 $q \rightarrow \{k,\emptyset\}$   
 $R \rightarrow l$

**11.3.3.2 Proto-Reefs/Santa Cruz to Nagu** *Pogostick Man*, from Ross, Malcolm, and Åshlid Næss (2007), “An Oceanic Origin for Äiwoo, the Language of the Reef Islands?”. *Oceanic Linguistics* 46(II):456 – 498

$m^w \rightarrow m$   
 $t \rightarrow l / V\_V$   
 $k \rightarrow \{k,\emptyset\} / \#\_$   
 $\eta \rightarrow n / \_i$   
 $q \text{ *}R \rightarrow \emptyset \{l,\emptyset\}$

**11.3.3.3 Proto-Reefs/Santa Cruz to Natügu** *Pogostick Man*, from Ross, Malcolm, and Åshlid Næss (2007), “An Oceanic Origin for Äiwoo, the Language of the Reef Islands?”. *Oceanic Linguistics* 46(II):456 – 498

$m^w \rightarrow m$   
 $t \rightarrow \{t,l\} / \#\_$   
 $t \rightarrow l / \_ \{u,i\}$   
 $t \ k \rightarrow l \ \emptyset / V\_V$   
 $r \rightarrow l / \_ \{u,\#\}$   
 $\eta \rightarrow n / \_i$   
 $q \text{ *}R \rightarrow \emptyset \{l,\emptyset\}$

### 11.3.4 Proto-Oceanic to Proto-Utupua

*Pogostick Man*, from Ross, Malcolm, and Åshlid Næss (2007), “An Oceanic Origin for Äiwoo, the Language of the Reef Islands?”. *Oceanic Linguistics* 46(II):456 – 498

p q → v Ø (in general, seems like there was something going on with conditioning in the case of \*p?)

w → Ø (? Tnb [w] may just be phonetically determined)

C → Ø / \_# (except for \*k?)

**11.3.4.1 Proto-Utupua to Asuboa** *Pogostick Man*, from Ross, Malcolm, and Åshlid Næss (2007), “An Oceanic Origin for Äiwoo, the Language of the Reef Islands?”. *Oceanic Linguistics* 46(II):456 – 498

PU \*p had occasional reflexes of p or Ø

p → w / \_B

p<sup>w</sup> m<sup>w</sup> → w m

dr s l → {d,ʃ} {Ø,s} {n,Ø}

c ɲ → Ø {ɲ,j}

t r l → {j,s} {j,Ø} j / \_u

t → s / \_i

k → {k,Ø} / \_#

k → {Ø,s} / \_#

r → {l,n,Ø}

R → {l,Ø}

**11.3.4.2 Proto-Utupua to Nebao** *Pogostick Man*, from Ross, Malcolm, and Åshlid Næss (2007), “An Oceanic Origin for Äiwoo, the Language of the Reef Islands?”. *Oceanic Linguistics* 46(II):456 – 498

PU \*p had occasional h or Ø reflexes

p<sup>w</sup> → v<sup>w</sup>

t k → r Ø / \_# (though \*t seems to have occasionally survived?)

t → {r,t} / \_B

t → {r,t} / V\_V

r → {l,Ø} / \_u

r \*R → l Ø

l → Ø (occasionally?)

c ɲ → Ø n

ɲ → n / \_i

**11.3.4.3 Proto-Utupua to Tanibili** *Pogostick Man*, from Ross, Malcolm, and Åshlid Næss (2007), “An Oceanic Origin for Äiwoo, the Language of the Reef Islands?”. *Oceanic Linguistics* 46(II):456 – 498

PU \*p seems to have remained; PU \*w is listed as having both Ø and w as reflexes although the latter may just be an epenthetic glide between vowels of unlike rounding

{s,\*R} → Ø

p t {r,l} → Ø s j / \_u

p<sup>w</sup> bw → p b

t → {t,r,k<sup>w</sup>} / #- (I’m not kidding. That’s what’s listed as the reflexes.)

k → {k,Ø} / #-

t k → {t,r,k<sup>w</sup>,Ø} Ø / V\_V

k → {Ø,j} / -#

dr → j / \_i

d c n → j {s,Ø} n

{r,l} → l (occasionally → Ø?)

### 11.3.5 Proto-Oceanic to Proto-Vanikoro

*Pogostick Man*, from Ross, Malcolm, and Åshlid Næss (2007), “An Oceanic Origin for Äiwoo, the Language of the Reef Islands?”. *Oceanic Linguistics* 46(II):456 – 498

p → Ø / \_u

p q → {v,p} Ø

r → Ø / d\_

k → Ø / V\_V

{s,\*R} → r / -#

**11.3.5.1 Proto-Vanikoro to Buma** *Pogostick Man*, from Ross, Malcolm, and Åshlid Næss (2007), “An Oceanic Origin for Äiwoo, the Language of the Reef Islands?”. *Oceanic Linguistics* 46(II):456 – 498

p t → Ø {s,k} / \_u

p → Ø / -#

k → Ø / #-

r → l / ! \_#

p<sup>w</sup> bw m<sup>w</sup> → p b m

c \*R → Ø {l,Ø}

ŋ → {ŋ,g} (ŋ remains when \_i)



**11.3.5.2 Proto-Vanikoro to Tanema** *Pogostick Man*, from Ross, Malcolm, and Åshlid Næss (2007), “An Oceanic Origin for Äiwoo, the Language of the Reef Islands?”. *Oceanic Linguistics* 46(II):456 – 498

$p \rightarrow v / \_ \#$   
 $p^w \ w \rightarrow b \ \emptyset$   
 $t \rightarrow \{\emptyset, t\} / \# \_$   
 $t \rightarrow s / \_ u$   
 $r \rightarrow l / ! \_ \#$   
 $c \ *R \rightarrow \emptyset \{l, \emptyset\}$   
 $s \rightarrow \{s, d, c\}$

**11.3.5.3 Proto-Vanikoro to Vano** *Pogostick Man*, from Ross, Malcolm, and Åshlid Næss (2007), “An Oceanic Origin for Äiwoo, the Language of the Reef Islands?”. *Oceanic Linguistics* 46(II):456 – 498

$w \rightarrow \{\emptyset, w\}$   
 $p^w \ m^w \rightarrow p \ m$   
 $t \rightarrow l / \# \_$ , in nouns  
 $t \rightarrow s / \_ \{u, i\}$   
 $t \rightarrow l / \_ V \_ V$   
 $r \rightarrow l / ! \_ \{u, \#\}$   
 $s \rightarrow r / \_ \#$   
 $c \ *R \rightarrow \{j, \emptyset\} \ l$

## 11.4 Micronesian

### 11.4.1 Proto-Micronesian to Marshallese

*Ketsuban*, from Hale, Mark, *Historical Linguistics: Theory and Method*

NB: “. . .the precise contrast between *\*s* and *\*S*, and *\*t* and *\*T* is unknown, as is the precise phonetic nature of *\*c* and *\*Z*.” Blust (v.s.) rejected *\*T* and *\*D*; according to his reconstruction. . .*\*s* and *\*S* were /ç s/, respectively. The substitution of /ts/ for *\*T* is inferred from the Wikipedia article but may be incorrect.

$K \rightarrow K^w / \_ \{C[+round], V[+round]\}$   
 $V[+high] \rightarrow \emptyset / \_ C[-high]$   
 $V \rightarrow \emptyset / \_ \#$   
 $V[+mid] \rightarrow \emptyset / \_ C[+high]$  when stressed  
 $V \rightarrow \emptyset / \_ VC \_$

$V \rightarrow \emptyset$  / “in CV reduplications”  
 $a \rightarrow 3$  /  $_{-}wo$   
 $f \rightarrow \emptyset$  /  $\#_{-}\{C[-low], V[-low]\}$   
 $f \rightarrow \text{uɿ}$  /  $\#_{-}aCo$   
 $f \rightarrow j$  / else  
 $\emptyset \rightarrow \text{uɿ}$  /  $\#_{-}aC[-low]$   
 $\emptyset \rightarrow j$  /  $\#_{-}\{aC[+low], V[-back], C[-back]\}$   
 $\emptyset \rightarrow w$  /  $\#_{-}\{C[+round], V[+round]\}$   
 $\{i, u\} \{e, o\} \rightarrow i \ 3$   
 $p \{t, ts\} c \rightarrow p^j \ t^j \ r^j$   
 $\{ç, s\} x \rightarrow t^w \ \emptyset$   
 $m \ n \rightarrow m^j \ n^j$

“The author does not elaborate on the complex development of vowels without an onset consonant, other than to say that a glide is inserted (\*Saa > t<sup>w</sup>auɿ), nor does he go into more detail than to say that l and n generally develop into l<sup>j</sup> and n<sup>j</sup> before Proto-Micronesian front vowels, and l, r, and n turn into l<sup>w</sup>, r<sup>w</sup>, and n<sup>w</sup> before a and l<sup>w</sup>, r<sup>w</sup>, and n<sup>w</sup> before Proto-Micronesian round vowels, but the author does not elaborate.”

## 11.5 Proto-Austronesian to Proto-Ongan

*Pogostick Man*, from Blevins, Juliette (2007), “A Long Lost Sister of Proto-Austronesian? Proto-Ongan, Mother of Jarawa and Onge of the Andaman Islands”. *Oceanic Linguistics* 46(I):154 – 198

*NB: Blevins floats the idea that Proto-Ongan was a sister of rather than a daughter of Proto-Austronesian, but for reasons of simplicity in editing this document it is placed here*

$b \rightarrow \emptyset$  /  $\#_{-}\{u, i\}$   
 $q \rightarrow \emptyset$  /  $\#_{-}V$   
 $q \rightarrow k$   
 $\{q^w, ku, qu\} \rightarrow k^w$  (note that PAn might have had  $*q^w \ *k^w \rightarrow q \ \{k, w\}$  instead; may be a change from POn-PAn, if it existed)  
 $\{c, *C, s, *S\} \rightarrow c$  (again, possibly a change from POn-PAn, if it existed)  
 $S \rightarrow \emptyset$  /  $_{-}\#$   
 $u \ a \ \text{ə} \rightarrow \{u, o\} \ \{a, e\} \ e$   
 $j \ g \ *N \ *R \rightarrow \{j, j\} \ \{j, g\} \ \{l, j\} \ \{l, r\}$   
 $z \rightarrow c$  (again, possibly evidence of a change from POn-PAn, if it existed)  
 $h \rightarrow \{h, j, \emptyset\}$  (Blevins has marked what apparently is  $*j$  but I’m assuming it’s an error)  
 $e \rightarrow \text{ə}$  /  $_{-}N$  when unstressed !  $\acute{K}_{-}$  (?; included here based on a comment earlier in the paper, but not listed on the correspondence list)

$\{m,n\} \rightarrow \{n,\emptyset\} \quad \{ŋ,\emptyset\} / \_ \#$  (first change marked “in progress?”)  
 $a_j \rightarrow e$

### 11.5.1 Proto-Ongan to Jarawa

*Pogostick Man*, from Blevins, Juliette (2007), “A Long Lost Sister of Proto-Austronesian? Proto-Ongan, Mother of Jarawa and Onge of the Andaman Islands”. *Oceanic Linguistics* 46(I):154 – 198

$e \rightarrow \text{ə} / \_ N$ , when unstressed (?)  
 $n \rightarrow ŋ / \_ \#$  (?)  
 $k^{(w)} \rightarrow h^{(w)}$   
 $\emptyset \rightarrow a / h \# \_$  (that’s not a typo; this happens across the word boundary)  
 $g \rightarrow j$   
 $e \rightarrow \{e,\text{ə},o\} / \_ V$   
 $e \rightarrow \emptyset / \_ \#$  (?)  
 $p \rightarrow b / \# \_$  (change seems to be ongoing)  
 $/a \text{ e} /$  reduce when unstressed (change seems to be ongoing?)

### 11.5.2 Proto-Ongan to Onge

*Pogostick Man*, from Blevins, Juliette (2007), “A Long Lost Sister of Proto-Austronesian? Proto-Ongan, Mother of Jarawa and Onge of the Andaman Islands”. *Oceanic Linguistics* 46(I):154 – 198

$e \rightarrow \text{ə} / \_ N$ , when unstressed (?)  
 $n \rightarrow ŋ / \_ \#$  (?)  
 $d \rightarrow r / V \_ \{V, \#\}$   
 $\{w,r\} \rightarrow \emptyset / \{a,e\} \_ \#$   
 $\emptyset \rightarrow e / C \_ \#$   
 $p \rightarrow b$   
 $aw \rightarrow o$   
 $e \rightarrow \{e,\text{ə},o\} / \_ V$   
 $N \rightarrow n / \_ \{d,l\}$   
 $gd \text{ gl} \rightarrow d: \text{ l:}$

## 11.6 Proto-Austronesian to Proto-Paiwan

*Pogostick Man*, from Chen, Chun-Mei (2006), *A Comparative Study on Formosan Phonology: Paiwan and Budai Rukai* 313 – 320

$t_1 d_1 d_3 Z \rightarrow t d d_1 j$   
 $l L \rightarrow l \Lambda$   
 $b d_2 \rightarrow \{v, b\} z$   
 $S_1 s c \rightarrow s t ts$   
 $V: \rightarrow V[-\text{long}]$

### 11.6.1 Proto-Paiwan to Northern Paiwan

*Pogostick Man*, from Chen, Chun-Mei (2006), *A Comparative Study on Formosan Phonology: Paiwan and Budai Rukai* 313–320

$c j q l \rightarrow t d ? l$   
 Something about final stress and preceding /ə/

### 11.6.2 Proto-Paiwan to Central Paiwan

*Pogostick Man*, from Chen, Chun-Mei (2006), *A Comparative Study on Formosan Phonology: Paiwan and Budai Rukai* 313–320

$w \rightarrow v / -\#$   
 Something about final stress and preceding /ə/

### 11.6.3 Proto-Paiwan to Southern Paiwan

*Pogostick Man*, from Chen, Chun-Mei (2006), *A Comparative Study on Formosan Phonology: Paiwan and Budai Rukai* 313–320

$k r \rightarrow ? \gamma$   
 Something about final stress and preceding /ə/

## 11.7 Philippines

### 11.7.1 Proto-Philippines to Proto-Kalamian

*Pogostick Man*, from Himes, Ronald (2006), “The Kalamian Microgroup of Philippine Languages”. Paper presented at Tenth International Conference on Austronesian Linguistics. 17 – 20 January 2006. Puerto Princesa City, Palawan, Philippines. <http://www.sil.org/asia/philippines/ical/papers.html>

$\{h, \varnothing\} \rightarrow \emptyset$   
 $\{z, j\} \rightarrow d$   
 $R \text{ } p \rightarrow l \text{ } n$   
 $e \rightarrow u / \_Cu$   
 $e \rightarrow u / uC\_$   
 $e \rightarrow a / \_C[- \text{voice}] \#$   
 $e \rightarrow i / \_Ci$   
 $d \rightarrow r / V\_V$   
 Loss of contrastive stress

**11.7.1.1 Proto-Kalamian to Agutaynen** *Pogostick Man*, from Himes, Ronald (2006), “The Kalamian Microgroup of Philippine Languages”. Paper presented at Tenth International Conference on Austronesian Linguistics. 17 – 20 January 2006. Puerto Princesa City, Palawan, Philippines. <http://www.sil.org/asia/philippines/ical/papers.html>

$O[- \text{voice}] \rightarrow ? / \_C$   
 $k \rightarrow \emptyset / \_ \{V, \#\}$   
 $q \rightarrow k$   
 $ai \text{ } ai \rightarrow \text{ } \text{ } ii$  (not sure if a long vowel here or two vowels in hiatus)  
 $t \rightarrow s / \_i$   
 $s \rightarrow t / \_V ! \_E$   
 $s \rightarrow t / \_ \#$   
 $\emptyset \rightarrow ? / \#\_$   
 $\emptyset \rightarrow ? / V\_ \#$

**11.7.1.2 Proto-Kalamian to Karamianan** *Pogostick Man*, from Himes, Ronald (2006), “The Kalamian Microgroup of Philippine Languages”. Paper presented at Tenth International Conference on Austronesian Linguistics. 17 – 20 January 2006. Puerto Princesa City, Palawan, Philippines. <http://www.sil.org/asia/philippines/ical/papers.html>

$\{t, k\} \text{ } q \rightarrow ? \text{ } k / \_C$   
 $s \rightarrow ? / \_C$   
 $k \rightarrow \emptyset / \_C$   
 $q \rightarrow k$   
 $ai \text{ } ai \rightarrow \text{ } \text{ } ii$  (not sure if a long vowel here or two vowels in hiatus)  
 $t \rightarrow s / \_i$   
 $s \rightarrow t / \_V ! \_E$   
 $s \rightarrow t / \_ \#$   
 $s \rightarrow c \&$  (I’m not sure what that represents; the paper doesn’t explain what it is)  
 $b \rightarrow \beta / V\_V$

$\beta \rightarrow w / V[+ \text{high}]_a$   
 $g \rightarrow h / V\_V$   
 $\emptyset \rightarrow ? / \#\_$   
 $\emptyset \rightarrow ? / V\_ \#$

**11.7.1.3 Proto-Kalamian to Kalamian Tagbanwa** *Pogostick Man*, from Himes, Ronald (2006), “The Kalamian Microgroup of Philippine Languages”. Paper presented at Tenth International Conference on Austronesian Linguistics. 17 – 20 January 2006. Puerto Princesa City, Palawan, Philippines. <http://www.sil.org/asia/philippines/ical/papers.html>

$\{t, k, q, s\} \rightarrow k / \_C$   
 $k \rightarrow \emptyset / \_ \{V, \#\}$   
 $q \rightarrow k$   
 $ai \ ai \rightarrow \pi \ ii$  (not sure if a long vowel here or two vowels in hiatus)  
 $b \ g \rightarrow \beta \ V / V\_V$   
 $\emptyset \rightarrow ? / \#\_$   
 $\emptyset \rightarrow ? / V\_ \#$

## 11.8 Proto-Austronesian to Proto-Rukai

*Pogostick Man*, from Chen, Chun-Mei (2006), *A Comparative Study on Formosan Phonology: Paiwan and Budai Rukai* 313–320

$\{t_1, c\} \ \{d_1, z\} \ d_3 \rightarrow t \ d \ d$   
 $R \ l \ L \rightarrow \{r, ?\} \ l \ l$   
 $S_1 \ s \ d_2 \ C \rightarrow s \ \theta \ \delta \ ts$  (not sure what \*C stands for here)  
 Something about echo-vowel epenthesis and stress that isn’t really clear from skimming it

### 11.8.1 Proto-Rukai to Budai Rukai

*Pogostick Man*, from Chen, Chun-Mei (2006), *A Comparative Study on Formosan Phonology: Paiwan and Budai Rukai* 313–320

$\{v, ?\} \ \delta \rightarrow \emptyset \ j$   
 Long vowels acquire a high-low contour, but it looks like this is more prosodic than anything

## 12 Northeast Caucasian

Proto-Northeast Caucasian is reconstructed as having had the following consonant inventory. Phonemes in parentheses or braces are so marked on User:Petusek’s page. Due to the inventory, the usual table format is modified.

	Nasal	Plosive	Fricative	Affricate	Cluster	Resonant
Bilabial	m	(p) b				
Alveolar	n	t t’ (d)	s (sː)	ts tsː ts’ tsː’ dz	st stː	r
Lateral			ɬ ɬː	tɬ tɬː tɬ’ tɬː’ (dɬ)		l
Postalveolar			ʃ ʃː	tʃ tʃː tʃ’ tʃː’ dʒ		
Velar			(x) (xː)	k (kː) k’ (kː’) g		
Uvular				q qː (q’) qː’ (ɢ)		
Pharyngeal					{ʕ}	
Glottal		{ʔ}				

My guess is that what I’ve transcribed here as length (it’s represented by doubled consonants in the source) is probably supposed to represent some sort of fortis-lenis distinction, given that in other places I think I’ve seen these doubled consonants in initial position, although I might be wrong, as I’m not very familiar with the morphology of the languages in question. Consonants such as \*tsː are written ⟨tts⟩ in the source; unless it’s the actual fricative that is geminate, the stop is the doubled consonant.

The citation format for Nichols (2003) is modified from that found in Wikipedia contributors (2014), “Northeast Caucasian languages”. *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=Northeast\\_Caucasian\\_languages&oldid=610673712](https://en.wikipedia.org/w/index.php?title=Northeast_Caucasian_languages&oldid=610673712), and is assumed to be the same article. The publication date for User:Petusek’s page is taken from the revision history at [https://en.wikipedia.org/w/index.php?title=User:Petusek/Drafts/Northeast\\_Caucasian&oldid=351133322](https://en.wikipedia.org/w/index.php?title=User:Petusek/Drafts/Northeast_Caucasian&oldid=351133322).

(From User:Petusek (2010), “User:Petusek/Drafts/Northeast Caucasian”. *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=User:Petusek/Drafts/Northeast\\_Caucasian&oldid=351133322](https://en.wikipedia.org/w/index.php?title=User:Petusek/Drafts/Northeast_Caucasian&oldid=351133322), apparently citing Nichols, Johanna (2003), “The Nakh-Daghestanian Consonant Correspondences”, in Tuite, Kevin, and Dee Ann Holisky, *Current Trends in Caucasian, East European, and Inner Asian Linguistics: Papers in Honor of Howard I. Aronson* 207 – 251)

### 12.1 Proto-Northeast Caucasian to Proto-Avar-Andic

*Pogostick Man*, from User:Petusek (2010), “User:Petusek/Drafts/Northeast Caucasian”. *Wikipedia, the Free Encyclopedia*. <https://en.wikipedia.org/w/index.php?title=User:>

Petusek/Drafts/Northeast\_Caucasian&oldid=351133322, apparently citing Nichols, Johanna (2003), “The Nakh-Daghestanian Consonant Correspondences”, in Tuite, Kevin, and Dee Ann Holisky, *Current Trends in Caucasian, East European, and Inner Asian Linguistics: Papers in Honor of Howard I. Aronson* 207 – 251

$l \rightarrow \{l, r\}$

b is “[p]rone to change to \*m”

### 12.1.1 Proto-Avar-Andic to Akhvakh

*Pogostick Man*, from User:Petusek (2010), “User:Petusek/Drafts/Northeast Caucasian”. *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=User:Petusek/Drafts/Northeast\\_Caucasian&oldid=351133322](https://en.wikipedia.org/w/index.php?title=User:Petusek/Drafts/Northeast_Caucasian&oldid=351133322), apparently citing Nichols, Johanna (2003), “The Nakh-Daghestanian Consonant Correspondences”, in Tuite, Kevin, and Dee Ann Holisky, *Current Trends in Caucasian, East European, and Inner Asian Linguistics: Papers in Honor of Howard I. Aronson* 207 – 251

$p \rightarrow h$

$dz \ d\mathfrak{z} \rightarrow \{ts:',z\} \ \{ts:',d\mathfrak{z}\}$

$\{ts,st\} \rightarrow t\mathfrak{f}$

$t\mathfrak{t}:\ d\mathfrak{k} \rightarrow t\mathfrak{t}(:) \ t\mathfrak{t}:$

$k: \ g \rightarrow x^j \ \{q:',\mathfrak{y}\}$

$\{l,r\} \rightarrow \emptyset$  (sometimes, only from original \*l)

### 12.1.2 Proto-Avar-Andic to Andi

*Pogostick Man*, from User:Petusek (2010), “User:Petusek/Drafts/Northeast Caucasian”. *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=User:Petusek/Drafts/Northeast\\_Caucasian&oldid=351133322](https://en.wikipedia.org/w/index.php?title=User:Petusek/Drafts/Northeast_Caucasian&oldid=351133322), apparently citing Nichols, Johanna (2003), “The Nakh-Daghestanian Consonant Correspondences”, in Tuite, Kevin, and Dee Ann Holisky, *Current Trends in Caucasian, East European, and Inner Asian Linguistics: Papers in Honor of Howard I. Aronson* 207 – 251

$\{ts,st\} \ dz \rightarrow s \ \{ts:',z\}$

$st: \rightarrow s:$

$d\mathfrak{z} \rightarrow \{t\mathfrak{f}:',d\mathfrak{z}\}$

$t\mathfrak{t} \ t\mathfrak{t}(:) \ t\mathfrak{t}(:)(') \ d\mathfrak{z} \rightarrow \mathfrak{t} \ t\mathfrak{t}(:) \ t\mathfrak{t}(:)(') \ t\mathfrak{t}:$

$q \ g \rightarrow x \ \{q:',\mathfrak{y}\}$



### 12.1.3 Proto-Avar-Andic to Avar

*Pogostick Man*, from User:Petusek (2010), “User:Petusek/Drafts/Northeast Caucasian”.  
*Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=User:Petusek/Drafts/Northeast\\_Caucasian&oldid=351133322](https://en.wikipedia.org/w/index.php?title=User:Petusek/Drafts/Northeast_Caucasian&oldid=351133322), apparently citing Nichols, Johanna (2003), “The Nakh-Daghestanian Consonant Correspondences”, in Tuite, Kevin, and Dee Ann Holisky, *Current Trends in Caucasian, East European, and Inner Asian Linguistics: Papers in Honor of Howard I. Aronson* 207 – 251

ts ts: ts' ts: dz → sh ts tʃ ts(:)' ts'  
 st(:) → ts  
 tʃ tʃ: tʃ: dʒ → ts(?) tʃ tʃ(:)' ts'  
 tʃ tʃ: tʃ: tʃ: → t t' tʃ tʃ(:)'  
 q q: ɣ → x {q(:)',gh} (not sure if that last ⟨gh⟩ should be y)  
 s s: ʃ: x x: → {s,ʃ} x ʃ {x,h} x  
 m → {m,n}

### 12.2 Proto-Northeast Caucasian to Dargi

*Pogostick Man*, from User:Petusek (2010), “User:Petusek/Drafts/Northeast Caucasian”.  
*Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=User:Petusek/Drafts/Northeast\\_Caucasian&oldid=351133322](https://en.wikipedia.org/w/index.php?title=User:Petusek/Drafts/Northeast_Caucasian&oldid=351133322), apparently citing Nichols, Johanna (2003), “The Nakh-Daghestanian Consonant Correspondences”, in Tuite, Kevin, and Dee Ann Holisky, *Current Trends in Caucasian, East European, and Inner Asian Linguistics: Papers in Honor of Howard I. Aronson* 207 – 251

\*b is “[p]rone to change to \*m”  
 {ts:,st} ts: dz st: → ts z ts: s  
 tʃ tʃ: dʒ → {ts',tʃ} ʒ ts  
 tʃ tʃ: tʃ: tʃ: → k {xʃ:,k:} kʰ {g,q}(?)  
 q: → ɣ  
 ʃ ʃ: ʃ: ʃ: → {s,ʃ} ʃ xʃ {xʃ,ʃ}

### 12.3 Proto-Northeast Caucasian to Khinalug

*Pogostick Man*, from User:Petusek (2010), “User:Petusek/Drafts/Northeast Caucasian”.  
*Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=User:Petusek/Drafts/Northeast\\_Caucasian&oldid=351133322](https://en.wikipedia.org/w/index.php?title=User:Petusek/Drafts/Northeast_Caucasian&oldid=351133322), apparently citing Nichols, Johanna (2003), “The Nakh-Daghestanian Consonant Correspondences”, in Tuite, Kevin,

and Dee Ann Holisky, *Current Trends in Caucasian, East European, and Inner Asian Linguistics: Papers in Honor of Howard I. Aronson* 207 – 251

$b\ d \rightarrow \{b,v\}\ z$

The development of \*ts' is unclear; in the user page there's a slash but it might be a typo for an apostrophe

$\{ts:,st\}\ \{ts':dz\} \rightarrow ts\ ts'$

$\{tʃ(:),dʒ\} \rightarrow tʃ'$

$tʃ\ tʃ: \ tʃ' \ tʃ: \ dʒ \rightarrow k\ \{k,x^j\}\ \{k',g\}\ \{k',k:\}\ k'$

$k: \ k' \ g \rightarrow k\ \{k',g\}\ \{k',k:\}$

$\{q:',g\} \rightarrow q'$

$s: \ ʃ(:) \ x: \rightarrow h\ x^j\ x$

$r \rightarrow n \ / \ _C$

$r \rightarrow \{r,\emptyset\}$

## 12.4 Proto-Northeast Caucasian to Lak

*Pogostick Man*, from User:Petusek (2010), “User:Petusek/Drafts/Northeast Caucasian”. *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=User:Petusek/Drafts/Northeast\\_Caucasian&oldid=351133322](https://en.wikipedia.org/w/index.php?title=User:Petusek/Drafts/Northeast_Caucasian&oldid=351133322), apparently citing Nichols, Johanna (2003), “The Nakh-Daghestanian Consonant Correspondences”, in Tuite, Kevin, and Dee Ann Holisky, *Current Trends in Caucasian, East European, and Inner Asian Linguistics: Papers in Honor of Howard I. Aronson* 207 – 251

$b\ d \rightarrow \{p:,b\}\ \{t:,d\}$  (but \*b is “[p]rone to change to \*m”)

$\{ts:,st:\}\ dz\ st \rightarrow s: \ \{ts:,z\}\ ts$

$tʃ\ tʃ: \ dʒ \rightarrow \{ts,tʃ\}\ \{ts',tʃ'\}\ tʃ(:)'$

$tʃ\ tʃ: \ tʃ' \ tʃ: \ dʒ \rightarrow x^j\ x: \ k' \ \{k:,l\}$

$g \rightarrow k:$

$q' \ q': \ g \rightarrow \{q',j\}\ q' \ \{q:,ʃ\}$

$ʃ\ ʃ \ ʃ: \rightarrow s \ \{x^j,ʃ\}\ x:$

$m\ l \rightarrow \{m,n\}\ \{l,\emptyset\}$

## 12.5 Proto-Northeast Caucasian to Proto-Lezgian

*Pogostick Man*, from User:Petusek (2010), “User:Petusek/Drafts/Northeast Caucasian”. *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=User:Petusek/Drafts/Northeast\\_Caucasian&oldid=351133322](https://en.wikipedia.org/w/index.php?title=User:Petusek/Drafts/Northeast_Caucasian&oldid=351133322), apparently citing Nichols, Johanna (2003), “The Nakh-Daghestanian Consonant Correspondences”, in Tuite, Kevin,

and Dee Ann Holisky, *Current Trends in Caucasian, East European, and Inner Asian Linguistics: Papers in Honor of Howard I. Aronson* 207 – 251

*NB: These changes here probably aren't "proper" sound changes, whatever that's supposed to mean, but there doesn't seem to be any particular sound change or set of sound changes that defines this family, so I've elected to go with something that seems to nearly work and note the exceptions.*

$q \text{ } \bar{q} \rightarrow \{x, q\} \text{ } \bar{y}$

### 12.5.1 Proto-Lezgian to Agul

*Pogostick Man*, from User:Petusek (2010), “User:Petusek/Drafts/Northeast Caucasian”. *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=User:Petusek/Drafts/Northeast\\_Caucasian&oldid=351133322](https://en.wikipedia.org/w/index.php?title=User:Petusek/Drafts/Northeast_Caucasian&oldid=351133322), apparently citing Nichols, Johanna (2003), “The Nakh-Daghestanian Consonant Correspondences”, in Tuite, Kevin, and Dee Ann Holisky, *Current Trends in Caucasian, East European, and Inner Asian Linguistics: Papers in Honor of Howard I. Aronson* 207 – 251

$b \text{ } d \rightarrow \{b, w\} \{d, z\}$   
 $\{ts, st\} \text{ } ts: \text{ } ts': \text{ } st: \text{ } dz \rightarrow \{s, ts\} \{ts, tʃ\} \text{ } t: \text{ } s \text{ } z$   
 $tʃ: \rightarrow tʃ:$   
 $tʃ \text{ } tʃ: \text{ } tʃ' \text{ } tʃ': \text{ } dʒ \rightarrow x^j \text{ } x \text{ } k' \text{ } k: \{, j, x^j\}$   
 $q: \rightarrow q:$   
 $ʃ(:) \text{ } x: \rightarrow x^j \text{ } x$   
 $m \rightarrow \{m, b\}$

### 12.5.2 Proto-Lezgian to Archi

*Pogostick Man*, from User:Petusek (2010), “User:Petusek/Drafts/Northeast Caucasian”. *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=User:Petusek/Drafts/Northeast\\_Caucasian&oldid=351133322](https://en.wikipedia.org/w/index.php?title=User:Petusek/Drafts/Northeast_Caucasian&oldid=351133322), apparently citing Nichols, Johanna (2003), “The Nakh-Daghestanian Consonant Correspondences”, in Tuite, Kevin, and Dee Ann Holisky, *Current Trends in Caucasian, East European, and Inner Asian Linguistics: Papers in Honor of Howard I. Aronson* 207 – 251

$d \rightarrow r \text{ } / \text{ } \_ \#$   
 $d \rightarrow \{d, t:\}$   
 $\{ts, st\} \text{ } ts: \text{ } ts': \text{ } st: \text{ } dz \rightarrow s \{s, ʃ\} \text{ } ts' \text{ } s: \text{ } ts$   
 $tʃ(:) \text{ } dʒ \rightarrow ʃ \text{ } tʃ$   
 $tʃ \text{ } tʃ: \text{ } tʃ' \text{ } tʃ': \text{ } dʒ \rightarrow ʃ \text{ } ʃ(:) \text{ } k' \text{ } tʃ' \text{ } tʃ:$

$k: g \rightarrow x \{k:,g\}$   
 $y \rightarrow q$  (more likely,  $*_G \rightarrow q$  instead of  $\rightarrow y$ )  
 $q \ q: \rightarrow x \ q(:)'$   
 $s: x: \rightarrow \{s:,h\} \ x$

### 12.5.3 Proto-Lezgif to Lezghi

*Pogostick Man*, from User:Petusek (2010), “User:Petusek/Drafts/Northeast Caucasian”.  
*Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=User:Petusek/Drafts/Northeast\\_Caucasian&oldid=351133322](https://en.wikipedia.org/w/index.php?title=User:Petusek/Drafts/Northeast_Caucasian&oldid=351133322), apparently citing Nichols, Johanna (2003), “The Nakh-Daghestanian Consonant Correspondences”, in Tuite, Kevin, and Dee Ann Holisky, *Current Trends in Caucasian, East European, and Inner Asian Linguistics: Papers in Honor of Howard I. Aronson* 207 – 251

$b \ d \rightarrow \{p:,b\} \ \{t:,d\}$   
 $\{ts,st\} \ ts: \ ts: \ dz \rightarrow \{f:,t,f\} \ tf(:) \ \{tf:,d_3\}$   
 $t\sharp \ t\sharp: \ t\sharp' \ t\sharp: \ d\sharp \rightarrow x^j \ \{y^j,g\} \ q' \ k(:) \ \{k:,y^j\}$   
 $k: \ g \rightarrow y \ k:$   
 $y \rightarrow \{q:,y\}$  (again, probably a difference in the development of  $*_G$  than this strict sound change)  
 $q: \rightarrow q(:)$   
 $j: \ \sharp \ \sharp: \ x \ x: \rightarrow y^j \ j \ j \ y \ x$

### 12.5.4 Proto-Lezgif to Rutul

*Pogostick Man*, from User:Petusek (2010), “User:Petusek/Drafts/Northeast Caucasian”.  
*Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=User:Petusek/Drafts/Northeast\\_Caucasian&oldid=351133322](https://en.wikipedia.org/w/index.php?title=User:Petusek/Drafts/Northeast_Caucasian&oldid=351133322), apparently citing Nichols, Johanna (2003), “The Nakh-Daghestanian Consonant Correspondences”, in Tuite, Kevin, and Dee Ann Holisky, *Current Trends in Caucasian, East European, and Inner Asian Linguistics: Papers in Honor of Howard I. Aronson* 207 – 251

$b \ d \rightarrow \{b,w\} \ \{d,z\}$   
 $\{ts,st\} \ ts: \ dz \rightarrow \{s,ts\} \ \{d,t\} \ z$   
 $t\sharp \ t\sharp: \ t\sharp: \rightarrow \{f:,t,f\} \ f \ t\sharp$   
 $t\sharp: \ t\sharp' \ t\sharp: \ d\sharp \rightarrow x^j \ q' \ q(:) \ \{w,x^j,j\}$   
 $k: \rightarrow x$   
 $q: \rightarrow q(:)$   
 $s: \ \sharp(:) \ x: \rightarrow \{h,x^j\} \ \{s:,h\} \ x$   
 $m \rightarrow \{m,b\}$

### 12.5.5 Proto-Lezgitic to Tabassaran

*Pogostick Man*, from User:Petusek (2010), “User:Petusek/Drafts/Northeast Caucasian”. *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=User:Petusek/Drafts/Northeast\\_Caucasian&oldid=351133322](https://en.wikipedia.org/w/index.php?title=User:Petusek/Drafts/Northeast_Caucasian&oldid=351133322), apparently citing Nichols, Johanna (2003), “The Nakh-Daghestanian Consonant Correspondences”, in Tuite, Kevin, and Dee Ann Holisky, *Current Trends in Caucasian, East European, and Inner Asian Linguistics: Papers in Honor of Howard I. Aronson* 207 – 251

$b\ d \rightarrow \{b,w\} \{d,z\}$   
 $\{ts,st\} ts: ts:' \rightarrow \{s,ts\} \{ts,tʃ\} ts:$   
 $tʃ\ tʃ: tʃ:' \rightarrow \{ʃ,tʃ\} \{tʃ,dʒ\} \{tʃ:,tʃ'\} (?)$   
 $tʃ\ tʃ: tʃ' tʃ:' dʒ \rightarrow x^j \{y^j,g\} k\ k: y^j$   
 $k: \rightarrow q$   
 $\{ʃ:,tʃ:\} x: \rightarrow x^j \int x$   
 $m \rightarrow \{m,b\}$

### 12.5.6 Proto-Lezgitic to Udi

*Pogostick Man*, from User:Petusek (2010), “User:Petusek/Drafts/Northeast Caucasian”. *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=User:Petusek/Drafts/Northeast\\_Caucasian&oldid=351133322](https://en.wikipedia.org/w/index.php?title=User:Petusek/Drafts/Northeast_Caucasian&oldid=351133322), apparently citing Nichols, Johanna (2003), “The Nakh-Daghestanian Consonant Correspondences”, in Tuite, Kevin, and Dee Ann Holisky, *Current Trends in Caucasian, East European, and Inner Asian Linguistics: Papers in Honor of Howard I. Aronson* 207 – 251

$ts\ ts: ts' ts:' dz \rightarrow \{\emptyset,s\} tʃ \{\emptyset,ts'\} \{ts',tʃ'\} z$   
 $t \rightarrow \emptyset / s_-$   
 $tʃ\ tʃ: tʃ' tʃ:' dʒ \rightarrow \{\emptyset,ʃ\} tʃ \emptyset tʃ' \{dʒ,tʃ\}$   
 $tʃ\ tʃ: tʃ' tʃ:' dʒ \rightarrow \{\emptyset,x\} q \{\emptyset,q'\} q' \{y,l\}$   
 $k: \rightarrow q$   
 $q\ q' q:' q:' \emptyset \rightarrow \emptyset(?) \emptyset\ q' y$   
 $\{tʃ(:),x:\} \rightarrow x$

## 12.6 Proto-Northeast Caucasian to Nakh

*Pogostick Man*, from User:Petusek (2010), “User:Petusek/Drafts/Northeast Caucasian”. *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=User:Petusek/Drafts/Northeast\\_Caucasian&oldid=351133322](https://en.wikipedia.org/w/index.php?title=User:Petusek/Drafts/Northeast_Caucasian&oldid=351133322), apparently citing Nichols, Johanna (2003), “The Nakh-Daghestanian Consonant Correspondences”, in Tuite, Kevin,

and Dee Ann Holisky, *Current Trends in Caucasian, East European, and Inner Asian Linguistics: Papers in Honor of Howard I. Aronson* 207 – 251

st st: → st(ʔ) st  
 ts: tʃ: → ts tʃ / #\_  
 ts:ʔ → ts:  
 {ts:,tʃ:,dz,dʒ} → t: / -#  
 tɬ(:) tɬ' tɬ:ʔ → x q' ɣ  
 k: q:ʔ → xk(?) q'  
 ʃ: ɬ: x: → ʃ ɬ x  
 l → r / -#  
 r → d / #\_

## 12.7 Proto-Northeast Caucasian to Proto-Tsezic

*Pogostick Man*, from User:Petusek (2010), “User:Petusek/Drafts/Northeast Caucasian”. *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=User:Petusek/Drafts/Northeast\\_Caucasian&oldid=351133322](https://en.wikipedia.org/w/index.php?title=User:Petusek/Drafts/Northeast_Caucasian&oldid=351133322), apparently citing Nichols, Johanna (2003), “The Nakh-Daghestanian Consonant Correspondences”, in Tuite, Kevin, and Dee Ann Holisky, *Current Trends in Caucasian, East European, and Inner Asian Linguistics: Papers in Honor of Howard I. Aronson* 207 – 251

\*b is “[p]rone to change to \*m”  
 {ts,st} {ts:ʔ,dz} → s ts  
 tʃ {tʃ:,dʒ} → ʃ tʃ (the change of \*tʃ:ʔ is conjectured for Bezhta, as the change is only listed in Tsez, but given the development of \*ts:ʔ I don’t find it unreasonable to put it here)  
 tɬ tɬ:ʔ → ɬ tɬ  
 ɡ → q  
 s x: → z x  
 l → {l,r}

### 12.7.1 Proto-Tsezic to Bezhta

*Pogostick Man*, from User:Petusek (2010), “User:Petusek/Drafts/Northeast Caucasian”. *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=User:Petusek/Drafts/Northeast\\_Caucasian&oldid=351133322](https://en.wikipedia.org/w/index.php?title=User:Petusek/Drafts/Northeast_Caucasian&oldid=351133322), apparently citing Nichols, Johanna (2003), “The Nakh-Daghestanian Consonant Correspondences”, in Tuite, Kevin, and Dee Ann Holisky, *Current Trends in Caucasian, East European, and Inner Asian Linguistics: Papers in Honor of Howard I. Aronson* 207 – 251

\*ɬ may have remained ɬ  
 r remained when intervocalic

### 12.7.2 Proto-Tsezic to Tsez

*Pogostick Man*, from User:Petusek (2010), “User:Petusek/Drafts/Northeast Caucasian”.  
*Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=User:Petusek/Drafts/Northeast\\_Caucasian&oldid=351133322](https://en.wikipedia.org/w/index.php?title=User:Petusek/Drafts/Northeast_Caucasian&oldid=351133322), apparently citing Nichols, Johanna (2003), “The Nakh-Daghestanian Consonant Correspondences”, in Tuite, Kevin, and Dee Ann Holisky, *Current Trends in Caucasian, East European, and Inner Asian Linguistics: Papers in Honor of Howard I. Aronson* 207 – 251

ts: tɬ: → z l / V\_V  
 ts: tɬ: → s ɬ  
 k:’ g → k k’  
 q q:’ → x(?) q  
 s: ʃ ʃ: ɬ ɬ: x → s ʒ l ɬ y  
 r → {r,l,Ø}

## 13 Northwest Caucasian

Wikipedia contributors (2014) give the following reconstruction for Proto-Northwest Caucasian consonants; due to the size of the reconstructed inventory, the usual table format has been modified:

	Stop	Fricative	Affricate	Resonant
Plain Labial	p pː pʼ b	f		m <sup>ʕ</sup>
Palatalized Labial	pʲ pʲː pʲʼ bʲ			
Labialized Labial	p <sup>w</sup> b <sup>w</sup>			
Palatalized Labialized Labial	p <sup>wʲ</sup> p <sup>wʲ</sup> ː b <sup>wʲ</sup>			
Pharyngealized Labial	p <sup>ʕ</sup> p <sup>ʕ</sup> ː p <sup>ʕ</sup> ʼ b <sup>ʕ</sup>			
Plain Coronal	t tː tʼ d	s z	ts tsː tsʼ dz	r n
Palatalized Coronal	tʲ	sʲ zʲ	tsʲ tsʲː tsʲʼ dzʲ	rʲ
Labialized Coronal	t <sup>w</sup> t <sup>w</sup> ː t <sup>w</sup> ʼ d <sup>w</sup>	ts <sup>w</sup> ts <sup>w</sup> ː dz <sup>w</sup>		
Palatalized Labialized Coronal	tʲ <sup>w</sup> tʲ <sup>w</sup> ː	tsʲ <sup>w</sup> tsʲ <sup>w</sup> ː dzʲ <sup>w</sup>		
Plain Lateral		ɬ ɬː	tɬ tɬː tɬʼ dɬ	l
Palatalized Lateral		ɬʲ (~ɬʲː) ɬʲ	tɬʲ tɬʲː dɬʲ	lʲ
Labialized Lateral		ɬ <sup>w</sup> ɬ <sup>w</sup> ː	tɬ <sup>w</sup> tɬ <sup>w</sup> ː tɬ <sup>w</sup> ʼ dɬ <sup>w</sup>	
Palatalized Labialized Lateral		ɬʲ <sup>w</sup> (~ɬʲ <sup>w</sup> ː) ɬʲ <sup>w</sup>	tɬʲ <sup>w</sup> tɬʲ <sup>w</sup> ː tɬʲ <sup>w</sup> ʼ dɬʲ <sup>w</sup>	
Plain Postalveolar		ʃ (~ʃː) ʒ	tʃ tʃː dʒ	
Labialized Postalveolar		ʃ <sup>w</sup> ʃ <sup>w</sup> ː ʒ <sup>w</sup>	tʃ <sup>w</sup> tʃ <sup>w</sup> ː tʃ <sup>w</sup> ʼ dʒ <sup>w</sup>	
Plain Palatal		ɕ ɕː ʑ	tɕ tɕː tɕʼ dʑ	j
Labialized Palatal		ɕ <sup>w</sup> ɕ <sup>w</sup> ː ʑ <sup>w</sup>	tɕ <sup>w</sup> tɕ <sup>w</sup> ː tɕ <sup>w</sup> ʼ	
Plain Velar	k kʼ g	x ɣ		
Palatalized Velar	kʲ gʲ	xʲ ɣʲ		
Labialized Velar	k <sup>w</sup> k <sup>w</sup> ʼ g <sup>w</sup>	x <sup>w</sup>		
Palatalized Labialized Velar	kʲ <sup>w</sup> gʲ <sup>w</sup>	xʲ <sup>w</sup> ɣʲ <sup>w</sup> (?)		
Plain Uvular	q qː qʼ ɢ	χ ʁ		
Palatalized Uvular	qʲː qʲ ɢʲ	χʲ ʁʲ		
Labialized Uvular	q <sup>w</sup> q <sup>w</sup> ː q <sup>w</sup> ʼ ɢ <sup>w</sup>	χ <sup>w</sup> ʁ <sup>w</sup>		
Labialized Palatalized Uvular	qʲ <sup>w</sup> qʲ <sup>w</sup> ː qʲ <sup>w</sup> ʼ ɢʲ <sup>w</sup>	χʲ <sup>w</sup> ʁʲ <sup>w</sup>		
Pharyngealized Uvular	q <sup>ʕ</sup> ː q <sup>ʕ</sup> ʼ	χ <sup>ʕ</sup> ʁ <sup>ʕ</sup>		
Pharyngealized Palatalized Uvular	q <sup>ʕʲ</sup> q <sup>ʕʲ</sup> ː q <sup>ʕʲ</sup> ʼ	χ <sup>ʕʲ</sup> ʁ <sup>ʕʲ</sup>		
Pharyngealized Labialized Uvular	q <sup>ʕw</sup> q <sup>ʕw</sup> ː q <sup>ʕw</sup> ʼ	χ <sup>ʕw</sup> ʁ <sup>ʕw</sup>		
Pharyngeal Labialized Palatal Uvular	q <sup>ʕʲw</sup> q <sup>ʕʲw</sup> ː q <sup>ʕʲw</sup> ʼ	χ <sup>ʕʲw</sup>		

(From Wikipedia contributors (2014), “Proto-Northwest Caucasian language”. *Wikipedia, the Free Encyclopedia*. [http://en.wikipedia.org/w/index.php?title=Proto-Northwest\\_Caucasian\\_language&oldid=596995618](http://en.wikipedia.org/w/index.php?title=Proto-Northwest_Caucasian_language&oldid=596995618), presumably citing Starostin, Sergei A. and Sergei L. Nikolayev (1994), *A North Caucasian Etymological Dictionary*)



### 13.1 Proto-Northwest Caucasian to Proto-Abazgi

*Pogostick Man*, from Wikipedia contributors (2014), “Proto-Northwest Caucasian language”. *Wikipedia, the Free Encyclopedia*. [http://en.wikipedia.org/w/index.php?title=Proto-Northwest\\_Caucasian\\_language&oldid=596995618](http://en.wikipedia.org/w/index.php?title=Proto-Northwest_Caucasian_language&oldid=596995618), presumably citing Starostin, Sergei A. and Sergei L. Nikolayev (1994), *A North Caucasian Etymological Dictionary*

$p^w, p^j \text{ } p^{(j)} \text{ } b^f \text{ } b^w \text{ } p^{wj} \text{ } b^{wj} \rightarrow p \text{ } b \text{ } f \text{ } ts^j \text{ } dz^j$   
 $m^f \rightarrow m$   
 $r^j \rightarrow r$   
 $t^w \text{ } t^{wj} \text{ } (') \rightarrow d(w) \text{ } t^w \text{ } (')$   
 $ts^j \text{ } \rightarrow dz^j$  (marked as dubious in the source)  
 $s^{wj} \text{ } z^j \rightarrow s^j \text{ } z$   
 $ts^w \text{ } ts^{wj} \rightarrow ts^w \text{ } (tf)$   
 $z^{wj} \text{ } ts^{wj} \text{ } dz^{wj} \rightarrow dz^j \text{ } z^j \text{ } tf \text{ } d\bar{z} \text{ } \bar{z}$   
 $tf \text{ } (') \text{ } d\bar{z} \rightarrow ts^j \text{ } (') \text{ } dz^j$   
 $f(\sim f) \text{ } \bar{z} \rightarrow s^j \text{ } s^j$   
 $t\epsilon \text{ } \rightarrow dz^j(\sim t\epsilon)$   
 $\epsilon \text{ } (:) \text{ } \bar{z} \rightarrow f \text{ } \bar{z}$  (the change of singleton  $*\epsilon$  to  $f$  is marked as dubious)  
 $tf^w \text{ } (') \text{ } tf^w \text{ } d\bar{z}^w \rightarrow tf \text{ } (') \text{ } z^w \text{ } dz^w \text{ } \sim z^w$   
 $f^w \text{ } f^w \text{ } \bar{z}^w \rightarrow s^w \text{ } f \text{ } z^j$  (this final change is marked as dubious)  
 $t\epsilon^w \text{ } (') \text{ } t\epsilon^w \text{ } \rightarrow tf \text{ } (') \text{ } d\bar{z} \text{ } \bar{z}$   
 $\epsilon^w \text{ } \epsilon^w \text{ } \bar{z}^w \rightarrow f^w \text{ } f \text{ } \bar{z}^w$   
 $t\bar{t} \text{ } t\bar{t} \text{ } t\bar{t} \text{ } d\bar{k} \rightarrow x \text{ } ts \text{ } x/ts \text{ } l$   
 $\bar{t} \text{ } \rightarrow x$   
 $t\bar{t}^j \text{ } t\bar{t}^j \text{ } d\bar{k}^j \rightarrow x^j \text{ } \epsilon \text{ } \bar{y}^j$   
 $\bar{t}^j(\sim \bar{t}^{jw}) \text{ } \bar{k}^j \rightarrow \epsilon \text{ } \bar{z}$   
 $\bar{l}^j \rightarrow r \text{ } / \text{ } \# \text{ } _$   
 $\bar{l}^j \rightarrow l \text{ } \sim \bar{y}^j$   
 $t\bar{t}^w \text{ } (:) \text{ } t\bar{t} \text{ } d\bar{k}^w \rightarrow ts^w \text{ } ts \text{ } (') \text{ } l$   
 $\bar{t}^w \text{ } (:) \rightarrow f$   
 $t\bar{t}^{wj} \text{ } t\bar{t}^{wj} \text{ } d\bar{k}^{wj} \rightarrow tf^w \text{ } \bar{z}^w \text{ } tf^w \text{ } d\bar{z}^w$   
 $\bar{t}^{wj}(\sim \bar{t}^w) \text{ } \rightarrow f$   
 $\bar{k}^{wj} \rightarrow \bar{z}$   
 $k^w \text{ } \rightarrow g^w$   
 $k^{wj} \text{ } \rightarrow k^w$   
 $x^{wj} \text{ } \bar{y}^{wj} \rightarrow s^w \text{ } z^w$  ( $*\bar{y}^{wj}$  is marked as dubious)  
 $q \text{ } q \text{ } \bar{g} \rightarrow (\bar{h}) \text{ } q \text{ } \bar{y}$  ( $*\bar{g}$  is marked as  $*G$  in the document)  
 $\chi^{(j)} \text{ } \bar{y}^{(j)} \rightarrow \bar{h} \text{ } \bar{y}$   
 $q^j \text{ } \bar{g}^j \rightarrow q \text{ } \bar{y}^j$

$q^w q^w: G^w \rightarrow h^w q^w y^w$   
 $\chi^w b^w \rightarrow h^w \Gamma^w$   
 $q^{wj} g^{wh} \rightarrow h^{(w)} y^{(w)}$   
 $q^{wj'} \rightarrow \Gamma^w (q^{w'}?)$   
 $\chi^{wj} b^{wj} \rightarrow h^{(w)} \Gamma^{(w)}$   
 $q^\Gamma: q^\Gamma \rightarrow \Gamma h$  (this latter is marked as dubious)  
 $b\Gamma \rightarrow \Gamma$   
 $q^{\Gamma j} q^{\Gamma j}: q^{\Gamma j'} \rightarrow q ? h(?)$   
 $\chi^{\Gamma j} b^{\Gamma j} \rightarrow h \Gamma$   
 $q^{\Gamma w} q^{\Gamma w}: q^{\Gamma w'}, \chi^{\Gamma w} b^{\Gamma w} \rightarrow h^w \Gamma^w q^{w'} h^w (h^w?)$   
 $q^{\Gamma wj} q^{\Gamma wj}: q^{\Gamma wj'}, b^{\Gamma wj} \rightarrow q^w \Gamma^w h^w \Gamma^w$

### 13.1.1 Proto-Abazgi to Ashkharywa Abaza

*Nortaneous*, from Chirikba, Viacheslav A. (2003), “Abkhaz”. *Languages of the World/Materials* 119.

$tj^w(\cdot) t\epsilon(\cdot) d\zeta^w dz \rightarrow f(\cdot) ts(\cdot) v dz$   
 $\epsilon z \rightarrow s z$   
 $"V\Gamma \Gamma^w V \rightarrow "aa a" a$  (but stays / $\Gamma$ / sometimes?)  
 $\Gamma^w \rightarrow \eta$   
 $t^w(\cdot) d^w \rightarrow \{t^w(\cdot), p(\cdot)\} \{d^w, b\}$

### 13.1.2 Proto-Abazgi to Tapanta Abaza

*Nortaneous*, from Chirikba, Viacheslav A. (2003), “Abkhaz”. *Languages of the World/Materials* 119.

$\{tj^w(\cdot), t\epsilon\} \{d\zeta^w, dz\} \rightarrow ts(\cdot) dz$   
 $t\epsilon^w(\cdot) dz^w \rightarrow \{t\epsilon^{(w)}(\cdot), tj^w(\cdot)\} \{dz^{(w)}, d\zeta^w\}$   
 $\epsilon z \rightarrow s z$   
 $\int^w \zeta^w \epsilon^w z^w \rightarrow \{\epsilon^{(w)}, \int^{(w)}\} \{z^{(w)}, \zeta^{(w)}\} \{\epsilon^{(w)}, \int^w\} \{z^{(w)}, \zeta^w\}$   
 $t^w(\cdot), d^w \rightarrow \{t\epsilon^{(w)}(\cdot), tj^{(w)}(\cdot)\} \{d\zeta^{(w)}, dz^{(w)}\}$

### 13.1.3 Proto-Abazgi to Ahchypsy Abkhaz

*Nortaneous*, from Chirikba, Viacheslav A. (2003), “Abkhaz”. *Languages of the World/Materials* 119.

$tj^w tj'^w d_3^w t\epsilon(') dz \rightarrow f p' ts(') v dz$   
 $\epsilon z \rightarrow s z$   
 $"V\Gamma \Gamma" V \rightarrow "aa a" a$   
 $\Gamma \Gamma^w \rightarrow a: \eta$   
 $q q^w \rightarrow \chi^\Gamma \chi^{\Gamma w}$

#### 13.1.4 Proto-Abazgi to Bzyp Abkhaz

*Nortaneous*, from Chirikba, Viacheslav A. (2003), “Abkhaz”. *Languages of the World/Materials* 119.

$tj^w tj'^w d_3^w \rightarrow p' f v$   
 $"V\Gamma \Gamma" V \rightarrow "aa a" a$   
 $\Gamma^w \rightarrow \eta$   
 $q q^w \rightarrow \chi^\Gamma \chi^{\Gamma w}$

#### 13.1.5 Proto-Abazgi to Abzhywa Proper

*Nortaneous*, from Chirikba, Viacheslav A. (2003), “Abkhaz”. *Languages of the World/Materials* 119.

$tj^w(') t\epsilon(') t\epsilon^w(') d_3^w dz dz^w \rightarrow f(') ts(') t\epsilon^w(') v dz dz$   
 $\epsilon \epsilon^w z z^w \rightarrow s j^w z \bar{z}^w$   
 $"V\Gamma \Gamma" V \rightarrow "aa a" a$   
 $\Gamma \Gamma^w \rightarrow a: \eta$   
 $q q^w \rightarrow \chi \chi^w$

#### 13.1.6 Proto-Abazgi to Tsabal Abzhywa

*Nortaneous*, from Chirikba, Viacheslav A. (2003), “Abkhaz”. *Languages of the World/Materials* 119.

$tj^w tj'^w t\epsilon(') t\epsilon^w(') d_3^w dz dz^w \rightarrow f p' ts(') t\epsilon^w(') v dz dz$   
 $\epsilon \epsilon^w z z^w \rightarrow s j^w z \bar{z}^w$   
 $"V\Gamma \Gamma" V \rightarrow "aa a" a$   
 $\Gamma \Gamma^w \rightarrow a: \eta$   
 $q q^w \rightarrow \chi^\Gamma \chi^{\Gamma w}$

### 13.1.7 Proto-Abazgi to Khaltys Sadz

*Nortaneous*, from Chirikba, Viacheslav A. (2003), “Abkhaz”. *Languages of the World/Materials* 119.

$tj^w(') \ t\epsilon(') \ t\epsilon^w(') \ d\zeta^w \ dz \ dz^w \rightarrow f(') \ ts(') \ t\epsilon^w(') \ v \ dz \ dz^w$   
 $\epsilon \ \epsilon^w \ z \ z^w \rightarrow s \ \{j^w, \epsilon^w\} \ z \ \{\zeta^w, z^w\}$   
 $"V\Gamma \ \Gamma"V \rightarrow "aa \ a" a$   
 $\Gamma^w \rightarrow \eta$   
 $q \ q^w \rightarrow \chi \ \chi^w$

### 13.1.8 Proto-Abazgi to Tswydzhy Sadz

*Nortaneous*, from Chirikba, Viacheslav A. (2003), “Abkhaz”. *Languages of the World/Materials* 119.

$tj^w(') \ t\epsilon(') \ t\epsilon^w(') \ d\zeta^w \ dz \ dz^w \rightarrow f(') \ ts(') \ t\epsilon^w(') \ v \ dz \ dz^w$   
 $\epsilon \ z \rightarrow s \ z$   
 $"V\Gamma \ \Gamma"V \rightarrow "aa \ a" a$   
 $\Gamma^w \rightarrow \eta$   
 $q \ q^w \rightarrow \chi^\Gamma \ \chi^w$

## 13.2 Proto-Northwest Caucasian to Proto-Circassian

*Pogostick Man*, from Wikipedia contributors (2014), “Proto-Northwest Caucasian language”. *Wikipedia, the Free Encyclopedia*. [http://en.wikipedia.org/w/index.php?title=Proto-Northwest\\_Caucasian\\_language&oldid=596995618](http://en.wikipedia.org/w/index.php?title=Proto-Northwest_Caucasian_language&oldid=596995618), presumably citing Starostin, Sergei A. and Sergei L. Nikolayev (1994), *A North Caucasian Etymological Dictionary*

$f \rightarrow x^w$   
 $p^j(:) \ p^j' \ b^j \rightarrow t(:) \ t' \ d$   
 $p^w \ p^{wj} \ p^{wj'} \ b^w \ b^{wj} \rightarrow p \ t^w \ t^{w'} \ b \ d$   
 $p^\Gamma(:) \ p^\Gamma \ b^\Gamma \rightarrow p(:) \ p' \ b$   
 $m^\Gamma \rightarrow m$   
 $r \ l \rightarrow t: \ t\hbar \ / \ \#_-$   
 $l \rightarrow \mathfrak{h}$   
 $t^w(:) \ t^{w'} \ d^w \rightarrow t(:) \ t' \ d$   
 $t^{wj} \ t^{wj'} \rightarrow ts \ ts'$   
 $ts \ ts: \ dz \rightarrow \{s, c\} \ ts: \ dz \sim z$   
 $ts^j \ ts^j: \ ts^j' \ dz^j \rightarrow (s) \ ts: \ ts' \ dz \sim z$

$s^j z^j \rightarrow s z$   
 $ts^w l^j \{q^{jw}, q^{fw}\} \rightarrow s^w d q^w / \#_-$  (data not given for non-initial forms)  
 $ts^{jw} ts^{jw} dz^{jw} \rightarrow ts^j ts^j dz^j$   
 $s^{jw} z^{jw} \rightarrow s^j z^j$   
 $tj tj' d\bar{z} dz \rightarrow s ts^j(?) dz \sim z dz \sim z$   
 $f(\sim f:) \rightarrow s$   
 $\epsilon(:) \bar{z} \rightarrow f(:) \bar{z}$   
 $tj^w(:) tj^w, d\bar{z}^w \rightarrow t\epsilon(:) t\epsilon' dz \sim z$   
 $f^w(:) \bar{z}^w \rightarrow f(:) \bar{z}$   
 $tc^w(:) t\epsilon^w \rightarrow tj(:) tj'$   
 $\epsilon^w \epsilon^w \bar{z}^w \rightarrow s^j f: z^j$   
 $t\bar{z}(:) t\bar{z}(:) t\bar{z}' d\bar{z} \rightarrow \epsilon(:) t\epsilon(:) t\epsilon' th$   
 $t\bar{z}^j t\bar{z}^j d\bar{z}^j \rightarrow t\epsilon t\bar{z}' y$   
 $t\bar{z}^w(:) t\bar{z}^w d\bar{z}^w \rightarrow tj(:) tj' h$   
 $t\bar{z}^w t\bar{z}^w \rightarrow x^{(w)} \epsilon:$   
 $t\bar{z}^{jw} t\bar{z}^{jw} t\bar{z}^{jw} d\bar{z}^{jw} \rightarrow x t\epsilon: t\epsilon' \bar{z}$   
 $t\bar{z}^{jw}(\sim t\bar{z}^w:) \bar{z}^{jw} \rightarrow x^{(w)} y^j$   
 $k k' g \rightarrow k^j k^j g^j$   
 $x^j y^j \rightarrow \epsilon \bar{z}$   
 $x^w \rightarrow x^{(w)}$   
 $g^{jw} x^{jw} y^{jw}(?) \rightarrow g^w x^w \bar{z}^w$   
 $G \rightarrow \bar{z}$   
 $q^j, \bar{z}^j \rightarrow ? \bar{z}$   
 $q^w \rightarrow q^w: / !_-$   
 $q^w, G^w \rightarrow q^w: \bar{z}^w$   
 $q^{jw}: q^{jw} G^{jw}, \bar{z}^{jw}\} \chi^{jw} \rightarrow q^w: ?^w \bar{z}^w \chi^w$   
 $\{q^{\bar{z}}, q^{\bar{z}'}\} \chi^{\bar{z}} \bar{z}^{\bar{z}} \rightarrow q: \chi \bar{z}$   
 $\{q^{\bar{z}j}, \chi^{\bar{z}j}\} q^{\bar{z}j} \bar{z}^{\bar{z}j} \{q^{\bar{z}j}: q^{\bar{z}j'}\} \rightarrow h ? j$   
 $\{q^{\bar{z}w}: q^{\bar{z}w'}\} \chi^{\bar{z}w} \bar{z}^{\bar{z}w} \rightarrow q^w: \chi^w \bar{z}^w$   
 $q^{\bar{z}jw} \{q^{\bar{z}jw}: q^{\bar{z}jw'}\} \bar{z}^{\bar{z}jw} \rightarrow h ?^w w \sim \bar{z}^w$

### 13.2.1 Proto-Circassian to Adyghe

*Pogostick Man*, from Wikipedia contributors (2014), “Proto-Circassian language”. *Wikipedia, the Free Encyclopedia*, [http://en.wikipedia.org/w/index.php?title=Proto-Circassian\\_language&oldid=591849172](http://en.wikipedia.org/w/index.php?title=Proto-Circassian_language&oldid=591849172); and Wikipedia contributors (2014), “Adyghe language”. *Wikipedia, the Free Encyclopedia*. [http://en.wikipedia.org/w/index.php?title=Adyghe\\_language&oldid=593857358](http://en.wikipedia.org/w/index.php?title=Adyghe_language&oldid=593857358)

— Stress changes:

"Ca.Ca	→	Ca:C
"Ca.Cə	→	CaC
"Cə.Ca	→	CəC
"Cə.Cə	→	CəC
Ca."Ca	→	Ca:C
Ca."Cə	→	Ca.Cə
Cə."Ca	→	Cə.Ca
Cə."Cə	→	Cə.Cə

— Consonant correspondences:

$ts^j \rightarrow t\epsilon$   
 $ts^w \rightarrow ts^{jw}$   
 $tʃ \ t\epsilon \rightarrow \int \ \xi$   
 $\text{ʔ}^{(w)} \sim \text{q}'^{(w)} \rightarrow \text{ʔ}^{(w)}$   
 $d\text{ʃ} \rightarrow \gamma$   
 $dz^j \ dz^w \rightarrow dz \ \text{z}^w$   
 $ts^{j'} \rightarrow \epsilon' \sim \text{f}'$   
 $s^w \ \epsilon \rightarrow \epsilon^w \sim \text{f}^w \ \epsilon \sim \text{f}$   
 $x^w \ \chi^j \rightarrow \text{f} \sim \Phi? \ \text{h}$   
 $\text{ʃ} \rightarrow \text{l}$   
 $z^w \rightarrow \text{z}^w \sim \text{ʒ}^w$

**13.2.1.1 Adyghe to Abadzekh Adyghe** *Pogostick Man*, from Wikipedia contributors (2014), “Proto-Circassian language”. *Wikipedia, the Free Encyclopedia*, [http://en.wikipedia.org/w/index.php?title=Proto-Circassian\\_language&oldid=591849172](http://en.wikipedia.org/w/index.php?title=Proto-Circassian_language&oldid=591849172); and Wikipedia contributors (2014), “Adyghe language”. *Wikipedia, the Free Encyclopedia*. [http://en.wikipedia.org/w/index.php?title=Adyghe\\_language&oldid=593857358](http://en.wikipedia.org/w/index.php?title=Adyghe_language&oldid=593857358)  $ts^j(:)$   
 $\rightarrow t\epsilon$

$ts^w \rightarrow t\text{f}^w$   
 $p: \ t: \ ts: \ ts^w \ \text{ʃ}: \ t\text{ʃ}: \ t\epsilon: \ k^j: \ k^w: \ q: \sim q\chi \ q^w: \sim q\chi^w \rightarrow p \ t \ ts \ t\text{f}^w \ \int \ \epsilon \ t\epsilon \ t\text{ʃ} \ k^w \ q: \ q^w$   
 $t\text{ʃ}' \ t\text{ʃ}' \rightarrow \text{ʔ}aj \sim \text{ʔ} \ \text{ʃ}'$   
 $t\text{ʃ}^{w'} \sim \text{ʃ}^{w'} \rightarrow \epsilon^{w'} \sim \text{f}^{w'}$   
 $k^j' \rightarrow t\text{ʃ}'$   
 $\xi: \ \text{ʃ}: \rightarrow \xi \ \text{ʃ}$   
 $s' \ \text{ʃ}' \sim \epsilon' \rightarrow ts' \ \text{ʃ}'$

**13.2.1.2 Adyghe to Bzhedug Adyghe** *Pogostick Man*, from Wikipedia contributors (2014), “Proto-Circassian language”. *Wikipedia, the Free Encyclopedia*, [http://en.wikipedia.org/w/index.php?title=Proto-Circassian\\_language&oldid=591849172](http://en.wikipedia.org/w/index.php?title=Proto-Circassian_language&oldid=591849172); and

Wikipedia contributors (2014), “Adyghe language”. *Wikipedia, the Free Encyclopedia*. [http://en.wikipedia.org/w/index.php?title=Adyghe\\_language&oldid=593857358](http://en.wikipedia.org/w/index.php?title=Adyghe_language&oldid=593857358)

$ts^j ts^j: \rightarrow t\epsilon t\epsilon:$   
 $k^j(:) k^j' g^j \rightarrow t_f(:) t_f' dz$   
 $ts^w: \rightarrow ts^{jw}:$   
 $q: \sim \chi q^w: \sim q\chi^w \rightarrow q: q^w:$   
 $ts^{w'} \sim f^{w'} \rightarrow \epsilon^{w'} \sim f^{w'}$   
 $t\sharp' \rightarrow \sharp'$   
 $s' f' \sim \epsilon' \rightarrow ts' f'$

**13.2.1.3 Adyghe to Shapsug Adyghe** *Pogostick Man*, from Wikipedia contributors (2014), “Proto-Circassian language”. *Wikipedia, the Free Encyclopedia*, [http://en.wikipedia.org/w/index.php?title=Proto-Circassian\\_language&oldid=591849172](http://en.wikipedia.org/w/index.php?title=Proto-Circassian_language&oldid=591849172); and Wikipedia contributors (2014), “Adyghe language”. *Wikipedia, the Free Encyclopedia*. [http://en.wikipedia.org/w/index.php?title=Adyghe\\_language&oldid=593857358](http://en.wikipedia.org/w/index.php?title=Adyghe_language&oldid=593857358)

$ts^j(:) ts^w t_f t\epsilon \rightarrow t\epsilon t_f^w \int \S$   
 $p: t: ts: ts^w: f: ts: t\epsilon: k^j: k^w: q: \sim q\chi q^w: \sim q\chi^w \rightarrow p t ts t_f^w \int t_f t\epsilon k^j k^w \chi \sim q \chi^w \sim q^w$   
 $p^{(w)'} t^{(w)'} ts' ts^{w'} \sim f^{w'} \rightarrow p^{\S} t^{\S} ts^{\S} \S^w$   
 $t\sharp' \rightarrow \sharp^{\S} \S: f: \rightarrow \S \int$   
 $s' f' \sim \epsilon' \rightarrow s^{\S} \S$

**13.2.1.4 Adyghe to Temirgoy Adyghe** *Pogostick Man*, from Wikipedia contributors (2014), “Proto-Circassian language”. *Wikipedia, the Free Encyclopedia*, [http://en.wikipedia.org/w/index.php?title=Proto-Circassian\\_language&oldid=591849172](http://en.wikipedia.org/w/index.php?title=Proto-Circassian_language&oldid=591849172); and Wikipedia contributors (2014), “Adyghe language”. *Wikipedia, the Free Encyclopedia*. [http://en.wikipedia.org/w/index.php?title=Adyghe\\_language&oldid=593857358](http://en.wikipedia.org/w/index.php?title=Adyghe_language&oldid=593857358)

$ts^j(:) ts^w \rightarrow t\epsilon ts^{jw}$   
 $k^j(:) k^j' k^w: g^j \rightarrow t_f t_f' k^w dz$   
 $q q^w \rightarrow q: q^w: ! / \#$   
 $p: t: ts: ts^w: f: t_f: t\epsilon: \rightarrow p t ts ts^{wj} \int t_f t\epsilon$   
 $q: \sim q\chi q^w: \sim q\chi^w \rightarrow q: q^w:$   
 $ts^j' ts^{w'} \sim f^{w'} \rightarrow \epsilon' \sim f' \epsilon^{w'} \sim f^{w'}$   
 $t\sharp' \rightarrow \sharp'$   
 $\S: f: \rightarrow \S \int$   
 $Y \rightarrow Y \sim g$   
 $s' f' \sim \epsilon' \rightarrow ts' f'$

### 13.2.2 Proto-Circassian to Kabardian

*Pogostick Man*, from Wikipedia contributors (2014), “Proto-Circassian language”. *Wikipedia, the Free Encyclopedia*, [http://en.wikipedia.org/w/index.php?title=Proto-Circassian\\_language&oldid=591849172](http://en.wikipedia.org/w/index.php?title=Proto-Circassian_language&oldid=591849172)

	”Ca.Ca	→	Ca:Ca
	”Ca.Cə	→	CaC
	”Cə.Ca	→	Cə.Ca
	”Cə.Cə	→	CəC
— Stress changes:	Ca.”Ca	→	Ca:Ca
	Ca.”Cə	→	CaC
	Cə.”Ca	→	Cə.Ca
	Cə.”Cə	→	CəC

— Consonant correspondences:

ts<sup>j</sup>(:) ts<sup>w</sup> {tʃ,tɕ} → ɕ f ʃ

k<sup>j</sup> → tʃ

ʔ~qʼ ʔ<sup>w</sup>~ʔ<sup>w</sup>

p: t: ts: ts<sup>w</sup>: ʃ: {tʃ:,tɕ:} k<sup>w</sup>: q:~qχ q<sup>w</sup>:~qχ<sup>w</sup> → b d dz v ɕ ʒ dʒ g<sup>w</sup> qʼ~qχ q<sup>w</sup>ʼ~qχ<sup>w</sup>

dʒ dz<sup>j</sup> dz<sup>w</sup> dz g<sup>j</sup> → ʒ ʒ {v,w} ʒ dʒ

ts<sup>j</sup>ʼ tʃ<sup>w</sup>ʼ~ʃ<sup>w</sup>ʼ tʃʼ tɕʼ tʃʼ k<sup>j</sup>ʼ → ɕʼ fʼ ɕʼ {ɕʼ,cɕʼ} ʃʼ tʃʼ

s<sup>w</sup> z<sup>w</sup> {ʃ:,ʒ:} {ʒ:,z:,ʒʲ} ʒ χ<sup>j</sup> → f v ɕ ʒ ʒ~ʒ χ

ʒ: ʃ: → ɕ ʒ

sʼ(?) ʃʼ~ɕʼ → tsʼ ɕʼ

### 13.3 Proto-Northwest Caucasian to Ubykh

*Pogostick Man*, from Wikipedia contributors (2014), “Proto-Northwest Caucasian language”. *Wikipedia, the Free Encyclopedia*. [http://en.wikipedia.org/w/index.php?title=Proto-Northwest\\_Caucasian\\_language&oldid=596995618](http://en.wikipedia.org/w/index.php?title=Proto-Northwest_Caucasian_language&oldid=596995618), presumably citing Starostin, Sergei A. and Sergei L. Nikolayev (1994), *A North Caucasian Etymological Dictionary*

p<sup>j</sup>(:) b<sup>j</sup> → t(:) d

p<sup>j</sup>ʼ → t<sup>w</sup>ʼ

{p<sup>w</sup>,b<sup>w</sup>} → f

p<sup>j</sup>: → t<sup>w</sup>~d<sup>w</sup>

p<sup>wj</sup> b<sup>wj</sup> → t<sup>w</sup> d<sup>w</sup>

p<sup>wj</sup>ʼ p<sup>ɕ</sup> p<sup>ɕ</sup>: p<sup>ɕ</sup>ʼ b<sup>ɕ</sup> → t<sup>w</sup>ʼ v<sup>ɕ</sup> b<sup>ɕ</sup> p<sup>ɕ</sup>ʼ b<sup>ɕ</sup>

t<sup>(w)</sup>: t<sup>wj</sup>ʼ → t<sup>(w)</sup> t<sup>w</sup>ʼ

{r,l} ʃ<sup>j</sup> → d r / #\_



$$\begin{aligned}
l\,l^j &\rightarrow \emptyset \sim j\,l \sim \gamma^j \\
r\,r^j &\rightarrow r \sim \mathcal{B}\,\mathfrak{h} \\
ts^{(j)}\colon ts^w\colon dz^j &\rightarrow ts\,ts^w\,dz \\
z^{(j)}\,z^w &\rightarrow dz^{(j)} \sim z^{(j)}\,dz^w \sim z^w \\
s^{wj}\,z^{wj}\,ts^{wj},\,dz^{wj} &\rightarrow t\mathfrak{f}^w\,\mathfrak{z}^w\,t\mathfrak{f}^j,\,d\mathfrak{z}^j \\
t\mathfrak{f}^{(\cdot)}\,d\mathfrak{z} &\rightarrow ts^{(\cdot)}\,dz \\
\int(\sim\mathfrak{f}\colon)\,\mathfrak{z} &\rightarrow s\,z \\
\mathfrak{e}\colon t\mathfrak{e}\colon &\rightarrow \mathfrak{e}\,t\mathfrak{e} \\
\mathfrak{f}^w(\colon)\,\mathfrak{z}^w\,t\mathfrak{f}^w(\cdot)\,d\mathfrak{z} &\rightarrow \int \mathfrak{z}\,t\mathfrak{f}^{(\cdot)}\,d\mathfrak{z} \\
t\mathfrak{e}^w(\colon)\,t\mathfrak{e}^{w'} &\rightarrow t\mathfrak{e}\,t\mathfrak{e}' \\
\mathfrak{e}^w\,\mathfrak{e}^w\colon \mathfrak{z}^w &\rightarrow \mathfrak{f}^w\,s^w\,\mathfrak{z}^w \\
t\mathfrak{f}\,t\mathfrak{f}\colon t\mathfrak{f}',\,d\mathfrak{h} &\rightarrow \mathfrak{e}\,(s^j)\,ts^j,\,\mathfrak{h} \\
\mathfrak{f}(\colon) &\rightarrow s^j \\
t\mathfrak{f}^j\,t\mathfrak{f}^j,\,d\mathfrak{h}^j &\rightarrow \mathfrak{e}\,t\mathfrak{f}',\,\mathfrak{e}\,\mathcal{B}(\sim z^j) \\
\mathfrak{f}^j(\sim\mathfrak{f}^j\colon) &\rightarrow \mathfrak{f} \\
\mathfrak{h} &\rightarrow \mathfrak{z} \\
t\mathfrak{f}' &\rightarrow ts^j, \\
\{\mathfrak{h}^j,l^j\} &\rightarrow \mathfrak{h} \\
t\mathfrak{f}^w(\colon)\,t\mathfrak{f}^w,\,d\mathfrak{h}^w &\rightarrow ts^w\,ts^{(w)},\,w \\
\mathfrak{f}^w\,\mathfrak{f}^w\colon &\rightarrow s^w\,s^{(w)} \\
t\mathfrak{f}^{wj}\,t\mathfrak{f}^{wj}\colon t\mathfrak{f}^{wj},\,d\mathfrak{h}^{wj} &\rightarrow f\,d\mathfrak{z}\,ts',\,d\mathfrak{z} \\
\mathfrak{f}^{wj}(\sim\mathfrak{f}^w\colon)\,\mathfrak{h}^{wj} &\rightarrow \mathfrak{f}^w\,\mathfrak{z}^w \\
k\,k',\,g\,x\,\mathfrak{y} &\rightarrow k^j\,k^j,\,g^j\,\mathfrak{e}\,\mathfrak{y} \sim \mathcal{B} \\
x^j\,\mathfrak{y}^j &\rightarrow s^j\,z^j \\
k^w\colon x^w &\rightarrow g^w\,x \\
k^{jw}\colon x^{jw}\,\mathfrak{y}^{jw}(?) &\rightarrow g^j\,k^j,\,x^j\,\mathcal{B}^j \\
\mathfrak{y} &\rightarrow \mathcal{B} \\
q^j(\cdot)\,G^j\,\chi^j &\rightarrow q^j(\cdot)\,\mathcal{B}^j\,x^j \\
q^w\colon G^w &\rightarrow q^w\,\mathcal{B}^w \\
q^{jw}\,q^{jw}\colon q^{jw},\,G^{jw}\,\chi^{jw}\,\mathcal{B}^{jw} &\rightarrow x^j\,q^j\,q^j,\,\mathcal{B}^j\,\chi^j\,\mathcal{B}^j \\
q^{\mathfrak{f}j} &\rightarrow q^{(\mathfrak{f})} \\
q^{\mathfrak{f}jw}\,\{q^{\mathfrak{f}jw},q^{\mathfrak{f}jw}\}\,\mathcal{B}^{\mathfrak{f}jw} &\rightarrow \chi^w\,q^w,\,w
\end{aligned}$$

## 14 Elamo-Dravidian

McAlpin (1974) reconstructs Proto-Elamo-Dravidian as having the following phonemic inventory; the following table is slightly modified for reasons to be explained.

	Bilabial	Alveolar	Palatal	Velar
Nasal	m mː	n nː		
Plosive	p	t tː	c cː	k kː
Fricative	v (?)	s		
Liquid		ɾ ɾː l lː	j	w

  

	Front	Center	Back
High	i		u
Mid	e		o
Low		a	

What here is denoted \*s the author has \*š for, but no other sibilant is readily identifiable in his paper. He makes mention of language written in cuneiform which may have influenced this convention. The phonemes \*ɾ and \*ɾː seem to have been contrastive rhotics. In \*NS clusters, the nasal appears to have assimilated to the following stop.

(From McAlpin, David W. (1974), “Toward Proto-Elamo-Dravidian”. *Language* 50(1):89 – 101)

### 14.1 Proto-Elamo-Dravidian to Proto-Dravidian

*Pogostick Man*, from McAlpin, David W. (1974), “Toward Proto-Elamo-Dravidian”. *Language* 50(1):89 – 101

w → v / #\_{i,e}lV

w → v / V\_

k f k → k\* kː / V\_V (the asterisk-marked k is what McAlpin terms “weak *k*”, which tends to drop out in morphology)

t → Ø / #\_VrC

t → {t,tː} / V\_V

rt → t / V\_V

p → v / V\_V

s → t / #\_VLV

s → j / V\_{V,#}

s → Ø / #V\_{ɾ,l}

s → Ø / C\_V

s → Ø / V\_C

$\dot{r} \rightarrow \underline{r}$   
 $\acute{r} \rightarrow r / V\_V$   
 $n \ n: \ r n \rightarrow \{\underline{n}, r\} \ \underline{n}(:) \ \eta / V\_V$   
 $n: \rightarrow \underline{n}(:)$   
 $n\dot{r} \rightarrow \underline{nr}$   
 $l \ l: \rightarrow \{l, \underline{l}\} \ l(:) / V\_V$   
 $l \rightarrow \underline{l} / V\_ \#$

Proto-Dravidian retained long vowels, possibly from the simplification of consonant clusters and/or deletion of intervocalic consonants with compensatory lengthening and/or the resulting vowels in hiatus merging

## 14.2 Proto-Elamo-Dravidian to Achaemanid Elamite

*Pogostick Man*, from McAlpin, David W. (1974), “Toward Proto-Elamo-Dravidian”. *Language* 50(1):89 – 101

$\{i, e, u\} \rightarrow \emptyset / \#\_ \{t, n\} a$   
 $e \rightarrow \{e, i\} / \# C\_C$   
 $w \rightarrow \acute{u} / V\_ \text{ (McAlpin uses the accented-vowel notation due to some apparent height-contrast neutralizations before /a/)}$   
 $k \ \eta k \ \eta k: \rightarrow \emptyset \ k \ k: / V\_V$   
 $mp \rightarrow p(:) / V\_V$   
 $c \rightarrow s / \#\_ \{a, u\}$   
 $pc \rightarrow ns / V\_V$   
 $\dot{r} \rightarrow r / V\_ \{V, C\}$   
 $\acute{r} \rightarrow r: / V\_V$   
 $n\dot{r} \rightarrow nr$   
 $l \rightarrow n / V\_ \#$   
 $v \rightarrow m / \#\_V (?)$

## 14.3 Tamil

### 14.3.1 Standard Tamil to Colloquial Tamil

*schwatever*, from Shiffman, Harold F. *A Reference Grammar on Spoken Tamil*

$aj \rightarrow e: \text{ “(exception: never finally in monosyllables, never initially in multisyllabic words)”}$   
 $avu \ aji \rightarrow aw \ aj$   
 $i \ u \rightarrow e \ o / \_Ca$   
 $\{k, v\} \rightarrow \emptyset / V\_V$

a: e: i: o: u: → a ε i o u / \_#  
 am an {a:m,a:n} → ã ã ã / \_#  
 {om,on} {em,en} {o:m,o:n} {e:m,e:n} → ã ã ã ã  
 um → ũ / \_#  
 Ø → i / \_N#  
 {l,ɫ} → Ø (sporadic, the latter very much so and contributing some compensatory lengthening)  
 l ɫ → l:ɫ / \_#(C)V[-long]  
 Ø → ɯ / {l,l}\_# if {M,V:} previously in the lexeme  
 r → ɾ “in most dialects”  
 ɾ → l  
 {ɾ,l,l} → Ø / V\_S  
 i u → i ɯ / short only when unstressed ! in #U  
 i ɯ → Ø / ! \_#  
 Ø → {i,ɯ} / to break up clusters  
 n → ŋ / \_{k,g}  
 i(:) e(:) → u(:) o(:) / {m,v,p}\_C  
 j → Ø / V[-front]\_#  
 j → j:i / E\_#  
 t: nt → c: ɲc / {i,j}\_-  
 tɫk → k:  
 n t: → n̥ t:  
 ŋ → n “(sporadic and dialect development)”  
 ɫ → l “(again, sporadic)”  
 c → s / \_{a,o,u,e}  
 c: → tʃ: “(most dialects)”  
 o e → u i / \_C{u,i} “(highly sporadic)”  
 “There’s also only a few changes necessary to turn this into the British dialect (which didn’t merge retroflexes with alveolars):”  
 — i(:) e(:) → u(:) o(:) / \_l  
 — eCə oCə → Ce: Co: / #\_

## 15 Eskimo-Aleut

The following phonological reconstruction of Proto-Eskimo-Aleut is adapted from Wikipedia.

	Labial	Alveolar	Palatal	Velar	Uvular
Nasal	m	n (n <sup>j</sup> )		ŋ	
Plosive	p	t t <sup>j</sup>		k	q
Fricative/Affricate	v	ð c s <sup>j</sup>		ɣ	ʁ
Lateral Fricative		(ɬ)			
Approximant		l	j		
	Front	Central	Back		
High	i		u		
Mid		ə			
Low		a			

It is noted that \*n and \*n<sup>j</sup> may not have been distinct phonemes; the article cites Fortescue mentioning that Sirilenski Eskimo has instances of initial /j/ whereas others have /n/; that \*c \*s<sup>j</sup> may have been either fricatives (\*s \*s<sup>j</sup>) or affricates (\*ts \*ts<sup>j</sup>), the source being unclear; and that \*ɬ may have actually arisen from \*l + plosive combinations.

(From Wikipedia contributors (2013), “Proto-Eskimo–Aleut language”. *Wikipedia, the Free Encyclopedia*. [http://en.wikipedia.org/w/index.php?title=Proto-Eskimo%E2%80%93Aleut\\_language&oldid=573345407](http://en.wikipedia.org/w/index.php?title=Proto-Eskimo%E2%80%93Aleut_language&oldid=573345407))

### 15.1 Proto-Eskimo-Aleut to Proto-Aleut

*Pogostick Man*, from Marsh, Gordon and Morris Swadesh (1951), “Kleinschmidt Centennial V: Eskimo Aleut Correspondences”, *International Journal of American Linguistics*, Vol. 17, No. 4 (Oct., 1951), pp. 209 – 216

a → i / i\_  
 u → a / a\_  
 p → h / #-  
 v → m / medial  
 v → w / a.a (in eastern dialects)  
 {t,ð} → n / -#  
 ð → t / else  
 Ø → t / #-s  
 z → s / #-  
 z → ð / medial

$l_{\circ} \rightarrow l$   
 $m \rightarrow w / \#_{-}$   
 $n \rightarrow t / \#_{-}$  (except, maybe, “in exclamations”)  
 $d_3 \rightarrow \delta / i_{-}$  (in eastern and central dialects)  
 $d_3 \rightarrow \delta / u_a$  (in eastern dialects)  
 $i \rightarrow \emptyset / \#_{-}\{z, d_3\}$   
 $\emptyset \rightarrow \emptyset / \#_{-}$ , “under certain conditions not yet discovered”  
 Deletion of medial vowels as per stress rules, “mostly affecting vowels before the accented syllable”  
 $nV_1nV_2 \rightarrow nV_2nV_2$

## 15.2 Proto-Eskimo-Aleut to Proto-Eskimo

*Pogostick Man*, from Marsh, Gordon and Morris Swadesh (1951), “Kleinschmidt Centennial V: Eskimo Aleut Correspondences”, *International Journal of American Linguistics*, Vol. 17, No. 4 (Oct., 1951), pp. 209 – 216

$\delta z \rightarrow t s$   
 $\gamma \text{ ʁ} \rightarrow k q / \#_{-}$   
 $\emptyset \rightarrow \emptyset / t_{-}$ , “in certain positions”

### 15.2.1 Proto-Eskimo to Barrow Iñupiaq

*Pogostick Man*, from Swadesh, Morris (1952), “Unaaliq and Proto Eskimo IV: Diachronic Notes”, *International Journal of American Linguistics*, Vol. 18, No. 3 (Jul., 1952), pp. 166–171

$l_{\circ} \rightarrow l / \text{medial}$   
 $t \rightarrow s / i_{-}$   
 $\emptyset \rightarrow i / \text{at word boundaries}$   
 $\emptyset \rightarrow u / u_{-}$   
 $\emptyset \rightarrow a / a_{-}$   
 $\emptyset \rightarrow \emptyset / \text{else}$   
 $\gamma \text{ ʁ} \rightarrow k q / \text{--}\#$   
 $C_0VC_0 \rightarrow C_0$ :  
 Regressive MOA assimilation and progressive voicing assimilation in consonant clusters (at least, when  $C_2$  is either  $/l/$  or  $/l_{\circ}/$ )  
 $m n \eta \rightarrow v t \gamma / \text{--}C[-\text{nasal}]$   
 $l_{\circ} \rightarrow t / \text{--}C$   
 $v \rightarrow p / \text{--}s$

$v \text{ } \mathfrak{B} \rightarrow p \text{ } q / S\_$   
 $v \text{ } \mathfrak{Y} \text{ } \mathfrak{B} \rightarrow p \text{ } k \text{ } q / \_C$  (unless  $C =$  one of  $/l \text{ } d_3 \text{ } m \text{ } n \text{ } \eta$ )  
 $\{p, v\} \text{ } t \text{ } \{k, \mathfrak{Y}\} \rightarrow m \text{ } n \text{ } \eta / \_N$   
 $v \rightarrow \emptyset / u\_i$   
 $d_3 \rightarrow \mathfrak{B} / i\_u$   
 $\text{əd}_3 \rightarrow i / \_ \{a, u\}$  (except in  $\#U$ )  
 $\text{ad}_3 \rightarrow i / \_a$  (except in  $\#U?$ )

### 15.2.2 Proto-Eskimo to Greenlandic Iñupiaq

*Pogostick Man*, from Swadesh, Morris (1952), “Unaaliq and Proto Eskimo IV: Diachronic Notes”, *International Journal of American Linguistics*, Vol. 18, No. 3 (Jul., 1952), pp. 166–171

$\text{ə} \rightarrow u / u\_$   
 $\text{ə} \rightarrow a / a\_$   
 $C: \rightarrow C /$  except when  $CV\_V$  in  $U_1U_2$   
 $t \rightarrow s / i\_$   
 $\text{ə} \rightarrow i /$  else  
 $d_3 \rightarrow t_f \rightarrow s /$  “in certain positions” (except for Thule Greenlandic, where  $d_3 \rightarrow t_f$  and stayed there, apparently)  
 $m \text{ } n \text{ } \eta \text{ } t \text{ } \{\mathfrak{Y}, \mathfrak{B}\} \rightarrow \{k, q\} \rightarrow p \text{ } t \text{ } k \text{ } n \text{ } \eta / \_ \#$   
 $m \text{ } n \text{ } \eta \rightarrow v \text{ } t \text{ } \mathfrak{Y} / \_C[-\text{nasal}]$   
 $l \rightarrow \mathfrak{B} / \_C$   
 $v \text{ } \mathfrak{B} \rightarrow p \text{ } q / S\_$   
 $v \text{ } \mathfrak{Y} \text{ } \mathfrak{B} \rightarrow p \text{ } k \text{ } q / \_C$  (except where  $C = /l \text{ } d_3 \text{ } m \text{ } n \text{ } \eta/$ )  
 $\{p, v\} \text{ } t \text{ } \{k, \mathfrak{Y}\} \rightarrow m \text{ } n \text{ } \eta / \_N$   
 $S_1S_2 \rightarrow F_1F_2$   
 Some metathesis in consonant clusters, the conditions of which are not elaborated upon; the given example cited within the text is  $l\mathfrak{B} \rightarrow \mathfrak{B}l$   
 $v \rightarrow \emptyset / u\_a$   
 $iv \rightarrow uj / \_u$   
 $d_3 \rightarrow t_f / i\_ \{u, i\}$   
 $\text{əd}_3 \rightarrow i / \_ \{a, u\}$  (except in  $\#U$ )  
 $\text{ad}_3 \rightarrow i / \_a$  (except in  $\#U?$ )

### 15.2.3 Proto-Eskimo to Mackenzie Iñupiaq

*Pogostick Man*, from Swadesh, Morris (1952), “Unaaliq and Proto Eskimo IV: Diachronic Notes”, *International Journal of American Linguistics*, Vol. 18, No. 3 (Jul., 1952), pp.

166–171

$\text{ə} \rightarrow \text{u} / \text{u}_-$

$\text{ə} \rightarrow \text{a} / \text{a}_-$

$\text{ə} \rightarrow \text{i} / \text{else}$

$\text{ɣ} \text{ ʁ} \rightarrow \text{k} \text{ q} / \text{ }_\#$

$\text{C}_0\text{VC}_0 \rightarrow \text{C}$ :

Regressive MOA assimilation and progressive voicing assimilation in consonant clusters, at least when  $\text{C}_2$  is either  $/\text{l}/$  or  $/\text{l}_\text{◌}/$

$\text{m} \text{ n} \text{ ŋ} \rightarrow \text{v} \text{ t} \text{ ɣ} / \text{ }_\text{C}[-\text{nasal}]$

$\text{l}_\text{◌} \rightarrow \text{t} / \text{ }_\text{C}$

$\text{v} \rightarrow \text{p} / \text{ }_\text{S}$

$\text{v} \text{ ʁ} \rightarrow \text{p} \text{ q} / \text{S}_-$

$\{\text{p}, \text{v}\} \text{ t} \{\text{k}, \text{ɣ}\} \rightarrow \text{m} \text{ n} \text{ ŋ} / \text{ }_\text{N}$

$\text{v} \rightarrow \emptyset / \text{u}_\text{i}$

$\text{əd}_3 \rightarrow \text{i} / \text{ }_\{\text{a}, \text{u}\} \text{ (except in } \# \text{U)}$

$\text{ad}_3 \rightarrow \text{i} / \text{ }_\text{a} \text{ (except in } \# \text{U?)}$

#### 15.2.4 Proto-Eskimo to Wales Iñupiaq

*Pogostick Man*, from Swadesh, Morris (1952), “Unaaliq and Proto Eskimo IV: Diachronic Notes”, *International Journal of American Linguistics*, Vol. 18, No. 3 (Jul., 1952), pp. 166–171

$\text{ə} \rightarrow \text{u} / \text{u}_-$

$\text{ə} \rightarrow \text{a} / \text{a}_-$

$\text{ə} \rightarrow \text{i} / \text{else}$

$\text{v} \rightarrow \text{u}$

$\text{ɣ} \rightarrow \text{u} / \text{“in some positions”}$

$\text{p} \text{ k} \text{ q} \text{ s} \rightarrow \text{v} \text{ ɣ} \text{ ʁ} \text{ z} / \text{V}_-\text{V}$

$\text{ɣ} \text{ ʁ} \rightarrow \text{k} \text{ q} / \text{ }_\#$

Regressive MOA assimilation and progressive voicing assimilation in consonant clusters, at least where  $\text{C}_2$  is either  $/\text{l}/$  or  $/\text{l}_\text{◌}/$

$\text{m} \text{ n} \text{ ŋ} \rightarrow \text{v} \text{ t} \text{ ɣ} / \text{ }_\text{C}[+\text{nasal}]$

$\text{l}_\text{◌} \rightarrow \text{t} / \text{C}_-$

$\text{v} \rightarrow \text{p} / \text{ }_\text{S}$

$\text{v} \text{ ʁ} \rightarrow \text{p} \text{ q} / \text{S}_-$

$\text{v} \text{ ɣ} \text{ ʁ} \rightarrow \text{p} \text{ k} \text{ q} / \text{ }_\text{C} \text{ (except if } \text{C} = \text{ }_\text{l} \text{ d}_3 \text{ m} \text{ n} \text{ ŋ)}$

$\{\text{p}, \text{v}\} \text{ t} \{\text{k}, \text{ɣ}\} \rightarrow \text{m} \text{ n} \text{ ŋ} / \text{ }_\text{N}$

$\text{v} \rightarrow \text{u} / \text{V}_-\text{V}$

$\text{v} \rightarrow \emptyset / \text{u}_-\text{V}$



$v \rightarrow \emptyset / V\_u$   
 $d_3 \rightarrow \text{ɸ} / i\_u$   
 $\text{əd}_3 \rightarrow i / \_ \{a, u\}$  (except in #U)  
 $\text{ad}_3 \rightarrow i / \_ a$  (except in #U?)  
 $y \rightarrow \emptyset / V\_u$   
 $y \rightarrow \emptyset / u\_V$   
 $y \rightarrow u / \{i, \text{ə}\}\_V$

### 15.2.5 Proto-Eskimo to Kuskokwim Yup'ik

*Pogostick Man*, from Swadesh, Morris (1952), “Unaaliq and Proto Eskimo IV: Diachronic Notes”, *International Journal of American Linguistics*, Vol. 18, No. 3 (Jul., 1952), pp. 166–171

$C: \rightarrow C$   
 $C \rightarrow C: / \_ V(\dots V)$  except in #U  
 $S \rightarrow \emptyset / \#\_F$   
 $s \rightarrow ts$  / in certain situations?  
 $C[+voice] \rightarrow C[-voice]$  / adjacent to  $\{S, s, l\}$   
 $y \text{ ɸ} \rightarrow k \text{ q} / \_ \#$   
 $\text{ə} \rightarrow a / \_ \#$   
 $\text{ə} \rightarrow \emptyset$   
 $i \rightarrow \emptyset / \#C[+dental]\_C[+dental]V$   
 $F[+voice] \rightarrow F[-voice]$  / adjacent to  $\{S, ts\}$   
 $F[+voice] \rightarrow S[+same \text{ POA}] / l\_$   
 $t \rightarrow s / \_ \{k, q\}$   
 $i \text{ a } u \rightarrow ii \text{ aa } uu / C\_ \text{ in } U[+open \text{ -initial -final}] \text{ such that } U[+open]\_$   
 $\text{ə} \rightarrow i / u\_$   
 $v \rightarrow \emptyset / u[+short]\_V[+short]$   
 $v \rightarrow \emptyset / V[+short]\_u[+short]$   
 $u \rightarrow \emptyset / \#\_vV$   
 $iv \rightarrow j / \#\_u$   
 $s \rightarrow d_3 / \{i, u\}\_V$   
 $d_3 \rightarrow \emptyset / i\_i$   
 $\text{ə} \rightarrow \emptyset / \_ d_3\{a, u\}$ , except in #U  
 $a \rightarrow \emptyset / \_ d_3a$ , except in #U  
 $in \rightarrow d_3 / \_ u$  (possibly only word-initially?)

### 15.2.6 Proto-Eskimo to Nunivak Yup'ik

*Pogostick Man*, from Swadesh, Morris (1952), “Unaaliq and Proto Eskimo IV: Diachronic Notes”, *International Journal of American Linguistics*, Vol. 18, No. 3 (Jul., 1952), pp. 166–171

C: → C

C → C: / \_V(...V) except in #U

S → Ø / #\_F

s → ts / in certain situations?

C[+voice] → C[-voice] / adjacent to {S,s,l}

ʏ ɸ → x ɣ / \_#

ə → a / \_#

ə → Ø

i → Ø / #C[+dental]\_C[+dental]V

a → Ø / C[+velar]\_C[+velar]

Regressive MOA and voicing assimilation in consonant clusters, at least when C<sub>2</sub> is either /l/ or /l̥/

v ɸ → f ɣ / S\_

F[+voice] → F[-voice] / adjacent to {S,ts}

F[+voice] → S / l̥\_

t → s / \_{k,q}

i a u → ii aa uu / C\_ in U[+open -initial -final] such that U[+open]\_

ə → i / u,a\_ (though aə seems to have become i in some circumstances)

v → Ø / u[+short]\_V[+short]

v → Ø / V[+short]\_u[+short]

u → Ø / #\_vV

iv → j / #\_u

s → dʒ / {i,u}\_V

dʒ → Ø / i\_i

ə → Ø / \_dʒa,u except in #U

a → Ø / \_dʒa (except in #U?)

in → dʒ / \_u (possibly only word-initially?)

### 15.2.7 Proto-Eskimo to Siberian Yup'ik

*Pogostick Man*, from Swadesh, Morris (1952), “Unaaliq and Proto Eskimo IV: Diachronic Notes”, *International Journal of American Linguistics*, Vol. 18, No. 3 (Jul., 1952), pp. 166–171

C: → C

$S \rightarrow \emptyset / \#_F$   
 $s \rightarrow ts \rightarrow tʃ$  / in some dialects?  
 $C[+voice] \rightarrow C[-voice]$  / next to  $\{S, s, l\}$   
 $y \text{ ʁ} \rightarrow k \text{ q} / \#$   
 $\text{ə} \rightarrow a /$   
 $\text{ə} \rightarrow \emptyset / \#_-$   
 $i \rightarrow \emptyset / \#C[+dental]_C[+dental]V$   
 $a \rightarrow \emptyset / C[+velar]_C[+velar]$   
 $F[+voice] \rightarrow F[-voice]$  / adjacent to  $\{S, ts\}$   
 $F[+voice] \rightarrow S / l_-$   
 $\emptyset \rightarrow n / \#iN$  (NB: This one is sort of a guess, given a singular example in the text that isn't really commented upon)  
 $t \rightarrow s / \_{\{k, q\}}$   
 $u \rightarrow a / a_-$   
 $\text{ə} \rightarrow i / \{u, a\}_-$   
 $v \rightarrow \emptyset / u[+short]_V[+short]$   
 $v \rightarrow \emptyset / V[+short]_u[+short]$   
 $u \rightarrow \emptyset / \#_vV$   
 $iv \rightarrow j / \#_u$   
 $s \rightarrow d_3 / \{i, u\}_V$   
 $d_3 \rightarrow \emptyset / i_i$   
 $\text{ə} \rightarrow \emptyset / \_d_3\{a, u\}$  except in  $\#U$   
 $a \rightarrow \emptyset / \_d_3a$  (except in  $\#U?$ )  
 $in \rightarrow d_3 / \_u$  (possibly only word-initially?)

### 15.2.8 Proto-Eskimo to Unaaliq Yup'ik

*Pogostick Man*, from Swadesh, Morris (1952), "Unaaliq and Proto Eskimo IV: Diachronic Notes", *International Journal of American Linguistics*, Vol. 18, No. 3 (Jul., 1952), pp. 166–171

$C: \rightarrow C$   
 $C \rightarrow C: / \_V(\dots V)$ , after  $\#U$   
 $S \rightarrow \emptyset / \#_F$   
 $s \rightarrow ts$  / in certain situations?  
 $C[+voice] \rightarrow C[-voice]$  / next to  $\{S, s, l\}$   
 $y \text{ ʁ} \rightarrow k \text{ q} / \#$   
 $\text{ə} \rightarrow a / \#$   
 $\text{ə} \rightarrow \emptyset / \#_-$   
 $i \rightarrow \emptyset / \#C[+dental]_C[+dental]V$   
 $a \rightarrow \emptyset / C[+velar]_C[+velar]$

$v \rightarrow ft / \_s$   
 $F[+voice] \rightarrow F[-voice] / \text{adjacent to } \{S, ts\}$   
 $F[+voice] \rightarrow S / l\_\circ$   
 $t \rightarrow s / \_ \{k, q\}$   
 $i \ a \ u \rightarrow ii \ aa \ uu / C\_ \text{ in } U[+open \text{ -initial -final}] \text{ such that } U[+open]\_$   
 $\text{ə} \rightarrow i / \{u, a\}\_ \text{ (though } a\text{ə} \text{ seems to have become } i \text{ in some circumstances)}$   
 $v \rightarrow \emptyset / u[+short]\_V[+short]$   
 $v \rightarrow \emptyset / V[+short]\_u[+short]$   
 $u \rightarrow \emptyset / \#\_vV$   
 $iv \rightarrow j / \#\_u$   
 $d\mathfrak{z} \rightarrow \emptyset / i\_i$   
 $\text{ə} \rightarrow \emptyset / \_d\mathfrak{z}\{a, u\} \text{ except in } \#U$   
 $a \rightarrow \emptyset / \_d\mathfrak{z}a \text{ (except in } \#U?)$   
 $s \rightarrow d\mathfrak{z} / \{i, u\}\_V$   
 $in \rightarrow d\mathfrak{z} / \_u \text{ (possibly only word-initially?)}$

## 16 Extended West Papuan

### 16.1 Tabla-Sentani

Proto-Tabla-Sentani is reconstructed by Gregerson and Hartzler (1987) as having had the following phonology:

	Bilabial	Alveolar	Palatal	Velar
Nasal	m	n		
Plosive	p b	t d		k
Approximant			j	w

  

	Front	Central	Back
Close	i		u
Mid	e	ə	o
Open		a	

(From Gregerson, Kenneth, and Margaret Hartzler (1987), “Towards a Reconstruction of Proto-Tabla-Sentani Phonology”. *Oceanic Linguistics*, Vol. 26, No. 1/2 (Summer – Winter, 1987), 1 – 29.)

#### 16.1.1 Proto-Tabla-Sentani to Nafri

*Pogostick Man*, from Gregerson, Kenneth, and Margaret Hartzler (1987), “Towards a Reconstruction of Proto-Tabla-Sentani Phonology”. *Oceanic Linguistics*, Vol. 26, No. 1/2 (Summer – Winter, 1987), 1 – 29.

$p\ k \rightarrow b\ g / V\_V$   
 $p\ t \rightarrow f\ \{s,h\} / \#\_$   
 $N \rightarrow \eta / \_ \#$   
 $e \rightarrow i / \_ (C)i$   
 $e \rightarrow \text{æ} / \{P,K\}\_$   
 $e \rightarrow \text{æ} / \_ P$   
 $e \rightarrow \text{ə} / \_ C\{a,\text{ə},u\}$  (seems to have become a in a few instances)  
 $\text{ə} \rightarrow o / \_ (C)o$   
 $\text{ə} \rightarrow e / \_ \{C[+palatal],E\}$   
 $\text{ə} \rightarrow \text{æ} / \_ ! \{B,K,H\}$   
 $a \rightarrow \text{æ} / \_ (C)e$   
 $a \rightarrow \text{æ} / i(C)\_$   
 $o \rightarrow e$  (sporadic, highly unusual)

### 16.1.2 Proto-Tabla-Sentani to Central Sentani

*Pogostick Man*, from Gregerson, Kenneth, and Margaret Hartzler (1987), “Towards a Reconstruction of Proto-Tabla-Sentani Phonology”. *Oceanic Linguistics*, Vol. 26, No. 1/2 (Summer – Winter, 1987), 1 – 29.

p k → b g / V\_V  
p b t → f p {s,h} / #\_  
d → l / medially  
N → m / -#  
e → i / -(C)i  
e → æ / {P,K}\_  
e → æ / \_P  
e → ə / \_C{a,ə,u} (seems to have become a in a few instances)  
ə → o / -(C)o  
ə → e / \_{C[+palatal],E}  
ə → æ / !\_ {B,K,H}  
a → æ / -(C)e  
a → æ / i(C)\_  
o → e (sporadic, highly unusual)

### 16.1.3 Proto-Tabla-Sentani to Eastern Sentani

*Pogostick Man*, from Gregerson, Kenneth, and Margaret Hartzler (1987), “Towards a Reconstruction of Proto-Tabla-Sentani Phonology”. *Oceanic Linguistics*, Vol. 26, No. 1/2 (Summer – Winter, 1987), 1 – 29.

p k → b g / V\_V  
p t → f {s,h} / #\_  
d → l / medially  
N → m / -#  
e → i / -(C)i  
e → æ / {P,K}\_  
e → æ / \_P  
e → ə / \_C{a,ə,u} (seems to have become a in a few instances)  
ə → o / -(C)o  
ə → e / \_{C[+palatal],E}  
ə → æ / !\_ {B,K,H}  
a → æ / -(C)e  
a → æ / i(C)\_  
o → e (sporadic, highly unusual)

#### 16.1.4 Proto-Tabla-Sentani to Western Sentani

*Pogostick Man*, from Gregerson, Kenneth, and Margaret Hartzler (1987), “Towards a Reconstruction of Proto-Tabla-Sentani Phonology”. *Oceanic Linguistics*, Vol. 26, No. 1/2 (Summer – Winter, 1987), 1 – 29.

p k → b g / V\_V  
s → t / #\_  
N → ŋ / -#  
e → i / -(C)i  
e → æ / {P,K}\_  
e → æ / \_P  
e → ə / \_C{a,ə,u} (seems to have become a in a few instances)  
ə → o / -(C)o  
ə → e / \_{C[+palatal],E}  
ə → æ / !\_ {B,K,H}  
a → æ / -(C)e  
a → æ / i(C)-  
o → e (sporadic, highly unusual)

#### 16.1.5 Proto-Tabla-Sentani to Tabla

*Pogostick Man*, from Gregerson, Kenneth, and Margaret Hartzler (1987), “Towards a Reconstruction of Proto-Tabla-Sentani Phonology”. *Oceanic Linguistics*, Vol. 26, No. 1/2 (Summer – Winter, 1987), 1 – 29.

d → r / medially  
N → ŋ / -#  
i → Ø / V\_ (with a few exceptions)  
Some allophony triggered where p~ɸ, and probably some others  
e → ə / unstressed (possibly only in disyllables?)  
oi → oe  
Some vowel assimilations, mostly dealing with central vowels  
o → e (sporadic, highly unusual)

## 17 Indo-European

Wikipedia gives the following phonological reconstruction for Proto-Indo-European, reproduced here with some slight adjustments for presentation's sake:

	Labial	Coronal	Palatovelar	Plain Velar	Labiovelar	Laryngeal
Nasal	m	n				
Plosive	p b b <sup>h</sup>	t d d <sup>h</sup>	k̑ g̑ g̑ <sup>h</sup>	k g g <sup>h</sup>	k <sup>w</sup> g <sup>w</sup> g <sup>w</sup> <sup>h</sup>	
Fricative		s				h <sub>1</sub> h <sub>2</sub> h <sub>3</sub>
Approximant		ɹ	j		w	
Lat. Approx.		l				

There is some debate as to whether the voiced and voiced aspirate stops were actually glottalized and plain voiced, respectively; the status of the palatovelars, plain velars, and labiovelars as possible plain velar, uvular, and labialized uvular consonants, or as to whether the labiovelars existed at all, are also subjects of much contention.

	Front	Central	Back
Mid	e eː		o oː
Back		(a) (aː)	

It is noted in the source that the nasals, approximants, and potentially laryngeals could also act as vowels; such allophones of /j w/ would then be [i u]. There is some debate over the presence of /a aː/ in the language, although the Wikipedia does mention that if Stang's law holds, /aː/ at least must have been phonemic.

The accentual system was apparently a sort of free pitch accent, heavily related to ablaut and the vestiges of which may be best seen in Vedic Sanskrit, Ancient Greek, and Lithuanian and some West South Slavic tongues.

(From Wikipedia contributors (2011), "Pitch accent". *Wikipedia, The Free Encyclopedia*. [http://en.wikipedia.org/w/index.php?title=Pitch\\_accent&oldid=451210103](http://en.wikipedia.org/w/index.php?title=Pitch_accent&oldid=451210103); and Wikipedia contributors (2011), "Proto-Indo-European language". *Wikipedia, The Free Encyclopedia*. [http://en.wikipedia.org/w/index.php?title=Proto-Indo-European\\_language&oldid=455124616](http://en.wikipedia.org/w/index.php?title=Proto-Indo-European_language&oldid=455124616))

### 17.1 Albanian

#### 17.1.1 Proto-Indo-European to Gheg Albanian

*Pogostick Man*, from Wikipedia contributors (2013), "Albanian language". *Wikipedia, the Free Encyclopedia*. [http://en.wikipedia.org/w/index.php?title=Albanian\\_language&oldid=582390175](http://en.wikipedia.org/w/index.php?title=Albanian_language&oldid=582390175)



$d d^{fi} \rightarrow \delta / V\_V$   
 $d d^{fi} \rightarrow \delta / r\_$   
 $\acute{k} \rightarrow s / \_ \{u, u, i, i\}$   
 $\acute{k} \rightarrow k / \_ R$   
 $\acute{k} \rightarrow \{ts, tf\}$  (“[a]rchaic relic”)  
 $\acute{k} \rightarrow \emptyset$   
 $k^w \rightarrow s / \_ ”E?$   
 $k^w \rightarrow c / \_ B?$   
 $k^w \rightarrow k / \text{else?}$   
 $\acute{g}^{(fi)} \rightarrow d / \%\_C[+sibilant]$   
 $g^w^{(fi)} \rightarrow \{g, z\}$   
 $b^{fi} d^{fi} \acute{g}^{(fi)} \rightarrow b d dh$   
 $s \rightarrow \int / \#\_$   
 $s \rightarrow \int / V\{\acute{i}, \acute{u}, r, k\}\_V$   
 $sd \rightarrow \emptyset / \text{medial}$   
 $s\acute{k} \rightarrow h / \text{medial}$   
 $sp \rightarrow f / \text{medial}$   
 $st \rightarrow \int t / \text{medial}$   
 $s \rightarrow \emptyset / \text{sometimes, involving “[d]issimilation with following vowel”}$   
 $s \rightarrow h / V\_V$   
 $\acute{i} \rightarrow \int / \{a, e, i\}\_$   
 $\acute{i} \rightarrow j / \_ B$   
 $\acute{i} \rightarrow \emptyset / E\_$   
 $\acute{i} \rightarrow h / V\_$   
 $\acute{u} \rightarrow v$   
 $Vn \rightarrow V[+nasal] / \_ C?$   
 $n \rightarrow \text{ɲ}$  (sometimes?)  
 $l r \rightarrow l(:) r(:)$   
 $\{m, n\} \downarrow r \rightarrow e u j \{ri, ir\}$   
 Loss of laryngeals, with the possible exception of  $h_4$ , if it existed;  $h_3$  and  $h_4$  seem to have possibly fronted a following back vowel  
 $e: i: o: u: \rightarrow o i e \{y, i\}$   
 $a e i o \rightarrow \{a, e\} (j)e \{e, i\} a$   
 Gheg seems to have maintained or innovated vowel length whereas Tosk has not  
 $\emptyset \rightarrow \emptyset / \_ \# c \int \rightarrow t\int d\int$  (for most speakers)

### 17.1.2 Proto-Indo-European to Tosk Albanian

*Pogostick Man*, from Wikipedia contributors (2013), “Albanian language”. *Wikipedia, the Free Encyclopedia*. [http://en.wikipedia.org/w/index.php?title=Albanian\\_language&](http://en.wikipedia.org/w/index.php?title=Albanian_language&)

oldid=582390175

$d d^{\text{fi}} \rightarrow \delta / V\_V$

$d d^{\text{fi}} \rightarrow \delta / r\_$

$\acute{k} \rightarrow s / \_ \{ \underset{\sim}{u}, u, \underset{\sim}{i}, i \}$

$\acute{k} \rightarrow k / \_ R$

$\acute{k} \rightarrow \{ts, tf\}$  (“[a]rchaic relic”)

$\acute{k} \rightarrow \theta$

$k^w \rightarrow s / \_ ”E?$

$k^w \rightarrow c / \_ B?$

$k^w \rightarrow k / \text{else?}$

$\acute{g}^{(\text{fi})} \rightarrow d / \%\_C[+\text{sibilant}]$

$g^w^{(\text{fi})} \rightarrow \{g, z\}$

$b^{\text{fi}} d^{\text{fi}} \acute{g}^{(\text{fi})} \rightarrow b d dh$

$s \rightarrow \text{ʃ} / \#\_$

$s \rightarrow \text{ʃ} / V \{ \underset{\sim}{i}, \underset{\sim}{u}, r, k \} \_ V$

$sd \rightarrow \theta / \text{medial}$

$s\acute{k} \rightarrow h / \text{medial}$

$sp \rightarrow f / \text{medial}$

$st \rightarrow \text{ʃt} / \text{medial}$

$s \rightarrow \theta / \text{sometimes, involving “[d]issimilation with following vowel”}$

$s \rightarrow h / V\_V$

$\underset{\sim}{i} \rightarrow \text{ʃ} / \{a, e, i\} \_$

$\underset{\sim}{i} \rightarrow j / \_ B$

$\underset{\sim}{i} \rightarrow \emptyset / E\_$

$\underset{\sim}{i} \rightarrow h / V\_$

$\underset{\sim}{u} \rightarrow v$

$n \rightarrow \emptyset / V\_C?$

$n \rightarrow \text{ɲ} (\text{sometimes?})$

$n \rightarrow r$

$l r \rightarrow \{l, \text{ɭ}\} \{r, r\}$

$\{m, n\} \text{ ɭ } r \rightarrow e u j \{ri, ir\}$

Loss of laryngeals, with the possible exception of  $h_4$ , if it existed;  $h_3$  and  $h_4$  seem to have possibly fronted a following back vowel

$e: i: o: u: \rightarrow o i e \{y, i\}$

$a e i o \rightarrow \{a, e\} (j)e \{e, i\} a$

$c \text{ ʃ} \rightarrow tʃ dʒ$  (much less widespread than in Gheg)

## 17.2 Proto-Indo-European to Common Anatolian

*Alces*, from <http://www.unc.edu/~melchert/anathistphon.pdf> (*link is dead*)

eh<sub>2</sub> → æ / “tautosyllabic”  
ei eu → ε: u:  
D<sup>h</sup> → D  
H → R / VR\_V  
h<sub>1</sub> → Ø  
h<sub>3</sub> → Ø / “medially”  
T h<sub>2</sub> → D h<sub>3</sub> / \_#  
T h<sub>2</sub> → D h<sub>3</sub> / V[-stress]\_V[-stress]  
T h<sub>2</sub> → D h<sub>3</sub> / ”V:  
T h<sub>2</sub> → D h<sub>3</sub> / ”W  
t → z / j “(allophonic)”  
r → Ø / #\_ (unclear)  
j → Ø / #\_e (not widely attested)  
{h<sub>1</sub>,h<sub>3</sub>}s,s{h<sub>1</sub>,h<sub>3</sub>} → s: (contested)

### 17.2.1 Common Anatolian to Hittite

*Alces*, from <http://www.unc.edu/~melchert/anathistphon.pdf> (*link is dead*)

D T → T T[+lenis] / #\_  
T D → T[+fortis] T[+lenis]  
h<sub>2</sub> h<sub>3</sub> → hh h  
Ķ → K  
V → V: / in ”U[+open]  
e o → e: o: / in ”U[+stress]  
o(:) æ: → a(:) e:  
e → i / \_{m,n} when posttonic in U[+closed] or when pretonic  
e → a / \_n in U[+open +posttonic]  
e → a / \_{r,l} (sporadic)  
t → ts / \_i ! s\_  
d → s / #\_{i,j}  
w → m / \_u  
w → m / u\_  
j → Ø / V\_V  
aj aw → ε: u: / !\_ {s,n,r,l}

### 17.2.2 Common Anatolian to Luwian

*Alces*, from <http://www.unc.edu/~melchert/anathistphon.pdf> (*link is dead*)

$D \rightarrow T \text{ } T[+lenis] / \#_-$   
 $T \rightarrow D \text{ } T[+fortis] \text{ } T[+lenis]$   
 $h_2 \text{ } h_3 \rightarrow hh \text{ } h$   
 $k_1 \rightarrow z$   
 $k^w \rightarrow w$   
 $\{k_1, k\} \rightarrow j / \text{ } _e(:)$   
 $\{k_1, k\} \rightarrow \emptyset / \text{ } _i(:)$   
 $k \rightarrow \emptyset / \text{ } V\_V$   
 $k \rightarrow \emptyset / \text{ } _N$   
 $g \rightarrow d_3 \text{ (sporadic)}$   
 $e \rightarrow i / \text{ } j_-$   
 $e \rightarrow a$   
 $V \rightarrow V_1 / \text{ in " } U[+open]$   
 $V \rightarrow V_1 / \text{ in " } \#U$   
 $o(:) \rightarrow a(:)$   
 $\{d, l\} \rightarrow r \text{ "in Hieroglyphic Luwian, occasionally"}$   
 $j \rightarrow \emptyset / \text{ } z_-$   
 $hh \text{ } h \rightarrow h \emptyset / \text{ " } V_1:u$   
 $hh \text{ } h \rightarrow h \emptyset / \text{ } u_1"V_1$   
 $h \rightarrow \emptyset / \text{ } _w ! \text{ at word boundaries}$   
 $hh \rightarrow \emptyset / \text{ } _\{w, m, n, r, l\} \text{ "medially, and sporadically"}$   
 $D \text{ } R \rightarrow D_1: R_1 / \text{ " } e_- \text{ in } U[+open]$   
 $\{e, e_1\}: \text{ } \text{ } \rightarrow i: \text{ } a:$

### 17.2.3 Common Anatolian to Lycian

*Alces*, from <http://www.unc.edu/~melchert/anathistphon.pdf> (*link is dead*)

$D \rightarrow T / \#_-$   
 $D \rightarrow F[+voice]$   
 $N\{F[+voice], T\} \rightarrow nD$   
 $d \rightarrow k / \text{ } _w$   
 $k^w \rightarrow t / \text{ } _E$   
 $k^w \rightarrow k / \text{ } _E, \text{ in Milyan}$   
 $\{g_1, g\} \rightarrow j / \text{ } _e(:)$   
 $\{g_1, g\} \rightarrow \emptyset / \text{ } _i(:)$   
 $g \rightarrow \emptyset / \text{ } V\_V$

$j \rightarrow \emptyset / ts\_$   
 $s \rightarrow z / \_ \{R,j,w\}$  “(in Milyan, this happened after the change of  $k'$  to s)”  
 $s \rightarrow h$   
 $k' \rightarrow s$   
 $h_3 \rightarrow g / \_ B$   
 $h_2 \rightarrow k / \_ EE$  (probably a palatal stop)  
 $h_2 \rightarrow q / \_ E$  (possibly plain velar stop)  
 $h_2 \rightarrow x /$  else (possibly a uvular stop)  
 $w \rightarrow b / \_ C\_$   
 $g \rightarrow d_3$  (sporadic)  
 $e \rightarrow i / j\_$   
 $\{e,e\} : o \text{ } \text{ } \rightarrow i : e \text{ } a :$   
 $V : \rightarrow V[-long]$   
 $e \rightarrow a / \_ U[+u,a]$   
 $a \rightarrow e / \_ U[+e,i]$   
 “[P]lus lots of syncope which he doesn’t elaborate on”

#### 17.2.4 Common Anatolian to Lydian

*Alces*, from <http://www.unc.edu/~melchert/anathistphon.pdf> (*link is dead*)

$d \rightarrow t_f / \_ \{i,u\}$   
 $d \rightarrow t / \_ \{\#,N\}\_$   
 $p \text{ } d \text{ } D \rightarrow f \text{ } \text{ } T$   
 $T \rightarrow D / \_ N\_$   
 $k' \rightarrow K$   
 $K^w \rightarrow K / \_ V[+round]$   
 $f \rightarrow s$   
 $s \rightarrow f / \_ \{i,e\}$   
 $s \rightarrow f / i\_$   
 $\{h_2,h_3\} \rightarrow \emptyset$   
 $\{m,n\} \rightarrow v / \_ \#$  “(that’s a Greek nu, I’m not sure what it’s supposed to represent)”  
 $l \rightarrow \text{ } / \_ \{i,j\}$   
 $w (\rightarrow v?) \rightarrow f / s\_$   
 $j \rightarrow \emptyset / \_ C\_$   
 $j \text{ } u \rightarrow \text{ } w / \_ \#\_$   
 $j \rightarrow \text{ } / \_ V\_V$   
 $e \rightarrow i / j\_$   
 $\{e,a,o\} \rightarrow \bar{e} / \_ N$  in “U[+closed]”  
 $\{e,a,o\} \rightarrow \bar{a} / \_ N$  in “U[+open]”  
 $\{e,o\} \rightarrow a /$  in U[-stress]

$n \rightarrow \emptyset / \_P$  “(leaves nasalization on the previous vowel)”

$o(:) \text{ e: } \text{æ:} \rightarrow a(:) \text{ i: } a:$

$V: \rightarrow V[-\text{long}]$

“[P]lus lots of syncope which he doesn’t elaborate on”

### 17.2.5 Common Anatolian to Palaic

*Alces*, from <http://www.unc.edu/~melchert/anathistphon.pdf> (*link is dead*)

$D \ T \rightarrow T \ T[+\text{lenis}] / \# \_$

$T \ D \rightarrow T[+\text{fortis}] \ T[+\text{lenis}]$

$h_2 \ h_3 \rightarrow hh \ h$

$\acute{K} \rightarrow K$

$V \rightarrow V: / \text{ }^{\circ}U[+\text{open}]$

$e \rightarrow i / \text{ pretonic}$

$e \rightarrow a / \text{ posttonic in } U[+\text{open}]$

$o(:) \rightarrow a(:)$

$a \text{ e} \rightarrow a: \text{ e:} / \text{ in } ^{\circ}U[+\text{closed}]$

$\text{æ:} \rightarrow \text{e:}$

$g^w \rightarrow h^w / \text{ medially}$

$hhy \rightarrow \text{“something like } / \text{ }_3 / \text{”}$

$h \rightarrow \emptyset / \text{ }^{\circ}V: \_u$

$h \rightarrow \emptyset / \_u \text{ }^{\circ}V:$

$w \rightarrow j / \text{ “in } *d\acute{i}wots > \text{ Tiyaz ‘sun-god’; conditioning unknown”}$

$\text{ε:} \rightarrow \text{i:}$

## 17.3 Armenian

### 17.3.1 Proto-Indo-European to Artsakh Armenian

*Mecislau & Pogostick Man*, the latter citing Wikipedia contributors (2013), “Armenian Language”. *Wikipedia, the Free Encyclopedia*. [http://en.wikipedia.org/w/index.php?title=Armenian\\_language&oldid=582063933](http://en.wikipedia.org/w/index.php?title=Armenian_language&oldid=582063933)

*NB: The changes in plosives are the most contentious; the Wikipedia article gives differences between the seven dialects in initial position for only the alveolar series by way of comparison, so take plosive changes with a huge grain of salt*

$\{e, i\}: \{u, o\}: \rightarrow i \ u$

$\{e, o\}j \ \text{εw} \rightarrow \text{εj} \ \text{ow}$

$\{e, o\} \rightarrow a \text{ (rare)}$

$a\text{:} \rightarrow a$   
 $e \rightarrow \varepsilon$   
 $\varepsilon o \rightarrow i u / \_N$   
 $ej ia \rightarrow e \varepsilon a$   
 $\{i,u\} \rightarrow \text{ə} / \text{ in some unstressed syllables}$   
 $e oj \varepsilon a \rightarrow i u \varepsilon / \text{ when unstressed}$   
 $p t \rightarrow h t^h / \#_- (?)$   
 $t \rightarrow t^h / \{aw,ow\}_-$   
 $k^w \rightarrow t_j^h / \_ \{e,i\}$   
 $t k^{(w)} \rightarrow d g / \{N,L\}_-$   
 $p k' k^{(w)} \rightarrow \{w,v\} s k^h$   
 $g \rightarrow ts (?)$   
 $b d g^{(w)} \rightarrow p t k$   
 $b^{\text{fi}} d^{\text{fi}} g^{\text{fi}} g^{w\text{fi}} \rightarrow p t j k / \#_-$   
 $b^{\text{fi}} d^{\text{fi}} g^{\text{fi}} g^{\text{fi}} g^{w\text{fi}} \rightarrow \{w,v\} d z g \text{ ʒ}$   
 $j \rightarrow w / \_o$   
 $j \rightarrow ?$   
 $\{sk,ks\} kj \rightarrow ts^h t_j^h (?)$   
 $\{sr,rs\} \rightarrow r\text{:}$   
 $r \rightarrow r\text{:} / \_N$   
 $l \rightarrow \text{ɫ} / \{C,IV\}_-$   
 $l \rightarrow \text{ɫ} / V\_V$   
 $Ns sN \rightarrow s N$   
 $N \rightarrow w / S\_S$   
 $VN \rightarrow V[+nasal] \rightarrow V \rightarrow (?) / \_ \#, \text{ in polysyllables}$   
 $N \rightarrow n / \_ \#, \text{ in monosyllables}$   
 $\text{N̥} \rightarrow n / \_ \#$   
 $\text{m̥ n̥ ɾ̥ ɭ̥} \rightarrow am an ar a\text{ɫ}$   
 $V \rightarrow (?) / \_ (C) \#$

### 17.3.2 Proto-Indo-European to Erevan Armenian

*Mecislau & Pogostick Man*, the latter citing Wikipedia contributors (2013), “Armenian Language”. *Wikipedia, the Free Encyclopedia*. [http://en.wikipedia.org/w/index.php?title=Armenian\\_language&oldid=582063933](http://en.wikipedia.org/w/index.php?title=Armenian_language&oldid=582063933)

*NB: The changes in plosives are the most contentious; the Wikipedia article gives differences between the seven dialects in initial position for only the alveolar series by way of comparison, so take plosive changes with a huge grain of salt*

$\{e,i\}\text{:} \{u,o\}\text{:} \rightarrow i u$

$\{e,o\}j \varepsilon w \rightarrow \varepsilon j ow$   
 $\{e,o\} \rightarrow a$  (rare)  
 $a: \rightarrow a$   
 $e \rightarrow \varepsilon$   
 $\varepsilon o \rightarrow i u / \_N$   
 $ej ia \rightarrow e \varepsilon a$   
 $\{i,u\} \rightarrow \text{ə} /$  in some unstressed syllables  
 $e oj \varepsilon a \rightarrow i u \varepsilon /$  when unstressed  
 $p t \rightarrow h t^h / \#\_ (?)$   
 $t \rightarrow t^h / \{aw,ow\}\_$   
 $k^w \rightarrow t_j^h / \_ \{e,i\}$   
 $t k^{(w)} \rightarrow d g / \{N,L\}\_$   
 $p k k^{(w)} \rightarrow \{w,v\} s k^h$   
 $g \rightarrow ts (?)$   
 $b d g^{(w)} \rightarrow p t k$   
 $g^{wf} \rightarrow g^f / \#\_$   
 $b^f d^f g^f g^{wf} \rightarrow \{w,v\} d z g \text{ ʒ}$   
 $j \rightarrow w / \_o$   
 $j \rightarrow ?$   
 $\{sk,ks\} kj \rightarrow ts^h t_j^h (?)$   
 $\{sr,rs\} \rightarrow r:$   
 $r \rightarrow r: / \_N$   
 $l \rightarrow \text{ɫ} / \{C,IV\}\_$   
 $l \rightarrow \text{ɫ} / V\_V$   
 $Ns sN \rightarrow s N$   
 $N \rightarrow w / S\_S$   
 $VN \rightarrow V[+nasal] \rightarrow V \rightarrow (?) / \_ \#,$  in polysyllables  
 $N \rightarrow n / \_ \#,$  in monosyllables  
 $N \rightarrow n / \_ \#$   
 $m \text{ ɲ } n \text{ ɾ } l \rightarrow am an ar a\text{ɫ}$   
 $V \rightarrow (?) / \_ (C) \#$

### 17.3.3 Proto-Indo-European to Istanbul Armenian

*Mecislau & Pogostick Man*, the latter citing Wikipedia contributors (2013), “Armenian Language”. *Wikipedia, the Free Encyclopedia*. [http://en.wikipedia.org/w/index.php?title=Armenian\\_language&oldid=582063933](http://en.wikipedia.org/w/index.php?title=Armenian_language&oldid=582063933)

*NB: The changes in plosives are the most contentious; the Wikipedia article gives differences between the seven dialects in initial position for only the alveolar series by way of comparison, so take plosive changes with a huge grain of salt*



$\{e,i\} \rightarrow \{u,o\}$   
 $\{e,o\}j \rightarrow \varepsilon j$   
 $\{e,o\} \rightarrow a$  (rare)  
 $a \rightarrow a$   
 $e \rightarrow \varepsilon$   
 $\varepsilon o \rightarrow i u / \_N$   
 $ej ia \rightarrow e \varepsilon a$   
 $\{i,u\} \rightarrow \text{ə} /$  in some unstressed syllables  
 $e oj \varepsilon a \rightarrow i u \varepsilon /$  when unstressed  
 $t \rightarrow t^h / \{aw,ow\} \_ ! \# \_$   
 $k^w \rightarrow t^h / \_ \{e,i\}$   
 $t k^{(w)} \rightarrow d g / \{N,L\} \_$   
 $p k k^{(w)} \rightarrow \{w,v\} s k^h$   
 $g \rightarrow ts (?)$   
 $b d g^{(w)} \rightarrow p t k$   
 $g^{wf} \rightarrow d \text{ʒ} / \# \_ \{e,i\}$   
 $b^f g^f g^{(w)f} \rightarrow b j k / \# \_$   
 $b^f d^f g^f g^{wf} \rightarrow \{w,v\} d z g \text{ʒ}$   
 $j \rightarrow w / \_o$   
 $j \rightarrow ?$   
 $\{sk,ks\} kj \rightarrow ts^h t^h (?)$   
 $\{sr,rs\} \rightarrow r$   
 $r \rightarrow r / \_N$   
 $l \rightarrow \text{ɫ} / \{C,IV\} \_$   
 $l \rightarrow \text{ɫ} / V\_V$   
 $Ns sN \rightarrow s N$   
 $N \rightarrow w / S\_S$   
 $VN \rightarrow V[+nasal] \rightarrow V \rightarrow (?) / \_ \#,$  in polysyllables  
 $N \rightarrow n / \_ \#,$  in monosyllables  
 $\text{N} \rightarrow n / \_ \#$   
 $m n r \text{ɫ} \rightarrow am an ar a\text{ɫ}$   
 $V \rightarrow (?) / \_ (C) \#$

#### 17.3.4 Proto-Indo-European to Kharpert Armenian

*Mecislau & Pogostick Man*, the latter citing Wikipedia contributors (2013), “Armenian Language”. *Wikipedia, the Free Encyclopedia*. [http://en.wikipedia.org/w/index.php?title=Armenian\\_language&oldid=582063933](http://en.wikipedia.org/w/index.php?title=Armenian_language&oldid=582063933)

*NB: The changes in plosives are the most contentious; the Wikipedia article gives differences between the seven dialects in initial position for only the alveolar series by way*

of comparison, so take plosive changes with a huge grain of salt

$\{e,i\} \rightarrow \{u,o\}$   
 $\{e,o\}j \rightarrow \varepsilon j$   
 $\{e,o\} \rightarrow a$  (rare)  
 $a: \rightarrow a$   
 $e \rightarrow \varepsilon$   
 $\varepsilon o \rightarrow i u / \_N$   
 $ej ia \rightarrow e \varepsilon a$   
 $\{i,u\} \rightarrow \text{ə} /$  in some unstressed syllables  
 $e oj \varepsilon a \rightarrow i u \varepsilon /$  when unstressed  
 $p t \rightarrow h t^h / \# \_ (?)$   
 $t \rightarrow t^h / \{aw,ow\} \_$   
 $k^w \rightarrow t^h j^h / \_ \{e,i\}$   
 $t k^{(w)} \rightarrow d g / \{N,L\} \_$   
 $p k^{(w)} \rightarrow \{w,v\} s k^h$   
 $g \rightarrow ts (?)$   
 $b d g^{(w)} \rightarrow p t k$   
 $b^h d^h g^h g^{(w)h} \rightarrow p t j k / \# \_$   
 $b^h d^h g^h g^{wh} \rightarrow \{w,v\} d z g \text{ ʒ}$   
 $j \rightarrow w / \_o$   
 $j \rightarrow ?$   
 $\{sk,ks\} kj \rightarrow ts^h t^h j^h (?)$   
 $\{sr,rs\} \rightarrow r:$   
 $r \rightarrow r: / \_N$   
 $l \rightarrow \text{ɫ} / \{C,IV\} \_$   
 $l \rightarrow \text{ɫ} / V\_V$   
 $Ns sN \rightarrow s N$   
 $N \rightarrow w / S\_S$   
 $VN \rightarrow V[+nasal] \rightarrow V \rightarrow (?) / \_ \#,$  in polysyllables  
 $N \rightarrow n / \_ \#,$  in monosyllables  
 $\text{N} \rightarrow n / \_ \#$   
 $m n r \text{ ɫ} \rightarrow am an ar a\text{ɫ}$   
 $V \rightarrow (?) / \_ (C) \#$

### 17.3.5 Proto-Indo-European to Sebastia Armenian

*Mecislau & Pogostick Man*, the latter citing Wikipedia contributors (2013), “Armenian Language”. *Wikipedia, the Free Encyclopedia*. [http://en.wikipedia.org/w/index.php?title=Armenian\\_language&oldid=582063933](http://en.wikipedia.org/w/index.php?title=Armenian_language&oldid=582063933)

*NB: The changes in plosives are the most contentious; the Wikipedia article gives differences between the seven dialects in initial position for only the alveolar series by way of comparison, so take plosive changes with a huge grain of salt*

$\{e,i\}r: \{u,o\}r: \rightarrow i\ u$   
 $\{e,o\}j\ \varepsilon w \rightarrow \varepsilon j\ ow$   
 $\{e,o\} \rightarrow a$  (rare)  
 $a:r \rightarrow a$   
 $e \rightarrow \varepsilon$   
 $\varepsilon\ o \rightarrow i\ u / \_N$   
 $\varepsilon j\ ia \rightarrow e\ \varepsilon a$   
 $\{i,u\} \rightarrow \text{ə}$  / in some unstressed syllables  
 $e\ oj\ \varepsilon a \rightarrow i\ u\ \varepsilon$  / when unstressed  
 $p\ t \rightarrow h\ t^h / \#\_ (?)$   
 $t \rightarrow t^h / \{aw,ow\}\_$   
 $k^w \rightarrow t_j^h / \_ \{e,i\}$   
 $t\ k^{(w)} \rightarrow d\ g / \{N,L\}\_$   
 $p\ k\ k^{(w)} \rightarrow \{w,v\}\ s\ k^h$   
 $g \rightarrow ts (?)$   
 $b\ d\ g^{(w)} \rightarrow p\ t\ k$   
 $b^f\ d^f\ g^f\ g^f\ g^{wf} \rightarrow \{w,v\}\ d\ z\ g\ ʒ / !\ \_ \#$   
 $j \rightarrow w / \_o$   
 $j \rightarrow ?$   
 $\{sk,ks\}\ kj \rightarrow ts^h\ t_j^h (?)$   
 $\{sr,rs\} \rightarrow r:r$   
 $r \rightarrow r:r / \_N$   
 $l \rightarrow \text{ɫ} / \{C,IV\}\_$   
 $l \rightarrow \text{ɫ} / V\_V$   
 $Ns\ sN \rightarrow s\ N$   
 $N \rightarrow w / S\_S$   
 $VN \rightarrow V[+nasal] \rightarrow V \rightarrow (?) / \_ \#, \text{ in polysyllables}$   
 $N \rightarrow n / \_ \#, \text{ in monosyllables}$   
 $N \rightarrow n / \_ \#$   
 $m\ n\ r\ l \rightarrow am\ an\ ar\ a\text{ɫ}$   
 $V \rightarrow (?) / \_ (C)\#$

### 17.3.6 Proto-Indo-European to Southeast Armenian

*Mecislau & Pogostick Man*, the latter citing Wikipedia contributors (2013), “Armenian Language”. *Wikipedia, the Free Encyclopedia*. [http://en.wikipedia.org/w/index.php?title=Armenian\\_language&oldid=582063933](http://en.wikipedia.org/w/index.php?title=Armenian_language&oldid=582063933)

*NB: The changes in plosives are the most contentious; the Wikipedia article gives differences between the seven dialects in initial position for only the alveolar series by way of comparison, so take plosive changes with a huge grain of salt*

$\{e,i\} \rightarrow \{u,o\}$   
 $\{e,o\} \rightarrow \{i,u\}$   
 $\{e,o\} \rightarrow a$  (rare)  
 $a \rightarrow \varepsilon$   
 $\varepsilon \rightarrow e$   
 $\varepsilon o \rightarrow i u / \_N$   
 $ej ia \rightarrow e \varepsilon a$   
 $\{i,u\} \rightarrow \text{schwa}$  / in some unstressed syllables  
 $e oj \varepsilon a \rightarrow i u \varepsilon$  / when unstressed  
 $p t \rightarrow h t^h / \# \_ (?)$   
 $t \rightarrow t^h / \{aw,ow\} \_$   
 $k^w \rightarrow t^h / \_ \{e,i\}$   
 $t k^{(w)} \rightarrow d g / \{N,L\} \_$   
 $p k k^{(w)} \rightarrow \{w,v\} s k^h$   
 $g \rightarrow ts (?)$   
 $b d g^{(w)} \rightarrow p t k$   
 $g^{wf} \rightarrow d z / \# \_ \{e,i\}$   
 $b^f g^f g^{wf} \rightarrow b j g / \# \_$   
 $b^f d^f g^f g^{(w)f} \rightarrow p t j k / \# \_$   
 $b^f d^f g^f g^{wf} \rightarrow \{w,v\} d z g z$   
 $j \rightarrow w / \_o$   
 $j \rightarrow ?$   
 $\{sk,ks\} kj \rightarrow ts^h t^h (?)$   
 $\{sr,rs\} \rightarrow r$   
 $r \rightarrow r$  /  $\_N$   
 $l \rightarrow \text{schwa} / \{C,IV\} \_$   
 $l \rightarrow \text{schwa} / V\_V$   
 $Ns sN \rightarrow s N$   
 $N \rightarrow w / S\_S$   
 $VN \rightarrow V[+nasal] \rightarrow V \rightarrow (?) / \_ \#,$  in polysyllables  
 $N \rightarrow n / \_ \#,$  in monosyllables  
 $\text{N} \rightarrow n / \_ \#$   
 $m n r \text{schwa} \rightarrow am an ar a\text{schwa}$   
 $V \rightarrow (?) / \_ (C) \#$

### 17.3.7 Proto-Indo-European to Southwest Armenian

*Mecislau & Pogostick Man*, the latter citing Wikipedia contributors (2013), “Armenian Language”. *Wikipedia, the Free Encyclopedia*. [http://en.wikipedia.org/w/index.php?title=Armenian\\_language&oldid=582063933](http://en.wikipedia.org/w/index.php?title=Armenian_language&oldid=582063933)

*NB: The changes in plosives are the most contentious; the Wikipedia article gives differences between the seven dialects in initial position for only the alveolar series by way of comparison, so take plosive changes with a huge grain of salt*

$\{e,i\} : \{u,o\} : \rightarrow i\ u$   
 $\{e,o\}j\ \varepsilon w \rightarrow \varepsilon j\ ow$   
 $\{e,o\} \rightarrow a$  (rare)  
 $a : \rightarrow a$   
 $e \rightarrow \varepsilon$   
 $\varepsilon\ o \rightarrow i\ u / \_N$   
 $\varepsilon j\ ia \rightarrow e\ \varepsilon a$   
 $\{i,u\} \rightarrow \text{ə}$  / in some unstressed syllables  
 $e\ oj\ \varepsilon a \rightarrow i\ u\ \varepsilon$  / when unstressed  
 $p\ t \rightarrow h\ t^h / \#\_ (?)$   
 $t \rightarrow t^h / \{aw,ow\}_-$   
 $k^w \rightarrow t^h / \_ \{e,i\}$   
 $t\ k^{(w)} \rightarrow d\ g / \{N,L\}_-$   
 $p\ k\ k^{(w)} \rightarrow \{w,v\}\ s\ k^h$   
 $g \rightarrow ts (?)$   
 $b\ d\ g^{(w)} \rightarrow p\ t\ k$   
 $g^{wf} \rightarrow d\ z / \#\_ \{e,i\}$   
 $b^f\ g^f\ g^{wf} \rightarrow b\ j\ g / \#\_$   
 $b^f\ d^f\ g^f\ g^{wf} \rightarrow \{w,v\}\ d\ z\ g\ z$   
 $j \rightarrow w / \_o$   
 $j \rightarrow ?$   
 $\{sk,ks\}\ kj \rightarrow ts^h\ t^h (?)$   
 $\{sr,rs\} \rightarrow r :$   
 $r \rightarrow r : / \_N$   
 $l \rightarrow \text{ɫ} / \{C,IV\}_-$   
 $l \rightarrow \text{ɫ} / V\_V$   
 $Ns\ sN \rightarrow s\ N$   
 $N \rightarrow w / S\_S$   
 $VN \rightarrow V[+nasal] \rightarrow V \rightarrow (?) / \_ \#,$  in polysyllables  
 $N \rightarrow n / \_ \#,$  in monosyllables  
 $\text{N} \rightarrow n / \_ \#$   
 $m\ n\ r\ l \rightarrow am\ an\ ar\ a\text{ɫ}$

$V \rightarrow (?) / \_ (C) \#$

## 17.4 Avestan

### 17.4.1 Proto-Indo-European to Avestan

*Pogostick Man, Alex Fink, and Tropylium*, the former two citing Wikipedia contributors (2013), “Proto-Indo-Iranian language”. *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=Proto-Indo-Iranian\\_language&oldid=543625693](https://en.wikipedia.org/w/index.php?title=Proto-Indo-Iranian_language&oldid=543625693); and Alex Fink citing [https://en.wikipedia.org/wiki/Avestan\\_phonology](https://en.wikipedia.org/wiki/Avestan_phonology)

*NB: Tropylium wishes to note that his sound changes are subject to change.*

$b^{fi} d^{fi} g^{fi} \rightarrow b d z$

$k g \rightarrow s z$

$k^{(w)} g^{(w)(fi)} \rightarrow tʃ dʒ / \_ E$

$k k^w g^{(w)(fi)} \rightarrow x k g / \text{else}$

$rt \rightarrow \check{s}$  (Alex Fink says that the realization of  $/\check{s}/$  “is unclear”)  $s \rightarrow \{s, h\}$

$u \rightarrow v$

$l \rightarrow r \{n, m\} \rightarrow a$

$\{l, r\} \rightarrow \text{ər}(\text{ə}(r))$

$e e: \rightarrow a a:$

$o o: \rightarrow \{a, a:\} a:$

$h(j) \rightarrow \eta h / a\_a$

$hw \rightarrow \eta^w h / a\_a$

$h \rightarrow \eta / a\_ra$

$h_x \rightarrow \emptyset$

## 17.5 Proto-Indo-European to Proto-Celtic

*dhokarena56*, from Matasović (2009), *Etymological Dictionary of Proto-Celtic* (ed. Lubotsky).

“PIE Dialectal”

—  $h_1 e h_2 e h_3 e \rightarrow e a o$

—  $eh_1 eh_2 eh_3 \rightarrow e: a: o:$

—  $H \rightarrow a / C\_C ! \# \_$

—  $SS \rightarrow s:$

—  $\emptyset \rightarrow a / CR\_HC$

—  $H \rightarrow \emptyset / V\_C$  when pretonic

- $H \rightarrow a / \#R\_C$
- $\acute{K} \rightarrow K$

#### Early Proto-Celtic

- $g^w \rightarrow b$
- $h \rightarrow \emptyset / C\_$
- $\emptyset \rightarrow i / C\{l,r\}S$
- $e \rightarrow a / \_Ra$  (short a only), though “[t]he e was often restored by analogy”
- $\emptyset \rightarrow a / C\_RC$
- $H \rightarrow \emptyset /$  “if not in a syllabic position”
- $p \dots k^w \rightarrow k^w \dots k^w$
- $e: \rightarrow i:$
- $o: \rightarrow u: /$  in  $U\#$
- $V: \rightarrow V[-\text{long}] / \_RC$
- $C_1C_2 \rightarrow xC_2 /$  if  $C_2$  was a plosive or s
- $p \rightarrow b / \_ \{r,l\}$

#### Late Proto-Celtic

- $p \rightarrow w / B\_N$
- $p \rightarrow f$
- $o: ej \rightarrow a: e:$
- $e \rightarrow o / \_w$
- $u \rightarrow o / \_wO$

### 17.5.1 Proto-Indo-European to Old Irish

*dhokarena56*

“Laryngeal rules (the ones common to all branches except Anatolian)”

$K^w \rightarrow K$

“The PIE rules for the voicing of  $s \rightarrow z$ , as in [nizdos] for \*nisdos, are assumed to apply”

$C^{fi} \rightarrow C$

$e: \rightarrow i: / ! \_ \{i,u\}$

Obstruent clusters assimilate in voicing to that of the final obstruent

$t: \rightarrow s:$

$p \rightarrow f / \{V,\#\}_-$

$f \rightarrow x / \_O$

$f \rightarrow \emptyset /$  else

$r \_ \rightarrow \{ri,ra\} \{li,la\} / \_ \{S,R\}$  (which vowel crops up is unpredictable)

$r \_ \rightarrow \{ra,ar\} \{la,al\} / \_ \{s,CC,V,\#\}$  (the results are unpredictable)

$m \_ \rightarrow am \ an / \_ \{s,(\{m,j,w\}V)\}$

$m \_ \rightarrow em \ en /$  else

Stress change:

- Pronouns, articles, and conjunctions become unstressed.
- First syllables stress in all verbal imperatives.
- First syllables stress in all other parts of speech except preverbs and the exceptions noted above.
- Second syllables receive stress otherwise.
- “This, unlike the preceding rules, remained a morphologically conditioned rule in Old Irish.”

$g^w \rightarrow b / \#\_V !\_u(:)$

$g^w \rightarrow b / \#\_N$

$g^w \rightarrow b / C\_V$

$g^w \rightarrow g$

$p\ t\ k\ k^w\ b\ d\ g\ m\ n\ l\ r\ s \rightarrow f\ \theta\ x\ x^w\ v\ \delta\ \gamma\ M\ N\ L\ R\ h / V(\#)\_ \{R,V\}$  (“We don’t know the exact values of lenited  $/m\ n\ l\ r/$ . We can guess that lenited  $m$  became a nasalized labial continuant of some sort, but beyond that, we don’t know.”)

$k \rightarrow x / V\_t$

$m \rightarrow n / V\_ \#$ ; “[i]t is thought that the vowel needs to be unstressed, but this is not certain”

$V: \rightarrow V / \_N \#$ ; “[i]t is thought that the long vowel probably needed to be unstressed-again, this is uncertain”

$p\ t\ k\ k^w\ b\ d\ g\ \emptyset \rightarrow b\ d\ g\ g^w\ mb\ nd\ \eta g\ n / n\#\_ \_V$

$o: \rightarrow u: / \_ (C \dots) \#$

$o: \rightarrow u: / \_ \#$

$o: \rightarrow a: / \text{else}$

$V: \rightarrow V[-\text{long}] / \_H$  (includes diphthongs)

“The following three rules only apply if the vowel is unstressed”:

—  $e \rightarrow i / \_ (C \dots) \#$

—  $o \rightarrow a / \_ \{(C \dots), u\} \#$

—  $\{ai, oi\} \rightarrow i: / \_ \#$

“The following two rules apply if the vowel in question is stressed or follows the stressed syllable”; consonant clusters cannot be  $/nt\ nd/$ :

—  $i\ u \rightarrow e\ o / \_ C(\dots C) \{a(:), e(:), o(:)\}$

—  $e\ o \rightarrow i\ u / \_ C(\dots C) \{H, j\}$

$C \rightarrow C^j / \_ \{F, j\}$

$C \rightarrow C^w / \_ \{B, w\}$

$K^w \rightarrow K$

For the following: “The book says nothing about length in the input vowels, but I think they could be either short or long from the examples given.”

—  $n \rightarrow \emptyset / \{i, o, u\} \_ \{p, t, k, s\}$

—  $\{a, e\}n \rightarrow e: / \_ \{p\ t\ k\ s\}$

$w \rightarrow f / \#\_$



w → Ø / {#,C}C\_

w → Ø / {θ,x}\_

w → Ø / V\_ {V,#}

w → v / else

“The following changes. . . are, quoth the book, ‘somewhat approximative’”:

— {p,t} → Ø / #s\_r

— {p,t} → Ø / #s\_ “(although it says that occasionally st > t / #\_)

— s → Ø / [anything]{l,r}\_O

— hn hm → n: m: / [anything]\_ (“[t]his change is a bit speculative”)

— “[A] sequence of two plosives becomes a geminate of the second one”

— st zd → s: d: / [anything]\_

— {l,h}l {l,h}r l{p,s,n} r{p,s,} ln → l: r: l: r: (l:?) / [anything]\_

— C: → C[-long]

V → Ø / C\_# when unstressed ! C = j

C(...C) → Ø / \_# ! /l r/ and clusters containing them; “[t]his remained a phonologically conditioned rule in OIr”

{au,eu,ou} → o:

ei → e:

o: → ua / \_[anything], when stressed

e: → ia / \_{#,Cj} when stressed; “ai and oi remain, but are written as <æai oi oi> seemingly randomly”

j → Ø

The second and third rule below “may well have been for the most part optional”; every one of the three “only applies to unstressed vowels” and “remained as a phonologically conditioned rule”:

— V: → V[-long]

— a → e / \_#

— {e,o} → a / \_[anything]

V → V: / \_#, when stressed; “[t]his remained as a phonologically conditioned rule in OIr”

VOR → V:R; “this is a tad unclear, because in some instances it didn’t seem to apply”

V → Ø / #UU( )U(U( )U) / unstressed; this “remained as a phonologically conditioned rule in OIr”; “[t]hat’s a little unclear, so let me try and enumerate: in words of more than three syllables, every other vowel (only the even ones) dropped, if it’s unstressed. In some words, syncope didn’t apply because it would create an unwieldy consonant cluster: so PIE \*komaktyom → OIr cumachte, not \*cumchte”

### 17.5.2 Proto-Celtic to Middle Welsh

*Dewrad & Pogostick Man*, the latter citing Willis (David), “Old and Middle Welsh”

k<sup>w</sup> → p

$V_i \rightarrow V / \_ \#$   
 $ei \rightarrow e_i$   
 $st \rightarrow s_i$  (with some exceptions)  
 $ai \rightarrow \varepsilon$   
 $s \rightarrow \emptyset / V\_V$   
 $V \rightarrow \emptyset / \_ (C) \#$ , also in proclitics  
 $s \rightarrow \emptyset / x\_$   
 $\{au, eu, ou\} \rightarrow \emptyset$   
 $u_i: \{oi, \varphi_i\} \rightarrow y_i: u_i$   
 $j \rightarrow \delta / V\_$   
 $i u \rightarrow e o / \_ Ca$   
 $y_i: \rightarrow i$   
 $p t k \{b, m\} d g \rightarrow b d g v \delta \gamma / \_ V$   
 $a_i: \rightarrow \varphi_i$   
 $a o \rightarrow ei \{i, ei\} / \_ (C \dots) j (C \dots) \#$   
 $a \rightarrow \{i, ei\} / \_ (C \dots) j (C \dots) \#$   
 $V \rightarrow i / \_ (C \dots) j (C \dots) \#$   
 $\{a, o\} \rightarrow e / \_ (C \dots) i (:)$   
 $\{a, e, o\} \rightarrow ei / \_ (C \dots) j$   
 $V \rightarrow \emptyset / \_ \#$   
 $mb nd \eta g \rightarrow m_i: n_i: \eta_i:$   
 $e \rightarrow i / \_ N$   
 $\$ \rightarrow h / V\_$  (what \$ is is unclear)  
 $V \rightarrow \emptyset / \_ [+intertonic]$   
 $p_i: t_i: k_i: \rightarrow f \theta x$   
 $p t k \rightarrow f \theta x / \{r, l\} \_$   
 $\gamma \rightarrow i / \_ C$   
 $xt \rightarrow i\theta$   
 $\gamma \rightarrow i / C\_V$   
 $\varepsilon_i: \rightarrow ui$   
 $\varphi_i: \rightarrow au /$  when stressed  
 $l \rightarrow \mathfrak{t} / \_ t$   
 $w \rightarrow gw / \# \_$   
 $mp nt \eta k \rightarrow m \grave{o} n \grave{o} \eta$   
 $\varphi \rightarrow \emptyset / \# sC$   
 $l r \rightarrow \mathfrak{t} r \grave{o} / \# \_$   
 $\gamma \rightarrow \emptyset / \_ \#$

## 17.6 Proto-Indo-European to Dacian

*Pogostick Man*, from Wikipedia contributors (2013), “Dacian language”. *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=Dacian\\_language&oldid=582406161](https://en.wikipedia.org/w/index.php?title=Dacian_language&oldid=582406161)

o → a  
e → je / in open syllables, when stressed  
e → ja / in closed syllables, when stressed  
e: → a:  
oi wo wj ow → ai wa vi aw  
ei → {ei,i} (“PIE \*ei evolution is not well reconstructed yet”)  
b<sup>fi</sup> d<sup>fi</sup> ǵ<sup>fi</sup> g<sup>fi</sup> g<sup>wfi</sup> → b d ǵ g g<sup>w</sup>  
k ǵ → ts dz  
{k<sup>w</sup>,kw} {g<sup>w</sup>,gw} → tʃ dʒ (→ s~z z ?) / \_E  
{k<sup>w</sup>,kw} {g<sup>w</sup>,gw} → k g / else

## 17.7 Proto-Indo-European to Common Germanic

*Siride*

b<sup>fi</sup> d<sup>fi</sup> g<sup>fi</sup> → β ð γ  
b d g → p t k  
p t k → f θ x  
f θ s x → β ð z γ “(Except initially or following IE stress)”  
{i,j} {u,w} → j w / V[+short]C\_  
{i,j} {u,w} → ij uw  
a: → o:  
e → i  
e: → æ:  
o → a  
ei oi → i: ai  
ei {oi,ai} → e: o: (?)  
eu ou → iu au

### 17.7.1 Common Germanic to Gothic

*Pogostick Man*, from Wright, Joseph (1910). *Grammar of the Gothic Language*, 2nd Ed.; and Wikipedia contributors (2014). “Gothic language”. *Wikipedia, the Free Encyclopedia*. [http://en.wikipedia.org/w/index.php?title=Gothic\\_language&oldid=](http://en.wikipedia.org/w/index.php?title=Gothic_language&oldid=)

*NB: Wright seems to regard Germanic labiovelars as sequences of velar + w if I'm reading this right; additionally it looks like some of what Wright considers diphthongs may have been long monophthongs*

Stressed vowels:

- o e → u i
- u → ɔ / \_{r,h} (unless this r “arose from older s by assimilation”)
- i → ε / \_{r,h,ʌ}
- æ: → e:
- ew → iw

Unstressed vowels:

- V[- long] → Ø / \_# ! V = u
- V[- long] → Ø / U\_C# ! V = u
- Inherited “long final vowels... became shortened in polysyllabic words, when the vowels in question originally had the ‘broken’ accent, but remained unshortened when they originally had the ‘slurred’ accent”
- aj → a / U\_#
- “Originally long diphthongs became shortened in final syllables”

iw → ju / [- stress]

w → ʊ / V[- long]\_#C}

w → Ø / o:~j

o:w æ:j → ɔ: ε: / \_V

j → i / C\_# “after the loss of a final vowel or syllable”

ij → i: / \_s “after the loss of a vowel in final syllables”

ij → i / \_# “after the loss of a final vowel or syllable”

Vw → u / \_s (to wit, the vowel is deleted and the \*w syllabifies)

“In a few instances medial **-w-** (or **-ww-** the origin of which is uncertain) after short vowels became **-ggw-** in Gothic...”; similarly, medial \*-j(j)- became -ddj- in uncertain conditions

iji → i: / U[- stress](C...)\_

iji → i: / U[+ long + closed]\_ in the stem

i → Ø / \_ji

m → β / C[- voiced]\_n, when medial

m → φ / C[+ voiced]\_n, when medial

n: → n / \_C ! \_j

β → b / {r,l}\_

ð → d / C[+ voiced]\_

β ð γ → φ θ x / V\_-(s)#

“The final **-h** [= /h/?] in unaccented particles was often assimilated to the initial consonant of the following word”

$\gamma \rightarrow g / \#$   
 $\gamma \rightarrow g / C.V$

“In the forms of the strong verbs, medial **z** was supplanted by **s** through the levelling out of the **s**-forms. . . **z** was also supplanted by **s** in several weak verbs, which in some cases was due to the influence of the corresponding strong verbs”

$z \rightarrow s / \#$ , though “[t]his **s** was dropped when it came to stand after an original **s** through the loss of a vowel”, though it “remained when protected by a particle”

$s \rightarrow \emptyset / V[-\text{long}]r\#$

$s \rightarrow r /$  in “[t]he prep[osition]. **us** . . . before **r** in compounds”

$s \rightarrow \emptyset /$  in “[t]he prep[osition]. **us** . . . in compounds before **st**”, though this seems to have been less common

## 17.7.2 Common Germanic to West Germanic

*Siride*

$\beta \ \delta \ \gamma \rightarrow b \ d \ g / \{\#, "V\}$

$z \rightarrow \{r, \emptyset\}$

$C \rightarrow C: / \_j \ ! \ C = r$

$i \ u \rightarrow e \ o / \_ \% \{a, o\}$

$o: \rightarrow u: / \_ \#$

**17.7.2.1 West Germanic to Anglo-Frisian** *Siride? & Pogostick Man*, the latter citing Wikipedia contributors (2014), “Anglo-Frisian languages”. *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=Anglo-Frisian\\_languages&oldid=602286013](https://en.wikipedia.org/w/index.php?title=Anglo-Frisian_languages&oldid=602286013); Wikipedia contributors (2014), “Old Frisian”. *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=Old\\_Frisian&oldid=559739599](https://en.wikipedia.org/w/index.php?title=Old_Frisian&oldid=559739599); and Wikipedia contributors (2014), “Old English phonology”. *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=Old\\_English\\_phonology&oldid=602537992](https://en.wikipedia.org/w/index.php?title=Old_English_phonology&oldid=602537992)

$a \rightarrow \tilde{a} / \_N$  (short only)

$VN \rightarrow \tilde{V}: / \_F$

$a \rightarrow \text{æ}: /$  short only, includes diphthongs !  $*B$  or  $*\tilde{a}$  in next syllable

$k \ g \rightarrow t f \ j(?)$

$\text{æ}: \rightarrow a:$  “under to [*sic*] the influence of neighboring consonants”, but the article doesn’t elaborate

$\text{æ}: \rightarrow e:$

$\text{æ}u \rightarrow au$  ( $\text{æ} \rightarrow a / \_B$  in general?)

$a: \rightarrow \text{æ}: / \ ! \_N$  or if nasalized

i o → e a / unstressed  
 ai au eu → {e:,a:} a: ia  
 ia iu → ja: ju:  
 a → æ / ! \_N or if nasalized, or if \*B or \*ã in next syllable  
 h → Ø / V\_V  
 {i,u} → Ø / -# ! VC\_  
 θ resists change to d until the 14th Century

**17.7.2.1.1 Anglo-Frisian to Old English** *Pogostick Man*, from Wikipedia contributors (2011), “Phonological history of English”. *Wikipedia, the Free Encyclopedia*. [http://en.wikipedia.org/w/index.php?title=Phonological\\_history\\_of\\_English&oldid=453796112](http://en.wikipedia.org/w/index.php?title=Phonological_history_of_English&oldid=453796112)

ã: → õ:  
 V[+nas] → V[-nas]  
 {i,u} → Ø / -# ! V[-long]C\_#  
 k ʏ g → tʃ j dʒ / “in certain complex circumstances”

**17.7.2.1.2 Old English to Kentish Middle English** *Pogostick Man*, from Moore, Samuel (1919), *Historical Outlines of English Phonology and Middle English Grammar for Courses in Chaucer, Middle English, and the History of the English Language*; and Wikipedia contributors (2011), “Middle English phonology”. *Wikipedia, the Free Encyclopedia*. [http://en.wikipedia.org/w/index.php?title=Middle\\_English\\_phonology&oldid=456896605](http://en.wikipedia.org/w/index.php?title=Middle_English_phonology&oldid=456896605)

V: → V[-long] / \_C{:C} ! \_st{#,V} or when preceding a cluster which had triggered a vowel to become long in Old English; the book gives “Christ” vs. “Christmas” as an example

ea e:a eo e:o → a ε: e e:  
 æj → aj → ej  
 {æ:j,e(:)j} → ej  
 ay → aw  
 {eah,eaç,eax,eaj,eay} → aw  
 e:aw i:w → ew ju  
 {a:w,a:ɣ,o:w} → ɔ:w  
 oy → ɔ:w / \_V  
 {o(:)ht,a:ht} → ow  
 a: y(:) → ɔ: e(:)  
 a e o → a: ε: o: / in U[+open] ! in #U with the following U containing /i:/ or ending in one of /m n r l/  
 e:a e:o ie become sounds of uncertain identity; Moore says they were probably diphthongs

$V_i \rightarrow V[-\text{long}] / \text{ in } \#U \text{ before a } U \text{ with } /i:/$   
 $m \rightarrow n \rightarrow \emptyset / \_ \# \text{ when unstressed}$   
 $hn \{wl,hl\} hr \rightarrow w \ l \ r$   
 $\gamma \rightarrow g / \_ \# \_$   
 $\gamma \rightarrow w / C\_V$

**17.7.2.1.3 Old English to Midlands Middle English** *Pogostick Man*, from Moore, Samuel (1919), *Historical Outlines of English Phonology and Middle English Grammar for Courses in Chaucer, Middle English, and the History of the English Language*; and Wikipedia contributors (2011), “Middle English phonology”. *Wikipedia, the Free Encyclopedia*. [http://en.wikipedia.org/w/index.php?title=Middle\\_English\\_phonology&oldid=456896605](http://en.wikipedia.org/w/index.php?title=Middle_English_phonology&oldid=456896605)

$V_i \rightarrow V[-\text{long}] / \_ C\{i,C\} ! \_ st\{\#,V\}$  or when preceding a cluster which had triggered a vowel to become long in Old English; the book gives “Christ” vs. “Christmas” as an example

$ea \ e:a \ eo \ e:o \rightarrow a \ \varepsilon: \ e \ e:$   
 $\ae j \rightarrow a j \rightarrow e j$   
 $\{\ae j, e(:)j\} \rightarrow e j$   
 $a\gamma \rightarrow aw$   
 $\{eah, ea\zeta, eax, eaj, eay\} \rightarrow aw$   
 $e:aw \ i:w \rightarrow ew \ ju$   
 $\{a:w, a:\gamma, o:w\} \rightarrow \text{ɔ:w}$   
 $o\gamma \rightarrow \text{ɔ:w} / \_ V$   
 $\{a:ht, o(:)ht\} \rightarrow ow$   
 $a: y(:) \rightarrow \text{ɔ:} \ i(:)$   
 $a \ e \ o \rightarrow a: \ \varepsilon: \ o: / \text{ in } U[+\text{open}] ! \text{ in } \#U \text{ with the following } U \text{ containing } /i:/ \text{ or ending in one of } /m \ n \ r \ l/$   
 $V_i \rightarrow V[-\text{long}] / \text{ in } \#U \text{ before a } U \text{ with } /i:/$   
 $m \rightarrow n \rightarrow \emptyset / \_ \# \text{ when unstressed}$   
 $hn \{wl,hl\} hr \rightarrow w \ l \ r$   
 $\gamma \rightarrow g / \_ \# \_$   
 $\gamma \rightarrow w / C\_V$   
 $\{e, a, o\} \rightarrow \text{ə} \rightarrow \emptyset / \_ \#$

**17.7.2.1.4 Midlands Middle English to Early Modern English** *Pogostick Man*, from FireSpeakerWiki contributors (2013), “English sound changes”. *FireSpeakerWiki*. [http://wiki.firespeaker.org/English\\_sound\\_changes](http://wiki.firespeaker.org/English_sound_changes)  $\text{ʊ} \rightarrow \text{ʌ} ! P\_ \text{ and } \_ l$   
 $mb \ \eta g \rightarrow m \ \eta / \_ \#$   
 $tj \ sj \ dj \ zj \rightarrow tʃ \ ʃ \ dʒ \ ʒ / ! \_ u:$  (perhaps only before stressed  $u:$ ?)

a a {ɛ,ɪ,ʏ} → a: ɔ: ɜ: / ɹ{C,#}

au → a: / ɹP

au → a: / ɹN (sometimes)

au → ɔ: / else

“[A] large number of cases that were a: have become ɔ: subsequently for non-phonetic reasons, like laundry”

a → a: / “in a few words, like ‘father’”

a → æ / else

əɪ əʊ → aɪ æʊ / “in some parts of South-Eastern England”

əɪ əʊ → aɪ aʊ / “in most of Britain”

e: o: → eɪ oʊ / ! ɹ

**17.7.2.1.5 Early Modern English to American English** *Pogostick Man*, from FireSpeakerWiki contributors (2013), “English sound changes”. *FireSpeakerWiki*. [http://wiki.firespeaker.org/English\\_sound\\_changes](http://wiki.firespeaker.org/English_sound_changes); and my Phonetic Description class

æ → æ: (e.g., NYC) or a: (e.g., Boston) / ɹ{F[-voiced],N[-voiced]} (“words which change vary between dialects”)

ɒ → ɒ: → ɔ: / ɹF[-voiced]

æ: a: ɔ: → æə~eə a ɔ

ʌ → w (regional)

l → ɫ / “in some conditions”

ɪ → i / ɹ# when unstressed

{t,d} → r / V\_V[-stress]

i u e → ɪ ʊ ɛ / ɹ

o ɔ → ɔ ɒ / ɹ (most dialects have at least one if not both)

æ → ɛ / ɹ

j → Ø / {θ,s,z,l,n,t,d} ɹ when in onset position

ɒ → ɔ / ɹK “(partial)”

æ → ɛə / ɹ{n,m} “and others depending on dialect”

eə → eɪ

iə → ɪ (ongoing)

w → Ø / C\_ɹ for some C (toward(s), quart(er), sword)

t → Ø / f\_ɹ

Stuff regarding syllabification (e.g., of /ɹ/) and hiatus

Loss of pretonic /ə/ in #U (ongoing)

**17.7.2.1.6 Early Modern English to Australian English** *Pogostick Man*, from FireSpeakerWiki contributors (2013), “English sound changes”. *FireSpeakerWiki*. [http://wiki.firespeaker.org/English\\_sound\\_changes](http://wiki.firespeaker.org/English_sound_changes); and my Phonetic Description class



ɜ:ɪ ɑ:ɪ ɔ:ɪ e:ɪ o:ɪ i:ɪ u:ɪ → ɜ: ɑ: ɔ: eə əə ɪə uə / syllable-finally  
 ɑ → ɒ  
 æ → æ: → ɑ: / \_{F[-voiced],N[-voiced]}  
 ɒ → ɔ: → ɔ: / \_F[-voiced]  
 ʌ → w  
 l → ɫ (the conditions of this are not elaborated upon)  
 oʊ i: → ɔʊ ɪə / \_ɫ  
 oʊ i: → əʊ ɪi / else  
 u: → uə → u: / \_ɫ ! in Queensland and New South Wales  
 u: → ʊʊ → ʊ: / else  
 ɫ → əɫ / ! if one of the above vowel changes after the formation of /ɫ/ apply  
 ɪ → i: / \_# when unstressed  
 ɪ → i: / “unstressed foot-finally if the next syllable is stressed and begins with /k g tʃ dʒ  
 ʃ ʒ/”  
 ɪ → ə / unstressed  
 ə → ɪ / \_{k,g,tʃ,dʒ,ʃ,ʒ,v}  
 t d → r / V\_V[-stress]  
 əə → ɔ:  
 eə uə → ɛ: ɔ: (ongoing)  
 uə → ɔ: / ! {j,dʒ}\_  
 uə → ʊ:wə / “almost always otherwise, but see [above vowel changes after /ɫ/ is formed]”  
 oə → ɔ:  
 j → Ø / %\_{θ,s,z,l}\_”V  
 sj zj lj → ʃ ʒ j~ɫj / else “(j~ɫj fluctuation is formality)”  
 ɫj → ɫi / “after any segment after which coda-/ɫ/ is forbidden, e.g. failure [fæiɫiə]”  
 tʃ dʒ → tʃ dʒ  
 ɔ: → ɔ / \_ɪV[-stress]  
 ɔ: → ɔ / \_F[-voiced]  
 ɔ → ɔ: / “in ‘gone’ and some derivatives”  
 æ → æ: / \_{n,m,g,ɫ% ! \_n,m,g,ɫ%{j,w} or a form of a strong verb  
 æ → æ: / \_d (rare) ! form of a strong verb

#### **17.7.2.1.7 Early Modern English to British English** *Pogostick Man*, from Fire-SpeakerWiki contributors (2013), “English sound changes”. *FireSpeakerWiki*. [http://wiki.firespeaker.org/English\\_sound\\_changes](http://wiki.firespeaker.org/English_sound_changes)

ɜ:ɪ ɑ:ɪ ɔ:ɪ e:ɪ o:ɪ i:ɪ u:ɪ → ɜ: ɑ: ɔ: eə əə ɪə uə / syllable-finally  
 ɑ → ɒ  
 æ → æ: → ɑ: / \_{F[-voiced],N[-voiced]}  
 ɒ → ɔ: → ɔ: / \_F[-voiced]  
 ʌ → w l → ɫ / “in coda”

ou → əu

“LOT-CLOTH split reversed properly”

**17.7.2.1.8 Old English to Northern Middle English** *Pogostick Man*, from Moore, Samuel (1919), *Historical Outlines of English Phonology and Middle English Grammar for Courses in Chaucer, Middle English, and the History of the English Language*; and Wikipedia contributors (2011), “Middle English phonology”. *Wikipedia, the Free Encyclopedia*. [http://en.wikipedia.org/w/index.php?title=Middle\\_English\\_phonology&oldid=456896605](http://en.wikipedia.org/w/index.php?title=Middle_English_phonology&oldid=456896605)

V: → V[-long] / \_C{:C} ! \_st{#,V} or when preceding a cluster which had triggered a vowel to become long in Old English; the book gives “Christ” vs. “Christmas” as an example

ea e:a eo e:o → a ε: e e:

æj → aj → ej

{æj,e(:)j} → ej

ay → aw

{eah,eaç,eax,eaj,eay} → aw

e:aw i:rw → ew ju

{a:w,a:y,o:w} → ɔ:w

oy → ɔ:w / \_V

{a:ht,o(:)ht} → ow

a: most likely became one of {e:,ε:}

a e o → a: ε: o: / in U[+open] ! in #U with the following U containing /i:/ or ending in one of /m n r l/

y(:) → i(:)

V: → V[-long] / in #U before a U with /i:/

n → Ø / \_# when unstressed (not clear as to whether m → n beforehand in this position or not)

j tʃ → g k

ʃ → s / in unstressed syllables

ʌ became a sound spelled ⟨qu⟩

hn {wl,hl} hr → w l r

ȝ → g / #-

ȝ → w / C-V

{e,a,o} → ə → Ø / \_#, when unstressed (it appears this sound may also have gone to /ɪ/)

**17.7.2.1.9 Early Northern Middle English to Scots** *Pogostick Man*, from Wikipedia contributors (2014), “Phonological history of Scots”. *Wikipedia, the Free Encyclopedia*.

[https://en.wikipedia.org/w/index.php?title=Phonological\\_history\\_of\\_Scots&oldid=582962563](https://en.wikipedia.org/w/index.php?title=Phonological_history_of_Scots&oldid=582962563); and Wikipedia contributors (2014), “Scottish Vowel Length Rule”. *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=Scottish\\_vowel\\_length\\_rule&oldid=589349104](https://en.wikipedia.org/w/index.php?title=Scottish_vowel_length_rule&oldid=589349104)

b → Ø / m\_l

t → Ø / {p,k}\_# (“except in some inflected forms” for \*kt)

d → Ø / n\_

d → Ø / l\_#

s → ʃ / \_E (E\_ also?)

f → Ø “in certain contexts”

/k g/ remain unpalatalized when E\_

{ϕ,x} → Ø / \_# (seems to be sporadic)

ʌ → xw (some speakers seem to have resisted this)

og → ʌu

ul became some sort of diphthong or vowel (possibly one of u:, uw, ʌw), but the article isn’t very clear

ol al → ou a: → ʌu {a,ɔ}

Vowel shift:

— ai → ei → əi / when stem-final

— u: → ʌu / when-stem final, in northern varieties

— ø: → wi / {k,g}\_ (in Mid Northern dialects)

— ø: → i (in northern dialects)

— ø: → (j){u,ʌ} / \_{k,x} (outcome varies depending upon dialect)

— a → i / \_n (in northern varieties)

— a → e / \_n (otherwise)

— a → {ɛ,e} / \_rC

— ai oi ui ei au ou iu ε(o)u → e: oe əi i: {a:,ɔ:} ʌu ju j(ʌ)u

— ε: → ei (→ əi?) / in some northern varieties

— i: e: ε: a: o: u: {ø:,y:} → əi i {i,e} e o u ø

— æ → ε / \_C[+alveolar]

— a ɔ u → {a,ɑ} ɔ ʌ

Application of the Scottish vowel-length rule:

— V → V: / \_{r,F[+voiced],\$,#}

— əi → ai / \_{r,F[+voiced],\$,#} (pursuant to the above)

**17.7.2.1.10 Old English to Southern Middle English** *Pogostick Man*, from Moore, Samuel (1919), *Historical Outlines of English Phonology and Middle English Grammar for Courses in Chaucer, Middle English, and the History of the English Language*; and Wikipedia contributors (2011), “Middle English phonology”. *Wikipedia, the Free Encyclopedia*. [http://en.wikipedia.org/w/index.php?title=Middle\\_English\\_phonology&oldid=](http://en.wikipedia.org/w/index.php?title=Middle_English_phonology&oldid=)

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V: → V[-long] / \_C{:C} ! \_st{#,V} or when preceding a cluster which had triggered a vowel to become long in Old English; the book gives “Christ” vs. “Christmas” as an example

ea e:a eo e:o → a ε: e e:

æj → aj → ej

{æ:j,e(:)j} → ej

ay → aw

{eah,eaç,eax,eaj,eay} → aw

e:aw i:w → ew ju

{a:w,a:y,o:w} → ɔ:w

oy → ɔ:w / \_V

{a:ht,o(:)ht} → ow

ɑ: → ɔ:

a e o → a: ε: o: / in U[+open] ! in #U with the following U containing /i:/ or ending in one of /m n r l/

y(:) → i(:)

V: → V[-long] / in #U before a U with /i:/

m → n → Ø / \_# when unstressed

hn {wl,hl} hr → w l r

f θ s γ → v ð z g / #-

γ → w / C\_V

{e,a,o} → ə / \_# e → Ø / if another /e/ one syllable previous

**17.7.2.1.11 Anglo-Frisian to Old Frisian** *Pogostick Man*, from Wikipedia contributors (2011), “Old Frisian”. *Wikipedia, the Free Encyclopedia*. [http://en.wikipedia.org/w/index.php?title=Old\\_Frisian&oldid=461768402](http://en.wikipedia.org/w/index.php?title=Old_Frisian&oldid=461768402)

k g → tʃ j / \_E

g → j / E\_

aj aw ew → {e:,a:} a: ja

h → Ø / V\_V

**17.7.2.1.12 North Frisian Lenition** *TzirTzi*, from Goblirsch, Kurt Gustav (2002), “The North Frisian lenition and Danish linguistic hegemony”. In Carr, Gerald F., and Irmengard Raugh (2002), *New Insights in Germanic Linguistics* III:46 – 65

p t k → b d g → v r γ / V:\_{V,#}

Vowel length neutralized (to long vowels?)

**17.7.2.2 West Germanic to Old Low Franconian** *Pogostick Man*, from Wikipedia contributors (2014), “Old Dutch”. *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=Old\\_Dutch&oldid=588537679](https://en.wikipedia.org/w/index.php?title=Old_Dutch&oldid=588537679); and Wikipedia contributors (2014), “Germanic umlaut”. *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=Germanic\\_umlaut&oldid=602634218](https://en.wikipedia.org/w/index.php?title=Germanic_umlaut&oldid=602634218)

e: o: → ie uo

ai au → e: o:

h → Ø / #\_C

jan → en / CC\_#

j → Ø / CC\_

h → Ø / V\_V

xs → s:

Final obstruents devoice

a → ʊ? (→ o) / \_ʌ

Some vowel reduction seems to have occurred in unstressed syllables

ai u → ei ʏ / \_ (C...){i(:),j} (short only; in the case of [ʏ] at least this was not yet phonemic)

a → ɛ / \_ (C...){i(:),j} (conjectured based on data from the “Germanic umlaut” article)

u: → ʊw / \_V (probably, in most areas)

u: → ʊw / \_V (probably, in areas that did not undergo the above change, such as Limburg)

u: → ʊ: (probably, in areas with u: → ʊw / \_V)

ei ou → e: o: (except in southeastern dialects; \*ei as a result of the umlaut of \*ai was not affected)

**17.7.2.2.1 Old Low Franconian to Middle Dutch** *Pogostick Man*, from Wikipedia contributors (2014), “Middle Dutch”. *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=Middle\\_Dutch&oldid=602536434](https://en.wikipedia.org/w/index.php?title=Middle_Dutch&oldid=602536434); and Wikipedia contributors (2014), “Hieronymus Bosch”. *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=Hieronymus\\_Bosch&oldid=601403790](https://en.wikipedia.org/w/index.php?title=Hieronymus_Bosch&oldid=601403790)

u: → y:

iu → ju / #\_ (in some northern dialects)

iu → {y:,io} (outcome varies depending upon dialect; the former seems more typical)

iw → yw (dialectal)

{ie,ia,io} uo → iə uə

Umlaut phonemicizes, but only for umlauts of non-diphthongal short vowels (except in extreme eastern dialects); [ʏ] becomes a phoneme

f θ s → v ð z / syllable-initially (h → fi?)

V → ə / if short and unstressed

f → {x,ç} / \_t (the former seems to have occurred in northern dialects, the latter in southern ones)

$\theta \delta \rightarrow t d$

$\{u, uw\} u \rightarrow \text{ɔw} o$  (except in the southeast)

$\{ol, al\} \{ar, er\} or \rightarrow \text{ɔu} a:r o:r / \_C[+dental]$

$V[-\text{long} +\text{stress}] \rightarrow V:$  / in open syllables ( $\gamma \rightarrow \{\text{æ}, \text{ø}\}$  here but this is not phonemically important; there seem to have been qualitative differences between original long vowels and long vowels resulting from this change—lengthened  $i:$  seems to have become  $e:$ , but lengthened  $a:$  merged with original  $a:$ ); does not affect original long vowels or vowels in diphthongs

**17.7.2.2.2 Middle Dutch to Modern Dutch** *Pogostick Man*, from Wikipedia contributors (2014), “Dutch Phonology”. *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=Dutch\\_phonology&oldid=602553868](https://en.wikipedia.org/w/index.php?title=Dutch_phonology&oldid=602553868); and Wikipedia contributors (2014), “Hard and soft G in Dutch”. *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=Hard\\_and\\_soft\\_G\\_in\\_Dutch&oldid=594028971](https://en.wikipedia.org/w/index.php?title=Hard_and_soft_G_in_Dutch&oldid=594028971)

*NB: This is likely highly incomplete but the source materials did not have much to say*

$l \rightarrow u / o_{-}\{t,d\}\#$

The change of  $/f/$  to a velar fricative is often reverted by analogy

$i: y: \rightarrow \text{ɛi} \text{œy}$

$u: \rightarrow \text{ɔu}$  (? conjectured based on the above diphthongization and on developments in Polder Dutch vowels)

Hard-vs.-soft-G phenomena:

—  $x \gamma \rightarrow \{x, \chi\} \{\gamma, x, \chi\} /$  in northern dialects

—  $x \gamma \rightarrow \text{ç} \text{j} /$  in southern dialects (the articles use velar phonemes here but describes them as “front velar”; based on the description and on representations in other articles, the palatal phonemes are used here)

**17.7.2.2.3 Modern Dutch to Polder Dutch Vowel Shift** *Pogostick Man*, from Wikipedia contributors (2014), “Dutch Phonology”. *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=Dutch\\_phonology&oldid=602553868](https://en.wikipedia.org/w/index.php?title=Dutch_phonology&oldid=602553868)

$\text{ɛi} \text{œy} \text{ɔu} \rightarrow \text{ai} \text{ay} \text{au}$

$e: \text{ø}: o: \rightarrow \text{ɛi} \text{œy} \text{ɔu}$

**17.7.2.2.4 Belgian and Netherlandish Dutch Monophthongization** *Pogostick Man*, from Wikipedia contributors (2014), “Dutch Phonology”. *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=Dutch\\_phonology&oldid=602553868](https://en.wikipedia.org/w/index.php?title=Dutch_phonology&oldid=602553868)

ɛi œy ou → ɛ: œ: ɔ:

**17.7.2.3 Middle High German to Standard German** *Pawel Ciupak*, from Behr, Hans-Joachim, Ingrid Bennewitz, *et al.* (2004). *Die Bamberg (BA)-Braunschweiger (BS) Grammatik des Alt- und Mittelhochdeutschen im Internet*. <https://www.tu-braunschweig.de/Medien-DB/germanistik/babs260304.pdf>; Kundert, Ursula (2009). *Einführung in das Mittelhochdeutsche*. [http://www.germsem.uni-kiel.de/mediaevistik/materialien/Kundert\\_Mhdreader\\_090330.pdf](http://www.germsem.uni-kiel.de/mediaevistik/materialien/Kundert_Mhdreader_090330.pdf); and Anonymous (2009). *Mittelhochdeutsche Kurzgrammatik*. [https://www.uni-frankfurt.de/47053276/Kurzgrammatik-HA\\_09\\_2009.pdf](https://www.uni-frankfurt.de/47053276/Kurzgrammatik-HA_09_2009.pdf)

$s \rightarrow \int / \# \_ \{l, m, n, w, p, t\}$   
 $s \rightarrow \int / r \_$   
 $t \rightarrow \{ts, k\} / \_w$   
 $x \rightarrow k / \_s$   
 $\{h, j\} \rightarrow \emptyset / V \_ V$   
 $w \ j \rightarrow b \ g / \{l, r\} \_$  (occasionally otherwise)  
 $w \rightarrow \emptyset / \{ou, \emptyset y, y:\} \_$   
 $w \rightarrow v$   
 $a: \rightarrow o: / \_ \{N, C[+ \text{dental}], P, h\}$  (sporadic?)  
 $a: \rightarrow o: / \{N, C[+ \text{dental}], P, h\} \_$  (sporadic?)  
 $e(:) \ i \rightarrow \emptyset(:) \ y / \_ C[+ \text{affricate}]$   
 $e(:) \ i \rightarrow \emptyset(:) \ y / \_ \{P, l, f\}$  (sporadic?)  
 $e(:) \ i \rightarrow \emptyset(:) \ y / \{P, l, f\} \_$  (sporadic?)  
 $y(:) \ y\emptyset \emptyset(:) \ \emptyset y \rightarrow i(:) \ i\emptyset \ e(:) \ ei$  (intermittent)  
 $u: \ y: \ i: \rightarrow ou \ \emptyset y \ ei$ , except in certain unstressed endings and monosyllables,  $\_ C\{C, V, \#\}$  (“especially before /xt/”), and Low German borrowings  
 $u\emptyset \ y\emptyset \ i\emptyset \rightarrow u: \ y: \ i:$   
 $ou \ \emptyset y \ ei \rightarrow au \ oy \ ai$   
 $u \ y \rightarrow o \ \emptyset / \_ N$  (with some occasional exceptions)  
 $a:w \rightarrow au$   
 $V: \rightarrow V[- \text{long}] / \_ CC$  (some exceptions; the change was more common around  $\_ xt$  and  $\_ rC$ )  
 $V: \rightarrow V[- \text{long}] / \_ \% C\emptyset \{r, l, n\} \#$  (some exceptions)  
 $V \rightarrow V: / \_ \%$ , when stressed (except for  $/\emptyset/?$ )  
 $V \rightarrow V: / \_ r\{t, d, s, ts\}$  (except  $/\emptyset/$ )  
 $V \rightarrow V: /$  in some monosyllables ending in alveolar resonants or vowels  
 $V \rightarrow V: /$  analogic in some cases  
 $\emptyset \rightarrow \emptyset /$  unstressed, but not in every case  
 $\emptyset \rightarrow \emptyset / M \_ r\%$  (I don’t know what Mr. Ciupak means by  $\langle M \rangle$ )

**17.7.2.4 High German Cosonant Shift and Umlaut** *Pogostick Man*, from [http:](http://)

[//en.wikipedia.org/wiki/High\\_German\\_consonant\\_shift](https://en.wikipedia.org/wiki/High_German_consonant_shift); and Wikipedia contributors (2014), “Germanic umlaut”. *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=Germanic\\_umlaut&oldid=602634218](https://en.wikipedia.org/w/index.php?title=Germanic_umlaut&oldid=602634218)

$p \ t \ k \rightarrow f \ z \ x \ / \ V\_V$   
 $p \ t \ k \rightarrow f \ z \ x \ / \ \_ \#$   
 $p \ t \ k \rightarrow pf \ ts \ kx \ / \ \#\_$   
 $p \ t \ k \rightarrow pf \ ts \ kx \ / \ \{L,N\}\_$   
 $p \ t \ k \rightarrow pf \ ts \ kx$   
 $b \ d \ g \rightarrow p \ t \ k$   
 $\gamma \rightarrow g$   
 $\beta \rightarrow b \ / \ V\_V$   
 $\beta \rightarrow b \ / \ \_l$   
 $s \rightarrow \int \ / \ \#\_ \{p,t\}$   
 $sk \rightarrow \int \ / \ \#\_$   
 $\{\theta, \delta\} \rightarrow d$   
 $a \ u \ o \rightarrow e \ y \ \emptyset \ / \ \_ (C \dots) \{i(:),j\}$

**17.7.2.5 West Germanic to Old Low German** *Pogostick Man*, from Wikipedia contributors (2014), “Old Saxon phonology”. *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=Old\\_Saxon\\_phonology&oldid=598609310](https://en.wikipedia.org/w/index.php?title=Old_Saxon_phonology&oldid=598609310); Wikipedia contributors (2014), “Old Saxon”. *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=Old\\_Saxon&oldid=598557577](https://en.wikipedia.org/w/index.php?title=Old_Saxon&oldid=598557577); and Wikipedia contributors (2014), “Germanic umlaut”. *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=Germanic\\_umlaut&oldid=602634218](https://en.wikipedia.org/w/index.php?title=Germanic_umlaut&oldid=602634218)

$ai \ au \rightarrow e \ o$   
 $\beta \rightarrow v$   
 $v \ \gamma \ h \rightarrow b \ g \ x$  (perhaps not strictly a sound change, but worth noting)  
 $f \ \theta \ s \rightarrow v \ \delta \ z \ / \ \text{syllable-initially}$   
 $v \rightarrow f \ / \ \_C \ ! \ \_d$   
 $b \ d \rightarrow p \ t \ / \ \_C[-\text{voice}]$   
 $k \rightarrow ts \ / \ \_E \ (g \rightarrow dz \text{ here?})$   
 $n \rightarrow \eta \ / \ \_ \{k,g\}$   
 $g \rightarrow k \ / \ \eta \ \#$   
 $g \rightarrow j \ / \ \_E \ (\text{singleton only})$   
 $g \rightarrow \gamma \ / \ \_V \ (\text{singleton only})$   
 $g \rightarrow x \ / \ \_ \#$   
 $F[-\text{voice}] \rightarrow F[+\text{voice}] \ / \ X[+\text{voiced}] \ \_X[+\text{voiced}]?$   
 Umlaut applies; going by the orthography, only  $a \rightarrow e \ / \ \_ (C \dots) \{i(:),j\}$  is often marked (and even then haphazardly), but based upon reflexes in the daughter languages it seems



that the umlaut had to apply to the other back vowels too

### 17.7.3 Common Germanic to Proto-Norse

*Herr Dunkel*, from personal observations

*NB: This list is incomplete and not in chronological order.*

$\{\text{æ}, \text{e}\} \rightarrow \text{a:}$   
 $\text{au ai} \rightarrow \text{o: e:} / \text{ when unstressed}$   
 $\text{z} \rightarrow \text{r}$   
 $\text{u} \rightarrow \text{o} / \text{ “before an approximant?”}$   
 $\text{w:} \rightarrow \text{g}^{\text{w:}}$   
 $\{\text{gj}, \text{j:}\} \rightarrow \text{ɣ:}$   
 $\text{an} \rightarrow \text{a:} / \text{ _C (conjectural)}$   
 $\text{o:n} \rightarrow \text{an} / \text{ _\#}$   
 $\text{w} \rightarrow \emptyset / \text{ _u}$   
 $\text{w} \rightarrow \emptyset / \text{ _a ( “some other conditions because (*meðwaz > meðwar) ”)}$   
 $\text{w} \rightarrow \emptyset / \text{ _o ( “probably something else since we have ‘Óðinn’ but ‘voði’ ”)}$   
 $\beta \rightarrow \emptyset / \text{ V\_B (conjectural)}$   
 $\text{i} \rightarrow \text{e} / \text{ \#(C...)_CC}$   
 $\text{we} \rightarrow \text{i} \text{ (conjectural)}$

#### 17.7.3.1 Proto-Norse to Icelandic *Wattmann*

$\emptyset \rightarrow \text{u} / \text{ C\_R\#}$   
 $\text{r} \rightarrow \text{r}$   
 $\text{w} \rightarrow \emptyset / \text{ \#\_r}$   
 $\text{f} \rightarrow \text{v} / \text{ ! \#\_}$   
 $\text{V[+nas]} \rightarrow \text{V[-nas]}$   
 $\text{y(:)} \rightarrow \text{i(:)}$   
 $\text{i: u:} \rightarrow \text{i u} \rightarrow \text{ɪ ʏ}$   
 $\text{o(:)} \rightarrow \emptyset$   
 $\text{a: e: o:} \rightarrow \text{au je ou}$   
 $\text{ɛ: ø:} \rightarrow \text{ɛ: ai}$   
 $\text{S:} \rightarrow \text{^hS} / \text{ when stressed}$   
 $\text{g} \rightarrow \text{ɣ} / \text{ V\_V}$   
 $\text{S[-voiced]} \text{ S[+voiced]} \rightarrow \text{S^h S[-voiced]}$   
 $\text{V} \rightarrow \text{V:} / \text{ _C ! _C:}$   
 $\text{A} \rightarrow \text{A[-voiced]} / \text{ \#h\_}$

## 17.8 Greek

It is entirely possible that I utterly failed to interpret the source documents correctly. If so, please do not hesitate to correct me.

### 17.8.1 Proto-Indo-European to Aeolian Greek

*Pogostick Man*, from Tucker, R. Whitney (1969), “Chronology of Greek Sound Changes”. *The American Journal of Philology* 90(1):36 – 47; and Wikipedia contributors (2013), “Ancient Greek dialects”. *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=Ancient\\_Greek\\_dialects&oldid=575325271](https://en.wikipedia.org/w/index.php?title=Ancient_Greek_dialects&oldid=575325271)

$\{H_{x,m,n}\} \rightarrow a$   
 $b^{\text{fi}} d^{\text{fi}} g^{\text{fi}} \rightarrow p^h t^h k^h$   
 $s \rightarrow h / \#\_$   
 $s \rightarrow h / V\_V$   
 $t \rightarrow ts / \_i$   
 $j \rightarrow h$   
 $k^w k^{\text{hw}} g^w \rightarrow t t^h d / \_E$   
 $k^w k^{\text{hw}} g^w \rightarrow p p^h b / \_{\{a,o,C\}}$   
 $k^w k^{\text{hw}} g^w \rightarrow k k^h g / \_u$   
 $k^w k^{\text{hw}} g^w \rightarrow k k^h g / u\_$   
 $ts \rightarrow s$   
 $h \rightarrow \emptyset$   
 $V_{\text{ns}} \rightarrow V:s$   
 $n \rightarrow \emptyset / \_s$

### 17.8.2 Proto-Indo-European to Attic Greek

*Pogostick Man*, from Tucker, R. Whitney (1969), “Chronology of Greek Sound Changes”. *The American Journal of Philology* 90(1):36 – 47; and Wikipedia contributors (2013), “Ancient Greek dialects”. *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=Ancient\\_Greek\\_dialects&oldid=575325271](https://en.wikipedia.org/w/index.php?title=Ancient_Greek_dialects&oldid=575325271)

$\{H_{x,m,n}\} \rightarrow a$   
 $b^{\text{fi}} d^{\text{fi}} g^{\text{fi}} \rightarrow p^h t^h k^h$   
 $s \rightarrow h / \#\_$   
 $s \rightarrow h / V\_V$   
 $t \rightarrow ts / \_i$

$j \rightarrow h$   
 $k^w k^{hw} g^w \rightarrow t t^h d / \_E$   
 $k^w k^{hw} g^w \rightarrow p p^h b / \_ \{a, o, C\}$   
 $k^w k^{hw} g^w \rightarrow k k^h g / \_u$   
 $k^w k^{hw} g^w \rightarrow k k^h g / u\_$   
 $ts \rightarrow s$   
 $h \rightarrow \emptyset$   
 $\alpha: \rightarrow \text{æ}:$   
 $V_{ns} \rightarrow V:s$   
 $n \rightarrow \emptyset / \_s$   
 $tʃ \rightarrow t / \#\_$   
 $tʃ \rightarrow t: / \text{medial}$   
 $w \rightarrow \emptyset$   
 Vowel contraction (on which the author does not elaborate much)  
 Some “metathesis of quality as well as of quantity” with regards to vowels  
 $u(:)(j) \rightarrow y(:)(j)$   
 $\text{æ}:\rightarrow \text{ɛ}:$  (includes diphthongs)  
 $\text{ej ow} \rightarrow \text{e}:\text{ o}:$   
 $\text{e}:\rightarrow \text{i}:/ \_C$   
 $j \rightarrow \emptyset / V:_$   
 $\text{e}:\rightarrow \text{i}:/ \_V$   
 $\text{ɛ}:\rightarrow \text{e}:$   
 $\alpha j \rightarrow \text{ɛ}:$   
 $h \rightarrow \emptyset$   
 $\text{oj} \rightarrow \emptyset j \rightarrow yj (\rightarrow y: \text{ sometimes})$   
 $\text{e o} \rightarrow \text{ɛ ɔ}$   
 $p^h t^h k^h \rightarrow f \theta x$   
 Pitch-accent lost  
 $b d g \rightarrow v \delta \gamma / V\_V$   
 $dz \rightarrow z$   
 $V: \rightarrow V[-\text{long}]$   
 $C: \rightarrow C[-\text{long}]$   
 $\alpha u \text{ ɛ} u \text{ ɛ} u \rightarrow \alpha v \text{ ɛ} v \text{ ɛ} v$   
 $\text{ɔ} \rightarrow \emptyset / \text{in the suffixes } -ios \text{ and } -ion$   
 $n \rightarrow \emptyset / \_ \#$   
 $\text{e} \rightarrow \text{i}$   
 $p t k \rightarrow b d g / N\_$   
 $y \rightarrow \text{i}$   
 $g x \rightarrow j \text{ ʒ} / \_ \{\text{ɛ}, \text{i}\}$   
 $p k \rightarrow f x / \_t$   
 $\text{”}\{i, e\}V \rightarrow j\text{”}V$

### 17.8.3 Proto-Indo-European to Boeotian Greek

*Pogostick Man*, from Tucker, R. Whitney (1969), “Chronology of Greek Sound Changes”. *The American Journal of Philology* 90(1):36 – 47; and Wikipedia contributors (2013), “Ancient Greek dialects”. *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=Ancient\\_Greek\\_dialects&oldid=575325271](https://en.wikipedia.org/w/index.php?title=Ancient_Greek_dialects&oldid=575325271)

$\{H_x, m, n\} \rightarrow a$   
 $b^h d^h g^h \rightarrow p^h t^h k^h$   
 $s \rightarrow h / \#\_$   
 $s \rightarrow h / V\_V$   
 $t \rightarrow ts / \_i$   
 $j \rightarrow h$   
 $k^w k^{hw} g^w \rightarrow t t^h d / \_E$   
 $k^w k^{hw} g^w \rightarrow p p^h b / \_ \{a, o, C\}$   
 $k^w k^{hw} g^w \rightarrow k k^h g / \_u$   
 $k^w k^{hw} g^w \rightarrow k k^h g / u\_$   
 $ts \rightarrow s$   
 $h \rightarrow \emptyset$   
 $V_{ns} \rightarrow V:s$   
 $n \rightarrow \emptyset / \_s$   
 $\{e:, ej\} \varepsilon: a(:)j \{oj, \alpha:j\} \rightarrow i: e: \varepsilon: \{y, \emptyset\}$   
 $o: \rightarrow u:$

### 17.8.4 Proto-Indo-European to Coan Greek

*Pogostick Man*, from Tucker, R. Whitney (1969), “Chronology of Greek Sound Changes”. *The American Journal of Philology* 90(1):36 – 47; and Wikipedia contributors (2013), “Ancient Greek dialects”. *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=Ancient\\_Greek\\_dialects&oldid=575325271](https://en.wikipedia.org/w/index.php?title=Ancient_Greek_dialects&oldid=575325271)

*NB: This assumes that the adjective “Coan” refers to the “Ceos” Tucker mentions in the source.*

$\{H_x, m, n\} \rightarrow a$   
 $b^h d^h g^h \rightarrow p^h t^h k^h$   
 $s \rightarrow h / \#\_$   
 $s \rightarrow h / V\_V$   
 $t \rightarrow ts / \_i$   
 $j \rightarrow h$

$k^w k^{hw} g^w \rightarrow t t^h d / \_E$   
 $k^w k^{hw} g^w \rightarrow p p^h b / \_{\{a,o,C\}}$   
 $k^w k^{hw} g^w \rightarrow k k^h g / \_u$   
 $k^w k^{hw} g^w \rightarrow k k^h g / u\_$   
 $ts \rightarrow s$   
 $h \rightarrow \emptyset$   
 $Vns \rightarrow V:s$   
 $n \rightarrow \emptyset / \_s$   
 $\text{æ:} \rightarrow \text{ɛ:}$

### 17.8.5 Proto-Indo-European to Cretan Greek

*Pogostick Man*, from Tucker, R. Whitney (1969), “Chronology of Greek Sound Changes”. *The American Journal of Philology* 90(1):36 – 47; and Wikipedia contributors (2013), “Ancient Greek dialects”. *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=Ancient\\_Greek\\_dialects&oldid=575325271](https://en.wikipedia.org/w/index.php?title=Ancient_Greek_dialects&oldid=575325271)

$\{H_{x,m,n}\} \rightarrow a$   
 $b^{fi} d^{fi} g^{fi} \rightarrow p^h t^h k^h$   
 $s \rightarrow h / \#\_$   
 $s \rightarrow h / V\_V$   
 $t \rightarrow ts / \_i$   
 $j \rightarrow h$   
 $k^w k^{hw} g^w \rightarrow t t^h d / \_E$   
 $k^w k^{hw} g^w \rightarrow p p^h b / \_{\{a,o,C\}}$   
 $k^w k^{hw} g^w \rightarrow k k^h g / \_u$   
 $k^w k^{hw} g^w \rightarrow k k^h g / u\_$   
 $ts \rightarrow s$   
 $h \rightarrow \emptyset$   
 $Vns \rightarrow V:s$   
 $n \rightarrow \emptyset / \_s$

### 17.8.6 Proto-Indo-European to Doric Greek

*Pogostick Man*, from Tucker, R. Whitney (1969), “Chronology of Greek Sound Changes”. *The American Journal of Philology* 90(1):36 – 47; and Wikipedia contributors (2013), “Ancient Greek dialects”. *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=Ancient\\_Greek\\_dialects&oldid=575325271](https://en.wikipedia.org/w/index.php?title=Ancient_Greek_dialects&oldid=575325271)

$\{H_{x,m,n}\} \rightarrow a$   
 $b^{\text{fi}} d^{\text{fi}} g^{\text{fi}} \rightarrow p^h t^h k^h$   
 $s \rightarrow h / \#\_$   
 $s \rightarrow h / V\_V$   
 $t \rightarrow ts / \_i$   
 $j \rightarrow h$   
 $k^w k^{\text{hw}} g^w \rightarrow t t^h d / \_E$   
 $k^w k^{\text{hw}} g^w \rightarrow p p^h b / \_{-}\{a,o,C\}$   
 $k^w k^{\text{hw}} g^w \rightarrow k k^h g / \_u$   
 $k^w k^{\text{hw}} g^w \rightarrow k k^h g / u\_$   
 $ts \rightarrow s$   
 $h \rightarrow \emptyset$   
 $Vns \rightarrow V(:)s$  (Tucker says that “[i]n a few Doric dialects the lengthening did not occur”)  
 $n \rightarrow \emptyset / \_s$   
 $tj \rightarrow t / \#\_$   
 $tj \rightarrow t: / \text{medial}$   
 $h \rightarrow \emptyset$  (in those “dialects of the western fringe of Asia Minor and the near-by islands”)  
 Vowel contraction (on which the author does not elaborate much)

### 17.8.7 Proto-Indo-European to Elian Greek

*Pogostick Man*, from Tucker, R. Whitney (1969), “Chronology of Greek Sound Changes”. *The American Journal of Philology* 90(1):36 – 47; and Wikipedia contributors (2013), “Ancient Greek dialects”. *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=Ancient\\_Greek\\_dialects&oldid=575325271](https://en.wikipedia.org/w/index.php?title=Ancient_Greek_dialects&oldid=575325271)

$\{H_{x,m,n}\} \rightarrow a$   
 $b^{\text{fi}} d^{\text{fi}} g^{\text{fi}} \rightarrow p^h t^h k^h$   
 $s \rightarrow h / \#\_$   
 $s \rightarrow h / V\_V$   
 $t \rightarrow ts / \_i$   
 $j \rightarrow h$   
 $k^w k^{\text{hw}} g^w \rightarrow t t^h d / \_E$   
 $k^w k^{\text{hw}} g^w \rightarrow p p^h b / \_{-}\{a,o,C\}$   
 $k^w k^{\text{hw}} g^w \rightarrow k k^h g / \_u$   
 $k^w k^{\text{hw}} g^w \rightarrow k k^h g / u\_$   
 $ts \rightarrow s$   
 $h \rightarrow \emptyset$   
 $Vns \rightarrow V:s$   
 $n \rightarrow \emptyset / \_s$

$h \rightarrow \emptyset$

### 17.8.8 Proto-Indo-European to Ionic Greek

*Pogostick Man*, from Tucker, R. Whitney (1969), “Chronology of Greek Sound Changes”. *The American Journal of Philology* 90(1):36 – 47; and Wikipedia contributors (2013), “Ancient Greek dialects”. *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=Ancient\\_Greek\\_dialects&oldid=575325271](https://en.wikipedia.org/w/index.php?title=Ancient_Greek_dialects&oldid=575325271)

$\{H_{x,m,n}\} \rightarrow a$

$b^{\text{fi}} d^{\text{fi}} g^{\text{fi}} \rightarrow p^{\text{h}} t^{\text{h}} k^{\text{h}}$

$s \rightarrow h / \#\_$

$s \rightarrow h / V\_V$

$t \rightarrow ts / \_i$

$j \rightarrow h$

$k^{\text{w}} k^{\text{hw}} g^{\text{w}} \rightarrow t t^{\text{h}} d / \_E$

$k^{\text{w}} k^{\text{hw}} g^{\text{w}} \rightarrow p p^{\text{h}} b / \_{\{a,o,C\}}$

$k^{\text{w}} k^{\text{hw}} g^{\text{w}} \rightarrow k k^{\text{h}} g / \_u$

$k^{\text{w}} k^{\text{hw}} g^{\text{w}} \rightarrow k k^{\text{h}} g / u\_$

$ts \rightarrow s$

$h \rightarrow \emptyset$

$a: \rightarrow \text{æ}:$

$Vns \rightarrow V:s$

$n \rightarrow \emptyset / \_s$

$tj \rightarrow s / \#\_$

$tj \rightarrow s: / \text{medial}$

$VCw \rightarrow V:C$

$w \rightarrow \emptyset$

$h \rightarrow \emptyset$  (in Eastern Ionic)

Vowel contraction (on which the author does not elaborate much)

$\text{æ}:\rightarrow \varepsilon:$

$ej\ ow \rightarrow e:\ o:$  happened “in the various Ionic dialects at various dates”

Some “metathesis of quality as well as of quantity” with regards to vowels; did not occur to the same degree as it did in Attic

$u(:)(j) \rightarrow y(:)(j)$

$o: \rightarrow u: (?)$

$j \rightarrow \emptyset / V:_$

$e: \rightarrow i: / \_V$

$\varepsilon: \rightarrow e:$

$aj \rightarrow \varepsilon:$

$h \rightarrow \emptyset$   
 $oj \rightarrow \emptyset j \rightarrow yj$  ( $\rightarrow y$ : sometimes)  
 $e o \rightarrow \varepsilon \circ$

### 17.8.9 Proto-Indo-European to Laconian Greek

*Pogostick Man*, from Tucker, R. Whitney (1969), “Chronology of Greek Sound Changes”. *The American Journal of Philology* 90(1):36 – 47; and Wikipedia contributors (2013), “Ancient Greek dialects”. *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=Ancient\\_Greek\\_dialects&oldid=575325271](https://en.wikipedia.org/w/index.php?title=Ancient_Greek_dialects&oldid=575325271)

$\{H_{x,m,n}\} \rightarrow a$   
 $b^{\text{fi}} d^{\text{fi}} g^{\text{fi}} \rightarrow p^{\text{h}} t^{\text{h}} k^{\text{h}}$   
 $s \rightarrow h / \#\_$   
 $s \rightarrow h / V\_V$   
 $t \rightarrow ts / \_i$   
 $j \rightarrow h$   
 $k^{\text{w}} k^{\text{hw}} g^{\text{w}} \rightarrow t t^{\text{h}} d / \_E$   
 $k^{\text{w}} k^{\text{hw}} g^{\text{w}} \rightarrow p p^{\text{h}} b / \_{\{a,o,C\}}$   
 $k^{\text{w}} k^{\text{hw}} g^{\text{w}} \rightarrow k k^{\text{h}} g / \_u$   
 $k^{\text{w}} k^{\text{hw}} g^{\text{w}} \rightarrow k k^{\text{h}} g / u\_$   
 $ts \rightarrow s$   
 $h \rightarrow \emptyset$   
 $Vns \rightarrow V:s$   
 $n \rightarrow \emptyset / \_s$   
 $p^{\text{h}} t^{\text{h}} k^{\text{h}} \rightarrow f \theta x$

### 17.8.10 Proto-Indo-European to Mycenaean Greek

*Pogostick Man*, from Tucker, R. Whitney (1969), “Chronology of Greek Sound Changes”. *The American Journal of Philology* 90(1):36 – 47; and Wikipedia contributors (2013), “Ancient Greek dialects”. *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=Ancient\\_Greek\\_dialects&oldid=575325271](https://en.wikipedia.org/w/index.php?title=Ancient_Greek_dialects&oldid=575325271)

$\{H_{x,m,n}\} \rightarrow a$   
 $b^{\text{fi}} d^{\text{fi}} g^{\text{fi}} \rightarrow p^{\text{h}} t^{\text{h}} k^{\text{h}}$   
 $s \rightarrow h / \#\_$   
 $s \rightarrow h / V\_V$



$t \rightarrow ts / \_i$   
 $j \rightarrow h$   
 $k^w k^{hw} g^w \rightarrow t t^h d / \_E$   
 $k^w k^{hw} g^w \rightarrow p p^h b / \_{-}\{a,o,C\}$   
 $k^w k^{hw} g^w \rightarrow k k^h g / \_u$   
 $k^w k^{hw} g^w \rightarrow k k^h g / u\_$   
 $ts \rightarrow s$   
 $h \rightarrow \emptyset$

## 17.9 Proto-Indo-European to Hittite

*Goatface*

$\acute{k} \acute{g} \acute{g}^{\acute{f}} \rightarrow k g g^{\acute{f}}$   
 $b^{\acute{f}} d^{\acute{f}} g^{\acute{f}} \rightarrow p t k$   
 $k^w g^w g^{wf} \rightarrow ku gu ku$   
 $t \rightarrow ts / \_{-}\{i,e\}$   
 $m \rightarrow \emptyset / \_ \#$   
 $e(:) \rightarrow a(:) / \_h_2$   
 $e(:) \rightarrow a(:) / h_2\_$   
 $e(:) \rightarrow o(:) / \_h_3$   
 $e(:) \rightarrow o(:) / h_3\_$   
 $h_3 \rightarrow \emptyset / \_o$  “(according to Kortlandt)”  
 $h_2 \rightarrow x$  (or some sort of dorsal or laryngeal fricative?)  
 $o(:) \rightarrow a(:)$   
 $\{u,eu,au\} \rightarrow u$   
 $\acute{m} \acute{n} \acute{r} \acute{l} \rightarrow am an ar al$   
 $w \rightarrow m / u\_$   
*“Changes I’m less sure of”*  
 $\_ r \rightarrow \emptyset / \#\_$   
 $\_ r \rightarrow \emptyset / \_ \#$  “sometimes??”  
 $\_ e(:) \rightarrow a(:) / \_R$  “sometimes??”  
 $\_ e(:) \rightarrow a(:) /$  “when unstressed?”

## 17.10 Proto-Indo-European to Proto-Indo-Aryan

*Pogostick Man*, from Wikipedia contributors (2013), “Proto-Indo-Arian Language”. *Wikipedia, the Free Encyclopedia*. [http://en.wikipedia.org/w/index.php?title=Proto-Indo-Iranian\\_language&oldid=543625693](http://en.wikipedia.org/w/index.php?title=Proto-Indo-Iranian_language&oldid=543625693)

$\acute{k} \acute{g} \acute{g}^{\text{fi}} \rightarrow \text{c} \text{ʃ} \text{h}$   
 $k^{(\text{w})} g^{(\text{w})} g^{(\text{w})\text{fi}} \rightarrow \text{c} \text{ʃ} \text{h} / \_E$   
 $u \rightarrow v$   
 $\{\text{m}, \text{n}\} \rightarrow \text{a}$   
 $e(\text{:}) \rightarrow a(\text{:})$   
 $o \rightarrow \text{a:} / \text{in } U[+\text{open}]?$   
 $o \rightarrow \text{a}$   
 $o\text{:} \rightarrow \text{a:}$   
 $h_x \rightarrow \emptyset$

### 17.10.1 Proto-Indo-Aryan to Central Middle Indo-Aryan

*Pogostick Man*, from Shukla, Shaligram (1974), “Phonological change and dialect variation in Middle-Indo-Aryan”. In Anderson, J., and C. Jones (Eds.), *Historical Linguistics* II:391-401.

$C(C) \rightarrow \emptyset / C\_\#$   
 $VN \text{ VC}[-\text{nas}] \rightarrow V[+\text{nas}] V\text{:} / \_ \#$   
 $a\{i, j\}(a) a\{u, w\}(a) \rightarrow e \text{ o}$   
 $j \text{ w} \rightarrow d\text{ʒ} \text{ b} / V\_V$   
 $C \rightarrow C[+\text{voiced}] / V\_V$   
 $\{b^{\text{fi}}, d^{\text{fi}}, g^{\text{fi}}\} \{j, v\} \rightarrow h \emptyset / V\_V$   
 $Vm \rightarrow Vv \rightarrow V[+\text{nas}]v / \_V$   
 $e \text{ o} \rightarrow i \text{ u} / \_ \#$   
 $V\text{:} \rightarrow V[-\text{long}] / \_ \#$   
 $ah \rightarrow o$   
 $\text{ɽ} \rightarrow i$   
 $\text{ʂ} \rightarrow x / k\_$   
 $\{\text{ʂ}, \text{ʃ}\} \rightarrow s$   
 $v \rightarrow \emptyset / \{t, d\}\_$   
 $C_1 C_2 \rightarrow C_2 C_2 / V\_V$   
 $Cn \rightarrow CC / V\_V ! C = d\text{ʒ}$   
 $d\text{ʒ}n \rightarrow n\text{:} / V\_V$

### 17.10.2 Proto-Indo-Aryan to Eastern Middle Indo-Aryan

*Pogostick Man*, from Shukla, Shaligram (1974), “Phonological change and dialect variation in Middle-Indo-Aryan”. In Anderson, J., and C. Jones (Eds.), *Historical Linguistics* II:391-401.

$C(C) \rightarrow \emptyset / C\_ \#$   
 $VN VC[-nas] \rightarrow V[+nas] V: / \_ \#$   
 $a\{i,j\}(a) a\{u,w\}(a) \rightarrow e o$   
 $j w \rightarrow d\zeta b / V\_V$   
 $C \rightarrow C[+voiced] / V\_V$   
 $\{b^f, d^f, g^f\} \{j, v\} \rightarrow h \emptyset / V\_V$   
 $b \{d, d\zeta, g\} \rightarrow v j / V\_V$   
 $Vm \rightarrow Vv \rightarrow V[+nas]v / \_V$   
 $e o \rightarrow i u / \_ \#$   
 $V: \rightarrow V[-long] / \_ \#$   
 $ah \rightarrow e$   
 $\text{ɽ} \rightarrow i$   
 $k\text{ɕ} \rightarrow hk$   
 $\text{ɕ} s \rightarrow s \text{ɕ}$   
 $r \rightarrow l$   
 $v \rightarrow \emptyset / \{t, d\}_-$   
 $C_1 C_2 \rightarrow C_2 C_2 / V\_V$   
 $Cn \rightarrow CC / V\_V ! C = d\zeta$   
 $d\zeta n \rightarrow \text{ɲ} : / V\_V$

### 17.10.3 Proto-Indo-Aryan to Northwestern Middle Indo-Aryan

*Pogostick Man*, from Shukla, Shaligram (1974), “Phonological change and dialect variation in Middle-Indo-Aryan”. In Anderson, J., and C. Jones (Eds.), *Historical Linguistics* II:391-401.

$C(C) \rightarrow \emptyset / C\_ \#$   
 $VN VC[-nas] \rightarrow V[+nas] V: / \_ \#$   
 $a\{i,j\}(a) a\{u,w\}(a) \rightarrow e o$   
 $j w \rightarrow d\zeta b / V\_V$   
 $C \rightarrow C[+voiced] / V\_V$   
 $\{b^f, d^f, g^f\} \{j, v\} \rightarrow h \emptyset / V\_V$   
 $Vm \rightarrow Vv \rightarrow V[+nas]v / \_V$   
 $e o \rightarrow i u / \_ \#$   
 $V: \rightarrow V[-long] / \_ \#$   
 $ah \rightarrow o$   
 $\text{ɽ} \rightarrow i$   
 $k\text{ɕ} \rightarrow t\text{ɕ}:$   
 $\{\text{ɕ}, \text{ɕ}\} \rightarrow s$   
 $sC \rightarrow Ch$   
 $v \rightarrow \emptyset / \{t, d\}_-$

$C_1C_2 \rightarrow C_2C_2 / V\_V$   
 $C_n \rightarrow CC / V\_V ! C = d_3$   
 $d_3n \rightarrow n_3 / V\_V$

#### 17.10.4 Proto-Indo-Aryan to Western Middle Indo-Aryan

*Pogostick Man*, from Shukla, Shaligram (1974), “Phonological change and dialect variation in Middle-Indo-Aryan”. In Anderson, J., and C. Jones (Eds.), *Historical Linguistics* II:391-401.

$C(C) \rightarrow \emptyset / C\_ \#$   
 $VN VC[-nas] \rightarrow V[+nas] V: / -\#$   
 $a\{i,j\}(a) a\{u,w\}(a) \rightarrow e o$   
 $j w \rightarrow d_3 b / V\_V$   
 $C \rightarrow C[+voiced] / V\_V$   
 $\{b^f, d^f, g^f\} \{j, v\} \rightarrow h \emptyset / V\_V$   
 $Vm \rightarrow Vv \rightarrow V[+nas]v / \_V$   
 $e o \rightarrow i u / -\#$   
 $V: \rightarrow V[-long] / -\#$   
 $ah \rightarrow o$   
 $r \rightarrow i$   
 $k_3 \rightarrow t_3:$   
 $\{s, 3\} \rightarrow s$   
 $tv dv \rightarrow p b$   
 $C_1C_2 \rightarrow C_2C_2 / V\_V$   
 $C_n \rightarrow CC / V\_V ! C = d_3$   
 $d_3n \rightarrow n_3 / V\_V$

#### 17.11 Proto-Indo-European to Proto-Slavic

*Hwhatting*

*NB: “Not in chronological order”*

$b^f d^f \{g^f, 3^f\} g^{wf} \rightarrow b d g g^w$   
 $K^w k' 3' \rightarrow K s z$   
 $s \rightarrow x / \{i, u, r, k\}_-$   
 $k g x \rightarrow t_3 3 j / -\{e(:)(i), i(:)\}$   
 $\{a, o, 3\} \rightarrow e / j_-$   
 $\{a, o, 3\} \rightarrow o$   
 $i u \rightarrow ь ь$

j i: u: → i i  
 u → ɤ / j\_  
 e(:)i → i  
 {ai,oi} → i / j\_  
 {ai,oi} → æ:  
 {ai,oi} → {æ:,a} (the former seems to be more common)  
 {a(:)u,o(:)u} e(:)u → u ju  
 e → ɤ / \_jV  
 e → o / \_wV  
 w → v  
 l r → {ɭ,ɮ} {ɮr,ɮr}  
 {m,n} → {ẽ,õ} / \_C\$  
 m n → {ɣm,ɣm} {ɣn,ɣn}  
 æ: → a / “After palatal fricatives and affricates”  
 {e(:),i(:)} {a(:),o(:),u(:)} → ẽ õ / \_N\$  
 oi o → i ɤ / “Sometimes in final syllables”  
 {O,N} → Ø / \_\$  
 k g x → ts dz s / \_{æ:,i}  
 k g x → ts dz s / “After some syllables with front vowels”  
 sj zj → ʃ ʒ  
 kj gj xj → tʃ ʒ ʃ

### 17.11.1 Proto-Slavic to Polish

*Xiǫdz Faust*, in <http://pittmirg.ovh.org/inne/psc.pdf><http://pittmirg.ovh.org/inne/psc.pdf>, mainly citing mainly citing Klemensiewicz *et al.* (1955), “Gramatyka historyczna języka polskiego”, and Dubisz and Długosz-Kurczabowa (2003?), “Gramatyka historyczna języka polskiego”)

*NB: The original document heavily uses Slavistic notation as opposed to IPA; I’ve done the best I could in figuring this stuff out but be warned of possible errors*

sk x → ɕtɕ ɕ / \_E  
 x → ɕ / E\_  
 ɛl → lɔ / T\_T “in certain cases (mostly after a PSl. palato-alveolar)”  
 ɔl ɔr ɛl ɛr → lɔ rɔ lɛ rɛ / T\_T  
 ɔr ɔl → ra la / #\_T “in syllables with long vowels”  
 ɔr ɔl → rɔ lɔ / #\_T  
 C → Cʲ / \_E ! /j ɕ z  
 j → jʲ / {p,b,m,v}\_ (sporadic)  
 ɛ ẽ ɛ: → ɔ ɔ̃ a / \_C[-palatalized +dental] (also sporadically before plain non-dentals)

$\varepsilon\text{:} \rightarrow \varepsilon$

Havlik's law:

—  $\{\mathfrak{b}, \mathfrak{b}\} \rightarrow e$  / iambic counting from U# or a syllable not containing a yer

—  $\{\mathfrak{b}, \mathfrak{b}\} \rightarrow \emptyset$  / in even syllables counting iambic from U# or a syllable not containing a yer

— “[H]owever: in the vicinity of \*j the development of yers did not comply with the aforementioned law”

$\mathfrak{b} \rightarrow a\text{:} / \text{ }_r$

$\mathfrak{bl} \rightarrow \mathfrak{o}(\text{:})\mathfrak{l} / P\text{ }_-$

$\mathfrak{bl} \rightarrow \varepsilon\mathfrak{l} / K\text{ }_-$

$\mathfrak{bl} \rightarrow \mathfrak{l}u$  / else

$\mathfrak{bl} \rightarrow \mathfrak{l}u / C[+\text{dental}]\text{ }_-$

$\mathfrak{bl} \rightarrow \varepsilon\mathfrak{l} / P\text{ }_C[+\text{dental} \text{ -palatalized}]$

$\mathfrak{bl} \rightarrow il / P\text{ }_-$

$\mathfrak{bl} \rightarrow \mathfrak{o}(\text{:})\mathfrak{l}$

$\mathfrak{b} \rightarrow a\text{:} / r.C[+\text{dental} \text{ -palatalized}]$

$\mathfrak{br} \rightarrow i(\text{:})\mathfrak{r}_\mathfrak{z} \rightarrow \{\varepsilon(\text{:})r, \varepsilon(\text{:})\mathfrak{r}_\mathfrak{z}\} \rightarrow \{\varepsilon r, \varepsilon \mathfrak{r}_\mathfrak{z}\}$

$\{\tilde{\varepsilon}, \tilde{\mathfrak{o}}\} \rightarrow \tilde{a}$

$a \varepsilon i \mathfrak{o} u i \tilde{a} \rightarrow a\text{:} \varepsilon\text{:} i\text{:} \mathfrak{o}\text{:} u\text{:} i\text{:} \tilde{a}\text{:} / \text{ }_{-}\{C/U\}[+\text{voiced}][\text{lost yer}]$  (i.e., a voiced consonant or a cluster with one)

$a_j \varepsilon \rightarrow \varepsilon\text{:}$  in adjectives,  $a\text{:}$  in verbs

$\{a_j a, \mathfrak{o} j a\} \{\mathfrak{o} j \varepsilon, i j \varepsilon\} i j \varepsilon \rightarrow a\text{:} \varepsilon\text{:} i\text{:}$

$\{\varepsilon(\text{:})j \varepsilon, \mathfrak{b} j \varepsilon, \mathfrak{o} j \varepsilon, u j \varepsilon, i j \varepsilon\} \rightarrow \varepsilon\text{:}$

$\{\mathfrak{o} j \tilde{\mathfrak{o}}, \tilde{\mathfrak{o}} j \tilde{\mathfrak{o}}, \mathfrak{b} j \tilde{\mathfrak{o}}\} \rightarrow \tilde{\mathfrak{o}}\text{:}$

$\mathfrak{b} j \mathfrak{b} \mathfrak{b} j \mathfrak{b} \rightarrow i i$

$j \mathfrak{b} \rightarrow i$  / utterance-initially (cf. English utterance-initial glottal stops before vowels)

$\mathfrak{b} \mathfrak{b} \rightarrow i i / \text{ }_j$

$j i \rightarrow i / \# \text{ }_-$

$\{a_j a, \varepsilon j a, \mathfrak{b} j a, \mathfrak{o} j a\} \rightarrow ipaa\text{:}$

$i j i i j i \rightarrow i i$

$\mathfrak{o} v i \rightarrow \emptyset$

$O[+\text{voice}] \rightarrow O[-\text{voice}] / \text{ }_{-}\#$  (unless followed by some type of voiced consonant, be it any type of consonant or just an obstruent—this differs by location)

$\mathfrak{o} \rightarrow \mathfrak{o}\text{:} / \text{ }_{-}\{r, l\}$  (sporadic, perhaps analogical)

$\emptyset \rightarrow h / \text{ }_{-}\mathfrak{b}$

Mobile stress  $\rightarrow$  initial stress  $\rightarrow$  penultimate stress (in most areas)

$V \rightarrow \emptyset /$  unstressed (sporadic)

$i \rightarrow \emptyset / \text{ }_{-}\#$  “in the infinite and imperative desinences. . . some verbs have never been affected due to a potential ‘difficult’ cluster that would result, instead they got an analogical final -j extension”

$t s i \mathfrak{z} i \rightarrow t \mathfrak{c} \mathfrak{z}_\mathfrak{z} / V\text{ }_-$

$i\ u \rightarrow u\ i$  /  $\{l^j, j\}_-$  (sporadic)  
 $t^j\ d^j\ s^j\ z^j\ n^j\ r^j\ l^j \rightarrow t_c\ d_3\ c\ z\ n\ r\ l$  (this last probably not before /i/)  
 $i: u: i: \rightarrow i\ u\ i$   
 $\tilde{a} \rightarrow \tilde{e}$  / short only  
 $\tilde{a}: \rightarrow \tilde{a} \rightarrow \tilde{o}$   
 $a: \ o: \ e: \rightarrow o\ o\ e$   
 $V: \rightarrow V$  in certain frequently-used words  
 Sporadic (de)nasalization of vowels; “there were certain environments which favoured nasal-ity changes: in the vicinity of nasal consonants. . .and before sibilants”  
 $\{i, i\} \rightarrow \epsilon$  /  $_-C[+rhotic]$   
 $k\ g \rightarrow k^j\ g^j$  /  $_- \epsilon$  where the vowel is from a yer or a borrowing  
 $k_i\ g_i \rightarrow k^j_i\ g^j_i$   
 $f_i\ z_i\ t_f_i\ d_3_i\ c_i\ z_i \rightarrow s_i\ z_i\ t_s_i\ d_z_i\ ts_i\ z_i$   
 $f\ z\ t_f\ d_3\ c\ z \rightarrow s\ z\ t_s\ d_z\ ts\ z$   
 $r_+ \rightarrow s$  /  $C[-voiced]_-$   
 $r_+ \rightarrow s$  /  $_-C[+voiced]$   
 $\acute{r} \rightarrow z$  / else  
 $\epsilon \rightarrow o$  /  $_-l$  (if the vowel was from a yer)  
 $\{\epsilon, a\} \rightarrow o$  (sporadic)  
 $V \rightarrow \epsilon$  (sporadic, analogical)  
 $l \rightarrow w$   
 $o\ e \rightarrow a\ \epsilon$   
 $o \rightarrow o$  /  $_-N$   
 $o \rightarrow u$  / else  
 $u \rightarrow o$  (rare, sporadic)  
 $p^j\ m^j\ f^j \rightarrow p\ m\ f$  /  $_- \#$   
 $\{i, i\} \rightarrow \emptyset$  /  $_-jV$  when unstressed  
 $\tilde{e} \rightarrow \epsilon$  /  $_- \{\#, l, l\}$   
 $\tilde{o} \rightarrow o$  /  $_- \{l, l\}$   
 $\tilde{o} \rightarrow o$  /  $_- \#$  (in some regions or dialects)  
 $\tilde{e}\ \tilde{o} \rightarrow \tilde{e}N\ \tilde{o}N$  /  $_- \{S, A\}$   
 $\tilde{e}\ \tilde{o} \rightarrow \epsilon\tilde{u}\ \epsilon\tilde{u}$  /  $_-F[-palatal]$   
 $\tilde{o} \rightarrow \epsilon\tilde{u}$  /  $_- \#$  (in standard registers/pronunciations)  
 $\tilde{e}\ \tilde{o} \rightarrow \epsilon\tilde{j}\ \epsilon\tilde{j}$  /  $_-F[+palatal]$   
 $n \rightarrow \tilde{j}$  /  $_-F$   
 $n \rightarrow \eta$  /  $_-S[+velar]$  (regional)

“The following sections are structured according to respective sound change types without much chronology, as the sound changes tend to sporadic, irregular or inconsistent or to be trends spreading over considerable time spans.”

$C^j \rightarrow C / \_C[+\text{dental}]$  with developments of yers in ablaut environments  
 $C^j \rightarrow C$  in select words due to prestige influence of Czech in the Middle Ages  
 $C^j \rightarrow C$  in select words otherwise, possibly by analogy  
 $t \rightarrow r / tV\_$   
 $n \rightarrow m / \{b,p\}\{l,r,z\}V\_$   
 $j \rightarrow \emptyset / \_ \varepsilon$  “in participial and deverbal forms originally with alveolopalatal consonants in the onsets of two consecutive syllables”  
 Oscillations involving:  
 — Dentals and postalveolars  
 — Postalveolars and alveolopalatals  
 — Voicing  
 $OR \rightarrow RO / V\_C$   
 $RO \rightarrow OR / C\_V$   
 $vC \rightarrow Cv / \_V$   
 $Cv \rightarrow vC / \_C$   
 $t\acute{e}ts\ z_r \rightarrow jts\ j_r$   
 $\acute{e}t\acute{e} \rightarrow js / \_ \{ts,s\}$   
 $zz \rightarrow z\acute{d}z$   
 $z\ z \rightarrow dz\ dz / \_v$   
 $\emptyset \rightarrow d / r\_z$   
 Regressive voicing/devoicing of obstruents in consonantal clusters  
 $v\ r \rightarrow f\ r / C[-\text{voiced}]\_$   
 $v\ r \rightarrow f\ r / \_ \{C[-\text{voiced}],\#\}$   
 $r\ r \rightarrow s\ z$   
 $Lv \rightarrow L[-\text{voiced}]f / O[-\text{voiced}]\_$  “for many speakers”  
 $v \rightarrow \emptyset / x\_o$   
 $\{xv,pv\} \rightarrow f$   
 $plv \rightarrow pf$   
 $p \rightarrow \emptyset / \#\_p$   
 $t\acute{s}s \rightarrow ts$   
 $\{z,s,\acute{s}\} \rightarrow \emptyset / \_sC$   
 $x \rightarrow \emptyset / \_r$  “in the word ‘robak’”  
 $r \rightarrow r / \{ \acute{e},z \} \_$   
 $z_r \rightarrow z_r$   
 $\acute{e}r\ z_r \rightarrow s_r\ z_r /$  “‘szron’ and ‘zreć’”, respectively  
 $t \rightarrow \emptyset / s\_ \{ \acute{t},w \}$   
 $t\acute{s} \rightarrow t / \_r$   
 $\acute{e} \rightarrow \emptyset / tr\_t\acute{e}$   
 $g \rightarrow \emptyset / \_d$   
 $w \rightarrow \emptyset / \{r,b\} \_$   
 $d \rightarrow \emptyset / \acute{t}\_n$



$d \rightarrow \emptyset / r\_ts$   
 $d \rightarrow \emptyset / \_n$  “in arch. ‘jeno’”  
 $\emptyset \rightarrow t / s\_r$  “in ‘stręczyć’”  
 $st \, \text{ʃ}ts \rightarrow z \, z\_ / \_b$   
 $\{b,p\} \rightarrow \emptyset / \_n$  “in verbs in -nąć”  
 $v \rightarrow \emptyset / \_stv$   
 $t \rightarrow \emptyset / \text{ʃ}s\_v$  in “czworo”  
 $s \rightarrow \emptyset / \_kza$  in “słza”  
 $trk \rightarrow kr /$  in the name of the river “Skrwa”  
 $zd^j \, st^j \rightarrow \{z,\text{ʃ}\} \{s,\text{ʃ}\} / \_n$   
 $d^j \rightarrow \emptyset / r\_n$   
 $st^j \rightarrow \text{ʃ} / \_l$   
 $sl^j \rightarrow \emptyset / \_s$   
 $pv \rightarrow f$   
 $\text{ʃ}s \rightarrow \text{ʃ} / \_p$   
 $st^jkl \rightarrow \text{ʃ}t\text{ʃ}kl \rightarrow \{\text{ʃ},s\}k\text{ʃ} \rightarrow \text{ʃ}k\text{ʃ}$   
 $dz \, ts \rightarrow d\text{ʒ} \, \text{ʃ}s$   
 $C[+sibilant]P \rightarrow C[+alveolopalatal] / \_C[+coronal]$   
 $C[+sibilant]P \rightarrow C[+dental]$   
 $w \rightarrow \emptyset / C\_ \#$   
 $w \rightarrow \emptyset / C\_C$  (sporadic)  
 “Oscillations between dental and alveo[lo]palatals” /  $\_C$   
 $n \rightarrow s \rightarrow \text{ʃ} / k\tilde{e}$  where the vowel was from Proto-Slavic  
 $n \rightarrow s / k\_Vn$   
 $d \rightarrow g / \_n$   
 $\text{ʃ}s \rightarrow t / \_r$   
 $\text{ʃ} \rightarrow \emptyset / t\_t\text{ʃ}$   
 “Insertion of epenthetic vowels” in some situations, typically one of / $\varepsilon$  u/, the latter written as either ⟨u⟩ or ⟨ó⟩  
 Epenthetic d g appears in some circumstances  
 $P^j \rightarrow P / \_C$   
 $r^j \rightarrow r / \_ \{s,\text{ʃ}s,l,w,n,\text{ŋ}\}$   
 $t^j \, d^j \rightarrow t \, d / \_ \{l,n,\text{ŋ},r,z\}$   
 $\text{ʃ} \, z \rightarrow s \, z / \_C$  (sometimes)

### 17.11.2 Proto-Slavic to Old Russian

#### *Hwhatting*

*NB: “Not in chronological order”*

$\{t,d\} \rightarrow \emptyset / V\_IV$   
 $or\ ol\ er\ el \rightarrow oro\ olo\ ere\ ele / \_ \$$   
 $mj\ pj\ bj \rightarrow ml^j\ pl^j\ bl^j$   
 $tj\ dj \rightarrow tʃ, ʒ$   
 $kt\ gd \rightarrow \_E$   
 $\tilde{e}\ \tilde{o} \rightarrow ja\ u$   
 $je \rightarrow o / \#\_$   
 $je \rightarrow o / V\_ \text{ (sporadic)}$   
 $j \rightarrow \emptyset / \#\_u$   
 $j \rightarrow \emptyset / V\_u \text{ (sporadic)}$   
 $j\mathfrak{b} \rightarrow i$   
 $\emptyset \rightarrow j / \#\_a$

## 17.12 Proto-Indo-European to Proto-Italic

*Pogostick Man*, from [http://gillesquentel.org/docs/PIE\\_to\\_Italic\\_C.pdf](http://gillesquentel.org/docs/PIE_to_Italic_C.pdf) and [http://gillesquentel.org/docs/PIE\\_to\\_Italic\\_V.pdf](http://gillesquentel.org/docs/PIE_to_Italic_V.pdf)

*NB: This is likely incomplete.*

$p \rightarrow \{p, k^w\}$   
 $k\ \acute{g} \rightarrow k\ g$   
 $\acute{g}^h\ g^{wh} \rightarrow g^h\ x^w$   
 $b^h\ d^h\ g^h \rightarrow p^h\ t^h\ d^h \rightarrow \phi\ \theta\ x$   
 $s \rightarrow z / \text{medial (I'm assuming between vowels or when *s voiced in PIE)}$   
 $eu \rightarrow ou$

### 17.12.1 Proto-Italic to Proto-Latino-Falsican

*Pogostick Man*, from [http://gillesquentel.org/docs/PIE\\_to\\_Italic\\_C.pdf](http://gillesquentel.org/docs/PIE_to_Italic_C.pdf) and [http://gillesquentel.org/docs/PIE\\_to\\_Italic\\_V.pdf](http://gillesquentel.org/docs/PIE_to_Italic_V.pdf)

*NB: This is likely incomplete.*

$x \rightarrow h$   
 $g^w \rightarrow w$   
 $g^h \rightarrow f / \#\_$   
 $g^h \rightarrow \{d, h, g\}$   
 $\{\phi, \theta\} \rightarrow f / \#\_$   
 $\phi\ \theta \rightarrow b\ \{d, b\} / V\_V$   
 $z \rightarrow r$

$x^w \rightarrow f$   
 $x^w \rightarrow \{w, g^w\}$   
 $l \ r \rightarrow ol \ \{or, er\} \ / \ -\#$   
 $m \ n \rightarrow em \ en$   
 $e \rightarrow \{e, i\}$

**17.12.1.1 Proto-Indo-European to Latin** *Mecislau*, from Ramat, Anna Giacrole and Paolo Ramat, *The Indo-European Languages*, and other sources

$e \ o \rightarrow i \ u \ / \ -\eta$   
 $e \rightarrow o \ / \ -\lambda$   
 $o \rightarrow u \ / \ -\{mb, mk, \lambda\}$   
 $o \rightarrow e \ / \ w-\{r, s, t\}$   
 $o: \rightarrow u: \ / \ -r$   
 $aj \rightarrow ai \rightarrow e: \text{ (in rustic dialects)}$   
 $aj \rightarrow ai \rightarrow ae$   
 $oj \rightarrow oi \rightarrow oe \rightarrow u:$   
 $aw \rightarrow o: \text{ (in rustic dialects)}$   
 $aw \rightarrow au$   
 $\{ew, ow\} \rightarrow ou \rightarrow u:$   
 $V \rightarrow i \ / \ \%(C)(C)\_ \% \text{ when unstressed}$   
 $V \rightarrow o \ / \ \%(C)(C)V\_ \% \text{ when unstressed}$   
 $V \rightarrow e \ / \ \%(C)(C)\_ \%r \text{ when unstressed (with some exceptions)}$   
 $V \rightarrow \{i, u\} \ / \ \%(C)(C)\_ \%P \text{ when unstressed}$   
 $a \ o \rightarrow e \ u \ / \ \%(C)(C)\_ C(C)\% \text{ when unstressed}$   
 $a \rightarrow e \rightarrow i \ / \ \%(C)(C)\_ \eta \text{ when unstressed}$   
 $a \rightarrow e \rightarrow u \ / \ \%(C)(C)\_ \lambda \text{ when unstressed}$   
 $e \rightarrow u \ / \ \%(C)(C)\_ \lambda \text{ when unstressed}$   
 $ai \rightarrow ei \rightarrow i: \ / \ \%(C)(C)\_ \text{ when unstressed}$   
 $ei \ oi \ ou \rightarrow i: \ e: \ u: \ / \ \%(C)(C)\_ \text{ when unstressed}$   
 $\{i, o\} \rightarrow e \ / \ -\#$   
 $\{i, e\} \rightarrow \emptyset \ / \ -\# \text{ (sometimes)}$   
 $a \rightarrow e \ / \ -C(C)\#$   
 $e \rightarrow i \ / \ -\{s, t\}\#$   
 $o \rightarrow u \ / \ -C(C)\# \ ! \ \{u, w\}\_$   
 $\{ai, ei, oi\} \rightarrow ei \rightarrow i: \ / \ -(C)(C)\#$   
 $V: \rightarrow V[-long] \ / \ -\{m, (n)t, l, r\}\#$   
 $V: \rightarrow V[-long] \ / \ -\#$   
 $j \rightarrow i \ / \ C\_$   
 $w \rightarrow u \ / \ t\_$   
 $e \rightarrow o \ / \ -w$

$e \rightarrow o / w\_$   
 $w \rightarrow \emptyset / s\_o$   
 $m\ n \rightarrow em\ en$   
 $n\colon \rightarrow n$   
 $l\ l\colon\ r\ r\colon \rightarrow ol\ l\ or\ r$   
 $b^{fi} \rightarrow h / \#\_$  (in rustic dialects)  
 $\{b^{fi}, d^{fi}, g^{wfi}\} \rightarrow f / \#\_$   
 $h \rightarrow \emptyset / b\_$   
 $t \rightarrow k / \_l$   
 $t \rightarrow \emptyset / C\_ \#$   
 $t \rightarrow d / V\_$   
 $dw \rightarrow b$   
 $d \rightarrow \emptyset / V\colon\_ \#$   
 $d \rightarrow \emptyset / C\_$   
 $d \rightarrow l$  “in many dialects”  
 $d^{fi} \rightarrow b / rV\_$   
 $d^{fi} \rightarrow b / \_Vr$   
 $d^{fi} \rightarrow b / \_l$   
 $d^{fi} \rightarrow b / u\colon\_$   
 $d^{fi} \rightarrow d$   
 $k\ g \rightarrow k\ g$   
 $g^{fi} \rightarrow g / \eta\_$   
 $g \rightarrow \emptyset / \_h$   
 $k^w \rightarrow \emptyset / C\_C$   
 $k^w \rightarrow k / \_ \{o, i, C\}$   
 $g^{w(fi)} \rightarrow gu / \eta\_$   
 $w \rightarrow \emptyset / gV\_ \{l, r\}$   
 $g^w \rightarrow v$   
 $g^{wfi} \rightarrow f / \_r$   
 $g^{wfi} \rightarrow v / V\_V$   
 $s \rightarrow z \rightarrow r / V\_V$   
 $s \rightarrow \theta \rightarrow f / \#\_r$   
 $s \rightarrow \theta \rightarrow b / \_r$   
 $s \rightarrow z / \_C[+voiced]$   
 $V \rightarrow V\colon / \_zC[+voiced]$   
 $z \rightarrow \emptyset / \_C[+voiced]$   
 $p \dots k^w \rightarrow k^w \dots k^w$   
 $V_1 \dots V_2 \rightarrow V_2 \dots V_2$  (rare)  
 $V \rightarrow V\colon / \_S[+voiced]\{S[-voiced], F[-voiced]\}$ ; “(i, e, and o sometimes bypass this)”  
 $S[+voiced] \rightarrow S[-voiced] / \_ \{S[-voiced], F[-voiced]\}$   
 $S[-voiced] \rightarrow S[+voiced] / \_N$

$s \rightarrow z / \_ \{N, l, r\}$   
 $V \rightarrow V: / \_ z \{l, r\}$   
 $z \rightarrow \emptyset / \_ \{l, r\}$   
 $S \rightarrow f / \_ f$   
 $\{t, d\} \rightarrow s / \_ s$   
 $\{p, b\} \{t, d\} \rightarrow m \ n / \_ \{m, n\}$   
 $\{k, g\} \rightarrow \eta / \_ n$   
 $m: \rightarrow n / \{W, V:\}_-$   
 $\{d, n, r\} \rightarrow l / \_ l$   
 $n \rightarrow r / \_ r$   
 $s \rightarrow z \rightarrow l / \_ l$   
 $s \rightarrow z \rightarrow r / \_ r$   
 $n \rightarrow l / \_ l$   
 $V \rightarrow V: / \_ \{t, d\} t$   
 $\{t, d\} t \rightarrow tst \rightarrow s:$   
 $\emptyset \rightarrow t / \_ s: r$   
 $\emptyset \rightarrow p / \_ m \_ \{s, t, l\}$   
 $s: \rightarrow s / \_ \#$   
 $s: \rightarrow s / \{W, V:\}_-$   
 $l \rightarrow r \rightarrow \_ V l$   
 $l \rightarrow r / \_ l V \_$  “(in suffixes with l if root already has l)”  
 $r \dots r \rightarrow r \dots \emptyset$   
 $\{n, d\} \dots r \rightarrow r \dots r$   
 $V: \rightarrow V / \_ C(C) \#$  “(irregular: often before -m, -t, -nt, but never before ?s)”  
 $V \rightarrow \{V:, V[+nas]\} / \_ n \{f, s\}$   
 $n \rightarrow \emptyset / \_ V[+nas] \_$   
 $C_1 C_2 C_3 C_4 \rightarrow (C_3) C_4$   
 $C_1 C_2 C_3 \rightarrow C_1 C_3$

**17.12.1.1.1 Classical Latin vs. Vulgar Latin** “The following relate to the changes of vowels as found in the evolution to the written medieval languages of Iberia, Gallia and Italia (Anglo-Norman, Old Spanish, etc.). The Latin of Africa, Sardinia and the easternmost parts of the Empire exhibited different mergers.”

$\{e, i\} \rightarrow j / \_ C \_ V$  when unstressed  
 $\{e, ai\} \rightarrow \epsilon$   
 $\{i, ei, oi\} \rightarrow e$   
 $i: \rightarrow i$   
 $o \rightarrow \circ$   
 $\{u, o:\} \rightarrow o$   
 $u: \rightarrow u$

$a: \rightarrow a$   
 $m \rightarrow n / \_ \#$  “(in certain common monosyllabic words, as well as some common compounds of them)”  
 $m \rightarrow \emptyset / \_ \#$   
 $h \rightarrow \emptyset$   
 $w \rightarrow \beta$   
 $\varepsilon \circ \rightarrow e \circ /$  when unstressed  
 $j \rightarrow \text{ɟ} / \_ \# \_ V$   
 $j \rightarrow \text{ɟ} : / V \_ V$

“In contrast, Romanian exhibits  $u, u: \rightarrow u$  (and ultimately also  $\circ, o: \rightarrow o$ ); and Sardinian and African Latin underwent a straight merger of the vowels by length without considering quality ( $e, e: \rightarrow e$ ;  $i, i: \rightarrow i$ ;  $u, u: \rightarrow u$ ; etc.)”

#### 17.12.1.1.2 Latin to Catalan *Mecislaw*

*NB: Due to problems when the board migrated to a different system, a lot of the special characters were replaced with  $\langle ? \rangle$ . In many cases these have been replaced with  $\langle \emptyset \rangle$  because it was likely that this was what was meant, but conditional  $\langle ? \rangle$  has either been left alone or attempted to have been filled in from context. In some cases, conditional  $\langle ? \rangle$  may have been used to mark stress or syllable boundaries. Take such changes with a grain of salt and use at your own risk.*

$h \rightarrow \emptyset$   
 $n \rightarrow \emptyset / \_ s$   
 $\{m, n, t\} \rightarrow \emptyset / \_ \#$   
 $V \rightarrow \emptyset / \text{ " } V \% C \_ L(C) V(C) \#$  (irregular)  
 $V \rightarrow \emptyset / \text{ " } V \% L \_ C(C) V(C) \#$  (irregular)  
 $V \rightarrow \emptyset / \text{ " } V \% s.t(C) V(C) \#$  (irregular)  
 $u \rightarrow w \rightarrow \emptyset /$  (“when in unstressed penult or between first and tonic syllables; irregular”)  
 $i: \rightarrow i /$  stressed  
 $i: \rightarrow i / \_ \% \text{ " } V$   
 $\{i, e:\} e \rightarrow \{e, \varepsilon\} \{ \varepsilon, e \} /$  stressed  
 $\{i, e:, e\} \rightarrow e / \_ \% \text{ " } V$   
 $i \rightarrow j / \text{ " } V \_ \#$   
 $u: \rightarrow u /$  stressed  
 $u: \rightarrow u / \_ \% \text{ " } V$   
 $au \rightarrow a / \_ \% \text{ " } u$   
 $\{u, o:\} o \rightarrow o \circ /$  stressed  
 $\{u, o(:)\} \rightarrow u / \_ \% \text{ " } V$  in East Catalan  
 $\{u, o(:)\} \rightarrow o / \_ \% \text{ " } V$  else  
 $u \rightarrow w / \text{ " } \varepsilon \_ \#$

a: → a  
 oe → {e,ε}  
 ae au → e ɔ / stressed  
 ae au → e o / \_%”V  
 o → u / \_a  
 o → u / \_%”V (irregular)  
 VV → V: (“For outcomes of word-final vowels, see down below”)  
 ndj → ɲ  
 dj → dʒ → ʒ  
 Ø → e / #\_sC  
 l → Ø / {o,u}\_CV  
 l → w / V\_CV (“although l was usually restored later”)  
 mn → n: → ɲ  
 p b t d k g → β {β,w} Ø {j,w} ɣ {j,Ø,g} / V\_rV  
 ŋ → ɲ / \_{i,e}  
 p b → b w / V\_IV (the latter is irregular)  
 {kl,gl} → ʎ / V\_V (the latter is irregular)  
 sk → ʃ / V\_{i,e}  
 p k → Ø j / V\_tV  
 k → Ø / V\_n\_tV  
 ks → ʃ / V\_V  
 k → j / \_s#  
 gn tj → ɲ Ø / V\_V  
 stj → ʃ  
 tj → s / C\_  
 sj ssj jn → js jʃ ɲ / V\_V  
 mnj → {mni,ɲ} / V\_V  
 lj rj kj gj → ʎ jr ts ʒ / V\_V  
 {bj,vj} → wʒ / \_%”V  
 b → v / V̥%\_j  
 ja → je / #\_ (irregular)  
 V → Ø / \_%”V (rare)  
 Ø → {e,o} / CL\_#  
 Ø → {e,o} / r: \_#  
 a → e / “in the penult”  
 V → Ø / ”V%\_(C)(C)V(C)# (“irregular; e is kept before n”)  
 b → v / V\_V  
 p t → b d / V\_V  
 f → v / V\_V (irregular)  
 s → z / ”V%V\_V  
 s → Ø / V\_V%”V

k g → Ø {Ø, ʒ} / V\_{i,e} (g → ʒ is learned)

g → Ø / V\_{V%}V

k j → g ʒ / V\_{V}

“These next two changes are awkward - Basically, when the final vowel drops off down below, the newly-final d should become w; BUT d should also have become z and disappeared before the final vowels drop off, leaving a dilem[m]a... I’m not certain how this should be [interpreted]”

— d → z → Ø / V\_{V}

— d → w / \_V#

i: → Ø / \_#

{i,e(:),ae} → Ø / \_{(C)}#

{u(:),o(:)} → Ø / \_#

V → Ø / “between first and tonic syllables; except when C\_{CC}, \_n”; “if there are multiple vowels between the initial and tonic syllables, the vowel directly before the tonic is usually dropped” ! V = a

w → Ø / u\_{-}#

j gj ts z n → tʃ i w s Ø / \_#

t → Ø / V\_{sV}

{b,v} → w / V\_{-}#

d → t / \_#

l → ʎ / #\_{-}

k → ts → s / #\_{i,e}

g → ʒ / #\_{i,e}

j → dʒ → ʒ / #\_{-}

k^w g^w → k g / #\_{i,e}

k^w → k / C\_{V}

k^w → g / V\_{i,e}

k^w → k / #\_{a%}V

k^w → gw / V\_{a}

k^w → kw / #\_{-}a

g^w → gw / #\_{a}

g^w → g / C\_{i,e}

g^w → gw / C\_{a}

b → m → Ø / V\_{m\_{-}V}

n → r → br / m\_{-}

k → w / V\_{rV}

{b,v} → w / V\_{tV}

g → Ø / V\_{dV}

l: n: → ʎ j

ʎ → l / \_i\_{-}

C → Ø / C\_{1-C\_{2}} ! C\_{2} = L



$\{a,o\} \rightarrow \emptyset / \#_-$  (rare)  
 $\circ \rightarrow o / \_N\$C$   
 $e \rightarrow \varepsilon / \_v$   
 $o \rightarrow u / \_ \{n,nk,\eta\}$  when stressed  
 $e \rightarrow i / \_ \{nk,\eta\}$  when stressed (irregular)  
 $aj \rightarrow ej \rightarrow ee \rightarrow e$  (irregular)  
 $aj \rightarrow ej / \_f$  when stressed (irregular)  
 $\varepsilon j \circ j \rightarrow j\varepsilon j \text{ uei} / i \{u,ui\} /$  stressed  
 $\varepsilon \rightarrow e / ! \_ \{r,l,rC[-labial],nr\}$  or  $\_ ? w\#$   
 $e \rightarrow \varepsilon$  (in Eastern Catalan)

### 17.12.1.1.3 Latin to French *pharazon*

*NB: The vowels here marked  $\langle \acute{o} \rangle$  and  $\langle \grave{o} \rangle$  seem to have had some sort of open-close distinction similar to /o ɔ/*

Vulgar Latin:

$h \rightarrow \emptyset$   
 $V_0 V_0 \rightarrow V_0 \acute{\phantom{a}}$   
 $n \rightarrow \emptyset / \_ \{f,v,s\}$   
 $r \rightarrow s / \_s$   
 $\{m,n\} \rightarrow \emptyset / \_ \#$  in polysyllables  
 $m \rightarrow n / \_ \#$   
 $u \rightarrow \emptyset / CC\_V$   
 $w \rightarrow gu /$  “from Germanic loanwords”  
 $V \rightarrow \text{”}V / \text{”}VSr\_$   
 $V \rightarrow \text{”}V / \_C^* \{i,e\}V$   
 $\{i,e\} \rightarrow j / \_V$

Stressed vowels:

$a\acute{\phantom{a}} \rightarrow a$   
 $(a)e \rightarrow \grave{e}$   
 $\{e\acute{\phantom{a}},i,oe\} \rightarrow \acute{e}$   
 $i\acute{\phantom{a}} o\acute{\phantom{a}} \rightarrow i \acute{o}$   
 $o \rightarrow \grave{o}$   
 $u \rightarrow \acute{o} / !i\acute{\phantom{a}}$   
 $u\acute{\phantom{a}} \rightarrow u$

Initial vowels (first vowel of a word):

$a\acute{\phantom{a}} \rightarrow a$   
 $\{e(\acute{\phantom{a}}),i,ae,oe\} \rightarrow e$   
 $i\acute{\phantom{a}} \rightarrow i$

— {o(:),u} → o

Final vowels:

— a: → a

— {e(:),i,ae,oe} → e

— i: o: → i o

— u(:) → o / except \_V (?)

k g → tʃ dʒ / \_E

è → ie / in U[+open]

è → ie / \_C#

è → ε / in U[+closed]

ò → uo → ue / in U[+open] ! \_N

ò → ɔ / in U[+closed]

dʒ → dʒ / r\_

d → Ø / \_j

j → Ø / V\_”E

j tʃ → dʒ ts / #-

j → dʒ / V\_V (rare)

Ø → s / t\_ j

t → s / s\_ j

{gn,nj} → ɲ

nk → ɲ / \_t

V → Ø / in the unstressed penult

V → Ø / intertonic ! V = a

a → ə / intertonic

Ø → b / m\_{r,l}

Ø → d / {n,l,ɲ,z}\_r

Ø → t / s\_r

k g → t d / {n,r}\_r

n → r / {g,p}\_-

“[T]wo obstruents in contact with different voicing assimilate to the voicing of the second”

C → Ø / C<sub>1</sub>-C<sub>2</sub> ! C<sub>2</sub> = {r,l}

t → s / \_{n,m}

{kl,gl,lj} → ʎ

{p,b} {t,d} → v ð / V\_{V,r}

v → Ø / V\_B

p → b / \_l

ð → Ø / \_r

(t)s → (d)z / V\_V

k → js / V\_sV

k → j / \_s#

$\{k,g\} \rightarrow \emptyset / V\_B$   
 $\{k,g\} \rightarrow \emptyset / B\_a$   
 $\{k,g\} \rightarrow j / \_ \{a,C\}$   
 $k^w \rightarrow \{v,u\} / V\_E$   
 $k^w \rightarrow j\{v,u\} / V\_a$   
 “[N]ote that the [following] clusters are the only case where a consonant does not receive intervocalic treatment before /j/”:  
 — (k)kj  $\rightarrow$  ts  
 — g  $\rightarrow \emptyset / \_j$   
 — pj  $\rightarrow$  tʃ  
 — {b,v}j  $\rightarrow$  dʒ  
 — m{ɲ,j}  $\rightarrow$  ndʒ  
 V”e  $\rightarrow$  ”Vi  
 V<sub>0</sub>V<sub>0</sub>  $\rightarrow$  V<sub>0</sub>  
 $\emptyset \rightarrow e / \#\_sC$   
 k g  $\rightarrow$  tʃ dʒ / \\_a  
 t  $\rightarrow \emptyset / \{j,s\}$   
 d  $\rightarrow \emptyset / \_ \{z,ʒ\}$   
 ε ɔ  $\rightarrow$  iε uε / \\_ {Cj,jC}  
 $\emptyset \rightarrow j / \{j,ʒ,sj,zj\}$ ” {a,é} \\_ in U[+open]  
 sj zj rj  $\rightarrow$  jsː jz jr  
 j  $\rightarrow \emptyset / s\_ (sː\_?)$   
 ε  $\rightarrow$  εa / \\_1 {C,#}  
 l  $\rightarrow$  u / \\_ {C,#}  
 l  $\rightarrow \emptyset / \{i,u\} \_$   
 {lɛ,lɔ}  $\rightarrow$  u / {e,o} \\_# “[this is actually an analogical development, but it applies as regularly as a sound law]”  
 (ε)au  $\rightarrow$  ɔ  
 é  $\rightarrow$  ei / in U[+open]  
 é  $\rightarrow$  ε / in U[+closed]  
 ó  $\rightarrow$  ou  $\rightarrow$  eu / in U[+open]  
 ó  $\rightarrow$  ɔ / \\_N  
 ó  $\rightarrow$  ou / in U[+closed]  
 e  $\rightarrow$  ə / # (C... ) \\_ (%... )” in U[+open]  
 e  $\rightarrow$  ε / # (C... ) \\_ (%... )” in U[+closed] or \\_V (?)  
 o  $\rightarrow$  {ou,ɔ} “(the outcome fluctuates, but ɔ is often the result of analogy rather than strict sound change; always ou before another vowel)”  
 a  $\rightarrow$  ə / # {tʃ,dʒ} \\_ (%... )” in U[+open]  
 a  $\rightarrow$  ε / in U[+open] “(but a following ʌ creates a [closed] syllable)”  
 k<sup>w</sup> g<sup>w</sup>  $\rightarrow$  k g  
 C<sub>0</sub>C<sub>0</sub>  $\rightarrow$  C<sub>0</sub>

$t \rightarrow \emptyset / V\_ \#$   
 $\varepsilon \rightarrow i / \_C(C \dots)i\#$   
 $V \rightarrow \emptyset / \_ \#$  “(except in monosyllables or after another vowel)” !  $V = a$   
 $a \rightarrow \emptyset$   
 $V \rightarrow \emptyset / \_ \{CC, tʃ, dʒ\} ! \_ \{nt, ng, mp, rt, rd\}$   
 $s \rightarrow \emptyset / \_ C$   
 $\{p, b\} \rightarrow \emptyset / \_ \{t, d\}$   
 $v \rightarrow \emptyset / \_ C$   
 $v \rightarrow \emptyset / C\_$   
 $\delta \rightarrow \emptyset$   
 $ue \rightarrow \varepsilon u$   
 $ai \rightarrow e / \_ \#$   
 $ai \ i \varepsilon i \rightarrow \varepsilon i$   
 $ou \ \varepsilon u \ u \ u \varepsilon i \rightarrow u \ \varepsilon \ y \ y i$   
 $\{ei, oi\} \rightarrow oi / C[-nas]$   
 $\circ \rightarrow u / \_ V$   
 $V[-high] \rightarrow \emptyset \rightarrow \emptyset / \_ V$  “(except that a is kept before o)”  
 $n \rightarrow in / \_ \{C, \#\}$   
 $V\{n, m\} / V[+nas] / \_ \{C, \#\}$   
 $\tilde{e} \rightarrow \tilde{a}$   
 $\{a\tilde{i}, e\tilde{i}\} \rightarrow \tilde{e}$   
 $\tilde{y} \rightarrow \tilde{ae}$   
 $O[+voiced] \rightarrow O[-voiced] / \_ \#$   
 $\{t, s\} \rightarrow \emptyset / \_ \#$   
 $k \rightarrow \emptyset / V[+nas]\_ \#$   
 $\{n, m\} \rightarrow \emptyset / C\_ \#$   
 $j \rightarrow \emptyset / \{j, ʒ\} \_ V[-nas]$   
 $\acute{a} \ r \rightarrow j \ \text{ʁ}$   
 $oi \rightarrow w\varepsilon \rightarrow wa$   
 $o\tilde{i} \rightarrow w\tilde{e}$   
 “([pharazon has] omitted the loss of  $\emptyset$  in various contexts, since it often resurfaces)”

#### 17.12.1.1.4 Vulgar Latin to Italian *Dewrad*, from Boyd-Bownam, P. *From Latin to Romance in Sound Charts*

*NB: Dewrad says, “It should be noted that due to my source they are not in any sort of chronological order, nor do they indicate some of the more sporadic changes.”*

$r \rightarrow \emptyset / a\_ju\#$   
 $tVk \rightarrow dʒ / \text{unstressed}$   
 $au \rightarrow u / \_ \#$  (sporadically, e.g. *audire* → *udire*)

au → o  
 k g → tʃ dʒ / \_E  
 kVl → kːj / unstressed  
 kt → tː  
 ε → jε / unstressed ! \_{dʒ,ʌ,n}  
 g → Ø / a\_V  
 j → dʒ / #\_  
 j → dʒ / V\_V  
 {dj,gj} lj {nj,gn} → dʒ ʌ n  
 ɔ → uo / stressed ! j\_ or \_{dʒ,L}  
 b → v / V\_  
 l → j / #C\_  
 C → Cː / V\_jV  
 sj → dʒ  
 {t,d,k,m,n,s} → Ø / \_#  
 r → Ø / \_# (in polysyllables only)  
 taːte → ˈta / \_#  
 t k → d g / V\_r  
 {skj,stj,sːj} → ʃ  
 tj ks w → ts sː gw

#### 17.12.1.1.5 Latin to Portuguese *Mecislau*

*NB: Due to problems when the board migrated to a different system, a lot of the special characters were replaced with ⟨?⟩. In many cases these have been replaced with ⟨Ø⟩ because it was likely that this was what was meant, but conditional ⟨?⟩ has either been left alone or attempted to have been filled in from context. In some cases, conditional ⟨?⟩ may have been used to mark stress or syllable boundaries. Take such changes with a grain of salt and use at your own risk. Further, Mecislau gives some dual-output changes, which distinguish between vulgar and “semi-learned” outcomes.*

h → Ø  
 rs → sː  
 n → Ø / \_s  
 V<sub>0</sub>V<sub>0</sub> → V<sub>0</sub>ː  
 V → Ø / ˈV%L(C)(C)V(C)# (irregular)  
 V → Ø / \_L(C)(C)V(C)# (irregular)  
 V → Ø / ˈV%<sub>s</sub>\_t(C)V(C)# (irregular)  
 u → w / \_V (between first and stressed syllables)  
 w → u / \_ˈV  
 w → Ø / \_V

$au \rightarrow a / \_ \% u$   
 $au \rightarrow o$   
 $e \rightarrow i: / \% i: \#$   
 $i: \{i, e\} e \rightarrow i e \varepsilon / \text{stressed}$   
 $i: \{i, e(:)\} \rightarrow i e / \_ \% V$   
 $i: \rightarrow \emptyset / \{k, s\} \_ \#$   
 $\{i(:), e(:), ae\} \rightarrow e / \_ \#$   
 $u: \rightarrow u$   
 $ui: \rightarrow ui / \_ \#$   
 $\{u, o:\} o \rightarrow o \circ / \text{stressed}$   
 $\{u, o(:)\} \rightarrow o / \_ \% V$   
 $\{u(:), o(:)\} \rightarrow o \rightarrow u / \_ \#$   
 $a: oe \rightarrow a e$   
 $ae \rightarrow \varepsilon / \text{stressed}$   
 $\varepsilon \circ \rightarrow e o / \_ (u) \#$   
 $\{olt, okt\} \rightarrow ujt \rightarrow ut$   
 $a\ddot{l} \rightarrow o$   
 $\ddot{l} \rightarrow w / V\_Ca$   
 $o \rightarrow u / \_ (V)$   
 $e \rightarrow \emptyset / el\_ \#$   
 $V \rightarrow a / \_ \{n, r\} (C) V (C) \#$  (irregular)  
 $V \rightarrow V[+nas] / \_ N\$C$  when stressed  
 $\tilde{o} \rightarrow \tilde{o}$   
 $N \rightarrow \emptyset / V[+nas] \_ \$C ! C = S$   
 $V \rightarrow V[+nas] / \_ N\$V$   
 $V \rightarrow V[+nas] / \# N\_ (rare)$   
 $N \rightarrow \emptyset / V[+nas] \_ \$V$   
 $\{\tilde{a}, \tilde{ae}, \tilde{oe}\} \rightarrow \tilde{ao} / \_ \#$   
 $V[+nas] \rightarrow V[-nas] / \text{unstressed}$   
 $V[+nas] \rightarrow V[-nas] / \text{in } U \#$   
 $V_0[+nas] V_0[-nas] \rightarrow V_0[+nas]$   
 $\tilde{i} \rightarrow i\eta$   
 $e V \rightarrow o \emptyset / \_ ?$  (irregular)  
 $e \rightarrow o / \_ m V$  (irregular)  
 $V \rightarrow \emptyset / \_ V$  (irregular)  
 $e \rightarrow \emptyset / \{l, n, r, s, k\} \_ \#$   
 $e \rightarrow \emptyset / \% \{i, e\} \_ \#$   
 $e \rightarrow i / \_ (C) (C) V (C) \#$   
 $\{e, i\} \rightarrow \emptyset / \{l, m, r\} \_ \text{when between } \#U \text{ and } U[+stress]$   
 $\{e, i\} \rightarrow \emptyset / k\_t \text{ when between } \#U \text{ and } U[+stress]$   
 $o \rightarrow \emptyset / \_ \{r, l\} \text{ when between } \#U \text{ and } U[+tonic]$

“[I]f there are multiple vowels between the initial and tonic syllables, the vowel directly before the tonic is dropped”

$k \rightarrow ts \rightarrow s / \#_{-}\{i,e\}$   
 $k \rightarrow g / \#_{-}\{a,r\}$  (rare)  
 $g \rightarrow g^i \rightarrow d^i \rightarrow d_3 \rightarrow 3 / \#_{-}\{i,e\}$   
 $j \rightarrow d_3 \rightarrow 3 / \#_{-}$   
 $pl \rightarrow \{f,pr\} / \#_{-}$   
 $l \rightarrow r / b_{-}$   
 $fl \rightarrow \{f,fr\} / \#_{-}$   
 $\{fl,skl\} \rightarrow f$   
 $ngi \rightarrow n$   
 $s \rightarrow f / V\_C[-voiced]V$   
 $s \rightarrow 3 / V\_C[+voiced]V$   
 $kl \rightarrow k\lambda \rightarrow t_f \rightarrow f / \#_{-}$   
 $\{kl,gl\} \rightarrow \lambda$   
 $g \rightarrow \emptyset / \#_l$   
 $k^w \rightarrow kw / \#_{-}”a$   
 $k^w g^w \rightarrow k g / \#_{-}\{i,e,o\}$   
 $k^w \rightarrow g / V_{-}\{i,e\}$   
 $k^w \rightarrow k / VC_{-}\{a,i,e\}$   
 $k^w \rightarrow gw / V_a g^w \rightarrow gw / \#_{-}$   
 $g^w \rightarrow gw / C_a$   
 $b \rightarrow v / V_{-}\{V,r\}$   
 $d \rightarrow \emptyset / V\_V$   
 $g \rightarrow \{\emptyset,3\} / V_{-}\{i,e\}$  ( $g \rightarrow 3$  is learned)  
 $g \rightarrow j / V_r$   
 $pl \ bl \ p \ t \rightarrow br \ \{br,l\} \ b \ d / V\_V$  ( $bl \rightarrow l$  is learned)  
 $p \ t \ k \rightarrow b \ d \ g / V_r$   
 $p \rightarrow \emptyset / V_{-}\{t,s\}V$   
 $k \rightarrow j / V\_tV$   
 $k \rightarrow \emptyset / V_n\_tV$   
 $ks \ gn \ tj \rightarrow f \ n \ \{z,s\} / V\_V$  ( $tj \rightarrow s$  is learned)  
 $tj \rightarrow s / C\_V$   
 $dj \rightarrow d_3 \rightarrow 3 / V\_V$   
 $dj \rightarrow dz \rightarrow ts \rightarrow s / r\_V$   
 $ndj \rightarrow nts \rightarrow ns \rightarrow n / V\_V$   
 $sj \rightarrow j_3 / V\_V$   
 $j \rightarrow \emptyset / i\_3V$   
 $s:j \ (m)nj \ lj \ rj \rightarrow jf \ n\lambda \ jr / V\_V$   
 $kj \rightarrow ts \rightarrow s / V\_V$   
 $gj \rightarrow \{3,j\} / V\_V$  ( $gj \rightarrow j$  is learned)

pj {bj,vj} → jb jv / V\_V  
 mj → jm (irregular)  
 C<sub>0</sub>C<sub>0</sub> → C<sub>0</sub> / ! C = r  
 C → Ø / C<sub>1</sub>-C<sub>2</sub> ! C<sub>2</sub> = L  
 k → j / \_s#  
 f → v / V\_V (irregular)  
 sl → z Ø / V\_V  
 a → Ø / "ɔ\_-#  
 sk k → jʃ z / V\_{i,e}  
 k → g / V<sub>1</sub>-V<sub>2</sub> ! V<sub>2</sub> = ɔ  
 j → {Ø,ʒ} / V\_V (j → ʒ is learned)  
 b → v / VL\_V  
 m → Ø / \_n  
 {e,i} → Ø / {L,N}\_(C)(C)V(C)#  
 o → Ø / \_-(C)(C)V(C)#  
 e → j / {a,o,u}\_-  
 a → e / \_j when stressed  
 o → u / \_ɲ when stressed  
 V<sub>0</sub>V<sub>0</sub> → V<sub>0</sub> (irregular)  
 d → Ø / V\_V (in Portugal)

**17.12.1.1.6 Vulgar Latin to Old Provençal** *Pogostick Man*, from Grandgent, Charles Hall (1905), *An outline of the phonology and morphology of old Provençal*, Revised Edition

*NB: Use at your own peril. Trying to put a chronology to this is sort of like what I imagine undergoing a root canal would be like, as is figuring out the conditioning on a lot of these things because of the convention Grandgent uses. Nevertheless, I have tried and probably largely failed. In any case the sections regarding the development of the vowels are placed first, because the source does that and other Romance changes posted here do similarly, and the grouping of the consonants is in large part informed by the source. Also, I use % here to denote a syllable boundary because I didn't want to have to open yet another window so I could throw a sigma into my document.*

Stress shift: Secondary stress shifts to two syllables away from the penult. If the secondary tonic precedes the tonic, that vowel is considered stressed for the purpose of subsequent sound changes, and at some point the intervening vowel drops. Vowel changes assume the changes in Vulgar Latin as listed elsewhere in this thread.

VN → V: / \_s (except for the prefixes con-, in-); I'm assuming this change happened in Vulgar Latin and then vowel length went to quality



## STRESSED VOWELS

- $i \rightarrow e$
- $u \rightarrow o$  (this change seems to have happened later, hence is listed separately)
- $\circ \rightarrow y$  /  $_{-}\{u,P,k,g,i\}$  (in northwestern dialects)
- $\circ \rightarrow \text{qe}$  /  $_{-}\{u,P,k,g,i\}$  (in western dialects, Limousin, and Auvergne)
- $\circ \rightarrow \text{qo}$  /  $_{-}\{u,P,k,g,i\}$  (in Languedoc)
- $\circ \rightarrow \{\text{qe}, \text{qo}, \circ\}$  /  $_{-}\{u,P,k,g,i\}$  (in southern dialects)
- $a \rightarrow a$  /  $_{-}N$  (Rouergue, Limousin, Auvergne, Dauphiné)
- $a \rightarrow a$  /  $_{-}\#$  in monosyllables and oxytones (Rouergue, Limousin, Auvergne, Dauphiné)
- $a \rightarrow \text{â}$  (I have no idea what is going on here. Grandgent seems to distinguish an open and close /a/, and I have listed his open a as /â/, which seems to have been distinct from /ɔ/, but beyond this section it doesn't really seem to matter very much)
- $\text{â } \varepsilon \circ \rightarrow a \text{ e o}$  /  $_{-}N$  (in Limousin and neighboring regions, the last two particularly in Limousin, Languedoc, and Gascon, though when  $_{-}n$  this change may have been blocked)
- $\varepsilon \circ \rightarrow \text{jé wó}$  (intermittent, “least common in the southwest”)
- $e \rightarrow i$  /  $_{-}V$  (and possibly  $V_{-}?$ )
- $e \rightarrow i$  /  $_{-}(C \dots )i\{C(C \dots )V, \#\}$
- $\varepsilon \rightarrow \text{jé}$  /  $_{-}\{u,i,\text{â},r^j,\text{f},\text{z},j,\text{t},\text{d}\}$  (except in some northern and western dialects, or if this  $u \leftarrow l$  or if this  $i \leftarrow \text{ð}$ )
- $ju \rightarrow \text{jeu}$
- $o \rightarrow y$  /  $_{-}\{\text{t},\text{f},\text{d},\text{z},\text{it},\text{id}\}$  (did not occur in Dauphiné)
- $o \rightarrow y$  /  $_{-}n$  (in northern and western dialects)
- $o \rightarrow y$  /  $_{-}i\#$  (in Bordeaux, Auvergne, and some of Languedoc)
- $\circ \rightarrow \{\circ, \text{we}\}$  (in southwestern dialects)
- $u \rightarrow y$
- $o \rightarrow u$  (during the literary period)

## UNSTRESSED VOWELS

- $E \rightarrow \emptyset$  /  $_{-}e$
- $B \rightarrow \emptyset$  /  $_{-}o$
- $E \rightarrow j$  (presumably in the vicinity of another vowel)
- $V \rightarrow \emptyset$  (though /a/ seemed to resist this)

## INITIAL-SYLLABLE VOWELS

- $\{a, \text{œ}, e, i\} \rightarrow e$  (here,  $\langle \text{œ} \rangle$  denotes the reflex of the Latin vowel written this way, not a front rounded vowel)
- $u \rightarrow o$
- $au \rightarrow a$  /  $_{-}(C \dots )u$
- $V \rightarrow \emptyset$  /  $_{-}r$  (seemed to be an intermittent change)
- Lots and lots of analogical formations

## INTERTONIC VOWELS

—  $V \rightarrow \emptyset$  (again, /a/ seemed to resist this change, which was itself generally blocked by analogy)

## PENULT VOWELS

—  $V \rightarrow \emptyset$  / “penult of paroxytones”, though /a/ often remained “as an indistinct e”, probably /ə/

— V often remained when  $\{tʃ, dʒ, j\}_-$ , especially if  $CC_-$ , or when  $\{(k)s, s:, sj\}_-$

— V is retained when  $P\_C[+dental]$

—  $CVK \rightarrow CVj$  (intermittent if C was a resonant)

—  $V \rightarrow \emptyset$  /  $lv\_r$  (dialect-dependent)

—  $e \rightarrow i$  /  $_(C\dots)i(C\dots)\#$

## FINAL VOWELS

— (Again, /a/ seems to be a persistent exception to these)

—  $V \rightarrow \emptyset$  /  $R\_ (C\dots)$

— Grandgent remarks that /i/ was probably the last vowel to drop out

—  $a \rightarrow o$  in most dialects except Gascon and Languedoc; final -as remained in “Limousin and some others”

— /i/ and /u/ remain when  $^nV_-$  (then u is subject to the changes listed above— $u \rightarrow y$ , &c.)

—  $e\ u \rightarrow e\ o$  /  $\_nt\#$

— -os remains “in the extreme east”

— Final -i remains “as late as the 12th century” in some regions (Aude, Tarn, Aveyron, Corrèze, and some pockets of Haute-Garonne)

— Epenthesis of /e/ in 2SG “of some verbs”

—  $V \rightarrow$  “indistinct e” (probably /ə/) if dropping it would create ugly consonant clusters:

——  $C\_L, P\_C[+dental], C\_tʃ, C\_k, C\_m, C\_n$  where “originally separated by the vowel of the penult” (proparoxytones)

——  $\acute{K}\_r$  (paroxytones)

—— Where the cluster would be unwieldy otherwise, apocope happened

—— Final / $(m)bj\ mnj\ pj\ mj$ / “required a supporting vowel” (dialect-dependent)

—  $V \rightarrow e$  “in many late words”

$K \rightarrow \emptyset$  /  $\_l$  (not always, but this was a general change)

$v \rightarrow b$  /  $r\_$  (sporadic)

$h \rightarrow \emptyset$

$d \rightarrow \emptyset$  /  $V\_V$  (seems to have happened in the north and northeast at some point)

$b\ d\ g \rightarrow \beta\ \delta\ \gamma$  /  $V\_V$

$\beta j \rightarrow j$  (in forms of *habeo* and *debeo*)

$k\ g \rightarrow tʃ\ dʒ$  /  $\_E$

$tʃ \rightarrow ts$  (sometimes)  
 $g \rightarrow \emptyset / V\_ (VC\ldots)''V$   
 $j \rightarrow \emptyset / V\_''E$   
 $N \rightarrow \emptyset / \_ \#$ , in polysyllables  
 $k^w g^w \rightarrow k g / \_ B$   
 $rs \rightarrow s$ :  
 $s: \rightarrow s / V\_\_$   
 $p t k s \rightarrow b d g z / V\_V$  (this  $b \rightarrow v$ ?)  
 $\emptyset \rightarrow i / \_ \# \_ sC$   
 $w \rightarrow v \rightarrow \emptyset / \_ u$  ("restored by analogy in many words")  
 $w \rightarrow v \rightarrow \emptyset / \_ ''o$   
 $w \rightarrow v \rightarrow \beta$   
 $\beta \rightarrow w / V\_C$   
 $w \rightarrow \emptyset / C.B$  (when from earlier B?)  
 $k \rightarrow \emptyset / \_ s\{C,\#\}$  (the latter in polysyllables only)  
 $\{d,g\} \rightarrow \emptyset / \_ j$   
 Loan phonemes:  
 — Loaned /b/ did not lenite  
 — Loaned /k/ did not palatalize  
 — Loaned  $w \rightarrow gw$   
 Original  $z (/ts/?)$   $\rightarrow dj \rightarrow j$   
 Greek /k/ shows up variously as /k g/  
 $p^h \rightarrow f$   
 Some reanalysis of initials as medials if a prefixed form was reanalyzed as a single morpheme  
 $(s)k g \rightarrow (s)tʃ dʒ / \_ \# \_ a$  (in the north and northeast)  
 $tʃ \rightarrow ts \rightarrow s / \_ \# \_$   
 $j \rightarrow dʒ / \_ \# \_$  (but not in Béarn)  
 $f \rightarrow h$  (in Béarn and Gascon)  
 $\beta \rightarrow b$  (in Béarn, Gascon, and Languedoc)  
 $\beta \rightarrow v$  (though sometimes  $\rightarrow gw$  instead if analogy interfered)  
 $k^w g^w \rightarrow kw gw$  (in western dialects)  
 $k^w g^w \rightarrow k g$  (else)  
 $\emptyset \rightarrow k / \_ \# \_ s \_ l$   
 $i \rightarrow e / \_ \# \_ sC$   
 $b \{d,dz,dʒ\} z ʒ g \rightarrow p \{t,ts,tʃ\} s ʃ k / \_ (s)\#$   
 $tʃs \rightarrow \{ts,tʃ\}$  (varies)  
 $j \rightarrow i / \_ (s)\#$   
 $\delta \rightarrow \emptyset / \_ \#$   
 $\delta \rightarrow t / \_ s\#$   
 $\beta \rightarrow u / V\_ (s)\#$

$\beta \rightarrow \{\emptyset, f\} / C\_ (s) \#$  (the latter is rare)  
 $n \rightarrow \emptyset / V\_ \#$  (did not occur in extreme western areas, some northern areas, the southeast, and the east)  
 $n \rightarrow \emptyset / \_s \#$  (except for eastern and southeastern dialects)  
 $n \rightarrow \emptyset / r\_ (s) \#?$   
 $k: \rightarrow tʃ / \_a$  (in the east and northeast)  
 $l: \rightarrow l$  (in the south)  
 $r: \sim r$  stuff—not sure what was going on here, but it seems like this distinction lingered on into the literary period, but the two may have been in the process of merging  
 $mn \rightarrow mpn \rightarrow n:$  (dialectal)  
 $C: \rightarrow C$   
 $g \rightarrow k / B\_$  (your guess is probably better than mine)  
 $g \rightarrow \{k, j\} / V\_$  (if /j/ resulted, it dropped after /i/; forms with k are “most persistent in the west” and more common overall)  
 $l \rightarrow w / V\_s$   
 $ms \ ns \rightarrow mps \ nts$  (sporadic?)  
 $\{p, b\} \rightarrow \emptyset / R\_s \#$  (unless blocked by analogy)  
 $ts \rightarrow s / \_ \#$  (Provence, Limousin, some Languedoc and Gascon)  
 $\beta \rightarrow \emptyset /$  when pretonic and immediately adjacent to a back vowel  
 $\beta \rightarrow b / V\_V$  (in western and some central dialects)  
 $\beta \rightarrow v$  (otherwise)  
 $tʃ \rightarrow i / \_C$   
 $tʃ \rightarrow i / C\_$   
 $tʃ \rightarrow jdz \rightarrow jz / V\_V$  (in the south and northwest)  
 $tʃ \rightarrow dz \rightarrow z / V\_V$  (otherwise)  
 $\delta \rightarrow i / C\_$   
 $\delta \rightarrow i / \_C ! \_s \#$   
 $\delta \rightarrow z$  (except in some northern and eastern dialects where  $\rightarrow \emptyset$ )  
 $g \rightarrow j / \_a$  (in the north and east; further  $\rightarrow d_3$  in the north)  
 $g \rightarrow g / \_ \{o, u, y\}$   
 $g \rightarrow j \rightarrow d_3 /$  “[b]etween the last two vowels of a proparoxytone”, though it dropped early in some dialects  
 $d_3 \rightarrow j$   
 $l \rightarrow u / \_s \#$  (in many dialects)  
 $s \rightarrow r / \_n$  (in a few dialects)  
 $j \rightarrow d_3 / \_ ”E$  (in the west)  
 $j \rightarrow \emptyset / \_ ”E$  (else)  
 $j \rightarrow i / \_C$   
 $j \rightarrow d_3 / V\_V$  (did not occur in the northeast and some northern dialects)  
 $\beta \rightarrow u / \_l$   
 $\{t, d\}l \ \{k, g\}l \rightarrow l: \acute{x}$

$\emptyset \rightarrow b / m\_l$   
 $p\ j \rightarrow b\ i / \_l$   
 $p\ k\ t_f\ b\ g\ \beta\ j \rightarrow b\ g\ i\ \{b,u,u \rightarrow y \rightarrow i\}\ \emptyset\ \{u,u \rightarrow y \rightarrow i\}\ i / \_r$   
 $\{t,d\} \rightarrow \delta \rightarrow i / \_r$   
 $\delta \rightarrow \emptyset / au\_$   
 $\emptyset \rightarrow d / z\_r$   
 $\emptyset \rightarrow b / m\_r$   
 $\emptyset \rightarrow t / s\_r$   
 $\beta w\ tw \rightarrow w: dw \rightarrow g^w\ g^w \rightarrow g\ g$   
 $\{d,k\}w \rightarrow g^w \rightarrow g$   
 $(k^w \rightarrow g^w \rightarrow g\ ?)$   
 $\{l,r\}w\ \{n,\eta k,\eta g\}w \rightarrow lg^w\ \eta g^w \rightarrow lg\ \eta g$   
 $pw \rightarrow upw \rightarrow up \rightarrow ub$   
 $w \rightarrow \emptyset / s\_ ?$   
 $\beta j \rightarrow \{ud\mathfrak{z},uj\}$  (in northern dialects)  
 $\beta \rightarrow u / \_j$  (in western dialects)  
 $\beta \rightarrow \{b,v\} / \_j$  (in southern and eastern dialects)  
 $ktj\ klj \rightarrow is\ \mathfrak{L}$   
 $\{t_f(\cdot),k^w\}j \rightarrow ts$   
 $dVg\ (n)dVg \rightarrow d\mathfrak{z}(?)\ nd\mathfrak{z}$   
 $l\{tj,t_fj\}\ ld\mathfrak{z} \rightarrow lts\ ldz \rightarrow uts\ udz \rightarrow us\ uz$   
 $l:\{j,Vd\mathfrak{z}\}\ lnj \rightarrow \mathfrak{L}\ n$   
 $lvj \rightarrow lbj \rightarrow ubj$   
 $j \rightarrow \emptyset / n\_ \#$  (in many dialects)  
 $nj \rightarrow n$   
 $mbj \rightarrow \{mbj,md\mathfrak{z},nd\mathfrak{z}\}$   
 $mnj \rightarrow n$  (Limousin, as well as extreme eastern and southwest dialects)  
 $mnj \rightarrow nd\mathfrak{z}$  (else)  
 $mj \rightarrow \{mj,n\}$   
 $\{ntfj,ndj\} \rightarrow nts \rightarrow ns$   
 $\{ndj,nd\mathfrak{z}j\}\ nd\mathfrak{z} \rightarrow n\ \{n,nd\mathfrak{z}\}$   
 $p \rightarrow b / \_rj$   
 $ptj \rightarrow ts \rightarrow s$   
 $pj \rightarrow pt_f \rightarrow t_f$  (except in western and some southern dialects)  
 $rtfj \rightarrow rts\ (\rightarrow rs\ ?)$   
 $rdj\ rVg \rightarrow rdz\ rd\mathfrak{z}$   
 $rd\mathfrak{z} \rightarrow \{rd\mathfrak{z},rdz(\rightarrow rz)\}$   
 $rtj \rightarrow rts \rightarrow rs$   
 $r:Vg\ rj \rightarrow rd\mathfrak{z}\ ir$   
 $rtVg \rightarrow \{rd\mathfrak{z},rts(\rightarrow rs)\}$   
 $rtj \rightarrow rts \rightarrow rs$

$v \rightarrow \{v, b\} / r\_j$   
 $rj \rightarrow r^j \rightarrow ir / V\_V$   
 $rj \rightarrow r^j \rightarrow r / \_ \#$   
 $\{s\_j, stj, stj\} \rightarrow j \rightarrow is$  (except in the west or extreme east, where the outcome was some flavor of (i)(t)f)  
 $sj \rightarrow \text{ɜ} \rightarrow (i)(d)\text{ɜ}$  (in some northeastern, northern, and western dialects)  
 $sj \rightarrow \text{ɜ} \rightarrow \{r, z\}$  (rare)  
 $sj \rightarrow \text{ɜ} \rightarrow iz$  (the usual outcome)  
 $tVg \ trj \rightarrow d\text{ɜ} \ ir$   
 $t\_j \rightarrow ts \rightarrow s$   
 $tj \rightarrow t\_f \rightarrow dj \rightarrow dj\text{ɜ} (?) \rightarrow dz$  (in the north and west) or  $idz$  (in the south and east)—medial (i)dz became (i)z; i-less forms “prevail in the literary language” and seem to have become common if the dz follows the stress  
 $l \rightarrow u / \_ \{t, s\}$  (Languedoc)  
 $l \rightarrow u / \_ \{d, s\}$  (Rouergue)  
 $l \rightarrow u / \_ \{t, d, s\}$  (else)  
 $ndt \ ndtf \ ntj \ nkt \ nf \rightarrow n\{d, t\} \{nts, ndz(\rightarrow nz), nd\text{ɜ}\} \ n(t)s \{n, (i)nt, ntj\} \{nf, f(\rightarrow f)\}$   
 $nt \ nd \rightarrow \{\emptyset, n\} \emptyset / \_ \#$  (in some Languedoc and Gascon areas)  
 $nd \rightarrow n / \_ \#$  (in western areas and for some speakers of Limousin)  
 $d \rightarrow t / n\_ \#$   
 $rtj \ rdtj \rightarrow r(t)s \{rdz(\rightarrow rz), rts, rd\text{ɜ}\}$   
 $rdg \rightarrow r\{g, d\text{ɜ}\} / \_ a$   
 $t \rightarrow \emptyset / rd\_$   
 $t \rightarrow \emptyset / r\_m$  (sometimes)  
 $stj \rightarrow s$  (in some northern and northeastern dialects)  
 $stj \rightarrow (i)(t)f$  (for western and extreme eastern regions)  
 $stj \rightarrow is$  (otherwise)  
 $k \rightarrow \emptyset / s\_b$  (sporadic?)  
 $\{p, t\} \rightarrow \emptyset / s\_m$  (sporadic?)  
 $p \rightarrow \emptyset / s\_t$   
 $stg \rightarrow s\{g, d\text{ɜ}\}$   
 $bk \rightarrow pts / \_ a$   
 $b \rightarrow \{\emptyset, u\} / \_ rg$   
 $b \rightarrow \emptyset / \_ s\{t, k\}$   
 $b \rightarrow \{\emptyset, b\} / \_ t$   
 $b \rightarrow \emptyset / \_ ts$   
 $\beta \rightarrow u / \_ k$   
 $\beta tj \rightarrow u\{ts, dz\} \rightarrow u\{s, z\}$   
 $\beta t \ \beta d \rightarrow pt \ bd$  (in the west)  
 $\beta t \ \beta d \rightarrow ut \ ud$  (else)  
 $ktj \rightarrow (i)tj$  (in western and extreme eastern dialects)

ktʃ → its → is (else)  
 tʃ k → {i,s} {Ø,k} / \_m  
 kt gd → it id (in the north, northeast, and southwest)  
 {tʃ,k}t gd → tʃ dʒ (else)  
 dtʃ → ts (in Auvergne and some western areas)  
 dtʃ → dʒ (for some southeastern and southwestern speakers)  
 dtʃ → dz → z (else)  
 g → Ø / \_m  
 gn{d,t} → ɲn{d,t} → n{d,t} → {(i)nd,nd,dʒ} or t(f)  
 gn → ɲn → n  
 ksk → stʃ / \_a (in the north and northeast)  
 k → Ø / \_sk (else)  
 ks → ʃ → s / \_m  
 ks: → is  
 p → Ø / \_f  
 pk → ptʃ / \_a

The outcome of ps varied; some dialects preserved it, while others changed it to (i)ʃ (typical of the west), us (the east), or is

pt → {ut,it} “in a few words”  
 p → Ø / \_t “except in parts of Languedoc and Gascony”  
 td → t: → t  
 jd → {dʒ,id}

Some dialects dropped all final k, while others only dropped it when B-#, changing it to i when {a,E}-#

{d,l} → Ø / \_#  
 t → Ø / \_# ! “in the preterit of verbs”, though it tended to drop “in strong preterits”

The outcome of final nt was usually n, but in the extreme north and some areas of the south, the full cluster was kept as part of the ending -ant; further, “in some dialects the n fell after o, u”

**17.12.1.1.7 Vulgar Latin to Rhaeto-Romance** *Pogostick Man*, from Wikipedia contributors (2014), “Rhaeto-Romance languages”. *Wikipedia, the Free Encyclopedia*.  
[https://en.wikipedia.org/w/index.php?title=Rhaeto-Romance\\_languages&oldid=607581179](https://en.wikipedia.org/w/index.php?title=Rhaeto-Romance_languages&oldid=607581179)

*NB: These are probably very incomplete and too general, but they seem to be the key distinguishing features of Rhaeto-Romance.*

ε e → ej je  
 a → e / stressed, usually when K\_  
 u: → y (→ i in most descendants, with the exception of Engadine)  
 a V → e (= /ə/?) Ø / in final syllables (though Friulian preserves the ending -is)

$k\ g \rightarrow tʃ\ dʒ / \_a$  (note the similarity with some varieties of Old Provençal)  
 $/pl\ fl\ kl/$  preserved  
 Germanic loaned  $/w/$  preserved—*i.e.*, it did not become  $/gw/$   
 $C[+ \text{voiced}] \rightarrow \emptyset / V\_V$  (only for obstruents?)  
 $C[- \text{voiced}] \rightarrow C[+ \text{voiced}] / V\_V$   
 Final  $/s/$  preserved

**17.12.1.1.8 Latin to Romanian** *pharazon*, from Jensen, *A Comparative Study of Romance*, as well as other sources

$h \rightarrow \emptyset$   
 $V_0V_0 \rightarrow V_0$ :  
 $n \rightarrow \emptyset / \_ \{f, v, s\}$   
 $r \rightarrow s / \_s$   
 $\{m, n, s\} \rightarrow \emptyset / \_ \#$  in polysyllables  
 $m\ s \rightarrow n\ i / \_ \#$   
 $u \rightarrow \emptyset / CC\_V$   
 $V \rightarrow "V / "VSr\_$   
 $V \rightarrow "V / \_ (C \dots)" \{i, e\}V$

“Stressed vowels (note the difference from the French development)”:

—  $a: \rightarrow a$   
 —  $(a)e \rightarrow \varepsilon$   
 —  $e:, i, oe \rightarrow e$   
 —  $i: o(:) u(:) \rightarrow i\ o\ u$

Word-initial vowels:

—  $a: \rightarrow a$   
 —  $\{e(:), i, ae, oe\} \rightarrow e$   
 —  $i: \rightarrow i$   
 —  $\{o(:), u\} \rightarrow o$

Word-final vowels:

—  $a: \rightarrow a$   
 —  $\{e(:), i, ae, oe\} \rightarrow e / \_ \#$   
 —  $i: \rightarrow i$   
 —  $\{o(:), u\} \rightarrow o$   
 —  $u \rightarrow o / ! V\_$

$s \rightarrow i / \#(C \dots)V\_ \#$   
 $k \rightarrow \emptyset / \_s \#$   
 $\{s, t\} \rightarrow \emptyset / \_ \#$   
 $k^w\ g^w \rightarrow p\ b / V\_a$



$g \rightarrow m / \_n$   
 $w \rightarrow \emptyset / \{k,g\}_-$   
 $k \ g \rightarrow tʃ \ dʒ / \_E$   
 $\varepsilon \rightarrow ie$   
 $t \ d \ s \rightarrow ts \ dz \ ʃ / \_i$   
 $o \ e \rightarrow u \ i / \_N$   
 $a \rightarrow i \_N ! \_ \{n:,mn\}$   
 $i \rightarrow \emptyset / OL\_e$   
 $e \rightarrow a / i\_ (C...)\{a,e\}\#$   
 $i \rightarrow \emptyset / \{ts,dz,S\}\_V$   
 $li \rightarrow lj / \_V$   
 $l \rightarrow lj / \_i$   
 $l: \rightarrow \emptyset / \_i$   
 $\text{"el:a} \rightarrow e\text{"a} / \_ \#$   
 $\{b,v\} \rightarrow \emptyset / V\_ \{V,t\}$   
 $l \rightarrow r / V\_V$   
 $m \rightarrow u / a\_nV$   
 $b \rightarrow u / V\_ \{l,r\}$   
 $p \rightarrow \emptyset / \_s$   
 $c \rightarrow p / \_ \{s,t\}$   
 $\{sc,st\} \rightarrow ʃt / \_F$   
 $s \rightarrow ʃ / \_kl$   
 $c \rightarrow \emptyset / n\_t$   
 $kj \ gj \rightarrow tʃ \ \{j,\emptyset\}$  ( $gj \rightarrow \emptyset$  is rare)  
 $Pj \rightarrow \eta$   
 $\{sj,stj,s:j\} \rightarrow ʃ$   
 $j \rightarrow s / t\_$   
 $j \rightarrow z / rd\_$   
 $dj \rightarrow ʒ / \_ \text{"B}$   
 $dj \rightarrow z / V\_V$   
 $\{n,l\} \rightarrow \emptyset / \_j$   
 $ja \rightarrow e / r\_ \#$   
 $j \rightarrow \emptyset / r\_$   
 $d \rightarrow \emptyset / \_z$   
 $l \rightarrow j / \{k,g\}_-$   
 $a \rightarrow e / C[+palatal]\_ \#$   
 $a \ o \rightarrow \text{ə} \ u / \text{"U}... \_ \#$   
 $e \rightarrow \text{ə} / \text{"U}...P\_ (C...)V\# ! \ V = i$   
 $u \rightarrow \emptyset / o\_e$   
 $e \rightarrow \text{ə} / ou\_ \#$   
 $u \rightarrow \emptyset / ! \ \{OL,\text{"V}\}\_ \#$

$a \rightarrow a / \#(C \dots)V \dots C[+palatal] \dots$ ”U  
 $a o \rightarrow \text{ə} u / \#(C \dots)V \dots \dots$ ”U  
 $e \rightarrow i / \#(C \dots)V \dots n \dots$ ”U  
 $e \rightarrow \text{ə} / \#(C \dots)V \dots \{t,d,n\} \dots$ ”U  
 $e \rightarrow \text{ə} / P \dots (C \dots)B$   
 $e \rightarrow \emptyset / P \dots a$   
 $e \rightarrow \text{ə} / \#\{r,P\} \dots$ ”U  
 $o \rightarrow u / \#C \dots \dots$ ”U  
 $a \rightarrow \text{ə} \#C(C \dots) \dots$ ”U  
 $\{t,d\} \rightarrow \emptyset / n \dots \#$   
 $C^i \rightarrow C^j / \dots \# ! R \dots R \dots \#$

#### 17.12.1.1.9 Latin to Sardinian *FearfulJesuit*

*NB: This is an incomplete list*

$w \rightarrow \beta$   
 $ae \rightarrow e$   
 $h \rightarrow \emptyset / \# \dots$   
 $m \rightarrow \emptyset / \dots \#$   
 $V: \rightarrow V[-long]$   
 $\{l:,ld\} nd \rightarrow d: \eta d / V \dots V$   
 $l \rightarrow r / C \dots$   
 $\emptyset \rightarrow V / \# \dots r /$  “in Campidenese, but I can determine no rule for when the vowel was what”  
 $\emptyset \rightarrow i / \# \dots sC$  “(Logudorese)”  
 $\{b d g\} \rightarrow \emptyset / V \dots V$  “(except in Nuorese)”  
 $p t k \rightarrow \beta \delta \gamma / V \dots V$  “(except in Nuorese)”  
 $v \rightarrow b / \# \dots$   
 $lj \rightarrow \{ts,dz\}$  “(varies)”  
 $k^w g^w \rightarrow p b$   
 $i \rightarrow z / \# \dots V$

#### 17.12.1.1.10 Vulgar Latin to Spanish ? and Serafín, the former citing Penny, Ralph (2002), *A History of the Spanish Language*, 2nd Ed. Cambridge University Press; and Lipski, John (1994), *Latin American Spanish*. Longman Pub Group.

$b \rightarrow \beta / V \dots V$   
 $\{tj,kj\} \{tj,kj,ptj,ktj,skj\} \rightarrow ts t:s$   
 $k g \rightarrow tʃ dʒ \rightarrow ts dz / \dots \{j,i,e,\varepsilon\}$   
 $\{t,k\} \rightarrow \emptyset / \dots \#$

$V \rightarrow \emptyset / C\_ \{r,l\}$  when unstressed and not at a word boundary  
 $V \rightarrow \emptyset / \{r,l\}\_C$  when unstressed and not at a word boundary  
 $V \rightarrow \emptyset / C\_s$  when unstressed and not at a word boundary (sporadic)  
 $V \rightarrow \emptyset / s\_C$  when unstressed and not at a word boundary (sporadic)  
 $\{k,g\} \rightarrow x \rightarrow j / \_ \{t,s,n,l\}$   
 $pt \{rs,ps\} \rightarrow t: s:$   
 $ns \rightarrow s$  (with a few exceptions)  
 $mb \ mn \rightarrow m: n:$   
 $\{jl,lj\} \{jn,nj\} \{jg,gj\} \rightarrow \text{ɰ} \text{ɰ} j:$   
 $bj \rightarrow j:$  (sporadic)

Raising of  $e \{ɛ,a\} \text{ɔ} \text{o} \rightarrow i \text{e} \text{o} \text{u}$ ; near  $j$ , in particular environments:

$\text{— } e \rightarrow i / \_Cj \text{ ! } C = p$   
 $\text{— } ɛ \text{ɔ} \text{u} \rightarrow e \text{o} \text{u} / \_ (C)j$   
 $\text{— } a \rightarrow e / \_ j$

$oj \rightarrow we$  (sporadic)  
 $ɛ \text{ɔ} \rightarrow je \text{we}$   
 $\text{”}je.o \text{”}je.a \rightarrow \{\text{”}i.o, \text{”}jo\} \text{”}i.a$   
 $jt \text{js} \rightarrow tʃ \text{ʃ}$   
 $f \rightarrow h / \text{ ! } \_ \{ue,L\}$   
 $rj \text{pj} \rightarrow jr \text{jp} / V\_$   
 $\text{ɰ} \rightarrow \text{ʒ}$   
 $j \rightarrow \{\emptyset, \text{ʒ}\}$  (the latter is rare)  
 $j: \rightarrow \emptyset / E\_$   
 $d \rightarrow \{\emptyset, \text{ð}\} / V\_V$   
 $g \rightarrow \{\emptyset, \text{ɣ}\} / V\_V$   
 $p \text{ t k s ts} \rightarrow b \text{ d g z dz} / V\_V$   
 $p: \text{ t: k: s: ts j:} \rightarrow p \text{ t k s ts j}$   
 $n: \text{ l: rr} \rightarrow \text{ɰ} \text{ɰ} r$   
 $kl \text{pl} \rightarrow \text{ɰ} \{\text{ɰ}, tʃ\}$   
 $fl \rightarrow \text{ɰ}$  (sporadic)  
 $V \rightarrow \emptyset / \text{unstressed ! } V = a$   
 $sj \rightarrow js / V\_$   
 $i \text{u} \rightarrow e \text{o} / \_ (C)\#$   
 $Vr \rightarrow rV / C\_ \#$   
 $e \rightarrow \emptyset / V \{d,s,n,l,r\}\_ \#$   
 $d \text{g} \rightarrow \text{ð} \text{ɣ} / V\_V$

/j/ “gains a fortified [dʒ] allophone” by analogy with the voiced-stop/voiced-fricative allophony in Spanish

“Complex resolution of many consonant clusters created with the previous loss of unstressed vowels”:

“With deletion or assimilation or both”:

- $t \rightarrow \emptyset / \_m$
- $d \rightarrow \emptyset / \_n$  (sometimes)
- $mn \rightarrow n$  (sometimes)
- $tst \ dzd \rightarrow ts \ dz$
- $Vdz \rightarrow \emptyset / \{nts, ndz, rdz\_ \}$
- $ndzVg \rightarrow ng$
- $mpVt \ skVp \ spVt \ stVk \rightarrow nt \ sp \ st \ sk$

“With dissimilation”:

- $n \rightarrow \{l, r\} / \_m$
- $n \rightarrow \{r, l\} / ng\_$
- $n \rightarrow r / nd\_$

“With metathesis”:

- $dn \ dl \rightarrow nd \ ld$
- $ml \ nr \rightarrow lm \ rn$  (sometimes)
- $\beta\gamma \rightarrow w\gamma \rightarrow \gamma w$

“With epenthesis”:

- $\emptyset \rightarrow b / m\_r$
- $mn \ ml \rightarrow mbr \ mbl$
- $\emptyset \rightarrow d / n\_r$

- $t \rightarrow \emptyset / \_ \#$
- $/b/ \ [b], / \beta/ \ [b \sim \beta] \rightarrow /b/ \ [b \sim \beta]$
- $b \rightarrow u / \_C$
- $l \rightarrow u / \_C$  (sometimes)
- $ts \ dz \rightarrow \underset{\cdot}{s} \ \underset{\cdot}{z}$
- $\underset{\cdot}{z} \ z \ \underset{\cdot}{z} \rightarrow \underset{\cdot}{s} \ s \ \underset{\cdot}{j}$
- $\underset{\cdot}{j} \rightarrow \{x, \chi\}$

“None of the following sound changes is universal to all dialects. If the same sound appears twice or more with an apparent contradiction, this accounts for different dialects. In all cases there are dialects that conserve the original sound at the beginning of the 21st century, with the exception of the old phonemic  $[\underset{\cdot}{s} - s]$  distinction (though kept in another way today, as  $[\theta - s]$  in many parts of Spain).”

- $h \rightarrow \emptyset$  “(just a reminder: from the  $f \rightarrow h$  change above)”
- $x \rightarrow h$
- $/dr/ \ [\delta r] \rightarrow r / V\_V$
- $\text{ʃ} \rightarrow /j/$  (“merged with”)
- $\text{ʃ} \rightarrow j$
- $/j/ \ [j \sim d\underset{\cdot}{z}] \rightarrow [\underset{\cdot}{z} \sim d\underset{\cdot}{z}]$

$\bar{s} \rightarrow \int$   
 $\{\bar{s}, s\} \rightarrow /s/ [\bar{s}]$  “(merged as)”  
 $\{\bar{s}, s\} \rightarrow h / \_ \$$   
 $\{\bar{s}, s\} \rightarrow h$  “(in all environments)”  
 $\bar{s} \rightarrow \theta$   
 $\{\bar{s}, s\} \rightarrow \theta [\theta]$  “(merged as)”  
 $h \rightarrow \emptyset / \_ d$   
 $h \rightarrow \emptyset / \_ t^h$   
 $h \rightarrow \emptyset / \_ \$$   
 $n \rightarrow \eta / \_ \#$   
 $b \ g \rightarrow \beta \ \gamma / \{l, r\} \_$   
 $d \rightarrow \delta / \_ r \_$   
 $tr \rightarrow \{t_{\circ}, t_{\int}, t_{\S}\}$   
 $r \rightarrow \{z, \chi\}$   
 $l \rightarrow r / \_ \$$   
 $r \rightarrow l / \_ \$$   
 $s \rightarrow r / \_ \theta$   
 $k\theta \rightarrow \theta$ :

### 17.12.2 Proto-Italic to Proto-Sibellian

*Pogostick Man*, from [http://gillesquentel.org/docs/PIE\\_to\\_Italic\\_C.pdf](http://gillesquentel.org/docs/PIE_to_Italic_C.pdf) and [http://gillesquentel.org/docs/PIE\\_to\\_Italic\\_V.pdf](http://gillesquentel.org/docs/PIE_to_Italic_V.pdf)

*NB: This is likely incomplete*

$t \rightarrow f$   
 $\acute{k} \acute{g} k^w g^w \rightarrow k \ g \ p \ b$   
 $\{\acute{g}^h, x\} \{\phi, \theta, g^{wh}\} \rightarrow h \ f$   
 $r_{\circ} \rightarrow er / \_ \#$   
 $eu \rightarrow ou$

#### 17.12.2.1 Proto-Sibellian to Oscan *Pogostick Man*, from [http://gillesquentel.org/docs/PIE\\_to\\_Italic\\_C.pdf](http://gillesquentel.org/docs/PIE_to_Italic_C.pdf) and [http://gillesquentel.org/docs/PIE\\_to\\_Italic\\_V.pdf](http://gillesquentel.org/docs/PIE_to_Italic_V.pdf)

*NB: This is likely incomplete.*

$z \rightarrow r$

**17.12.2.2 Proto-Sibellian to Umbrian** *Pogostick Man*, from [http://gillesquentel.org/docs/PIE\\_to\\_Italic\\_C.pdf](http://gillesquentel.org/docs/PIE_to_Italic_C.pdf) and [http://gillesquentel.org/docs/PIE\\_to\\_Italic\\_V.pdf](http://gillesquentel.org/docs/PIE_to_Italic_V.pdf)

*NB: This is likely incomplete.*

$d \rightarrow rs / V\_V$

## 17.13 Tocharian

### 17.13.1 Proto-Indo-European to Tocharian A

*Dayun*

*NB: A note on the KQ page says “I believe that ⟨?⟩ here is either /i/ or /ə/.”*

$\{b, b^{fi}\} d^{fi} \rightarrow p t$

$d \rightarrow \{ts, \emptyset\}$  (“the environments are not yet fully understood”; the page seems to imply that  $d \rightarrow ts$  was more common)

$k \acute{g} \acute{g}^{fi} g g^{fi} \rightarrow k$

$k^w g^w g^{wfi} \rightarrow$  “k plus labialization”

$t k st l n \rightarrow t\acute{f} \int \{j:, ftj\} lj nj / \_E$

Some other palatalizations  $\_E$  not expanded upon

$N l \rightarrow n \emptyset / \_ \#$

“[S]yllabic resonants develop prosthetic ?”

$H \rightarrow \emptyset / R\_C$

$H \rightarrow a: / C\_C$

$iH \rightarrow ja$

$uH \rightarrow wa$

$\{e, i, u\} \rightarrow ? \rightarrow a(:)$  “or remain depending on complex factors”

$o \rightarrow a / !$  “if there was a /u/ in the following syllable”

$e: \rightarrow a$

$\{a, o:\} \rightarrow a$

$a: \rightarrow a$

$i: u: \rightarrow i u$

Diphthongs  $\rightarrow$  monophthongs

$? \rightarrow \emptyset /$  in U[+open]

$U\# \rightarrow \emptyset$  “with addition of ? as needed”

### 17.13.2 Proto-Indo-European to Tocharian B

*Dayun*

*NB: A note on the KQ page says “I believe that ⟨?⟩ here is either /i/ or /ə/.”*

$\{b, b^{\text{fi}}\} d^{\text{fi}} \rightarrow p t$

$d \rightarrow \{ts, \emptyset\}$  (“the environments are not yet fully understood”; the page seems to imply that  $d \rightarrow ts$  was more common)

$k^{\text{fi}} g^{\text{fi}} g^{\text{fi}} \rightarrow k$

$k^w g^w g^{w\text{fi}} \rightarrow \text{“k plus labialization”}$

$t k st l n \rightarrow t\text{f} \int \{j:, ft\} lj nj / \_E$

$w \rightarrow j / \_E$  (sometimes)

Some other palatalizations  $\_E$  not expanded upon

$N l \rightarrow n \emptyset / \_ \#$

“[S]yllabic resonants develop. . . prosthetic a”

$H \rightarrow \emptyset / R\_C$

$H \rightarrow a: / C\_C$

$iH \rightarrow ja$

$uH \rightarrow wa$

$\{e, i, u\} \rightarrow ? \rightarrow a(:)$  “or remain depending on complex factors”

$o \rightarrow e / !$  “if there was a /u/ in the following syllable”

$e: \rightarrow e$

$\{a, o:\} \rightarrow a:$

$a: \rightarrow o$

$i: u: \rightarrow i u$

$? \rightarrow \emptyset /$  in  $U[+open -stress]$

## 18 Je-Tupí-Carib

As pertains to this section, the vowels given in the form  $\langle\{V_1/V_2\}\rangle$  herein may have apparently been some sort of alternation in vowel grade or quality. Also, the names of these languages were researched on the Wikipedia; they are in many cases different from the names cited within the source papers proper.

Moore and Galucio (1994) give the following inventory for Proto-Tuparí:

	Bilabial	Alveolar	Palatal	Velar	Labiovelar	Glottal
Stop	p	t		k	k <sup>w</sup>	ʔ
Nasal	m	n		ŋ	ŋ <sup>w</sup>	
Fricative	β					h
Affricate		ts (n)dz				
Liquid		r~D	j~j̃~ɲ			

  

	Front	Central	Back
High	i ĩ	ɨ ɨ̃	u ũ
Mid	e ẽ		
Low		a ã	

\*u \*ũ may have actually been \*o \*õ, respectively. Additionally, the following ablaut pairs have been reconstructed:

a~\*e  
e~\*a  
ĩ~\*ẽ

(From Moore, Denny and Ana Vilacy Galucio (1994), “Reconstruction of Proto-Tupari Consonants and Vowels”. *Report 8: Survey of California and Other Indian Languages: Proceeds of the Meeting of the Society for the Study of the Indigenous Languages of the Americas, July 2 – 4, 1993, and the Hokan-Penutian Workshop, July 3, 1993*, 119 – 137)

### 18.1 Tuparí

#### 18.1.1 Proto-Tuparí to Makuráp

*Pogostick Man*, from Moore, Denny and Ana Vilacy Galucio (1994), “Reconstruction of Proto-Tupari Consonants and Vowels”. *Report 8: Survey of California and Other Indian Languages: Proceeds of the Meeting of the Society for the Study of the Indigenous Languages*



of the Americas, July 2 – 4, 1993, and the Hoka-Penutian Workshop, July 3, 1993, 119 – 137.

$t \rightarrow r / \_ "V$   
 $t \rightarrow l / \_ V$   
 $t \rightarrow \emptyset / \text{else}$   
 $k \rightarrow \emptyset / \_ \#$   
 $k^w \rightarrow \emptyset$   
 $b \rightarrow \beta / V\_V$   
 $g^w \rightarrow \beta / \_ V[-nas]$   
 $ts (n)dz \rightarrow t nd$   
 $\beta \rightarrow \emptyset / \_ i$   
 $h \rightarrow \emptyset / V\_C$   
 $? \rightarrow \emptyset$   
 $r \rightarrow l / V[+nas] \_ V[+nas]$   
 $\delta n\eta^w \rightarrow c \beta / \# \_ V[-nas]$   
 $\delta \rightarrow \{\emptyset, c\} / \text{else}$   
 $j \eta^w m n \rightarrow p m \{m, p\} \{\emptyset, t\} / \_ V[+nas]$   
 $^n d \eta \rightarrow t \{g, k\} / \_ V[-nas]$   
 $u \rightarrow o / \_ \{p, b\} i$   
 $i \rightarrow \emptyset / ! \# \_ \{p, \beta\} e$   
 $\{a/e\} \{e/a\} \{\tilde{i}, \tilde{e}\} \rightarrow e a \tilde{e}$

### 18.1.2 Proto-Tuparí to Mekens

*Pogostick Man*, from Moore, Denny and Ana Vilacy Galucio (1994), “Reconstruction of Proto-Tupari Consonants and Vowels”. *Report 8: Survey of California and Other Indian Languages: Proceeds of the Meeting of the Society for the Study of the Indigenous Languages of the Americas, July 2 – 4, 1993, and the Hoka-Penutian Workshop, July 3, 1993*, 119 – 137.

$t \rightarrow r / \_ "V$   
 $g \rightarrow k$   
 $k \rightarrow g / \text{in } U[+stress]$   
 $g^w \rightarrow k / \_ o$   
 $g^w \eta g \rightarrow k^w k / \_ V[-nas]$   
 $g^w \rightarrow k^w / \# \_ V[+nas]$   
 $ts (n)dz \rightarrow \{s, ts\} s$   
 $\beta \rightarrow \emptyset / \_ i$   
 $h \rightarrow \emptyset / V\_C$   
 $? \rightarrow \emptyset$

$\{^mb,^nd,\delta\} \rightarrow t / \_V[+nas]$   
 $\delta \rightarrow s / \_i$   
 $\delta \rightarrow h / \text{else}$   
 $\eta \eta^w \rightarrow k \ m / \_V[+nas]$   
 $\eta^w \rightarrow k^w / \#\_V[-nas]$   
 $i \rightarrow i / \#\_ \{p,\beta e\}$   
 $i \rightarrow \emptyset / \text{else}$   
 $\{\{a/e\},\{e/a\}\} \{\tilde{i},\tilde{e}\} \rightarrow a \ \tilde{e}$

### 18.1.3 Proto-Tuparí to Tuparí

*Pogostick Man*, from Moore, Denny and Ana Vilacy Galucio (1994), “Reconstruction of Proto-Tupari Consonants and Vowels”. *Report 8: Survey of California and Other Indian Languages: Proceeds of the Meeting of the Society for the Study of the Indigenous Languages of the Americas, July 2 – 4, 1993, and the Hokan-Penutian Workshop, July 3, 1993*, 119 – 137.

$t \rightarrow r / \_V$   
 $k^w \ g \rightarrow \emptyset \ k$   
 $g^w \rightarrow \emptyset / \_o$   
 $g^w \ \eta g \rightarrow \beta \ k / \_V[-nas]$   
 $\{(n)dz,ts\} \rightarrow s / \_i$   
 $\{(n)dz,ts\} \rightarrow t / \text{else}$   
 $\beta \ \delta \rightarrow \emptyset \ \{s,h\} / \_i$   
 $\delta \rightarrow h$   
 $^mb \ \eta^w \rightarrow p \ \beta / \#\_V[-nas]$   
 $n \rightarrow \emptyset / \ ! \ \#\_V[-nas]$   
 $\eta \rightarrow k / \#\_V[+nas]$   
 $\eta^w \rightarrow m / V[+nas]\_V[+nas]$   
 $u \rightarrow o / \_ \{p,b\}i$   
 $\{a/e\} \rightarrow e$

### 18.1.4 Proto-Tuparí to Wayoró

*Pogostick Man*, from Moore, Denny and Ana Vilacy Galucio (1994), “Reconstruction of Proto-Tupari Consonants and Vowels”. *Report 8: Survey of California and Other Indian Languages: Proceeds of the Meeting of the Society for the Study of the Indigenous Languages of the Americas, July 2 – 4, 1993, and the Hokan-Penutian Workshop, July 3, 1993*, 119 – 137.

$p \rightarrow \beta / V_-$   
 $t \rightarrow r / \_''V$   
 $p \ t \rightarrow \emptyset \ l / \_V$   
 $k \rightarrow g / \text{in } U[+\text{stress}]$   
 $b \rightarrow \emptyset / V\_V$   
 $g^w \rightarrow g / \_o$   
 $b^w \rightarrow \beta / \#\_V[+\text{nas}]$   
 $ts \ (n)dz \rightarrow t \ nd$   
 $h \rightarrow \emptyset / V\_C$   
 $\text{ʔ} \rightarrow \emptyset$   
 $r \ \eta^w \rightarrow n \ \beta / V[+\text{nas}]\_V[+\text{nas}]$   
 $\text{ð} \rightarrow (n)d$   
 $\eta g \rightarrow k / \! \_V[-\text{nas}]$   
 $u \rightarrow i / \_{\{p,b\}}i$   
 $\{a/e\} \ \{e/a\} \ \{\tilde{i},\tilde{e}\} \rightarrow a \ e \ \tilde{i}$

## 18.2 Tupí-Guaraní

### 18.2.1 Proto-Tupí-Guaraní to Akwára

*Pogostick Man*, from Lemle, Miriam (1971), Internal Classification of the Tupi-Guarani Linguistic Family. In *Tupi Studies I*, from *Summer Institute of Linguistics Publications in Linguistics and Related Fields Publication Number 29*.

$p \rightarrow k / \_w$   
 $t \rightarrow t\text{ʃ} / \_{\{i,\tilde{i}\}}$   
 $k \ b \ r \rightarrow \{\eta,\emptyset\} \ \{w,m\} \ \{n,r,t\} / \_ \#$   
 $b \rightarrow w$   
 $ts \rightarrow \{h,\emptyset\}$   
 $a \rightarrow \{i,o\} / \_N\#$   
 $o \rightarrow a / \! \ o(C\ldots)\_(C\ldots)\#$   
 $u \rightarrow \emptyset / k\_w$   
 $a \rightarrow o / \! \ Cw\_$   
 $\tilde{a} \rightarrow a / Cw\_$   
 $\tilde{a} \rightarrow \tilde{o}$   
 $\{\tilde{e},\tilde{i}\} \ \tilde{i} \ \{u,\tilde{u},\tilde{o}\} \rightarrow i \ \tilde{i} \ o$

### 18.2.2 Proto-Tupí-Guaraní to Cocama

*Pogostick Man*, from Lemle, Miriam (1971), Internal Classification of the Tupi-Guarani

Linguistic Family. In *Tupi Studies I*, from *Summer Institute of Linguistics Publications in Linguistics and Related Fields Publication Number 29*.

$p \rightarrow k / \_w$   
 $t \rightarrow tʃ / \_ \{i, \tilde{i}\}$   
 $? ts \eta \rightarrow \emptyset \{ts, tʃ\} n$   
 $\emptyset \rightarrow i / j\_ \#, \text{ in monosyllables}$   
 $j \rightarrow i / \_ \#, \text{ in polysyllables}$   
 $b \rightarrow \emptyset / \_ \#$   
 $b \rightarrow w / \text{ else}$   
 $w \rightarrow \emptyset / k\_w$   
 $w \rightarrow u / k\_$   
 $a \rightarrow \emptyset / \_ j \#$   
 $eN \rightarrow y / \_ \#$   
 $e \rightarrow i / \{k, j\} \_$   
 $o \rightarrow u(a) / ! o(C \dots) \_ (C \dots) \#$   
 $\tilde{a} \{ \tilde{e}, \tilde{i} \} \tilde{i} \rightarrow a i \emptyset$   
 $u \rightarrow \tilde{u} (? \text{ possibly backwards?})$   
 $i? u? \rightarrow j w / C\_V$   
 $V_0?V_0 \rightarrow V_0:$

### 18.2.3 Proto-Tupí-Guaraní to Guajajara

*Pogostick Man*, from Lemle, Miriam (1971), Internal Classification of the Tupi-Guarani Linguistic Family. In *Tupi Studies I*, from *Summer Institute of Linguistics Publications in Linguistics and Related Fields Publication Number 29*.

$t \rightarrow ts / \_ \{i, \tilde{i}\}$   
 $ts \rightarrow \{h, \emptyset\}$   
 $b \rightarrow \emptyset / u\_ \#$   
 $b \rightarrow w / \text{ else}$   
 $u \rightarrow \emptyset / k\_w$   
 $a \rightarrow \emptyset / \_ N \#$   
 $a \rightarrow \emptyset / \text{ if } N \text{ in } U \#$   
 $o \rightarrow u / ! o(C \dots) \_ (C \dots) \#$   
 $\tilde{a} \tilde{e} \tilde{i} \tilde{i} \{ \tilde{o}, \tilde{u} \} \rightarrow \emptyset e i i o$

### 18.2.4 Proto-Tupí-Guaraní to Guaraní

*Pogostick Man*, from Lemle, Miriam (1971), Internal Classification of the Tupi-Guarani

Linguistic Family. In *Tupi Studies I*, from *Summer Institute of Linguistics Publications in Linguistics and Related Fields Publication Number 29*.

$m \ p \rightarrow \eta \ k \ / \ _w$   
 $t \rightarrow t_f \ / \ _{\{i, \tilde{i}\}}$   
 $k \rightarrow \emptyset$   
 $ts \rightarrow \{t_f, \emptyset\}$   
 $\{b, r\} \rightarrow \emptyset \ / \ _\#$   
 $u \rightarrow \emptyset \ / \ k\_w$   
 $V\{m, n\} \rightarrow V[+nas] \ / \ _\#$   
 $V\eta \rightarrow V[+nas]$

### 18.2.5 Proto-Tupí-Guaraní to Guarayo

*Pogostick Man*, from Lemle, Miriam (1971), Internal Classification of the Tupi-Guarani Linguistic Family. In *Tupi Studies I*, from *Summer Institute of Linguistics Publications in Linguistics and Related Fields Publication Number 29*.

$m \ p \rightarrow \eta \ k \ / \ _w$   
 $t \rightarrow t_f \ / \ _{\{i, \tilde{i}\}}$   
 $\{b, k\} \ r \rightarrow \emptyset \ \{r, \emptyset\} \ / \ _\#$   
 $? \ ts \rightarrow \{?, \emptyset\} \ \{ts, t_f\}$   
 $\{Vm, V\eta\} \ Vn \rightarrow V[+nas] \ \{Vr, V[+nas]\} \ / \ _\#$   
 $aN \ eN \ iN \ \tilde{i}N \ uN \rightarrow \tilde{a} \ \tilde{e} \ \tilde{i} \ \tilde{u} \ / \ _\#$   
 $\tilde{o} \rightarrow o$

### 18.2.6 Proto-Tupí-Guaraní to Kamayurá

*Pogostick Man*, from Lemle, Miriam (1971), Internal Classification of the Tupi-Guarani Linguistic Family. In *Tupi Studies I*, from *Summer Institute of Linguistics Publications in Linguistics and Related Fields Publication Number 29*.

$p \rightarrow h \ / \ _{\{o, u, w\}}$   
 $t \rightarrow t_f \ / \ _{\{i, \tilde{i}\}}$   
 $ts \rightarrow \{h, j, \emptyset\}$   
 $b \ r \rightarrow p \ t \ / \ _\#$   
 $b \rightarrow w \ / \ \text{else}$   
 $\tilde{a} \rightarrow a \ / \ Cw\_$   
 $\tilde{e} \ \tilde{i} \ \tilde{o}$  lost nasalization sometimes, kept it in others  
 $u \rightarrow \tilde{o} \ (\text{? possibly backwards?})$

### 18.2.7 Proto-Tupí-Guaraní to Parintintín

*Pogostick Man*, from Lemle, Miriam (1971), Internal Classification of the Tupi-Guarani Linguistic Family. In *Tupi Studies I*, from *Summer Institute of Linguistics Publications in Linguistics and Related Fields Publication Number 29*.

$k \rightarrow \{\eta, \emptyset\} / \text{-}\#$   
 $ts \rightarrow \{h, \emptyset\}$   
 $Vn \rightarrow V[+\text{nas}]$  (sometimes)  
 $\emptyset \rightarrow \eta / \{\#, V\}\text{-}w$   
 $b\ r \rightarrow \{b, \emptyset\} \{r, t\} / \text{-}\#$   
 $u \rightarrow \emptyset / k\text{-}w$   
 $eN \rightarrow \tilde{i} / \text{-}\#$   
 $\tilde{e}\ \tilde{i}\ \tilde{u} \rightarrow \{\tilde{e}, e\} \{\tilde{i}, i\} \{\tilde{u}, \tilde{o}\}$

### 18.2.8 Proto-Tupí-Guaraní to Sirionó

*Pogostick Man*, from Lemle, Miriam (1971), Internal Classification of the Tupi-Guarani Linguistic Family. In *Tupi Studies I*, from *Summer Institute of Linguistics Publications in Linguistics and Related Fields Publication Number 29*.

$p \rightarrow \{h, \emptyset\} / \text{-}\{u, o\}$   
 $p \rightarrow \{k, \emptyset\} / \text{-}w$   
 $p \rightarrow h / \text{else}$   
 $t \rightarrow \{ts, tf\} / \text{-}\{i, \tilde{i}\}$   
 $k \rightarrow \emptyset / \text{-}\#$   
 $?\ ts \rightarrow \emptyset \{s, f\}$   
 $u \rightarrow \emptyset / k\text{-}w$   
 $V\{m, n\} \rightarrow V[+\text{nas}] / \text{-}\#$   
 $V\eta \rightarrow V[+\text{nas}]$   
 $j \rightarrow \{j, i\} / \text{-}\#$   
 $j \rightarrow \{n, tf\} / \text{else}$   
 $w \rightarrow \{g, k\} / \{\#, V\}\text{-}$   
 $\{b, r\} \rightarrow \emptyset / \text{-}\#$   
 $a \rightarrow \{\emptyset, o, e\} / \text{-}j\#$   
 $o\ u \rightarrow \{u, o\} \{u, o, i\}$   
 $aN\ eN\ iN\ \tilde{i}N\ uN \rightarrow \tilde{a}\ \tilde{e}\ \tilde{i}\ \{\tilde{i}, \tilde{i}\}\ \tilde{o} / \text{-}\#$   
 $\{\tilde{i}, \tilde{o}\}\ \tilde{u} \rightarrow \{\tilde{o}, \tilde{e}\}\ \tilde{o}$

## 18.2.9 Proto-Tupí-Guaraní to Classical Tupi

*Pogostick Man*, from Lemle, Miriam (1971), Internal Classification of the Tupi-Guarani Linguistic Family. In *Tupi Studies I*, from *Summer Institute of Linguistics Publications in Linguistics and Related Fields Publication Number 29*.

$t \rightarrow tʃ / \_ \{i, \tilde{i}\}$

$ts \rightarrow \{s, ʃ\}$

$i \rightarrow \tilde{i} / \_ \#$  (sporadic)

### 18.2.9.1 Tupian

**18.2.9.1.1 Proto-Monde to Gavião** *Pogostick Man*, from Anonby, Stan, and David J. Holbrook (2013), “A report and comparative-historical look at the Cinta Larga, Suruí, Gavião and Zoró languages”. *Working Papers of the Linguistics Circle of the University of Victoria* 23:14 – 31

$p \rightarrow v / \_ \#$

$h \rightarrow \emptyset / V\_$  (sporadic, likely an areal feature)

**18.2.9.1.2 Proto-Monde to Proto-Cinta Larga-Suruí-Zoró** *Pogostick Man*, from Anonby, Stan, and David J. Holbrook (2013), “A report and comparative-historical look at the Cinta Larga, Suruí, Gavião and Zoró languages”. *Working Papers of the Linguistics Circle of the University of Victoria* 23:14 – 31

$V \rightarrow \tilde{V} / \_ h$

$h \rightarrow \emptyset / V\_$

$v \rightarrow w / \#\_$

$tʃ \rightarrow ʃ$

**18.2.9.1.3 Proto-Cinta Larga-Suruí-Zoró to Cinta Larga** *Pogostick Man*, from Anonby, Stan, and David J. Holbrook (2013), “A report and comparative-historical look at the Cinta Larga, Suruí, Gavião and Zoró languages”. *Working Papers of the Linguistics Circle of the University of Victoria* 23:14 – 31

$o \rightarrow u$

$Vh \rightarrow V:$

$V \rightarrow V: / \_ \#$

**18.2.9.1.4 Proto-Cinta Larga-Suruí-Zoró to Suruí** *Pogostick Man*, from Anonby, Stan, and David J. Holbrook (2013), “A report and comparative-historical look at the Cinta Larga, Suruí, Gavião and Zoró languages”. *Working Papers of the Linguistics Circle of the University of Victoria* 23:14 – 31

h → Ø / V\_  
 ŋg → g / #\_ (possibly all prenasalized consonants?)  
 b → m / #\_

**18.2.9.1.5 Proto-Cinta Larga-Suruí-Zoró to Zoró** *Pogostick Man*, from Anonby, Stan, and David J. Holbrook (2013), “A report and comparative-historical look at the Cinta Larga, Suruí, Gavião and Zoró languages”. *Working Papers of the Linguistics Circle of the University of Victoria* 23:14 – 31

h → Ø / V\_  
 Ø → ʔ / V\_#  
 ŋg → g / #\_ (possibly all prenasalized consonants?)  
 ʃ → tʃ (sporadic, areal feature from Gavião influence)

## 18.2.10 Proto-Tupí-Guaraní to Urubu

*Pogostick Man*, from Lemle, Miriam (1971), Internal Classification of the Tupi-Guarani Linguistic Family. In *Tupi Studies I*, from *Summer Institute of Linguistics Publications in Linguistics and Related Fields Publication Number 29*.

p k → k Ø / \_w  
 t → ʃ / \_{i,ĩ}  
 k → {k,Ø} / \_#  
 k → {k,ʃ} / else  
 ts → {s,h}  
 Vn → V[+nas] / \_# (sometimes)  
 Vŋ → V[+nas]  
 j b → {j,i} Ø / \_#  
 b → w / else  
 u → Ø / k\_w  
 u → o / ! o(C...)(C...)#  
 aN iN uN → {aN,ã} ī {uN,ũ} / \_#  
 ã ē õ → Ø {ẽ,e} {o,õ,u,ũ}



## 19 Kartvelian

Wikipedia presents the following phonemic inventory for Proto-Kartvelian.

	Bilabial	Alveolar	Postalveolar	Retroflex	Palatal	Velar	Uvular	Glottal
Nasal	m	n						
Plosive	p p' b	t t' d				k k' g	q q'	
Fricative		s z	ʃ	ʂ z̥		x ɣ		h
Lateral Fricative		ɬ						
Affricate		ts ts' dz	tʃ tʃ' dʒ	tʂ tʂ' dʐ				
Lateral Affricate		tɬ'						
Liquid		l r			(j)	w		

  

	Front	Central	Back
High	(i)		(u)
Mid	ɛ ɛː		ɔ ɔː
Low			ɑ ɑː

The presence of \*j is denoted in the article on the protolanguage proper as “dubious”; the page on the language family does not include it in its list of regular correspondences, nor does it list the long vowels or \*h.

(From Wikipedia contributors (2013), “Kartvelian languages”. *Wikipedia, the Free Encyclopedia*. [http://en.wikipedia.org/w/index.php?title=Kartvelian\\_languages&oldid=580201868](http://en.wikipedia.org/w/index.php?title=Kartvelian_languages&oldid=580201868); and Wikipedia contributors (2013), “Proto-Kartvelian language”. *Wikipedia, the Free Encyclopedia*. [http://en.wikipedia.org/w/index.php?title=Proto-Kartvelian\\_language&oldid=574800306](http://en.wikipedia.org/w/index.php?title=Proto-Kartvelian_language&oldid=574800306))

### 19.1 Proto-Kartvelian to Georgian

*Pogostick Man*, from Wikipedia contributors (2013), “Kartvelian languages”. *Wikipedia, the Free Encyclopedia*. [http://en.wikipedia.org/w/index.php?title=Kartvelian\\_languages&oldid=580201868](http://en.wikipedia.org/w/index.php?title=Kartvelian_languages&oldid=580201868)

$q \rightarrow x$   
 $\{\text{ɬ}, \text{ʂ}\} \rightarrow s$   
 $\text{tʂ} \{\text{tʂ}', \text{tɬ}'\} \rightarrow ts \text{ ts'}$   
 $\text{dʐ} \rightarrow dz$   
 $\text{z}_l \rightarrow z$   
 $w \rightarrow v$

## 19.2 Proto-Kartvillian to Svan

*Pogostick Man*, from Wikipedia contributors (2013), “Kartvelian languages”. *Wikipedia, the Free Encyclopedia*. [http://en.wikipedia.org/w/index.php?title=Kartvelian\\_languages&oldid=580201868](http://en.wikipedia.org/w/index.php?title=Kartvelian_languages&oldid=580201868)

$k \ k' \rightarrow \{k, tʃ\} \ \{k', tʃ'\}$   
 $g \rightarrow \{g, dʒ\}$   
 $ʃ \ ʃ' \rightarrow l \ \{sg, ʃg\} \ ʃ$   
 $tʃ \ tʃ' \ tʃ'' \ tʃ''' \rightarrow \{tʃk, ʃg\} \ tʃ \ h \ \{ʃk', tʃ''k'\} \ tʃ'$   
 $dz \ dʒ \ dʒ' \rightarrow \{dz, z\} \ \{dʒg, sg\} \ \{dʒ, ʒ\}$   
 $z_1 \rightarrow ʒ$

## 19.3 Proto-Kartvelian to Zan

*Pogostick Man*, from Wikipedia contributors (2013), “Kartvelian languages”. *Wikipedia, the Free Encyclopedia*. [http://en.wikipedia.org/w/index.php?title=Kartvelian\\_languages&oldid=580201868](http://en.wikipedia.org/w/index.php?title=Kartvelian_languages&oldid=580201868)

$\varepsilon \ a \rightarrow a \ \varnothing$   
 $q \ q' \rightarrow x \ \{k', q', ʔ\}$   
 $ʃ \ ʃ' \rightarrow \emptyset \ \{sk, ʃk\} \ ʃ$   
 $tʃ \ tʃ' \ \{tʃ', tʃ''\} \ tʃ''' \rightarrow tʃk \ tʃ \ tʃ' \ \{ts'k', tʃ''k'\}$   
 $dʒ \ dʒ' \rightarrow \{dʒg, dzg\} \ dʒ$   
 $z_1 \rightarrow ʒ$   
 $w \rightarrow v$

## 20 Khoisan

For the following section, all clicks change regardless of secondary articulation or associated articulations with the exception of when such is specifically noted.

### 20.1 Khoe

#### 20.1.1 Proto-Khoe to $\parallel$ Ana

*Pogostick Man*, from Rainer (1984), “Studying the linguistic and ethno-history of the Khoe-speaking (central Khoisan) peoples of Botswana, research in progress”. In *Botswana Notes and Records* 16:19 – 35.

$\tilde{!}(n) \rightarrow \tilde{\ddot{n}}$   
 $! \rightarrow !\sim k$   
 $!x \rightarrow x$   
 $\underset{\sim}{!} \rightarrow g$   
 $\underset{\sim}{!}(n) \rightarrow \eta$   
 $ts \rightarrow \{ts\sim ts^h, ts, s\}$   
 $h \rightarrow j / \_E$

#### 20.1.2 Proto-Khoe to $\parallel$ Ani

*Pogostick Man*, from Rainer (1984), “Studying the linguistic and ethno-history of the Khoe-speaking (central Khoisan) peoples of Botswana, research in progress”. In *Botswana Notes and Records* 16:19 – 35.

$\tilde{!}(n) \rightarrow \tilde{\ddot{n}}$   
 $! \underset{\sim}{!} \tilde{!} \rightarrow !\sim k \underset{\sim}{!} \sim g \tilde{!}(n) \sim \eta g$   
 $!x \rightarrow !x\sim x$   
 $ts \rightarrow \{ts, s\}$   
 $h \rightarrow j\sim ? / \_E$   
 $h \rightarrow h\sim ?$

#### 20.1.3 Proto-Khoe to Buga

*Pogostick Man*, from Rainer (1984), “Studying the linguistic and ethno-history of the Khoe-speaking (central Khoisan) peoples of Botswana, research in progress”. In *Botswana Notes and Records* 16:19 – 35.

$\tilde{l}(n) \rightarrow \tilde{\ddot{l}}$   
 $! \ !^2 \ ! \ \tilde{l} \rightarrow k \ \emptyset \ g \ \eta g$   
 $!x \rightarrow x$   
 $\tilde{l}n \rightarrow \eta g j \sim \tilde{l}$   
 $ts \rightarrow \{ts \sim ts^h, ts, s\}$   
 $h \rightarrow j$

#### 20.1.4 Proto-Khoe to Kxoe

*Pogostick Man*, from Rainer (1984), “Studying the linguistic and ethno-history of the Khoe-speaking (central Khoisan) peoples of Botswana, research in progress”. In *Botswana Notes and Records* 16:19 – 35.

$\tilde{l}(n) \rightarrow \tilde{\ddot{l}}$   
 $! \ !^2 \ ! \ \tilde{l} \rightarrow k \ \emptyset \ g \ \eta g$   
 $!x \ \tilde{l}n \rightarrow x \ \eta g j \sim \tilde{l}$   
 $ts \ dz \rightarrow \{\zeta, t\zeta\} \ d\zeta$   
 $k^h \rightarrow kx$   
 $h \rightarrow j$

#### 20.1.5 Proto-Khoe to Nama

*Pogostick Man*, from Rainer (1984), “Studying the linguistic and ethno-history of the Khoe-speaking (central Khoisan) peoples of Botswana, research in progress”. In *Botswana Notes and Records* 16:19 – 35.

$k \rightarrow g$   
 $\{|^2, |x'\} \rightarrow |$   
 $\tilde{l}(n) \rightarrow \{\tilde{\ddot{l}}, \ddot{l}\}$   
 $! \ !^2 \ \tilde{l}n \rightarrow !g \ \tilde{l}$   
 $\ddot{l} \ \{\tilde{\ddot{l}}n, \ddot{l}^2, \ddot{l}x'\} \rightarrow \ddot{l}g \ \ddot{l}$   
 $\{||^2, ||x'\} \rightarrow ||$   
 $ts \ dz \ kx' \rightarrow \{ts, s\} \ d \ \emptyset$

#### 20.1.6 Proto-Khoe to Naro

*Pogostick Man*, from Rainer (1984), “Studying the linguistic and ethno-history of the Khoe-speaking (central Khoisan) peoples of Botswana, research in progress”. In *Botswana Notes and Records* 16:19 – 35.

$\tilde{[}(n) \rightarrow \tilde{\#}$   
 $ts \ dz \rightarrow \{ts\sim ts^h, ts, s\} \ dz\sim ts$   
 $k^h \rightarrow \{kx, k\}$

#### 20.1.7 Proto-Khoe to !Ora

*Pogostick Man*, from Rainer (1984), “Studying the linguistic and ethno-history of the Khoe-speaking (central Khoisan) peoples of Botswana, research in progress”. In *Botswana Notes and Records* 16:19 – 35.

$\tilde{[}(n) \rightarrow \tilde{\#}$   
 $! \tilde{!}n \rightarrow ! \tilde{!}$   
 $\tilde{\#}n \rightarrow \#$   
 $\|? \rightarrow \{\|?, \|\}$   
 $ts \rightarrow \{ts, s\}$

#### 20.1.8 Proto-Khoe to Teti

*Pogostick Man*, from Rainer (1984), “Studying the linguistic and ethno-history of the Khoe-speaking (central Khoisan) peoples of Botswana, research in progress”. In *Botswana Notes and Records* 16:19 – 35.

$\tilde{[}(n) \rightarrow j$   
 $! \ !? \ ! \tilde{!}(n) \ !x \rightarrow k \ \emptyset \ g \ \eta \ x$   
 $\# \ \tilde{\#}n \ \#? \rightarrow c \ n \ ?j$   
 $\|? \ \|x' \rightarrow \{\|?, \emptyset\} \ \|?$   
 $ts \ dz \ kx' \rightarrow \{ts\sim ts^h, ts, s\} \ z \ k'$   
 $h \rightarrow j\sim ?j \ / \ \_E$   
 $h \rightarrow h\sim ?j$

#### 20.1.9 Proto-Khoe to Ts?ixa

*Pogostick Man*, from Rainer (1984), “Studying the linguistic and ethno-history of the Khoe-speaking (central Khoisan) peoples of Botswana, research in progress”. In *Botswana Notes and Records* 16:19 – 35.

$\tilde{[}(n) \ |x' \rightarrow j \ |?$   
 $! \ !? \ ! \tilde{!}(n) \ !x \rightarrow k \ \emptyset \ g \ \eta g \ x$   
 $\tilde{\#}n \ \#x' \rightarrow n \ \#?$   
 $\|x' \rightarrow \|^?$

ts dz kx' → {ts~ts<sup>h</sup>, ts, s} z k'  
h → j~ʔj / \_E  
h → h~j

### 20.1.10 Proto-Khoe to ǀUi

*Pogostick Man*, from Rainer (1984), “Studying the linguistic and ethno-history of the Khoe-speaking (central Khoisan) peoples of Botswana, research in progress”. In *Botswana Notes and Records* 16:19 – 35.

ĩ(n) → ǀn  
ǀ!x → ǀ(n) !x~x  
ts → {ts~ts<sup>h</sup>, s}  
h → j / \_E  
h → fi

## 20.2 Kx'a

### 20.2.1 Proto-Kx'a to ǀHoan

*Pogostick Man*, from Heine, Bernd and Henry Honken (2010), “The Kx'a family: A New Khoisan Genealogy”

“Something about word-initial glottal stops”

∅ → a / o\_m  
a → ∅ / \_e (sporadic)  
o → ∅ / u\_  
u → ∅ / o\_  
iao → iu  
o → ∅ / a(C)\_  
Vn ɲ → V[+nas] ∅ / \_#  
t d s → {c, tʃ} ʃ ʃ  
!! → ||  
<sup>n</sup>Q<sup>h</sup> Q̂<sub>G</sub> → Q<sup>h</sup> Q

### 20.2.2 Proto-Kx'a to Northwestern !Xun

*Pogostick Man*, from Heine, Bernd and Henry Honken (2010), “The Kx'a family: A New Khoisan Genealogy”

a → Ø / #\_m

ui → o (?)

i → Ø / V\_

a → Ø / \_e (sporadic)

u → Ø / \_o

o → Ø / \_u

o → a / \_Ca

a → Ø / \_-(C)o

“Some weird stuff with vowel pharyngealization/glottalization; some of the pharyngealized proto-vowels stayed that way, others glottalized”

ʔ → ʔ / \_m

n → Ø / \_#

ts(ʔ) s → tʃ(ʔ) ʃ

!! Ø → || |

‡ → !! (dialectal)

### 20.2.3 Proto-Kx'a to Southeastern !Xun

*Pogostick Man*, from Heine, Bernd and Henry Honken (2010), “The Kx'a family: A New Khoisan Genealogy”

a → Ø / #\_m

ui → o (?)

i → Ø / V\_

ɛ ɔ → i u

u → Ø / \_o

o → Ø / \_u

o → a / \_Ca

a → Ø / \_-(C)o

“Some weird stuff with vowel pharyngealization/glottalization; some of the pharyngealized proto-vowels stayed that way, others glottalized”

ʔm → {b, ɓ}

n → Ø / \_#

ts(ʔ) s → tʃ(ʔ) ʃ

!! Ø → || |

ʔ → Ø / \_nQ

<sup>n</sup>Q<sup>h</sup> {<sup>h</sup>q, <sup>h</sup>g} Q̂q → <sup>n</sup>Q(<sup>h</sup>) <sup>n</sup>|<sup>h</sup> Q[+voiced]

## 21 Lakes Plain

Clouse (1993) reconstructs the following phonological inventory for Proto-Lakes Plain:

	Bilabial	Alveolar	Velar
Stop	p b	t d	k
	Front	Central	Back
High	i		u
Mid	e		o
Low		a	

Additionally, \*r is of uncertain reconstruction and is most likely an allophone of \*d.

For the following sound changes, a circumflexed vowel refers to an “extra-high” or “fricativized” vowel. There are a few cases where I may have either missed, misread, or put in an extraneous sound change to extra-high vowels; many of these were due to my perception of changes involving extra-high vowels being listed without a change creating them.

(From Clouse, Duane (1993), “Languages of the Western Lakes Plains”. *IRIAN: Bulletin of Irian Jaya* XXI:1 – 17)

### 21.1 Proto-Lakes Plain to Proto-Far West

*Pogostick Man*, from Clouse, Duane (1993), “Languages of the Western Lakes Plains”. *IRIAN: Bulletin of Irian Jaya* XXI:1 – 17

$r \rightarrow \emptyset$   
 $ku \rightarrow \emptyset / \#\_$   
 $d \rightarrow r / V\_V$   
 $\emptyset \rightarrow \text{echo vowel} / C\_CV$   
 $CV \rightarrow \emptyset / \_ \#$  (possibly only when  $CV\_ \#$ , possibly sporadic)  
 $e\ o \rightarrow \varepsilon\ ɔ\ (?)$

#### 21.1.1 Proto-Far West to Awera

*Pogostick Man*, from Clouse, Duane (1993), “Languages of the Western Lakes Plains”. *IRIAN: Bulletin of Irian Jaya* XXI:1 – 17

$k \rightarrow \gamma / V\_V$   
 $b \rightarrow \beta \sim m / \_ \#\_V[-\text{high}]$



$b \ d \ g \rightarrow \beta \sim w \ r \sim \emptyset \ y / V\_V$   
 $ti \rightarrow s / \#\_V$   
 $t \ d \rightarrow t \sim r \sim n \ n / \#\_$   
 $ii\epsilon \ Vdie \rightarrow ije \ \beta e$

### 21.1.2 Proto-Far West to Saponi

*Pogostick Man*, from Clouse, Duane (1993), “Languages of the Western Lakes Plains”.  
*IRIAN: Bulletin of Irian Jaya* XXI:1 – 17

$p \ d \rightarrow p \sim f \ n / \#\_$   
 $ti \rightarrow s / \#\_V$   
 $b \rightarrow \beta \sim m / \#\_V[+ \text{ low}]$   
 $p \ b \ d \ k \rightarrow p \sim f \ w \ r \ g \sim y / V\_V$   
 $ii\epsilon \ Vdie \rightarrow dze \ r\epsilon$

### 21.1.3 Proto-Far West to Rasawa

*Pogostick Man*, from Clouse, Duane (1993), “Languages of the Western Lakes Plains”.  
*IRIAN: Bulletin of Irian Jaya* XXI:1 – 17

$p \ b \ d \ k \rightarrow \phi \ \beta \ r \ x \sim k / V\_V$   
 $ti \rightarrow s / \#\_V$   
 $b \rightarrow \beta \sim m / \#\_V[+ \text{ low}]$   
 $ii\epsilon \ Vdie \rightarrow ije \ \beta ie$

## 21.2 Proto-Lakes Plain to Proto-Tariku

*Pogostick Man*, from Clouse, Duane (1993), “Languages of the Western Lakes Plains”.  
*IRIAN: Bulletin of Irian Jaya* XXI:1 – 17

$p \ d \rightarrow \phi \ r / V\_V$

### 21.2.1 Proto-Tariku to Proto-Central Tariku

*Pogostick Man*, from Clouse, Duane (1993), “Languages of the Western Lakes Plains”.  
*IRIAN: Bulletin of Irian Jaya* XXI:1 – 17

$\emptyset \rightarrow \text{echo vowel} / C\_CV$   
 $ku \rightarrow b$

$p\ k \rightarrow \phi\ \emptyset \sim k$   
 $ti \rightarrow s \sim ti / \_V$   
 $d \rightarrow r \sim d / V\_V$   
 $iC\ uC \rightarrow \hat{i}\ \hat{u} / \_ \{C, \#\}$   
 $a \rightarrow e\ (?)$   
 $e\ o \rightarrow \varepsilon\ \circ$

**21.2.1.1 Proto-Central Tariku to Edopi** *Pogostick Man*, from Clouse, Duane (1993), “Languages of the Western Lakes Plains”. *IRIAN: Bulletin of Irian Jaya* XXI:1 – 17

$C \rightarrow \emptyset / \_ \#$   
 $\phi \rightarrow h$   
 $b\ k \rightarrow m \sim b\ \emptyset / \# \_$   
 $d \rightarrow d \sim n \sim l / \# \_a$   
 $d \rightarrow dz / \_ i$   
 $s \rightarrow s \sim t$   
 $\emptyset \rightarrow dz / \_ \hat{i}$   
 $\varepsilon \rightarrow e$

**21.2.1.2 Proto-Central Tariku to Iau** *Pogostick Man*, from Clouse, Duane (1993), “Languages of the Western Lakes Plains”. *IRIAN: Bulletin of Irian Jaya* XXI:1 – 17

$CV \rightarrow \emptyset / \_ \#$   
 $\phi \rightarrow \phi \sim h$   
 $b\ k \rightarrow m \sim b\ \emptyset / \# \_$   
 $d \rightarrow d \sim l \sim n / \# \_a$   
 $r \rightarrow \emptyset / V\_V$

“Some vowel coalescence takes place following the above; the author notes that the vowels often take on the tonal characteristics of the absorbed vowel”

$au \rightarrow \circ$

## 21.2.2 Proto-Tariku to Proto-East Tariku

*Pogostick Man*, from Clouse, Duane (1993), “Languages of the Western Lakes Plains”. *IRIAN: Bulletin of Irian Jaya* XXI:1 – 17

$ti \rightarrow s \sim ti / \_V$   
 $r \rightarrow r \sim \emptyset / V\_V$   
 $a \rightarrow e\ (?)$   
 $e \rightarrow \varepsilon$

**21.2.2.1 Proto-East Tariku to Biritai** *Pogostick Man*, from Clouse, Duane (1993), “Languages of the Western Lakes Plains”. *IRIAN: Bulletin of Irian Jaya* XXI:1 – 17

$p \rightarrow h\sim\phi$   
 $C \rightarrow \emptyset / \_ \#$   
 $V \rightarrow \emptyset / di\_$   
 $iC uC \rightarrow \hat{i} \hat{u} / \_ \{C, \#\}$   
 $\emptyset \rightarrow dz / \hat{i} \_ V$   
 $ku \rightarrow b$   
 $k \rightarrow \emptyset / \_ \hat{V}$

**21.2.2.2 Proto-East Tariku to Doutai** *Pogostick Man*, from Clouse, Duane (1993), “Languages of the Western Lakes Plains”. *IRIAN: Bulletin of Irian Jaya* XXI:1 – 17

$p \rightarrow p\sim\phi$   
 $C \rightarrow \emptyset / \_ \#$   
 $di \rightarrow dz / \_ V$   
 $iC uC \rightarrow \hat{i} \hat{u} / \_ \{C, \#\}$   
 $V \rightarrow dz / \_ \hat{V}$   
 $r \rightarrow \emptyset / ! \_ C$

**21.2.2.3 Proto-East Tariku to Eritai** *Pogostick Man*, from Clouse, Duane (1993), “Languages of the Western Lakes Plains”. *IRIAN: Bulletin of Irian Jaya* XXI:1 – 17

$p \rightarrow p\sim h$   
 $b C \rightarrow \emptyset d / \_ \#$   
 $diV \rightarrow dz$   
 $iC uC \rightarrow \hat{i} \hat{u} / \_ \{C, \#\}$   
 $\emptyset \rightarrow dz \rightarrow \hat{i} \_ V$   
 $iC \rightarrow iC\sim i / \_ \{C, \#\}$  (not sure how this plays in with the change mentioned earlier about extra-high vowels; I must have misread something)

**21.2.2.4 Proto-East Tariku to Kai** *Pogostick Man*, from Clouse, Duane (1993), “Languages of the Western Lakes Plains”. *IRIAN: Bulletin of Irian Jaya* XXI:1 – 17

$p \rightarrow \phi$   
 $C \rightarrow \emptyset / \_ \#$   
 $V \rightarrow \emptyset / di\_$   
 $iC uC \rightarrow \hat{i} \hat{u} / \_ \{C, \#\}$   
 $\emptyset \rightarrow dz / \hat{i} \_ V$

**21.2.2.5 Proto-East Tariku to Obokuitai** *Pogostick Man*, from Clouse, Duane (1993), “Languages of the Western Lakes Plains”. *IRIAN: Bulletin of Irian Jaya* XXI:1 – 17

$p \rightarrow \phi \sim h$   
 $b \ C \rightarrow b^\sim g^\sim / \_ \#$   
 $V \rightarrow \emptyset / di\_$   
 $iC \ uC \rightarrow \hat{i} \ \hat{u} / \_ \{C, \#\}$   
 $\emptyset \rightarrow dz / \hat{i}V$

**21.2.2.6 Proto-East Tariku to Sikaritai** *Pogostick Man*, from Clouse, Duane (1993), “Languages of the Western Lakes Plains”. *IRIAN: Bulletin of Irian Jaya* XXI:1 – 17

$p \rightarrow p \sim h$   
 $b \ C \rightarrow b \sim \emptyset \ \{d, g\} / \_ \#$   
 $diV \rightarrow dz$   
 $iC \ uC \rightarrow \hat{i} \ \hat{u} / \_ \{C, \#\}$   
 $\emptyset \rightarrow dz / \hat{i} \_ V$   
 $ik \rightarrow g / \{s, k, p\} \_ ?$

**21.2.2.7 Proto-East Tariku to Waritai** *Pogostick Man*, from Clouse, Duane (1993), “Languages of the Western Lakes Plains”. *IRIAN: Bulletin of Irian Jaya* XXI:1 – 17

$p \ d \rightarrow p \sim \phi s \ d \sim t$   
 $V \rightarrow \emptyset / di\_$   
 $C \rightarrow \emptyset / \_ \#$   
 $iC \ uC \rightarrow \hat{i} \ \hat{u} / \_ \{C, \#\}$   
 $r \rightarrow \emptyset / ! \ C \_$   
 $k \rightarrow \emptyset / \_ \hat{V}$   
 $\emptyset \rightarrow dz / \hat{i} \_ V$   
 $ik \rightarrow g / \{s, p\} \_ ?$

### 21.2.3 Proto-Tariku to Proto-West Tariku

*Pogostick Man*, from Clouse, Duane (1993), “Languages of the Western Lakes Plains”. *IRIAN: Bulletin of Irian Jaya* XXI:1 – 17

$p \rightarrow \phi$   
 $r \rightarrow r \sim \emptyset / V \_ V$   
 $k \rightarrow k \sim \emptyset$   
 $iC \ uC \rightarrow \hat{i} \ \hat{u} / \_ \{C, \#\}$

**21.2.3.1 Proto-West Tariku to Deirate** *Pogostick Man*, from Clouse, Duane (1993), “Languages of the Western Lakes Plains”. *IRIAN: Bulletin of Irian Jaya* XXI:1 – 17

$p \rightarrow \phi \sim h$   
 $b \ d \ k \rightarrow b \sim \beta \ r \sim l \sim \emptyset \ k \sim x \sim g \sim \gamma \ / \ V\_V$   
 $b \rightarrow m \ / \ \#\_a$   
 $b \rightarrow b \sim^m b$   
 $ti \ di \rightarrow s \ dz \ / \ \_V$

**21.2.3.2 Proto-West Tariku to Faia** *Pogostick Man*, from Clouse, Duane (1993), “Languages of the Western Lakes Plains”. *IRIAN: Bulletin of Irian Jaya* XXI:1 – 17

$p \rightarrow \phi \sim h$   
 $b \ d \ k \rightarrow b \sim \beta \ r \sim \emptyset \ k \sim x \sim g \sim \gamma \ / \ V\_V$   
 $b \ d \rightarrow m \ n \ / \ \#\_a$   
 $ti \rightarrow s \ / \ \_V$

**21.2.3.3 Proto-West Tariku to Fayu** *Pogostick Man*, from Clouse, Duane (1993), “Languages of the Western Lakes Plains”. *IRIAN: Bulletin of Irian Jaya* XXI:1 – 17

$p \rightarrow \phi \sim h$   
 $b \ d \ k \rightarrow b \sim \beta \ r \sim \emptyset \ k \sim x \sim g \sim \gamma \ / \ V\_V$   
 $b \ d \rightarrow m \ n \ / \ \#\_a$   
 $b \ d \rightarrow b \sim^m b \ d \sim^n d$   
 $ti \ di \rightarrow s \ dz \ / \ \_V$

**21.2.3.4 Proto-West Tariku to Kirikiri** *Pogostick Man*, from Clouse, Duane (1993), “Languages of the Western Lakes Plains”. *IRIAN: Bulletin of Irian Jaya* XXI:1 – 17

$p \rightarrow \phi \sim h$   
 $b \ d \ k \rightarrow b \sim \beta \ r \sim l \sim \emptyset \ k \sim x \sim g \sim \gamma \ / \ V\_V$   
 $b \ d \rightarrow m \ n \ / \ \#\_a$   
 $b \ d \rightarrow b \sim^m b \ d \sim^n d$   
 $ti \rightarrow s \ / \ \_V$

**21.2.3.5 Proto-West Tariku to Sehudate** *Pogostick Man*, from Clouse, Duane (1993), “Languages of the Western Lakes Plains”. *IRIAN: Bulletin of Irian Jaya* XXI:1 – 17

$p \rightarrow \phi \sim h$   
 $b \ d \ k \rightarrow b \sim \beta \ r \sim \emptyset \ k \sim x \sim g \sim \gamma \ / \ V\_V$   
 $b \rightarrow m \ / \ \#\_a$

$b \rightarrow b^{\sim m}b$   
 $ti\ di \rightarrow s\ dz / \_V$

**21.2.3.6 Proto-West Tariku to Tause** *Pogostick Man*, from Clouse, Duane (1993),  
 “Languages of the Western Lakes Plains”. *IRIAN: Bulletin of Irian Jaya* XXI:1 – 17

$p \rightarrow \phi^{\sim h}$   
 $b\ d\ k \rightarrow b^{\sim \beta}\ r^{\sim \emptyset}\ k^{\sim x}\ g^{\sim y} / V\_V$   
 $b \rightarrow m / \#\_a$   
 $b\ d \rightarrow b^{\sim m}b\ d^{\sim n}d$   
 $ti\ di \rightarrow s\ j / \_V$

**21.2.3.7 Proto-West Tariku to Weirate** *Pogostick Man*, from Clouse, Duane (1993),  
 “Languages of the Western Lakes Plains”. *IRIAN: Bulletin of Irian Jaya* XXI:1 – 17

$p \rightarrow \phi^{\sim h}$   
 $b\ d\ k \rightarrow b^{\sim \beta}\ r^{\sim l}\ k^{\sim x}\ g^{\sim y} / V\_V$   
 $b\ d \rightarrow m\ n / \#\_a$   
 $b\ d \rightarrow b^{\sim m}b\ d^{\sim n}d$   
 $ti\ di \rightarrow s\ dz / \_V$

## 22 Macro-Arawakan

Dixon (2004) gives the following reconstruction for Proto-Arawá:

	Bilabial	Coronal	Postalveolar	Velar	Glottal
Nasal	m	n			
Plosive	p p <sup>h</sup> b ɓ	t t <sup>h</sup> d ɗ		k k <sup>h</sup> g ɠ	ʔ
Fricative		s			h
Affricate		ts ts <sup>h</sup> dz	tʃ		
Liquid		r			

  

	Front	Central	Back
High	i		
Mid	e		o
Low		a	

Dixon states “[i]t is likely that, as in modern languages, *\*o* ranged over [u] and [o]”. Further, he notes that “*\*w* could have been a voiced bilabial fricative [β], or a labial-velar semivowel [w] (or could have had both as allophones), and *\*j* could have been a voiced alveolar affricate [dz], a voiced postalveolar affricate [dʒ], or a voiced palatal stop [j]”.

Dixon also hypothesizes that there was an Arawán language that eventually died out after gaining substrate status; he has attempted to identify sound changes from Proto-Arawá to this hypothetical language. While most likely incomplete his findings are presented below along with those of the other languages.

(From Dixon, R.M.W. (2004), “Proto-Arawá Phonology”. *Anthropological Linguistics* 46(1):1 – 83)

### 22.1 Proto-Arawá to Arawá

*Pogostick Man*, from Dixon, R.M.W. (2004), “Proto-Arawá Phonology”. *Anthropological Linguistics* 46(1):1 – 83

p → f  
p<sup>h</sup> → p / #-  
p<sup>h</sup> → ɸ / else  
ɗ → t / #-  
dz → s / medially  
ts<sup>h</sup> → s

## 22.2 Proto-Arawá to Banawá-Jamamadi

*chris\_notts & Pogostick Man*, the latter citing Dixon, R.M.W. (2004), “Proto-Arawá Phonology”. *Anthropological Linguistics* 46(1):1 – 83

$\beta \rightarrow b / \#_-$   
 $\beta \rightarrow \phi / \text{medially}$   
 $p^{(h)} \rightarrow \phi$   
 $\{t^h, d\} \rightarrow t$   
 $k^h g \rightarrow k w$   
 $\{ts^{(h)}, tʃ\} dz \rightarrow s ʃ$   
 $? \rightarrow \emptyset$

## 22.3 Proto-Arawá to Hypothetical Arawán Substrate

*Pogostick Man*, from Dixon, R.M.W. (2004), “Proto-Arawá Phonology”. *Anthropological Linguistics* 46(1):1 – 83

$e \rightarrow a / \text{medially}$   
 $e \rightarrow i / \#_-$   
 $p \rightarrow ?$   
 $p^h \rightarrow h / \text{medially}$   
 $dz \rightarrow s$

## 22.4 Proto-Arawá to Jarawara

*chris\_notts & Pogostick Man*, the latter citing Dixon, R.M.W. (2004), “Proto-Arawá Phonology”. *Anthropological Linguistics* 46(1):1 – 83

$\beta \rightarrow b / \#_- \beta \rightarrow f / \text{medially}$   
 $d \rightarrow t$   
 $p^{(h)} \{t^h, d\} \rightarrow \phi t$   
 $k^h g \rightarrow k w$   
 $dz \rightarrow ʃ$   
 $\{ts^{(h)}, tʃ\} \rightarrow s$   
 $? \rightarrow \emptyset$



## 22.5 Proto-Arawá to Kulína-Dení

*Pogostick Man*, from Dixon, R.M.W. (2004), “Proto-Arawá Phonology”. *Anthropological Linguistics* 46(1):1 – 83

ɓ → b / #<sub>-</sub>

ɓ → p / medially

ɗ → t

g → w

tʃ → ʃ (?)

ʔ → Ø / #<sub>-</sub>

## 22.6 Proto-Arawá to Sorowahá

*Pogostick Man*, from Dixon, R.M.W. (2004), “Proto-Arawá Phonology”. *Anthropological Linguistics* 46(1):1 – 83

e → i / -#

e → a / else

{p<sup>(h)</sup>, ɓ} → h

ɗ → d / #<sub>-</sub>

{t<sup>h</sup>, ɗ → t

k<sup>h</sup> → k

ts<sup>(h)</sup> → s ʔ → Ø / #<sub>-</sub>, possibly everywhere?

## 22.7 Proto-Arawá to Paumarí

*Pogostick Man*, from Dixon, R.M.W. (2004), “Proto-Arawá Phonology”. *Anthropological Linguistics* 46(1):1 – 83

e → a / medially

e → {a, i} / #<sub>-</sub>

p<sup>h</sup> → p / #<sub>-</sub>

p<sup>h</sup> t → ɸ ʔ / medial

ts<sup>(h)</sup> → s

## 23 Macro-Pama-Nyungan

Wikipedia gives the following reconstruction for the phonological inventory of Proto-Pama-Nyungan, citing Alpher (2004). The particulars of the presentation have been modified somewhat from that presented in the article.

	Bilabial	Alveolar	Retroflex	Palatal	Velar
Plosive	p	t	ɖ	c (cʲ?)	k
Nasal	m	n	ɳ	ɲ	ŋ
Rhotic		r	ɽ		
Lateral		l	ɭ	ʎ	
Semivowel	w			j	

  

	Front	Central	Back
High	i i:		u u:
Low		a a:	

(From Wikipedia contributors (2014), “Pama–Nyungan languages”. *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=Pama%E2%80%93Nyungan\\_languages&oldid=605755580](https://en.wikipedia.org/w/index.php?title=Pama%E2%80%93Nyungan_languages&oldid=605755580), presumably citing Alpher, Barry (2004), “Proto-Pama-Nyungan etyma”. In Bowern, Claire, and Harold Koch (eds.), *Australian Languages: Classification and the Comparative Method*)

### 23.1 Paman

*NB: These changes are most likely largely incomplete, especially for languages with fewer changes shown*

#### 23.1.1 Proto-Paman to Aritningitiy

*Pogostick Man*, from Hale, Kenneth (1964), “Classification of Northern Paman Languages, Cape York Peninsula, Australia: A Research Report”. *Oceanic Linguistics* Vol. 3, No. 2, 248 – 265

C → Ø / #\_

i[-long]C → Cj / #\_ ! \_i

u[-long]C → Cw / #\_

a[-long]C → Ca / #\_ (! \_a?)

u i → w j / a\_ when this a is a result of metathesis (?)

V: → V[-long] / in #U

### 23.1.2 Proto-Paman to Awɲtim

*Pogostick Man*, from Hale, Kenneth (1964), “Classification of Northern Paman Languages, Cape York Peninsula, Australia: A Research Report”. *Oceanic Linguistics* Vol. 3, No. 2, 248 – 265

iC aC uC → Cj Ca Cw / #\_ ! before an identical vowel  
u i → w j / a\_ when this a is a result of the preceding metathesis  
(N)S → F / #(C)V\_  
∅ → j / #(C)i:(C)\_V ! \_i  
∅ → w / #(C)u:(C)\_V ! \_u  
∅ → a / #(C)a:(C)\_V ! \_a  
C → ∅ / #\_  
V: → ə / in #U

### 23.1.3 Proto-Paman to Linɲitiɲ

*Pogostick Man*, from Hale, Kenneth (1964), “Classification of Northern Paman Languages, Cape York Peninsula, Australia: A Research Report”. *Oceanic Linguistics* Vol. 3, No. 2, 248 – 265

(N)S → F / #(C)V\_  
N → ∅ / #NV\_SV  
C → ∅ / #\_  
V: V[-long] → V[-long] ∅ / in #U

### 23.1.4 Proto-Paman to Mbiywom

*Pogostick Man*, from Hale, Kenneth (1964), “Classification of Northern Paman Languages, Cape York Peninsula, Australia: A Research Report”. *Oceanic Linguistics* Vol. 3, No. 2, 248 – 265

C → ∅ / #\_  
i[-long]C → Cj / #\_ ! \_i  
u[-long]C → Cw / #\_  
a[-long]C → Ca / #\_ (! \_a?)  
u i → w j / a\_ when this a is a result of metathesis (?)  
V: → V[-long] / in #U

### 23.1.5 Proto-Paman to Mpalican

*Pogostick Man*, from Hale, Kenneth (1964), “Classification of Northern Paman Languages, Cape York Peninsula, Australia: A Research Report”. *Oceanic Linguistics* Vol. 3, No. 2, 248 – 265

NVS → V<sup>n</sup>S / #\_

C → Ø / #\_

V: → V[-long] / in #U

### 23.1.6 Proto-Paman to Uraði

*Pogostick Man*, from Hale, Kenneth (1964), “Classification of Northern Paman Languages, Cape York Peninsula, Australia: A Research Report”. *Oceanic Linguistics* Vol. 3, No. 2, 248 – 265

(N)S → F / #(C)V\_

V: → V[-long] / in #U

### 23.1.7 Proto-Paman to Yinwum

*Pogostick Man*, from Hale, Kenneth (1964), “Classification of Northern Paman Languages, Cape York Peninsula, Australia: A Research Report”. *Oceanic Linguistics* Vol. 3, No. 2, 248 – 265

a → i / #C[+palatal]V[-long]C\_

i → e / #(C)aC[-palatal]\_

#”UU → #U”U

NVS → V<sup>n</sup>S / #\_

C → Ø / #\_

Ø → j / #i:(C)\_a

Ø → w / #u:(C)\_a

V: → V[-long] / in #U

## 24 Mayan

Wikipedia gives the following for the Proto-Mayan phonology:

	Bilabial	Alveolar	Palatal	Velar	Uvular	Glottal
Nasal	m	n		ŋ		
Plosive	p ɓ	t t'	tʃ tʃ'	k k'	q q'	ʔ
Fricative		s	ʃ		χ	h
Affricate		ts ts'	tʃ tʃ'			
Liquid		l r				
Glide			j	w		
		Front	Central	Back		
High		i i:		u u:		
Mid		e e:		o o:		
Low			a a:			

(From Wikipedia contributors (2013), “Mayan languages”. *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=Mayan\\_languages&oldid=583331877](https://en.wikipedia.org/w/index.php?title=Mayan_languages&oldid=583331877))

### 24.1 Proto-Mayan to Ch’olan

*Pogostick Man*, from Wikipedia contributors (2013), “Proto-Mayan language”. *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=Proto-Mayan\\_language&oldid=571518268](https://en.wikipedia.org/w/index.php?title=Proto-Mayan_language&oldid=571518268)

q(ʔ) → k(ʔ)  
 ŋ → n  
 a: e: o: → i i u  
 tʃ(ʔ) → t(ʔ)  
 r → j  
 V: → V[-long]

### 24.2 Proto-Mayan to Chujean

*Pogostick Man*, from Wikipedia contributors (2013), “Proto-Mayan language”. *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=Proto-Mayan\\_language&oldid=571518268](https://en.wikipedia.org/w/index.php?title=Proto-Mayan_language&oldid=571518268)

ŋ → n  
 tʃ(ʔ) → t(ʔ)

$r \rightarrow j$   
 $V: \rightarrow V[-\text{long}]$

### 24.3 Proto-Mayan to Huastecan

*Pogostick Man*, from Wikipedia contributors (2013), “Proto-Mayan language”. *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=Proto-Mayan\\_language&oldid=571518268](https://en.wikipedia.org/w/index.php?title=Proto-Mayan_language&oldid=571518268)

$w \rightarrow b$   
 $h \rightarrow w / \_ \{o, u\}$   
 $q(\cdot) \rightarrow k(\cdot)$   
 $\eta \rightarrow h$   
 $kV[+\text{round}]C[+\text{glide}] \rightarrow k^w$

### 24.4 Proto-Mayan to Ixilean

*Pogostick Man*, from Wikipedia contributors (2013), “Proto-Mayan language”. *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=Proto-Mayan\\_language&oldid=571518268](https://en.wikipedia.org/w/index.php?title=Proto-Mayan_language&oldid=571518268)

$\eta \rightarrow x$   
 $t \rightarrow tʃ$   
 $CV?VC \rightarrow CV?C$   
 $r \rightarrow \{t, j\}$   
 $tʃ \rightarrow tʂ$

### 24.5 Proto-Mayan to Kaqchikel-Tz’utujil

*Pogostick Man*, from Wikipedia contributors (2013), “Proto-Mayan language”. *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=Proto-Mayan\\_language&oldid=571518268](https://en.wikipedia.org/w/index.php?title=Proto-Mayan_language&oldid=571518268)

$\eta \rightarrow x$   
 $h \rightarrow j / \_ \#$   
 $CV?VC \rightarrow CV?C$   
 $\delta w \rightarrow ? j / VCV\_ \#$   
 $t^j(\cdot) \rightarrow tʃ(\cdot)$   
 $V: \rightarrow V[-\text{long}]$

“Kaqchikel retains a centralized lax schwa-like vowel as a reflex of Proto-Mayan [a]”

## 24.6 Proto-Mayan to Core K'iche'

*Pogostick Man*, from Wikipedia contributors (2013), “Proto-Mayan language”. *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=Proto-Mayan\\_language&oldid=571518268](https://en.wikipedia.org/w/index.php?title=Proto-Mayan_language&oldid=571518268)

$\eta \rightarrow x$   
 $CV?VC \rightarrow CV?C$   
 $t^j(?) \rightarrow t^f(?)$

## 24.7 Proto-Mayan to Mamean

*Pogostick Man*, from Wikipedia contributors (2013), “Proto-Mayan language”. *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=Proto-Mayan\\_language&oldid=571518268](https://en.wikipedia.org/w/index.php?title=Proto-Mayan_language&oldid=571518268)

$\eta \rightarrow x$   
 $t \rightarrow t^f$   
 $CV?VC \rightarrow CV?C$   
 $r \rightarrow \{t, j\}$   
 $t^f \rightarrow t^s$   
 $t^j(?) \rightarrow t(?)$   
 $t^j(?) \rightarrow t^s(?)$   
 $r \ t \ t^f \ f \rightarrow t \ t^f \ t^s \ s$

## 24.8 Proto-Mayan to Q'anjob'alan

*Pogostick Man*, from Wikipedia contributors (2013), “Proto-Mayan language”. *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=Proto-Mayan\\_language&oldid=571518268](https://en.wikipedia.org/w/index.php?title=Proto-Mayan_language&oldid=571518268)

$q(?) \rightarrow k(?)$   
 $\eta \rightarrow n$   
 $r \rightarrow j$   
 $V: \rightarrow V[-long]$

## 24.9 Proto-Mayan to Tzeltalan

*Pogostick Man*, from Wikipedia contributors (2013), “Proto-Mayan language”. *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=Proto-Mayan\\_](https://en.wikipedia.org/w/index.php?title=Proto-Mayan_)

language&oldid=571518268

q(ʼ) → k(ʼ)

ŋ → n

a: e: o: → i i u

## 24.10 Proto-Mayan to Yucatecan

*Pogostick Man*, from Wikipedia contributors (2013), “Proto-Mayan language”. *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=Proto-Mayan\\_language&oldid=571518268](https://en.wikipedia.org/w/index.php?title=Proto-Mayan_language&oldid=571518268)

q(ʼ) → k(ʼ)

ŋ → n

a: → i

t → tʃ / -#

tʃ(ʼ) → tʃ(ʼ)

“[V]owel length and [h] and [ʔ]” have converted into a tone distinction



## 25 Niger-Congo

Hedinger (1987) reconstructs the following consonant inventory for Pre-Proto-Bantu:

	Labial	Alveolar	Palatal	Velar
Lenis nasal	'm	'n	'ɲ	
Fortis nasal	m	n	ɲ	ŋ
Lenis stop	'p	't 'd	'ɸ	'k 'g
Fortis stop	p b	t d	c ɸ	k g
Unknown (stop?)		d <sub>2</sub>		

  

	Front	Central	Back
High	i		u
Mid-high	e		o
Mid-low	ɛ		ɔ
Low		a	

\*'p \*'c \*'ɸ \*'g appear confined to C<sub>1</sub> position; \*ŋ, to C<sub>2</sub> position.

Hedinger also considers the Manenguba languages (and possibly the Mbo languages in general) as sharing a common ancestor with Proto-Bantu instead of being descended from it, although the author seems to use the abbreviation “PM” to refer to Proto-Manenguba.

Due to the scarcity of available resources on Niger-Congo historical phonology, there will likely be many overlaps or contradictions in the available data, maybe more so than in other sections, even Indo-European. What is included in the Index is what is available.

A lot of the Bantu sound changes are from Johnston, Sir Harry Hamilton (1919), *A Comparative Study of the Bantu and Semi-Bantu Languages*. This book contains comparative vocabulary lists from which I have attempted to find sound changes; I make no guarantee as to their completeness or their accuracy, as there are numerous potential problems with the data and source (not to mention the guy trying to find the sound changes). Further, some names may have fallen into disuse or obsolescence; the source is from 1919, and no offense is intended from the use of the names from the source document—I welcome any corrections that may be sent to me.

(From Hedinger, Robert (1987), *The Manenguba Languages (Bantu A.15, Mbo Cluster) of Cameroon*)

## 25.1 Proto-Potou-Akanic-Bantu to Proto-Bantu

*Pogostick Man*, from Stewart, John M. (2002), “The potential of proto-Potou-Akanic-Bantu as a pilot Proto-Niger-Congo, and the reconstructions updated”. JALL 23:197 – 224

*NB: For at least the first batch of sound changes herein, the sound changes applying to those consonants in #U will also apply in U<sub>2</sub> under the following conditions, as reported by Stewart (2002): If V<sub>2</sub> = V<sub>1</sub> (vowel nasality does not necessarily have to be the same, however), changes affecting the vowels will also affect V<sub>2</sub>. If C is an approximant, changes involving a nasalized V<sub>1</sub> will also affect C<sub>2</sub> and V<sub>2</sub>.*

$\tilde{u} \rightarrow \tilde{I} / \#_-$   
 $u \tilde{u} \rightarrow i \tilde{I} / \#R[-labial]_-$   
 $\tilde{u} \tilde{I} \rightarrow \tilde{u} \tilde{I} / \#N[-labial]_-$   
 $i \tilde{I} V[-round] \rightarrow ui u\tilde{I} V[+round] / C^w_-$   
 $\tilde{u} \rightarrow v / \#R[-labial]_-$   
 $f C \rightarrow c R / \#_-$   
 $g^w \rightarrow w / \#_V[-nas]$   
 $g^w \rightarrow \tilde{w} / \#_V[+nas]$   
 $V[+nas] \rightarrow V[-nas] / \#S[+voiced]_-$   
 $\tilde{I} \rightarrow \tilde{e} / \#(C)V_C$   
 $u\tilde{I} \rightarrow j \tilde{I} / \#C_-$   
 $i \tilde{I} \rightarrow i \tilde{I} / \#(C)V[-high]C_-$   
 $\tilde{u} \rightarrow m / \#(C)V_-$   
 $O[+nas -voiced] \rightarrow O[-nas] / \#(C)VC_-$

### 25.1.1 Pre-Proto-Bantu to Proto-Bantu

*Pogostick Man*, from Hedinger, Robert (1987), *The Manenguba Languages (Bantu A.15, Mbo Cluster) of Cameroon*

$S[+lenis] N[+lenis] \rightarrow S[-lenis] N[-lenis] / \text{in } C_1 \text{ position}$   
 $N[+lenis] N[-lenis] \rightarrow N[-lenis] {}^nS / \text{in } C_2 \text{ position}$   
 $d_2 \rightarrow d / \text{in } C_2 \text{ position}$

#### 25.1.1.1 British East Africa

**25.1.1.1.1 Proto-British East Africa to Kamba** *Pogostick Man*, from Johnston, Sir Harry Hamilton (1919), *A Comparative Study of the Bantu and Semi-Bantu Languages*

$d \rightarrow r / ! N\_$   
 $h \rightarrow \emptyset / V\_V$   
 $p \ b \rightarrow \{v, h\} \ v / V\_V$   
 $z \rightarrow r$   
 $ts \rightarrow \emptyset$   
 $Vr \rightarrow \emptyset$   
 $wi \rightarrow uj / C\_$   
 $gV \rightarrow \emptyset / V\_ \#$

Looks like some dissimilation may have gone on where if there were two [θ] in a word, the first one changed to [s]

$u \rightarrow w / \_a \#$   
 $i \rightarrow \emptyset / u\_ \#$

A lot of intervocalic voicing, but not every item—not sure if there's conditioning or if it's something with the data

**25.1.1.1.2 Proto-British East Africa to Kikuyu** *Pogostick Man*, from Johnston, Sir Harry Hamilton (1919), *A Comparative Study of the Bantu and Semi-Bantu Languages*

$d \rightarrow r / ! N\_$   
 $ki \rightarrow tʃ / \_V ?$   
 $h \rightarrow \emptyset / V\_V$   
 $ts \rightarrow s / n\_ (? \text{ Some conflicting data but it might be analogical})$   
 $p \ ts \rightarrow h \ \emptyset$   
 $S[- \text{ voice}] \rightarrow S[+ \text{ voice}] / N\_$   
 $\{l, z\} \rightarrow r$   
 $i \rightarrow \emptyset / u\_ \#$

A lot of intervocalic voicing, but not every item—not sure if there's conditioning or if it's something with the data

**25.1.1.1.3 Proto-British East Africa to Nika** *Pogostick Man*, from Johnston, Sir Harry Hamilton (1919), *A Comparative Study of the Bantu and Semi-Bantu Languages*

$ni \rightarrow n / \_V$   
 $p \rightarrow f / V\_V$   
 $d \rightarrow z / \#\_ ?$   
 $k \ t \rightarrow \{ts, tʃ\} \ s / \_i$   
 $k \rightarrow tʃ / \_E \#$   
 $N \rightarrow \emptyset / \_S[- \text{ voice}]$   
 $t \rightarrow h / V\_V \#$

$\text{ɲ} \rightarrow \text{n} / \#\_$   
 $\text{u} \rightarrow \text{w} / \_ \text{a} \#$   
 $\text{i} \rightarrow \emptyset / \_ \text{u} \#$   
 $\text{i} \rightarrow \emptyset / \text{u} \_ \#$   
 $\text{r} \rightarrow \text{l}$   
 $\text{uju} \rightarrow \text{wi} / \_ \#$

A lot of intervocalic voicing, but not every item—not sure if there’s conditioning or if it’s something with the data

**25.1.1.1.4 Proto-British East Africa to Pokomo** *Pogostick Man*, from Johnston, Sir Harry Hamilton (1919), *A Comparative Study of the Bantu and Semi-Bantu Languages*

$\text{ni} \rightarrow \text{ɲ} / \_ \text{V}$   
 $\text{p b} \rightarrow \text{pf bv} / \text{i} \_ ?$   
 $\text{p} \rightarrow \text{f} / \#\_$   
 $\text{S}[- \text{voice}] \rightarrow \text{h} / \text{V} \_ \text{V} \#$   
 $\{\text{p}, \text{b}\} \rightarrow \text{w} / \text{V} \_ \text{V}$   
 $\text{ts} \rightarrow \text{s} / \text{N} \_$   
 $\text{t} \rightarrow \emptyset / \text{w} \_$   
 $\text{g} \rightarrow \emptyset / \text{V} \_ \text{V} \#$   
 $\text{g} \rightarrow \text{j} / \text{V} \_ \text{V}$   
 $\text{r} \rightarrow \text{j}$   
 $\text{s ts} \rightarrow \emptyset \text{tʃ} / \_ \text{w}$   
 $\text{uju} \rightarrow \text{wi} / \_ \#$   
 $\text{u} \rightarrow \text{w} / \_ \text{V} \#$   
 $\text{k} \rightarrow \text{tʃ} / \_ \text{i} \#$   
 $\text{i} \rightarrow \emptyset / \_ \text{B} \#$

A lot of intervocalic voicing, but not every item—not sure if there’s conditioning or if it’s something with the data

**25.1.1.1.5 Proto-British East Africa to Taita** *Pogostick Man*, from Johnston, Sir Harry Hamilton (1919), *A Comparative Study of the Bantu and Semi-Bantu Languages*

$\text{t d} \rightarrow \text{tʃ dʒ} / \_ \text{i}$   
 $\text{d} \rightarrow \text{r} / \#\_$   
 $\text{p} \rightarrow \text{f}$   
 $\text{ts} \rightarrow \text{tʃ} / \_ \text{i}$   
 $\text{z} \rightarrow (\text{d}) \text{ʒ} / \_ \text{i}$

ts dz → s z / N\_

Stem-initial consonants seem to have voiced, but not prefix-initial ones

t s → {s,ʃ} ʃ / \_i

t → d / V\_V#

ts → t / \_w

ts → Ø / w\_

ts dz → {s,tʃ} {z,dʒ} ?

S[- voice] → S[+ voice] / N\_

V → Ø / V\_#

ndʒ → ɲ

r → l

i → Ø / u\_#

si → ʃ / \_B

A lot of intervocalic voicing, but not every item—not sure if there's conditioning or if it's something with the data

**25.1.1.1.6 Proto-British East Africa to Taveita** *Pogostick Man*, from Johnston, Sir Harry Hamilton (1919), *A Comparative Study of the Bantu and Semi-Bantu Languages*

{p,b} → w / V\_V

p → f

g → {ɣ,j} / V\_V

si → ʃ / \_B

t s → s ʃ / \_i

ts → t / \_w

ts → s / #\_

S[- voice] → S[+ voice] / N\_

s → h / #\_

ua → au / \_# ?

r → l

a → i / w\_#

u → w / \_V#

A lot of intervocalic voicing, but not every item—not sure if there's conditioning or if it's something with the data

### 25.1.1.2 Kilimanjaro

**25.1.1.2.1 Proto-Kilimanjaro to Chaga** *Pogostick Man*, from Johnston, Sir Harry Hamilton (1919), *A Comparative Study of the Bantu and Semi-Bantu Languages*

$\{ts, dz\} \rightarrow z / V\_V$   
 $ts\ dz \rightarrow s\ z / N\_$   
 $s \rightarrow z / N\_ ?$   
 $tʃ \rightarrow ʃ / \#\_$  (? I'd expect  $dʒ \rightarrow ʒ / \#\_$  as well)  
 $h \rightarrow \emptyset / V\_V$   
 $k \rightarrow j / E\_B ?$   
 $ʃ \rightarrow dʒ / N\_$   
 $k \rightarrow h / \{N, V\}\_V$   
 $p \rightarrow b / N\_$   
 $p \rightarrow h$   
 $f \rightarrow \{f, \emptyset\} / V\_V$   
 $w \rightarrow \emptyset / \#\_u$   
 $s \rightarrow r / V\_V$   
 $n \rightarrow \emptyset / \_s$   
 $t \rightarrow \{h, d\} / V\_V$   
 $l \rightarrow d / n\_$   
 $\emptyset \rightarrow d / n\_r ?$   
 $i \rightarrow \emptyset / \_V ?$

Looks like something may have happened where an obstruent voiced following a nasal if they did not share a POA

**25.1.1.2.2 Proto-Kilimanjaro to Paregweni** *Pogostick Man*, from Johnston, Sir Harry Hamilton (1919), *A Comparative Study of the Bantu and Semi-Bantu Languages*

$\emptyset \rightarrow b / m\_w$   
 $wa \rightarrow o ?$   
 $a \rightarrow o / w\_ ?$   
 $w \rightarrow \emptyset / B\_B$   
 $u \rightarrow w / \_V$   
 $p \rightarrow \emptyset / V\_V$   
 $\{t, d\} \rightarrow r / V\_V$   
 $k \rightarrow g / \{N, V\}\_V$   
 $l \rightarrow r$   
 $d \rightarrow r / \#\_V ?$   
 $ʃ\ ʒ \rightarrow s\ z / N\_$   
 $s \rightarrow z / N\_$   
 $g \rightarrow ɣ / \{N, V\}\_V$   
 $oi \rightarrow \text{ɔɛ} / \_ \#$

$s \rightarrow z / \#_ - ? \$_ - ?$  Possibly more, but this seems to be the most consistent phone to voice in this situation

$\eta g \rightarrow \eta / \_i$

$l \rightarrow d / n_ -$

$u \rightarrow \emptyset / V_ - \# ?$

$S[- \text{voice}] \rightarrow h / V_ - V \#$  (possibly sporadic)

### 25.1.1.3 Nyanza

**25.1.1.3.1 Proto-Nyanza to Kiguzii** *Pogostick Man*, from Johnston, Sir Harry Hamilton (1919), *A Comparative Study of the Bantu and Semi-Bantu Languages*

$t^j d^j \rightarrow t^j d^j$

$\eta k \rightarrow s / \_i ?$

$k^w \rightarrow p$

$p k s \rightarrow b g r / V_ - V$

$\eta k^w \rightarrow \eta / \# \_i$

$\varepsilon \rightarrow \emptyset / i_ - \#$

$C[- \text{voice}] \rightarrow C[+ \text{voice}] / N_ -$

**25.1.1.3.2 Proto-Nyanza to Kikoria** *Pogostick Man*, from Johnston, Sir Harry Hamilton (1919), *A Comparative Study of the Bantu and Semi-Bantu Languages*

$t^j d^j \rightarrow t^j d^j$

$g \rightarrow h / \_i E$

$s \rightarrow r / V_ - V \#$

$iE \rightarrow i: / \_ \#$

$\eta k^w \rightarrow n / \# \_i$

$k^w g^w \rightarrow k \{gw, hw\}$

**25.1.1.3.3 Proto-Nyanza to Luganda** *Pogostick Man*, from Johnston, Sir Harry Hamilton (1919), *A Comparative Study of the Bantu and Semi-Bantu Languages*

$ki \rightarrow \{ki, t^j\} / \_ V$

$n \rightarrow \{l, r\} / V_ - V$  (sporadic? allophonic?)

$n \rightarrow \emptyset / \_ d^j$

$t^j d^j \rightarrow t^j d^j / n_ -$

$t^j d^j \rightarrow s z$

$g \rightarrow \emptyset / \# V N_ -$

$b \rightarrow w / V_ - V$

$f (\rightarrow h?) \rightarrow s / \_i$   
 $V \rightarrow V: / \_V\#$   
 $V \rightarrow \emptyset / V:_$   
 $h \rightarrow \emptyset / V\_V$   
 $k^w \rightarrow f$   
 $h \rightarrow w / V\_B ?$   
 $we \rightarrow i / \_ \#$   
 $e \rightarrow \varepsilon / \_ \#$   
 $C[- \text{voice}] \rightarrow C[+ \text{voice}] / N\_$   
 $N \rightarrow N[+ \text{same POA}] / \_C ! \_w$   
 $C: \rightarrow C$   
 $n \rightarrow m / \_w$

**25.1.1.3.4 Proto-Nyanza to Lugishu** *Pogostick Man*, from Johnston, Sir Harry Hamilton (1919), *A Comparative Study of the Bantu and Semi-Bantu Languages*

Possible dissimilatory process where  $n \rightarrow l / \_Vn?$

$t \rightarrow s / V\_i\#$   
 $t \rightarrow r / V\_V$   
 $t^j d^j \rightarrow s z$   
 $gi \rightarrow j / \_E$   
 $(\eta)k \rightarrow s / \_i (?)$   
 $k^w \rightarrow s / \#i$   
 $k^w \rightarrow p / \#N\_$   
 $k^w \rightarrow \{xw, f\}$   
 $d \rightarrow l ?$   
 $k \rightarrow \{x, g\} / V\_V$   
 $i \rightarrow \emptyset / V\_ \#$   
 $C[- \text{voice}] \rightarrow C[+ \text{voice}] / N\_$

**25.1.1.3.5 Proto-Nyanza to Lukonde** *Pogostick Man*, from Johnston, Sir Harry Hamilton (1919), *A Comparative Study of the Bantu and Semi-Bantu Languages*

$k \rightarrow g / \#\_$  (seemingly in one prefix)  
 $s \rightarrow z / V\_V\#$   
 $t \rightarrow s / V\_i\#$   
 $t^j d^j \rightarrow \{ts, tf\} \{dz, d\zeta\}$   
 $gi \rightarrow \{h, j\} / \_E$   
 $\eta k \rightarrow nz / \_i$   
 $k \rightarrow tf / \_i$



$k^w \rightarrow \{p, b\} / \#N\_$   
 $k^w \rightarrow \{xw, f\}$

**25.1.1.3.6 Proto-Nyanza to Lunyara** *Pogostick Man*, from Johnston, Sir Harry Hamilton (1919), *A Comparative Study of the Bantu and Semi-Bantu Languages*

$k \rightarrow \int / \_i\#$   
 $k \rightarrow (t)s / \_i$   
 $\eta k \rightarrow s / \_i ?$   
 $gi \rightarrow j / \_E$   
 $b \rightarrow \emptyset / \_w$   
 $t \rightarrow s / V\_i\#$   
 $t^j d^j \rightarrow t\int d\int$   
 $k^w g^w \rightarrow \{f, x\} w:$   
 $d \rightarrow l ?$   
 $k t \rightarrow x \{d, r\} / V\_V$   
 $t \rightarrow d / \#\_$   
 $C[- \text{voice}] \rightarrow C[+ \text{voice}] / N\_$

**25.1.1.3.7 Proto-Nyanza to Luwanga** *Pogostick Man*, from Johnston, Sir Harry Hamilton (1919), *A Comparative Study of the Bantu and Semi-Bantu Languages*

$t \rightarrow s / V\_i\#$   
 $g \rightarrow \gamma / i\_i$   
 $t \rightarrow r / \{\#, V\}\_V$   
 $t^j d^j \rightarrow ts dz$   
 $\eta k \rightarrow s / \_i ?$   
 $k \rightarrow \int / \_i$   
 $k \rightarrow x / \_e$   
 $k^w \rightarrow \int / \#\_i$   
 $k^w g^w \rightarrow \{f(w), xw\} w:$   
 $d \rightarrow r / ! n\_$   
 $k t \rightarrow x d / V\_V$   
 $u \rightarrow w / \_V\#$   
 $C[- \text{voice}] \rightarrow C[+ \text{voice}] / N\_$

**25.1.1.3.8 Proto-Nyanza to Luziba** *Pogostick Man*, from Johnston, Sir Harry Hamilton (1919), *A Comparative Study of the Bantu and Semi-Bantu Languages*

$t^j d^j \rightarrow \int \int ?$

$\text{nd}^j \rightarrow \text{ɲ}$   
 $\text{f} (\rightarrow \text{h}?) \rightarrow \text{s} / \text{ }_i$   
 $\text{k}^w \rightarrow \text{f}$   
 $\text{s} \rightarrow \text{ʃ} / \text{ }_i$  (either this or some consonant harmony probably started to work)  
 $\text{a e} \rightarrow \text{o } \varepsilon / \text{ }_{-}\#$   
 $\text{C}[-\text{voice}] \rightarrow \text{C}[+\text{voice}] / \text{N}_{-}$   
 $\text{l} \rightarrow \text{r}$   
 $\text{b} \rightarrow \text{m} / \text{ }_{-}\text{VN} ?$   
 $\text{C}^{\text{}} \rightarrow \text{C}$   
 $\text{N} \rightarrow \text{N}[+\text{ same POA}] / \text{ }_{-}\text{C}$

**25.1.1.3.9 Proto-Nyanza to Olukonjo** *Pogostick Man*, from Johnston, Sir Harry Hamilton (1919), *A Comparative Study of the Bantu and Semi-Bantu Languages*

$\text{S}[-\text{voice}] \rightarrow \text{S}[+\text{voice}] / \text{N}_{-}$   
 $\text{k}^w \rightarrow \text{k}$   
 $\text{l} \rightarrow \text{d} / \text{ }_n$   
 $\text{p} \rightarrow \text{h}$   
 $\text{C}^{\text{}} \rightarrow \text{C}$   
 $\text{ɲ} \rightarrow \text{n} / \text{ }_i$  (No, this is not backwards)  
 $\text{e} \rightarrow \varepsilon$   
 $\text{u} \rightarrow \text{w} / \text{ }_{-}\text{V}\#$   
 $\text{z} \rightarrow \text{r}$   
 $\text{t}^j \text{d}^j \rightarrow \text{t d}$   
 $\text{d} \rightarrow \text{z} / \text{V}_{-}\text{VCV}\# ?$   
 $\text{ai} \rightarrow \varepsilon$   
 $\text{wa} \rightarrow \text{o} / \text{ }_{-}\#$   
 $\text{g} \rightarrow \text{ɣ} / \text{V}_{-}\text{V}$   
 Somehow, \*l \*r seem to have become flip-flopped with respect to their reflexes in Urunyorow  
 $\text{N} \rightarrow \text{N}[+\text{ same POA}] / \text{ }_{-}\text{C} ! \text{ }_{-}\text{w}$

**25.1.1.3.10 Proto-Nyanza to Oruhoma** *Pogostick Man*, from Johnston, Sir Harry Hamilton (1919), *A Comparative Study of the Bantu and Semi-Bantu Languages*

$\text{C}^{\text{}} \rightarrow \text{C}$   
 $\text{k}^w \rightarrow \text{p}$   
 $(\text{k}^w \rightarrow) \text{p} \rightarrow \text{f} / ! \text{ }_m$   
 $\text{t}^j \text{d}^j \rightarrow (\text{t})\text{s} ? \text{z}$   
 $\text{k } \eta \text{g} \rightarrow \text{tʃ } \text{ɲ} / \text{ }_{-}\text{E}$   
 $\text{b} \rightarrow \emptyset / \text{ }_{-}\text{w}$

$s \rightarrow z / n\_$  (and  $V\_V?$ )  
 $ts \rightarrow (d)z / V\_V$   
 $h \rightarrow s / \_iV$   
 $l \rightarrow r$   
 $e \rightarrow i$   
 $ai \rightarrow \varepsilon / \_ \#$   
 $ai \rightarrow \varepsilon :$   
 $VV \rightarrow V(:)\emptyset / \_ \#$   
 $N \rightarrow N[+ \text{ same POA}] / \_C ! \_w$

**25.1.1.3.11 Proto-Nyanza to Rugungu** *Pogostick Man*, from Johnston, Sir Harry Hamilton (1919), *A Comparative Study of the Bantu and Semi-Bantu Languages*

$o u \rightarrow u i$  (sometimes?)  
 $t \rightarrow t^j / \_i$  (maybe only word-finally?)  
 $V \rightarrow \emptyset / \_ \#$   
 $b \rightarrow \{v, w\} / V\_V$   
 $p \rightarrow n / \_i$   
 $n \rightarrow m / \_w$   
 $E \rightarrow i / \_ \#$   
 $e \rightarrow \varepsilon$   
 $\eta g \rightarrow p / \_E$   
 $t^j d^j \rightarrow t^j d^3$   
 $z \rightarrow l$   
 $r \rightarrow l$   
 $V \rightarrow \emptyset / V\_ \#$   
 $N \rightarrow N[+ \text{ same POA}] / \_C ! \_w$

**25.1.1.3.12 Proto-Nyanza to Rukyopi** *Pogostick Man*, from Johnston, Sir Harry Hamilton (1919), *A Comparative Study of the Bantu and Semi-Bantu Languages*

$o u \rightarrow u i$  (sometimes?)  
 $VC: \rightarrow V:C$   
 $k^w \rightarrow p$   
 $(k^w \rightarrow) p \rightarrow f / ! m\_$   
 $t^j \rightarrow s$   
 $\eta g \rightarrow p / \_E$   
 $r \rightarrow l$   
 $e \rightarrow i$   
 $VV \rightarrow V: / \_ \#$

$N \rightarrow N[+ \text{ same POA}] / \_C$

**25.1.1.3.13 Proto-Nyanza to Rututsi** *Pogostick Man*, from Johnston, Sir Harry Hamilton (1919), *A Comparative Study of the Bantu and Semi-Bantu Languages*

$k \rightarrow ts / \_i$

$d^j \rightarrow z / n\_$

$b \rightarrow m / \_VN ?$

$b \ ts \rightarrow w \ dz / V\_V$

$e \rightarrow \varepsilon / \_ \#$

$l \rightarrow r$

$u \rightarrow w / \_V \#$

$C: \rightarrow C$

$N \rightarrow N[+ \text{ same POA}] / \_C$

**25.1.1.3.14 Proto-Nyanza to Urukagwe** *Pogostick Man*, from Johnston, Sir Harry Hamilton (1919), *A Comparative Study of the Bantu and Semi-Bantu Languages*

$k \rightarrow ts / \_i$

$t^j \ d^j \rightarrow s \ z$

$ns \rightarrow z / \#V\_$

$ns \rightarrow dz$

$r \rightarrow l$

$d \rightarrow l / \$\_$

$b \ ts \rightarrow v \ dz / V\_V$

$v \rightarrow \emptyset / a.o \#$

$f \rightarrow h$  (sometimes?)

$k^w \rightarrow f$

$e \rightarrow \varepsilon / \_ \#$

$C: \rightarrow C$

$C[- \text{ voice}] \rightarrow C[+ \text{ voice}] / N\_$

$N \rightarrow N[+ \text{ same POA}] / \_C$

**25.1.1.3.15 Proto-Nyanza to Urukerebe** *Pogostick Man*, from Johnston, Sir Harry Hamilton (1919), *A Comparative Study of the Bantu and Semi-Bantu Languages*

$ki \rightarrow c$

$t^j \ d^j \rightarrow s \ z$

$d \rightarrow l / \$\_$

$f \rightarrow h$  (sometimes?)

$k^w \rightarrow f$   
 $u \rightarrow w / \_E$   
 $n \ d \rightarrow l \ r / V\_V$  (seems to have happened at least once)  
 $S[- \text{voice}] \rightarrow S[+ \text{voice}] / N\_$   
 $ai \rightarrow \varepsilon / \_C$   
 $e \rightarrow \varepsilon / \_ \#$   
 $l \rightarrow r$   
 $C: \rightarrow C$   
 $N \rightarrow N[+ \text{ same POA}] / \_C$

**25.1.1.3.16 Proto-Nyanza to Urunya-Ruanda** *Pogostick Man*, from Johnston, Sir Harry Hamilton (1919), *A Comparative Study of the Bantu and Semi-Bantu Languages*

$t^j \rightarrow ts$  (maybe  $\rightarrow s / \_VCV(C)\#$  ?)  
 $k \rightarrow tʃ / \_i$   
 $ns \rightarrow ts$   
 $d^j \rightarrow z / n\_$   
 $g \rightarrow r / V\_VCV\#$  (I'm not entirely sure of the conditioning here)  
 $g \rightarrow \gamma / b\_$   
 $a \rightarrow o / \_i$   
 $i \rightarrow \emptyset / V\_$   
 $e \rightarrow i / \#\_$   
 $e \rightarrow i / \_ \#$   
 $V \rightarrow \emptyset / V\_ \#$   
 $mu \rightarrow mwe / \_ \#$   
 $l \rightarrow r$   
 $N \rightarrow N[+ \text{ same POA}] / \_C$

**25.1.1.3.17 Proto-Nyanza to Urunyoro** *Pogostick Man*, from Johnston, Sir Harry Hamilton (1919), *A Comparative Study of the Bantu and Semi-Bantu Languages*

$k^w \rightarrow p$   
 $p \rightarrow h / ! m\_$   
 $t \rightarrow tʃ / \_w$   
 $b \ d \rightarrow w \ r / V\_V$   
 $w \rightarrow \emptyset / b\_$   
 $d^j \rightarrow dʒ / N\_$   
 $e \rightarrow i$   
 $\eta g \rightarrow ɲ / \_E$   
 $C[- \text{voice}] \rightarrow C[+ \text{voice}] / V\_V\#$

$z \rightarrow l / V\_V ?$

$t^j d^j \rightarrow s z$

$a \rightarrow \emptyset / \_i$

Somehow, \*r \*l seem to have become flip-flopped with respect to their reflexes in Olukonjo

$N \rightarrow N[+ \text{ same POA}] / \_C ! \_w$

**25.1.1.3.18 Proto-Nyanza to Urutoro** *Pogostick Man*, from Johnston, Sir Harry Hamilton (1919), *A Comparative Study of the Bantu and Semi-Bantu Languages*

$b \rightarrow w / V\_V$

$t \rightarrow t^j / \_w ?$

$k^w \rightarrow p$

$(k^w \rightarrow) p \rightarrow f / ! m\_$

$t^j \rightarrow t^j / \_ (V)i? \_V[+ \text{ high}]?$

$t^j \rightarrow s$

$\eta g \rightarrow \eta / \_E$

$i \rightarrow j / \_V\#$

$l \rightarrow r$

$e \rightarrow i$

$(a)i \rightarrow \varepsilon / \_ \#$

$a \rightarrow \varepsilon / \_i$

$VV \rightarrow V: / \_ \#$

#### 25.1.1.4 Upper Rufiji

**25.1.1.4.1 Proto-Upper Rufiji to Bena** *Pogostick Man*, from Johnston, Sir Harry Hamilton (1919), *A Comparative Study of the Bantu and Semi-Bantu Languages*

$t \rightarrow h / n\_$  (may have happened for other voiceless stops)

$t^j d^j \rightarrow s z / n\_$

$t^j d^j \rightarrow \{ts, t^j\} \{dz, d^j\} ?$

$s \rightarrow h$

$C[- \text{ voice}] \rightarrow C[+ \text{ voice}] / V\_V$

$w \rightarrow \emptyset / V\_V$  (possibly lengthening the first vowel?)

**25.1.1.4.2 Proto-Upper Rufiji to Gangi** *Pogostick Man*, from Johnston, Sir Harry Hamilton (1919), *A Comparative Study of the Bantu and Semi-Bantu Languages*

$t^j d^j \rightarrow ts dz ?$

$u i \rightarrow w j / \_V$

$\varepsilon \rightarrow a / w\_ \#$

$j \rightarrow \emptyset / k\_$

There may be some voicing dissimilation going on if the same consonant appears twice in the root (e.g., *\*kuku*  $\rightarrow$  *guku*)

**25.1.1.4.3 Proto-Upper Rufiji to Hehe** *Pogostick Man*, from Johnston, Sir Harry Hamilton (1919), *A Comparative Study of the Bantu and Semi-Bantu Languages*

$s \rightarrow h / V\$\_$  (root-initial after a vowel)

$S[- \text{voice}] \rightarrow \{h, \emptyset\} / N\_$  (occasionally it voices but that seems to have only happened in a handful of cases)

$t^j d^j \rightarrow s z$

$u i \rightarrow w j / \_V$

$\varepsilon \rightarrow i / \_ \#$

The first consonant of a root tends to voice if voiceless, though this appears like it might have been blocked after a nasal  $g \rightarrow \emptyset / \_w$

$kj \rightarrow tʃ$

$l \rightarrow d / n\_$

**25.1.1.4.4 Proto-Upper Rufiji to Pogoro** *Pogostick Man*, from Johnston, Sir Harry Hamilton (1919), *A Comparative Study of the Bantu and Semi-Bantu Languages*

$t^j d^j \rightarrow \{ts, tʃ\} \{dz, dʒ\} / N\_$

$t^j d^j \rightarrow s z$

$k g \rightarrow tʃ dʒ / \_i$

$C[- \text{voice}] \rightarrow C[+ \text{voice}] / N\_$

$\eta$  seems to have become  $n$  sometimes

$N \rightarrow \emptyset / \_ \# \{s, z\}$

$kj \rightarrow tʃ$

$v \rightarrow w ?$

**25.1.1.4.5 Proto-Upper Rufiji to Sango** *Pogostick Man*, from Johnston, Sir Harry Hamilton (1919), *A Comparative Study of the Bantu and Semi-Bantu Languages*

$nt^j nd^j \rightarrow \{n, ns\} \{n, nz\}$

$t^j d^j \rightarrow \{s, tʃ\} \{z, dʒ\} ?$

$k \rightarrow \{s, ʃ, ɕ, x\} / V\_i$

$k \rightarrow x$

$\emptyset \rightarrow V / \_ \# \_ NC$  (typically  $i$ )

$S[- \text{voice}] \rightarrow h / n\_ (*mp \text{ remains})$

w → v

u i → w j / \_V

kj → {ç,tʃ}

There may be some voicing dissimilation going on if the same consonant appears twice in the root (*e.g.*, \*kuku → guku)

#### 25.1.1.5 Sam

**25.1.1.5.1 Proto-Sam to Amu** *Pogostick Man*, from Nurse, Derek (1985), “Dentality, Areal Features, and Phonological Change in Northeastern Bantu”. In *Studies of African Linguistics* 16(3):243 – 279

*NB: Due to the source, only changes creating dental consonants are considered here.*

ntç tç → (ṇ)ṭ<sup>h</sup> ṭ

{ndj,nz} → ṇḍ

**25.1.1.5.2 Proto-Sam to Bajuni** *Pogostick Man*, from Nurse, Derek (1985), “Dentality, Areal Features, and Phonological Change in Northeastern Bantu”. In *Studies of African Linguistics* 16(3):243 – 279

*NB: Due to the source, only changes creating dental consonants are considered here.*

ntç tç → (ṇ)ṭ<sup>h</sup> ṭ

{ndj,nz} jz → ṇḍ ṇ ð

**25.1.1.5.3 Proto-Sam to Mwiini** *Pogostick Man*, from Nurse, Derek (1985), “Dentality, Areal Features, and Phonological Change in Northeastern Bantu”. In *Studies of African Linguistics* 16(3):243 – 279

*NB: Due to the source, only a few changes, mostly concerning creating dental consonants, are considered here.*

ntç tç → (ṇ)ṭ<sup>h</sup> ṭ

ndj → ṇḍ

j → {ɲ,ṇ}

**25.1.1.5.4 Proto-Sam to Siu-Pate** *Pogostick Man*, from Nurse, Derek (1985), “Dentality, Areal Features, and Phonological Change in Northeastern Bantu”. In *Studies of African Linguistics* 16(3):243 – 279



*NB: Due to the source, only changes creating dental consonants are considered here.*

$nt\zeta \ t\zeta \rightarrow (\underset{\sim}{n})\underset{\sim}{t}^h \underset{\sim}{t}$   
 $\{ndj,nz\} \ z \rightarrow \underset{\sim}{n}\underset{\sim}{d} \ \tilde{o}$

**25.1.1.5.5 Proto-Sam to Proto-Aweera** *Pogostick Man*, from Nurse, Derek (1985), “Dentality, Areal Features, and Phonological Change in Northeastern Bantu”. In *Studies of African Linguistics* 16(3):243 – 279

*NB: Due to the source, only a few changes are considered here.*

$nz \ z \ c \rightarrow \underset{\sim}{n}\underset{\sim}{d} \ \underset{\sim}{j}$

**25.1.1.5.6 Proto-Sam to Lower Pokomo** *Pogostick Man*, from Nurse, Derek (1985), “Dentality, Areal Features, and Phonological Change in Northeastern Bantu”. In *Studies of African Linguistics* 16(3):243 – 279

*NB: Due to the source, only a change creating a dental consonant is considered here.*

$l \rightarrow \underset{\sim}{d}$

**25.1.1.6 Proto-Bantu to Sebirwa** *Pogostick Man*, from Chebanne, A. (2000), “The Sebirwa language: a synchronic and diachronic account”. *Pula: Botswana Journal of African Studies* 14(2)

$i \ u \ VS \rightarrow j \ w \ A \ / \ _V[+high \ +ATR]$   
 $S \rightarrow S^h \rightarrow A^h$   
 $V[+high \ +ATR] \rightarrow V[+high \ -ATR]$   
 $NC \rightarrow C[-voiced] \ / \ \#_- \text{ (in nouns)}$   
 $NC \rightarrow N[+same \ POA]C \ / \ \#_- \text{ (in verbs)}$   
 $t \ d \ l \rightarrow \{t,t^j\} \ \{d,d^j\} \ \{l,l^j,\lambda\}$  (The paper is a bit unclear as to which is meant, as the transcription and the textual aspects of the paper seem to disagree here)  
 $p \ t \ d \ c \ \underset{\sim}{j} \ k \ g \rightarrow \underset{\sim}{\phi} \ \underset{\sim}{r} \ \{d,l\} \ t^h \ \emptyset \ h \ \{\emptyset,g\}$   
 $\emptyset \rightarrow g \ / \ \#n\_V \text{ (in verbs)}$   
 $l \rightarrow d \ / \ n\_$

**25.1.1.7 Proto-Bantu to Tswana** *Whimemsz*, from Creissels, Dennis (1999), “Remarks on the Sound Correspondences between Proto-Bantu and Tswana (S.31), with Particular Attention to Problems Involving \*j (or \*y), \*j and Sequences \*NC”. *Bantu Historical*

*Linguistics: Theoretical and Empirical Perspectives*, ed. Jean-Marie Hombert and Larry M. Hyman

$\{p, t, t_f, k\} \{mp, nt, nt_f, nk\} \{(m)b, (n)d, (n)d_3, (n)g\} \{m, n\} \rightarrow s \text{ ts}^h \text{ ts } n / \_i V$   
 $\{t_f, k\} \{nt_f, nk, r\} \{nd_3, ng\} mp \text{ mb } p \text{ b } \{d, l\} m \text{ n} \rightarrow s \text{ ts}^h \text{ ts } t_f^h(w) \text{ t}_f(w) \text{ f}(w) \text{ d}_3(w) \text{ d}_3 \text{ } \eta w$   
 $n / \_ \{i, e\} V$   
 $\{p, t, t_f, k\} \{mp, nt, nt_f, nk\} \{(m)b, (n)d, (n)d_3, (n)g\} \{m, n, n\} \rightarrow sw \text{ ts}^h w \text{ tsw } \eta w / \_i V$   
 $mp \text{ mb } p \text{ b } m \rightarrow t_f^h(w) \text{ t}_f(w) \text{ f}(w) \text{ d}_3(w) \text{ } \eta w / \_ \{u, o\} V$   
 “In these cases, the initial vowel of the sequence drops following the consonant change”;  
 Whimemsz doesn’t specify if all  $V_1 V_2$  sequences drop the  $V_1$   
 $\{t_f, k\} \{nt_f, nk\} \{nd_3, ng\} \rightarrow s \text{ ts}^h \text{ ts} / \_ \{i, e\}$   
 $nk \text{ k} \rightarrow k^h \text{ h} / \_ u$   
 $mp \text{ nt } nt_f \text{ nk } mp \text{ nd } nd_3 \text{ ng} \rightarrow p^h \text{ t}^h \text{ t}_f^h \text{ q}^h \text{ p } t \text{ t}_f \text{ k}$   
 $p \text{ t } t_f \text{ k } \{d_3, g\} n \rightarrow h \text{ r } t_f^h \text{ } \chi \text{ } \emptyset \text{ n}$

#### 25.1.1.8 Usagara-Ugogo

**25.1.1.8.1 Proto-Usagara-Ugogo to Dzalamo** *Pogostick Man*, from Johnston, Sir Harry Hamilton (1919), *A Comparative Study of the Bantu and Semi-Bantu Languages*

$n\{t^j, d^j\} \rightarrow n / \_ i$   
 $d^j \rightarrow d_3 / \# \_$  (not sure if  $t \rightarrow t_f$  here)  
 $d^j \rightarrow z$   
 $S[- \text{ voice}] \rightarrow h / N\_V(N)CV\#$  (this is sort of a guess at the conditioning; a few voiceless stops seem not to have lenited)  
 $g \rightarrow dz / \# N\_i ?$   
 $w\epsilon \rightarrow \text{ } \text{ } / \_ \# ?$

**25.1.1.8.2 Proto-Usagara-Ugogo to Gogo** *Pogostick Man*, from Johnston, Sir Harry Hamilton (1919), *A Comparative Study of the Bantu and Semi-Bantu Languages*

$C[- \text{ voice}] \rightarrow C[+ \text{ voice}] / N\_$   
 $d^j \rightarrow z / n\_$   
 $t^j d^j \rightarrow ts? \text{ dz}$   
 $b \rightarrow \emptyset / \_ v$   
 $k \rightarrow t_f / \_ i$  (presumably  $g \rightarrow d_3$  in these conditions too)  
 $g \rightarrow z / \# N\_i ?$   
 $r \rightarrow l$   
 $mj \rightarrow n (/ \# \_ ?) ?$   
 $\epsilon \rightarrow a / w\_ \# ?$

**25.1.1.8.3 Proto-Usagara-Ugogo to Irangi** *Pogostick Man*, from Johnston, Sir Harry Hamilton (1919), *A Comparative Study of the Bantu and Semi-Bantu Languages*

$g \rightarrow \emptyset / V\_V$   
 $n\{t^j, d^j\} \rightarrow n / \#\_$   
 $t^j d^j \rightarrow t^f d^z / n\_$   
 $b \rightarrow \emptyset / \_v$   
 $V \rightarrow \emptyset / V\_ \#$   
 $z \rightarrow r / V\_V$   
 $v \rightarrow b / \#m\_$   
 $u \rightarrow w / \_V$

**25.1.1.8.4 Proto-Usagara-Ugogo to Kaguru** *Pogostick Man*, from Johnston, Sir Harry Hamilton (1919), *A Comparative Study of the Bantu and Semi-Bantu Languages*

$S[- \text{voice}] \rightarrow S[+ \text{voice}] / N\_$   
 $k \rightarrow x / \{N, V\}\_V$   
 $t^j d^j \rightarrow t^f d^z / n\_$   
 $d^j \rightarrow d / \#\_ ?$   
 $t^j d^j \rightarrow s z$   
 $b \rightarrow \emptyset / \_v$   
 $g \rightarrow j / E\_E$   
 $in \rightarrow n / \$\_V$

**25.1.1.8.5 Proto-Usagara-Ugogo to Kami** *Pogostick Man*, from Johnston, Sir Harry Hamilton (1919), *A Comparative Study of the Bantu and Semi-Bantu Languages*

$n\{t^j, d^j\} \rightarrow n / \#\_$   
 $d^j \rightarrow z / n\_$   
 $t^j d^j \rightarrow ts dz$   
 $S[- \text{voice}] \rightarrow h / N\_V(N)CV\#$   
 $f \rightarrow v / N\_$   
 $k \rightarrow t^f / \#\_V$

Looks like some metathesis might have happened; Kami has *twaga* where the others have *tagwa*

$g \rightarrow z / \#N.i ?$   
 $in \rightarrow n / \$\_V$   
 $u \rightarrow \text{ɔ} / \_ \#$   
 $wɛ \rightarrow \text{ɔ} / \_ \# ?$

**25.1.1.8.6 Proto-Usagara-Ugogo to Southern Sagara** *Pogostick Man*, from Johnston, Sir Harry Hamilton (1919), *A Comparative Study of the Bantu and Semi-Bantu Languages*

$t^j d^j \rightarrow s \text{ (d)z} / n\_$   
 $t^j d^j \rightarrow ts? dz$   
 $s \rightarrow h / \text{when the first consonant in the root}$   
 $f \rightarrow v / N\_$   
 $b \rightarrow \emptyset / \_v$   
 $b \rightarrow w / V\_V$

#### 25.1.1.9 Usambara

**25.1.1.9.1 Proto-Usambara to Bondei** *Pogostick Man*, from Johnston, Sir Harry Hamilton (1919), *A Comparative Study of the Bantu and Semi-Bantu Languages*

$\int \rightarrow s / \_w$   
 $w \rightarrow \emptyset / u\_V\#$   
 $g \rightarrow j / E\_E$   
 $\int \rightarrow s / \_V\#$   
 $ts dz \rightarrow s z / ! N\_$   
 $l_1 l_2 \rightarrow l \emptyset / V\_V$  (I'm assuming one of these is \*r and one is \*l, but I'm not sure which one's which)  
 $r \rightarrow l$

**25.1.1.9.2 Proto-Usambara to Kimrima** *Pogostick Man*, from Johnston, Sir Harry Hamilton (1919), *A Comparative Study of the Bantu and Semi-Bantu Languages*

$u \rightarrow w / \#C\_V$   
 $l \rightarrow r$   
 $ts dz \rightarrow tʃ dʒ / \_i$   
 $p \rightarrow h / V\_V$   
 $l \dots l \rightarrow l \dots \emptyset$

**25.1.1.9.3 Proto-Usambara to Shambara** *Pogostick Man*, from Johnston, Sir Harry Hamilton (1919), *A Comparative Study of the Bantu and Semi-Bantu Languages*

$r \rightarrow l$   
 $\emptyset \rightarrow u / \#m\_ \$ ! \_w$   
 $w \rightarrow \emptyset / u\_V\#$

$s \rightarrow \int / \_i$   
 $s \rightarrow \int / i\_ ! \_ \#$   
 $g \rightarrow \gamma / V\_V$   
 $ts \ dz \rightarrow t\int \ d\int / N\_$   
 $ts \ dz \rightarrow s \ z$   
 $m \rightarrow \eta / \_w$

**25.1.1.9.4 Proto-Usambara to Zigula** *Pogostick Man*, from Johnston, Sir Harry Hamilton (1919), *A Comparative Study of the Bantu and Semi-Bantu Languages*

$\int \rightarrow s$   
 $\textcircled{v} \rightarrow u / \_Ci$   
 $u \rightarrow w / \#C\_V$   
 $\emptyset \rightarrow b / m\_w$   
 $t \rightarrow l / V\_V\#$

#### 25.1.1.10 Wunyamwezi

**25.1.1.10.1 Proto-Wunyamwezi to Kinyaturu** *Pogostick Man*, from Johnston, Sir Harry Hamilton (1919), *A Comparative Study of the Bantu and Semi-Bantu Languages*

$b \rightarrow v / V\_V$   
 $z \rightarrow d / n\_$   
 $Vr \rightarrow V:$   
 $n \rightarrow \emptyset / \_{\{t^j, d^j, s\}}$   
 $k \rightarrow j / N\_E ?$   
 $k \ g \rightarrow x \ \gamma / V\_E$   
 $k \rightarrow g / V\_V\#$   
 $S[- \text{voice}] \rightarrow S[+ \text{voice}] / N\_$   
 $t^j \ d^j \rightarrow t \ d / \_i ?$   
 $t^j \ d^j \rightarrow s \ z ?$   
 $s \rightarrow h / V\_V ?$   
 $o \rightarrow a / \#\_ ?$   
 $o \rightarrow w\epsilon / \_ \# ?$

**25.1.1.10.2 Proto-Wunyamwezi to Kisukuma** *Pogostick Man*, from Johnston, Sir Harry Hamilton (1919), *A Comparative Study of the Bantu and Semi-Bantu Languages*

$\text{ɲ} \rightarrow n$   
 $w \rightarrow \emptyset / b\_$

$s \rightarrow z / V\$V$   
 $b\ d \rightarrow w\ z / V\_V$   
 $si \rightarrow \int / \_V$   
 $t^j\ d^j \rightarrow t^f\ d_3 / \_i ?$   
 $t^j\ d^j \rightarrow ts\ dz$   
 $n \rightarrow \emptyset / \_t^f$   
 $g \rightarrow z / V\_E$   
 $g \rightarrow \emptyset / \eta\_w$   
 $S[-\text{voice}] \rightarrow h / N\_$   
 $p \rightarrow h / V\_V\#$   
 $V \rightarrow \emptyset / V\_ \#$   
 $n \rightarrow \emptyset / \_s$   
 $t \rightarrow s / \_i$   
 $e \rightarrow i / \_ \#$

**25.1.1.10.3 Proto-Wunyamwezi to East Nyamwezi** *Pogostick Man*, from Johnston, Sir Harry Hamilton (1919), *A Comparative Study of the Bantu and Semi-Bantu Languages*

$\mu \rightarrow n$   
 $p \rightarrow h$   
 $b\ d\ z \rightarrow v\ z\ l / V\_V$   
 $S[-\text{voice}] \rightarrow h / N\_$   
 $\{t^j, d^j\} \rightarrow z / n\_$   
 $t^j\ d^j \rightarrow t^f\ d_3$   
 $g \rightarrow d_3 / V\_i\#$   
 $t \rightarrow s / \_i$   
 $t \rightarrow l / V\$V$   
 $w \rightarrow v$   
 $n \rightarrow \emptyset / \_s$   
 $S[-\text{voice}] \rightarrow h / \#\_$   
 $a \rightarrow \varepsilon / \_ (C) \varepsilon$   
 $p\ k \rightarrow h\ g / V\_V\#$   
 $u \rightarrow w / \_V\#$   
 $k \rightarrow g / \#kV\_V$  (? dissimilation?)  
 $\{\varepsilon, e\} \rightarrow i / \_ \#$

**25.1.1.10.4 Proto-Wunyamwezi to West Nyamwezi** *Pogostick Man*, from Johnston, Sir Harry Hamilton (1919), *A Comparative Study of the Bantu and Semi-Bantu Languages*

$p \rightarrow f ?$   
 $f \rightarrow v / \#_-$   
 $\int \rightarrow s$   
 $n \rightarrow \emptyset / \_C[+ \text{fricative}]$   
 $\{t^j, d^j\} \rightarrow z / n_-$   
 $d^j \rightarrow j ?$   
 $k \rightarrow g / \#kV\_V (? \text{ dissimilation?})$   
 $u \ i \rightarrow w \ j / \_V$   
 $l \rightarrow n / V\_V\#$

**25.1.1.10.5 Proto-Wunyamwezi to Shisumbwa** *Pogostick Man*, from Johnston, Sir Harry Hamilton (1919), *A Comparative Study of the Bantu and Semi-Bantu Languages*

$\text{ɲ} \rightarrow n$   
 $s \rightarrow z / V\$\_V$   
 $p \rightarrow f$   
 $l \rightarrow r$   
 $n \rightarrow \emptyset / \_s$   
 $\{t^j, d^j\} \rightarrow z / n_-$   
 $s \rightarrow r / V\_V\#$   
 $si \rightarrow \int / \_V$   
 $\{d, s\} \rightarrow z / V\_V$   
 $t \rightarrow \{t^f, s\} / \_i$   
 $g \rightarrow z / V\_E$   
 $k \rightarrow \int / \_i$   
 $k \rightarrow g / \#kV\_V (? \text{ dissimilation?})$   
 $f \rightarrow h / V\_V\#$   
 $u \rightarrow w / \_V\#$   
 $e \rightarrow \varepsilon / \_ \#$

#### **25.1.1.11 Zangian**

**25.1.1.11.1 Proto-Zangian to Kiamu** *Pogostick Man*, from Johnston, Sir Harry Hamilton (1919), *A Comparative Study of the Bantu and Semi-Bantu Languages*

$t^j \ d^j \rightarrow t \ \{d, j\}$   
 $t^j \rightarrow t^f$   
 $z \rightarrow \theta / \_i$   
 $d^j \rightarrow \emptyset / \#_-$

$b \rightarrow w / V\_V$   
 $r \rightarrow \emptyset / V\_V$   
 $wu \rightarrow \emptyset / V\_ \#$   
 $V \rightarrow \emptyset / V\_ \#$   
 $\text{ɲ} \rightarrow n / \_w$   
 $g \rightarrow \emptyset / \#\_$

**25.1.1.11.2 Proto-Zangian to Kimvita** *Pogostick Man*, from Johnston, Sir Harry Hamilton (1919), *A Comparative Study of the Bantu and Semi-Bantu Languages*

$Vr \rightarrow V\text{:} / \_V$   
 $t^j d^j \rightarrow \{t, t^f\} \{d, d_3\}$   
 $\{r, j\} \rightarrow \emptyset / V\_V$   
 $b \rightarrow w / V\_V$   
 $wu \rightarrow \text{ɔ} / V\_ \#$   
 $\text{ɲ} \rightarrow n / \_w$

**25.1.1.11.3 Proto-Zangian to Kitikuu** *Pogostick Man*, from Johnston, Sir Harry Hamilton (1919), *A Comparative Study of the Bantu and Semi-Bantu Languages*

$\text{ɲ} \rightarrow n$   
 $w b \rightarrow v w / V\_V$   
 $t d \rightarrow t^f d_3 / m\_$   
 $N \rightarrow \emptyset / \#V\_S$   
 $tj \rightarrow t^f$   
 $t^j d^j \rightarrow t? j$

**25.1.1.11.4 Proto-Zangian to Kiwibu** *Pogostick Man*, from Johnston, Sir Harry Hamilton (1919), *A Comparative Study of the Bantu and Semi-Bantu Languages*

$l \rightarrow r$   
 $w \rightarrow \{w, v\}$   
 $b \rightarrow w / V\_V$   
 $p \rightarrow \emptyset / \#m\_$   
 $tj \rightarrow t^f$   
 $s \rightarrow \int / \_i$

**25.1.1.11.5 Proto-Zangian to Shiangazija** *Pogostick Man & jmcd*, the former citing Johnston, Sir Harry Hamilton (1919), *A Comparative Study of the Bantu and Semi-Bantu Languages*



w → b / \$ \_

ʃ → s

tʃ dʃ → s z / n \_

tʃ dʃ → ts dz

nd → ɲdʒ

{w,r} → Ø / V \_ V #

t → r / V \_ V #

ɲ → n / \_w

tʃ → ʃ / # \_ (assuming *fuma* “iron” isn’t a loan)

k lenites word-initially before i but the result varies; any of [x ɕ ʃ] seem typical

There seems to be sporadic voicing of the initial consonant of either the prefix or the root;  
might be variation or listener error

**25.1.1.11.6 Proto-Zangian to Swahili** *Pogostick Man*, from Johnston, Sir Harry Hamilton (1919), *A Comparative Study of the Bantu and Semi-Bantu Languages*

tʃ dʃ → tʃ dʒ

wu → ɔ / V \_ #

Looks like certain prefixes may get an epenthetic vowel sometimes (typically #m \_), but there’s no obvious conditioning

There seems to be a few cases of initial voicing for either words or roots

## 25.1.2 Pre-Proto-Bantu to Proto-Manenguba

*Pogostick Man*, from Hedinger, Robert (1987), *The Manenguba Languages (Bantu A.15, Mbo Cluster) of Cameroon*

*NB: In Hedinger’s notation, an apostrophe indicates a lenis consonant in Pre-Proto-Bantu*

\*ɟ may have turned into one of {c,(n)z}?

’p ’t ’d/d₂ c {’ɟ} ’k g → f l ɟ s Ø {w,Ø} {k,w} / in C₁ position

N[+ lenis] → N[- lenis] / in C₁ position

p t ’t {’d,d₂} c k ’k → b d l {l,Ø} ɟ g Ø / in C₂ position

’m m ’n n {’ɲ,ɲ} ɲ → m {ᵐb,m} n {ᵐd,n} ɲ {ᵐg,ɲ} / in C₂ position

{u,o} {ɛ,e,i} → w j / C\_a in noun roots

{u,o} {ɛ,e,i} → w j / C\_(a) in verb roots

{u,o} {ɛ,e,i} → w j / C\_\$V in noun class prefixes

f → h (perhaps not in all languages?)

## 25.2 Proto-Potou-Akanic-Bantu to Proto-Potou-Akanic

*Pogostick Man*, from Stewart, John M. (2002), “The potential of proto-Potou-Akanic-Bantu as a pilot Proto-Niger-Congo, and the reconstructions updated”. JALL 23:197 – 224

$C \rightarrow J[+nas] / \#(C)V[+nas]_-$   
 $\text{u}\tilde{\text{u}} \rightarrow \text{l}\tilde{\text{l}} / \#(C)V_-$   
 $C \rightarrow J / \#(C)V_-$   
 $\text{i}(C\text{i}) \rightarrow \text{e}(C\text{i}) / \text{t}_-;$  “vowel nasalizations are retained either way on each”  
 $\text{ɟ f j c g}^w \rightarrow \text{c ɟ f t ɟp}$   
 $(N)V_1[+mid +nas](\tilde{\text{l}}) \rightarrow CV[-nas]\text{n}$   
 $V[+nas](\tilde{\text{u}}, \tilde{\text{l}}) \rightarrow V[-nas](\text{m}, \text{n}) / \#J[+voiced]_-$

### 25.2.1 Proto-Potou-Akanic to Proto-Akanic

*Pogostick Man*, from Stewart, John M. (2002), “The potential of proto-Potou-Akanic-Bantu as a pilot Proto-Niger-Congo, and the reconstructions updated”. JALL 23:197 – 224

$V[+high +ATR](C(V[+high -ATR])) \rightarrow \#(C)V[-high +ATR](CV[+high +ATR]) / \#J[+dorsal -voiced]_-$   
 $\varepsilon \rightarrow \text{ia} / \#(C)_-$   
 $R[-voiced] R[+voiced] W \rightarrow Z[-voiced] O[-voiced] F / \#_-$   
 $\text{u}\tilde{\text{u}} \tilde{\text{u}} \tilde{\text{w}} \rightarrow \text{h} \tilde{\text{h}} \tilde{\text{h}}^w / \#_-$   
 $\tilde{\text{h}} \text{h}^w \rightarrow \text{ɕ} \text{ɕ}^w$   
 $\text{h} \rightarrow \text{j}\tilde{\text{u}} / \#_-\tilde{\text{a}}$   
 $\text{h} \rightarrow \text{w} / \#_-$   
 $\text{t} \rightarrow \text{c} / \#_-\text{V}[-nas]$

**25.2.1.1 Proto-Akanic to Akan** *Pogostick Man*, from Stewart, John M. (2002), “The potential of proto-Potou-Akanic-Bantu as a pilot Proto-Niger-Congo, and the reconstructions updated”. JALL 23:197 – 224

$\text{l}\tilde{\text{l}} \rightarrow \text{j}\tilde{\text{j}} / \#_-$   
 $C[+dorsal] \rightarrow C^w / _V[+round]$   
 $V \rightarrow V[-round] / \#C[+dorsal]_-\text{C}[-labial]$   
 $\text{jV}[+nas] \rightarrow \text{jV}[-nas] / \#_-$   
 $\text{f} \rightarrow \text{j} / \#_-\text{V}[-nas]$   
 $\text{f} \rightarrow \tilde{\text{j}} / \#_-\text{V}[+nas]$   
 $\{\text{p}, \tilde{\text{v}}\} \text{c} \text{kp} \rightarrow \text{f s p} / \#_-$   
 $\text{n} \rightarrow \text{ŋ} / \#(C)V_-$

$N \rightarrow S$  (I'm not sure what's going on here in the paper, but here it is presented anyway for your enjoyment)

$V \rightarrow \emptyset / \#(C)VC[-\text{coronal}]_-$

$v\ l \rightarrow w\ \text{ɹ} / \#(C)V_-$

$V[+\text{high}] \rightarrow V[+\text{nas}] / \#(C)_-N$

$i \rightarrow \emptyset / \#C\_a$

$\tilde{i} \rightarrow \emptyset / \#\_a$

## 26 Oto-Manguean

Rensch (1977) reconstructs Proto-Oto-Manguean as having had the following phonemic inventory:

	Alveolar	Palatal	Velar	Laryngeal
Nasal	n			
Plosive	t		k k <sup>w</sup>	ʔ
Fricative	s			h
Liquid		Y	w	

  

	Front	Back
High	i	u
Low	e	a

Vowels could have had one of four tones, the first of which is denoted as a high tone.

(From Rensch, Calvin R. (1977), “Classification of the Otomanguean Languages and the Position of Tlapanec”. *Summer Institute of Linguistics Publications in Linguistics* 55:53 – 108)

### 26.1 Chatino

Unless otherwise noted specifically, for Chatino correspondences, assume vowels may be either long or short.

#### 26.1.1 Proto-Chatino to Papabuco Chatino

*Pogostick Man*, from Upson, B.W., and Robert E. Longacre (1965), “Proto-Chatino Phonology. *International Journal of American Linguistics* 31(4):312 – 322

$t \rightarrow r$  /  $_{-}\{u,\tilde{e}\}$  when unstressed  
 $t \rightarrow r$  /  $_{-}a$   
 $t \rightarrow tʃ$  /  $_{-}\{e,i\}$   
 $t \rightarrow ʃ$  /  $i_{-}$   
 $t \rightarrow s$  /  $!$  “in cluster with  $\tilde{s}$ ” (presumably  $[ʃ]$ )  
 $t^j \rightarrow s$  /  $_{-}u$   
 $t^j \rightarrow tʃ$  / else  
 $k \rightarrow g$  /  $a_{-}a$   
 $k^w \rightarrow r$  /  $\#_{-}ek$   
 $k^w \rightarrow b$  / else

$\text{ʔ} \rightarrow \emptyset$  (?)  
 $\{\text{c}, \text{tʃ}\} \rightarrow \text{ʃ}$   
 $\text{s} \rightarrow \text{tʃ}$  (in certain cases? Not a lot of data available on this one)  
 $\text{l} \rightarrow \{\text{ɫ}, \text{n}\}$  “under obscure conditions”  
 $\text{n} \rightarrow \text{n}^j$   
 $\text{n}^j \rightarrow \text{l} / \# \_i$   
 $\text{h} \rightarrow \text{d} / \_a$  (... lolwut)  
 $\text{h} \rightarrow \text{t} / \text{else}$  (... again, lolwut)  
 $\text{j} \rightarrow \text{n}^j$  “under obscure conditions (PC morphophonemics?)”  
 $\text{i} \rightarrow \text{e} / \text{tʃ} \_$   
 $\tilde{\text{i}} \rightarrow \text{i}$   
 $\text{e} \rightarrow \text{a} / \_ \{\text{l}, \text{ʔn}\}$  when unstressed  
 $\text{e} \rightarrow \text{i} / \{\text{k}^j, \text{nt}\} \_$  when stressed  
 $\text{e} \rightarrow \text{i} /$  in a few data sets “where obscure morphological developments (in the ultimate or penultimate syllable) have resulted in regressive assimilation of vowel quality”  
 $\tilde{\text{e}} \rightarrow \text{a} / \text{t}^j \_$   
 $\tilde{\text{e}} \rightarrow \text{i} / \text{h} \_$   
 $\tilde{\text{e}} \rightarrow \text{i} /$  in U[+long -stress]  
 $\tilde{\text{e}} \rightarrow \text{e} / \text{else}$   
 $\text{a} \rightarrow \{\text{i}, \text{e}\}$  “under special conditions”

### 26.1.2 Proto-Chatino to Tataltepec Chatino

*Pogostick Man*, from Upson, B.W., and Robert E. Longacre (1965), “Proto-Chatino Phonology. International Journal of American Linguistics 31(4):312 – 322

$\text{t} \rightarrow \text{t}^j / \_ \tilde{\text{o}}$  (... again... lolwut)  
 $\text{t} \rightarrow \text{tʃ} / \# \_i \text{ç}$   
 $\text{t}^j \rightarrow \text{tʃ} / \_i$  [-long -stress]  
 $\text{t}^j \rightarrow \text{t} / \_a$   
 $\text{k}^j \rightarrow \text{t}^j$   
 $\text{c} \rightarrow \text{tʃ} / \text{i} \_$   
 $\text{tʃ} \rightarrow \text{c}$   
 $\text{s} \rightarrow \text{ʃ} / \text{E} \_$  (? Not a lot of data available on this one)  
 $\text{ʃ} \rightarrow \text{s}$   
 $\text{l n} \rightarrow \text{ɫ n}^j / \text{e} \_$  in U[-long -stress]  
 $\text{ç} \rightarrow \text{ʔ}$  (? Not sure if I’m reading the phone(me)s right on this one)  
 $\text{e} \rightarrow \text{a} / \_ \text{ʔ}$  in U[-stress]  
 $\text{et el en} \rightarrow \text{it}^j \text{el}^j \text{en}^j$   
 $\text{e} \rightarrow \text{i} / \_j$

$\varepsilon \rightarrow \tilde{i} / S\_ \# \varepsilon \rightarrow i / n\_ \#$   
 $\varepsilon \rightarrow e / \_? \#$ , in monosyllables

### 26.1.3 Proto-Chatino to Yaitepec Chatino

*Pogostick Man*, from Upson, B.W., and Robert E. Longacre (1965), “Proto-Chatino Phonology. International Journal of American Linguistics 31(4):312 – 322

$t^j \rightarrow tj$   
 Some consonant disharmony involving reflexes of  $*k$ ,  $*k^w$   
 $k \rightarrow tʃ / \_Ek^{(w)}$   
 $k^j \rightarrow k / \_ \{a, \tilde{a}\}$   
 $k^j \rightarrow kj / \text{else}$   
 $k^w \rightarrow w / \_e:j$   
 $k^w \rightarrow w / \_ek$   
 $k^w \rightarrow m / ku\_ (\text{medial})$   
 $k^w \rightarrow kw / \text{else}$   
 $ts \rightarrow tʃ / \#\_ \{a, \tilde{o}\} ?$   
 $ts \rightarrow tʃ / V[+high]\_$   
 $ts \rightarrow ʃ / \#\_ \tilde{e}$   
 $c \rightarrow ts$   
 $tʃ \rightarrow ts / a\_$   
 $s \rightarrow ʃ / V\_V$   
 $s \rightarrow ʃ / \text{if } /l/ \text{ is present in the same syllable}$   
 $s \rightarrow tʃ / \#\_ a$   
 $ʃ \rightarrow s / \_ \{ik, e, \tilde{i}, \tilde{e}\}$   
 $ʃ \rightarrow ts / \_ i, \text{ in monosyllables}$   
 $l^j \rightarrow l / \#\_ \text{ in } U[-\text{long } -\text{stress}]$   
 $l^j \rightarrow lj / \text{else}$   
 $n^j \rightarrow j / \_ \tilde{a} (\text{with some exceptions?})$   
 $n^j \rightarrow nj / \text{else}$   
 $h \rightarrow ? / \_ \tilde{a}$   
 $\varsigma \rightarrow hj$   
 $h^w \rightarrow m$   
 $\tilde{e} \rightarrow \tilde{i} / \{t, h\}\_ \#$   
 $\tilde{e} \rightarrow \tilde{i} / \_ ? \#$   
 $\tilde{e} \rightarrow \tilde{i} / ?\_ \#$  “in one case”

#### 26.1.4 Proto-Chatino to Zenzontepec Chatino

*Pogostick Man*, from Upson, B.W., and Robert E. Longacre (1965), “Proto-Chatino Phonology. *International Journal of American Linguistics* 31(4):312 – 322

*NB: This set is likely very incomplete.*

$k^j \rightarrow tʃ$   
 $e \rightarrow i / l\_ \text{ when unstressed}$   
 $e \rightarrow i / k^j\_ \text{ when stressed}$

#### 26.2 Proto-Oto-Manguean to Tlapanec

*Pogostick Man*, from Rensch, Calvin R. (1977), “Classification of the Otomanguean Languages and the Position of Tlapanec”. *Summer Institute of Linguistics Publications in Linguistics* 55:53 – 108

*NB: Y here refers to some sort of palatalizing element; H, to some laryngeal.*

$k^w \rightarrow p$   
 $n \rightarrow \{n, \eta\}$  (the latter “under obscure conditions”)  
 $j \rightarrow l(V)$   
 $Yt Ynt Ys \rightarrow tʃ dʒ ʃ$   
 $\{ns, nt\} nk^w nj nw \rightarrow (n)d (m)b r m$   
 $nk \rightarrow \{g, \eta\}$  (the latter “under obscure conditions”)  
 $\{in, en\} an \rightarrow a u$   
 $\{iHn, eHn, aHn\} uHn \rightarrow \tilde{a} \tilde{u}$   
“No clearly distinct reflex of  $**un$  has been identified”; the author speculates that this most likely turned into  $/u/$ , but does not rule out  $/o/$  as a reflex  
 $e \rightarrow i$   
 $? \rightarrow \emptyset / \#\_$   
 $h \rightarrow ʃ / \_C[-\text{voice}]$  (? “both  $h$  and  $\check{s}$  occur before nasals, so it is possible that  $\check{s}$  has a separate source in Proto Otomanguean”)  
 $h \rightarrow CV?V / \_ \#$  (or possibly in just any final syllable?)

## 27 Penutian

### 27.1 Utian

Callaghan (1983, 1988) reconstructs the following inventory for Proto-Utian:

	Bilabial	Coronal	Retroflex	Palatal	Velar	Glottal
Nasal	m	n				
Plosive	p	t̪	ʈ	tʃ	k kʷ	ʔ
Fricative		s̪	ʂ	ʃ		h
Resonant		l r	j	w		

  

	Front	Central	Back
High	i i:	ɨ:	u u:
Mid	e e:		o o:
Low		a a:	

(From Callaghan, Catherine A. (1983), “Proto-Utian Derivational Verb Morphology”. *Proceedings of the 1982 Conference on Far Western American Indian Languages, Occasional Papers on Linguistics Number 11*; and Callaghan, Catherine A. (1988), “Proto-Utian Stems” in *In Honor of Mary Haas*)

#### 27.1.1 Proto-Utian to Proto-Costanoan (Ohlone)

*CatDoom*, from Callaghan, Catherine A. (1983), “Proto-Utian Derivational Verb Morphology”. *Proceedings of the 1982 Conference on Far Western American Indian Languages, Occasional Papers on Linguistics Number 11*; and Callaghan, Catherine A. (1988), “Proto-Utian Stems” in *In Honor of Mary Haas*

$\int \rightarrow h$   
 $i\$Ci \rightarrow e\$Ce / \_C ! \_r$   
 $i\$Ci \rightarrow e\$Ce / \_C ! \_r$   
 $e \rightarrow i / \_ (C \dots) u$   
 $k \rightarrow \mathfrak{s} / \_ i$   
 $k \rightarrow \mathfrak{s} / i \_$   
 $k \rightarrow \mathfrak{s} / \_ \{i, u\}$   
 $k \rightarrow \mathfrak{s} / \{i, u\} \_$   
 $l \rightarrow r / ! \_ \$ \text{ or } o \_$   
 $tʃ \rightarrow \mathfrak{s} / \_ \#$   
 $o \rightarrow a / ! o(C \dots) \_ \text{ or } \_ (C \dots) \{o, i\}$   
 $i \rightarrow e / CC \_ \#$



i → {e,i} / CC\_  
i → i

**27.1.1.1 Proto-Costanoan to Chochenyo** *CatDoom*, from Callaghan, Catherine A. (1983), “Proto-Utian Derivational Verb Morphology”. *Proceedings of the 1982 Conference on Far Western American Indian Languages, Occasional Papers on Linguistics Number 11*; and Callaghan, Catherine A. (1988), “Proto-Utian Stems” in *In Honor of Mary Haas*

tʲ ɬ → j ʃ  
kʷ → k / #\_  
kʷ → w / else  
l → r / V\_V  
a → e / il\_  
o → u / -(C...)i

**27.1.1.2 Proto-Utian to Proto-Miwok** *CatDoom*, from Callaghan, Catherine A. (1983), “Proto-Utian Derivational Verb Morphology”. *Proceedings of the 1982 Conference on Far Western American Indian Languages, Occasional Papers on Linguistics Number 11*; and Callaghan, Catherine A. (1988), “Proto-Utian Stems” in *In Honor of Mary Haas*

kʷ ʃ → w ɬ  
t → tʃ / \_e  
t → tʃ / e\_

**27.1.1.2.1 Proto-Miwok to Proto-Western Miwok** *CatDoom*, from Callaghan, Catherine A. (1983), “Proto-Utian Derivational Verb Morphology”. *Proceedings of the 1982 Conference on Far Western American Indian Languages, Occasional Papers on Linguistics Number 11*; and Callaghan, Catherine A. (1988), “Proto-Utian Stems” in *In Honor of Mary Haas*

ɬ → ʃ  
t → tʃ / {a:,o:}\_  
i → {u,i}

**27.1.1.3 Proto-Costanoan to Mutsun** *CatDoom*, from Callaghan, Catherine A. (1983), “Proto-Utian Derivational Verb Morphology”. *Proceedings of the 1982 Conference on Far Western American Indian Languages, Occasional Papers on Linguistics Number 11*; and Callaghan, Catherine A. (1988), “Proto-Utian Stems” in *In Honor of Mary Haas*

$\text{ʂ} \rightarrow \text{ʂ}$   
 $\text{t} \rightarrow \{\text{t}, \text{ts}, \text{tʃ}\} / \_ \{\text{j}, \text{r}\}$   
 $\text{k}^{\text{w}} \rightarrow \text{k} / \# \_$   
 $\text{k}^{\text{w}} \rightarrow \{\text{k}, \text{w}\} / \text{else}$   
 $\text{l} \rightarrow \text{r} / \text{V} \_ \text{V}$   
 $\text{a} \rightarrow \text{e} / \text{il} \_$   
 $\text{o} \rightarrow \text{u} / \_ (\text{C} \dots) \text{i}$

**27.1.1.4 Proto-Costanoan to Rumsen** *CatDoom*, from Callaghan, Catherine A. (1983), “Proto-Utian Derivational Verb Morphology”. *Proceedings of the 1982 Conference on Far Western American Indian Languages, Occasional Papers on Linguistics Number 11*; and Callaghan, Catherine A. (1988), “Proto-Utian Stems” in *In Honor of Mary Haas*

$\text{t}^{\text{j}} \rightarrow \text{tʃ}$   
 $\text{h} \rightarrow \{\text{h}, \text{x}, \text{ʔ}\}$   
 $\text{t} \rightarrow \{\text{t}, \text{tʃ}\} / \{\text{a}, \text{o}\} \_$   
 $\text{t} \rightarrow \{\text{t}, \text{tʃ}\} / \{\text{i}, \text{e}, \text{o}\} \text{ʂ} \_$   
 $\text{t} \rightarrow \{\text{t}, \text{tʃ}\} / \_ \{\text{j}, \text{r}\}$   
 $\text{k}^{\text{w}} \rightarrow \text{k} / \# \_$   
 $\text{k}^{\text{w}} \rightarrow \{\text{k}, \text{w}\} / \text{else}$   
 $\text{l} \rightarrow \text{r} / \text{V} \_ \text{V}$   
 $\text{a} \rightarrow \text{e} / \text{il} \_$   
 $\text{i} \rightarrow \text{e} / \_ \text{C}(\text{C})\text{oC}$   
 $\text{o} \rightarrow \text{u} / \_ (\text{C} \dots) \text{i}$

## 27.2 Wintun

Shepherd (2005) reconstructs the following inventory for Proto-Wintun:

	Bilabial	Alveolar	Palatal	Velar	Uvular	Glottal
Nasal	m	n				
Plosive	p p <sup>h</sup> p' b	t t <sup>h</sup> t' d		k k <sup>h</sup> k' g	q q <sup>h</sup> q'	ʔ
Fricative		s ʃ		x	χ	h
Affricate		tʃ	tʃ <sup>h</sup> tʃ'			
Liquid	w	r l	j			

  

	Front	Central	Back
High	i i:		u u:
Mid	e e:		o o:
Low		a a:	

Shepherd further notes that “PW vowel length before continuants appears to be non-distinctive in many instances”.

(From Shepherd, Alice (2005), “Proto-Wintun”. *UC Publications in Linguistics*. <http://escholarship.org/uc/item/8dq1f3jj>)

### 27.2.1 Proto-Wintuan to Nomlaki

*Pogostick Man*, from Shepherd, Alice (2005), “Proto-Wintun”. *UC Publications in Linguistics*. <http://escholarship.org/uc/item/8dq1f3jj>

$VrV \rightarrow \{V:,M\}$   
 $r \rightarrow j / -\#$   
 $tj^h k^h q^h \{x,\chi\} \rightarrow tj k^{(h)} \{k^h, q^h, \chi\} k^h$

### 27.2.2 Proto-Wintuan to Patwin

*Pogostick Man*, from Shepherd, Alice (2005), “Proto-Wintun”. *UC Publications in Linguistics*. <http://escholarship.org/uc/item/8dq1f3jj>

$tj tj^h tj' \rightarrow t t^h t'$   
 $k^{(h)} k' q^{(h)} q' \rightarrow tj^{(h)} tj' k^h k'$   
 $x \chi \rightarrow s h$

### 27.2.3 Proto-Wintuan to South Patwin

*Pogostick Man*, from Shepherd, Alice (2005), “Proto-Wintun”. *UC Publications in Linguistics*. <http://escholarship.org/uc/item/8dq1f3jj>

$r \rightarrow \{r,j\}$   
 $tj tj^h tj' \rightarrow t t^h t'$   
 $k^{(h)} k' q^{(h)} q' \rightarrow tj^{(h)} tj' k^{(h)} k'$   
 $x \rightarrow s$   
 $\chi \rightarrow \emptyset (?)$

### 27.2.4 Proto-Wintuan to Wintu

*Pogostick Man*, from Shepherd, Alice (2005), “Proto-Wintun”. *UC Publications in Linguistics*. <http://escholarship.org/uc/item/8dq1f3jj>

$tj^h \rightarrow tj k^h q^h \rightarrow k \chi$

## 27.3 Yokutsan

Whistler and Golla (1986) reconstruct the following phonological inventory for Proto-Yokuts:

	Labial	Dental	Retroflex	Palatal	Velar	Glottal
Nasal	m mʔ	n nʔ			ŋ ŋʔ	
Stop	p pʰ pʼ	t tʰ tʼ	ʈ ʈʰ ʈʼ		k kʰ kʼ	ʔ
Affricate		(ts) tsʰ tsʼ				
Fricative		s	ʂ		x	h
Approximant		l lʔ		j jʔ	w wʔ	
		Front	Central	Back		
High		i i:	ɨ ɨ:	u u:		
Mid				o o:		
Low			a a:			

It is further instructive to note some morphophonetic processes in Proto-Yokuts:

- S → Sʰ / \_{C,#} (also holds for affricates)
- Nʔ → Nʔ
- Ø → ʔ / V\_V

(From Whistler, Kenneth W., and Golla, Victor (1986), “Proto-Yokuts Reconsidered”. *International Journal of American Linguistics* Vol. 52, No. 4 (Oct. 1986))

### 27.3.1 Proto-Yokuts to General Yokuts

*CatDoom*, from Whistler, Kenneth W., and Golla, Victor (1986), “Proto-Yokuts Reconsidered”. *International Journal of American Linguistics* Vol. 52, No. 4 (Oct. 1986)

i: ɨ: u: → e: ə: o: (this change sometimes did not occur)

e: ə: → e ə (as a result of ablaut)

o → u / \_Ci

**27.3.1.1 General Yokuts to Buena Vista Yokuts** *CatDoom*, from Whistler, Kenneth W., and Golla, Victor (1986), “Proto-Yokuts Reconsidered”. *International Journal of American Linguistics* Vol. 52, No. 4 (Oct. 1986)

t tʰ tʼ → ts tsʰ tsʼ / #\_ “(in some words, conditioning factors unclear)”

V[+ high] → a / V[+ high]C\_(C)#

tʰ → s / #\_u

**27.3.1.2 Buena Vista Yokuts to Hometwoli** *CatDoom*, from Whistler, Kenneth W., and Golla, Victor (1986), “Proto-Yokuts Reconsidered”. *International Journal of American Linguistics* Vol. 52, No. 4 (Oct. 1986)

$\emptyset \rightarrow h / V(:)_{-}$ , when stressed (only sometimes, “particularly before consonants”)

**27.3.1.3 Buena Vista Yokuts to Tulamni** *CatDoom*, from Whistler, Kenneth W., and Golla, Victor (1986), “Proto-Yokuts Reconsidered”. *International Journal of American Linguistics* Vol. 52, No. 4 (Oct. 1986)

$i(:) \text{ } \text{ə}(:) \rightarrow i(:) \text{ } e(:)$

$V? \rightarrow V: / \text{ stressed}$

## 27.3.2 Buena Vista Yokuts to Proto-Nim-Yokuts

*CatDoom*, from Whistler, Kenneth W., and Golla, Victor (1986), “Proto-Yokuts Reconsidered”. *International Journal of American Linguistics* Vol. 52, No. 4 (Oct. 1986)

$s \rightarrow \int$   
 $ts \text{ } ts^h \text{ } ts' \rightarrow t\int \text{ } t\int^h \text{ } t\int'$

**27.3.2.1 Proto-Nim-Yokuts to Proto-Tule-Kaweah** *CatDoom*, from Whistler, Kenneth W., and Golla, Victor (1986), “Proto-Yokuts Reconsidered”. *International Journal of American Linguistics* Vol. 52, No. 4 (Oct. 1986)

$t \text{ } t^h \text{ } t' \rightarrow t\int \text{ } t\int^h \text{ } t\int' / \#_{-}$  “(in some words, conditioning factors unclear)”

$l \rightarrow t$

**27.3.2.1.1 Proto-Tule-Kaweah to Wikchamni** *CatDoom*, from Whistler, Kenneth W., and Golla, Victor (1986), “Proto-Yokuts Reconsidered”. *International Journal of American Linguistics* Vol. 52, No. 4 (Oct. 1986)

$\text{ɬ} \rightarrow s$  “(sometimes remains allophonically in word-initial position before back vowels, but not consistently)”

**27.3.2.1.2 Proto-Tule-Kaweah to Yawdanchi** *CatDoom*, from Whistler, Kenneth W., and Golla, Victor (1986), “Proto-Yokuts Reconsidered”. *International Journal of American Linguistics* Vol. 52, No. 4 (Oct. 1986)

“ $\int$  may have merged with  $\text{ɬ}$  in some positions”

**27.3.2.2 Proto-Nim-Yokuts to Northern Yokuts** *CatDoom*, from Whistler, Kenneth W., and Golla, Victor (1986), “Proto-Yokuts Reconsidered”. *International Journal of American Linguistics* Vol. 52, No. 4 (Oct. 1986)

i(:) ə(:) → i(:) e(:)  
ŋ → n

**27.3.2.2.1 Northern Yokuts to Gashowu** *CatDoom*, from Whistler, Kenneth W., and Golla, Victor (1986), “Proto-Yokuts Reconsidered”. *International Journal of American Linguistics* Vol. 52, No. 4 (Oct. 1986)

p t t̥ k → b d d̥ g

**27.3.2.2.2 Northern Yokuts to Kings Valley Yokuts** *CatDoom*, from Whistler, Kenneth W., and Golla, Victor (1986), “Proto-Yokuts Reconsidered”. *International Journal of American Linguistics* Vol. 52, No. 4 (Oct. 1986)

i → u / uC<sub>-</sub>

**27.3.2.2.3 Northern Yokuts to Valley Yokuts** *CatDoom*, from Whistler, Kenneth W., and Golla, Victor (1986), “Proto-Yokuts Reconsidered”. *International Journal of American Linguistics* Vol. 52, No. 4 (Oct. 1986)

“o-raising rule (o > u / \_Ci) ceases to be productive”

**27.3.2.2.4 Valley Yokuts to Chukchansi** *CatDoom*, from Whistler, Kenneth W., and Golla, Victor (1986), “Proto-Yokuts Reconsidered”. *International Journal of American Linguistics* Vol. 52, No. 4 (Oct. 1986)

/s ʃ ʂ/ may be a single alternating phoneme

t̥ t<sup>h</sup> t̥' → tʃ tʃ<sup>h</sup> tʃ'  
tʃ tʃ<sup>h</sup> tʃ' → ts ts<sup>h</sup> ts'

**27.3.2.2.5 Valley Yokuts to Tachi** *CatDoom*, from Whistler, Kenneth W., and Golla, Victor (1986), “Proto-Yokuts Reconsidered”. *International Journal of American Linguistics* Vol. 52, No. 4 (Oct. 1986)

t̥ t<sup>h</sup> t̥' → ts ts<sup>h</sup> ts' “(t̥' remains unchanged in careful speech)”

**27.3.2.2.6 Valley Yokuts to Yawelmani** *CatDoom*, from Whistler, Kenneth W., and Golla, Victor (1986), “Proto-Yokuts Reconsidered”. *International Journal of American Linguistics* Vol. 52, No. 4 (Oct. 1986)

$\int \rightarrow s$   
 $t\int t\int^h t\int' \rightarrow ts ts^h ts'$  (except in “lexicalized diminutives”, where these go to  $t_s t_s^h t_s'$ )

### 27.3.3 Proto-Yokuts to Palewyami

*CatDoom*, from Whistler, Kenneth W., and Golla, Victor (1986), “Proto-Yokuts Reconsidered”. *International Journal of American Linguistics* Vol. 52, No. 4 (Oct. 1986)

$s \rightarrow \int / \_i$   
 $t t^h t' \rightarrow ts ts^h ts' / \#\_$  “(in some words; conditioning factors unclear)”  
 $ts ts^h ts' \rightarrow t\int t\int^h t\int' / \_i$   
 $i(:) \rightarrow i(:)$   
 $\{u,a\} \rightarrow e / \_CVC\#, \text{ when stressed (short only)}$   
 $i \rightarrow e / \_CVC\#, \text{ when stressed (! } \_H, \text{ short only)}$   
 $V \rightarrow e / C''VC\_$   
 $V \rightarrow i / C''iC\_$   
 $V \rightarrow u / C''uC\_$   
 $V \rightarrow o / C''oC\_$

## 28 Quechumaran

Orr and Longacre (1968) reconstruct Proto-Quechumaran as having the following inventory:

	Bilabial	Alveolar	Postalveolar	Retroflex	Palatal	Velar	Uvular	Glottal
Nasal	m	n			ɲ			
Plosive	p	t				k	q	ʔ
Fricative	ɸ	s	ʃ	ʂ			χ	h
Affricate		ts	tʃ	tʂ				
Liquid		r l	ɭ					
Semivowel					j	w		
			Front	Central	Back			
		High	i		u			
		Low		a				

(From Orr, Carolyn, and Robert E. Longacre (1968), “Proto-Quechumaran”. *Language* 44(3):528 – 555)

### 28.1 Proto-Quechumaran to Ayachuco

*Pogostick Man*, from Orr, Carolyn, and Robert E. Longacre (1968), “Proto-Quechumaran”. *Language* 44(3):528 – 555

p' t' tʃ' k' q' → p t tʃ k q

h → Ø / {p,t,k,q}-

q → χ

χ → q / n-

ts(h) tʃh → tʃ s

tʂ → s / \_K

tʂ → tʃ / \_V

tʂ' → tʃ'

ɸ(,h) → p

ʃ ʂ → s h

### 28.2 Proto-Quechumaran to Bolivia

*Pogostick Man*, from Orr, Carolyn, and Robert E. Longacre (1968), “Proto-Quechumaran”. *Language* 44(3):528 – 555



$qh \rightarrow h / \_r$   
 $ph \ th \ kh \ qh \rightarrow p^h \ t^h \ k^h \ q^h$   
 $\{k, q\} \rightarrow h / \_ \{C, \#\}$   
 $ts \ \{tsh, tfh\} \rightarrow tf \ tf^h$   
 $tf \rightarrow f / \_q$   
 $tf' \rightarrow tf$   
 $t_s \rightarrow s / \_K$   
 $t_s \rightarrow tf / \_V$   
 $t_s' \rightarrow tf'$   
 $\Phi(') \ \Phi h \rightarrow p(') \ p^h$   
 $f \rightarrow s$   
 $s \rightarrow h / \_ \{a, i\}$   
 $s \rightarrow \emptyset / \_u$   
 $\chi \rightarrow q^h / \_\#$   
 $j \rightarrow \emptyset / \_i \_ \{a, u\}$   
 $j \rightarrow \emptyset / \_u \_ \Delta$

### 28.3 Proto-Quechumaran to Cuzco

*Pogostick Man*, from Orr, Carolyn, and Robert E. Longacre (1968), “Proto-Quechumaran”.  
*Language* 44(3):528 – 555

$h \rightarrow \emptyset / \_nq\_$   
 $h \rightarrow \emptyset / \_\#q\_ \{i, u\}$   
 $ph \rightarrow p / \_\#\_VA$   
 $ph \rightarrow p / \_\#\_aC[+sibilant]$   
 $p' \rightarrow p / \_\#\_C[+sibilant]$   
 $ph \rightarrow p / \_a\_ (?)$   
 $ph \rightarrow p^h$   
 $kh \rightarrow k / \_r\_$   
 $kh \rightarrow k / \_\#\_a$   
 $kh \rightarrow k / \_\#\_$  “in a word with two back vowels”  
 $kh \ qh \rightarrow k^h \ q^h$   
 $ts \ tsh \rightarrow tf \ tf^h$   
 $tf \rightarrow s / \_q$   
 $tfh \rightarrow s / \_E$   
 $\{tfh, tf'\} \rightarrow tf$   
 $t_s \rightarrow s / \_K$   
 $t_s \rightarrow tf / \_V$   
 $t_s' \rightarrow tf / \_n\_$   
 $t_s' \rightarrow tf'$

$\Phi(') \Phi h \rightarrow p(') p^h$   
 $\int \S \rightarrow s h$   
 $\chi \rightarrow q^h / \#_-$

## 28.4 Proto-Quechumaran to Huarás

*Pogostick Man*, from Orr, Carolyn, and Robert E. Longacre (1968), “Proto-Quechumaran”.  
*Language* 44(3):528 – 555

$p' t' t\int' k' q' \rightarrow p t ts k q$   
 $h \rightarrow \emptyset / p_-$   
 $t^h \rightarrow t$   
 $q \rightarrow \widehat{q\chi}$   
 $ts(h) t\int \rightarrow t\int ts$   
 $t\int \rightarrow ts / _q$   
 $t\int \rightarrow s / _K$   
 $t\int \rightarrow t\int / _V$   
 $\Phi(' ^h) \rightarrow p$   
 $\S \rightarrow \int / _a$   
 $\S \rightarrow h / _\{i,u\}$   
 $n \rightarrow n$   
 $aw aj \{uj,ij\} \rightarrow u: e: i:$

## 28.5 Proto-Quechumaran to Putamayo

*Pogostick Man*, from Orr, Carolyn, and Robert E. Longacre (1968), “Proto-Quechumaran”.  
*Language* 44(3):528 – 555

$p' t' k' q' \rightarrow p t k q$   
 $p \rightarrow b / m_-$   
 $t^{(h)} \rightarrow d / n_-$   
 $t^h \rightarrow t$   
 $k \rightarrow g / n_-$   
 $k \rightarrow g / _\{L,j\}$   
 $h \rightarrow \emptyset / ts_-$   
 $t\int' \rightarrow t\int$   
 $t\int \rightarrow t\int / _V$   
 $\Phi(' ^h) \rightarrow p$   
 $\S \rightarrow s$   
 $h \rightarrow \emptyset / \#_-$

## 28.6 Proto-Quechumaran to Quito

*Pogostick Man*, from Orr, Carolyn, and Robert E. Longacre (1968), “Proto-Quechumaran”.  
*Language* 44(3):528 – 555

$q \rightarrow h / \{r,s\}_-$   
 $p' k' q' \rightarrow p k q$   
 $p \rightarrow b / m_-$   
 $t^{(h)} \rightarrow d / n_-$   
 $t' \rightarrow t^h / \#_i$   
 $t' \rightarrow t$   
 $k \rightarrow g / \#_-$   
 $k \rightarrow g / n_-$   
 $k \rightarrow g / \{L,j\}$   
 $k' \rightarrow h / j_-$   
 $ts \rightarrow dz / ! \#_-$   
 $h \rightarrow \emptyset / ts_-$   
 $tʃ \rightarrow ʃ / \_q$   
 $tʃh \rightarrow ʃ$   
 $tʃ' \rightarrow tʃ$   
 $tʂ \rightarrow ʃ / \_K$   
 $tʂ \rightarrow tʃ / \_V$   
 $\phi \rightarrow p / r_-$   
 $\{\phi',\phi h\} \rightarrow \phi$   
 $\xi \rightarrow ʃ$   
 $\chi \rightarrow h \#_-$

## 28.7 Proto-Quechumaran to Riobamba

*Pogostick Man*, from Orr, Carolyn, and Robert E. Longacre (1968), “Proto-Quechumaran”.  
*Language* 44(3):528 – 555

$q \rightarrow k \text{ } qh \rightarrow k^h / \_i ! \_i \{ʃ,tʃ\}$   
 $qh \rightarrow k$   
 $p' t' k' q' \rightarrow p t k q$   
 $p \rightarrow b / m_-$   
 $t^{(h)} \rightarrow d / n_-$   
 $t' \rightarrow t^h / \#_i$   
 $k \rightarrow h / \#_-$   
 $k \rightarrow g / \{L,j\}$   
 $kh \rightarrow k^h / \#_{- \{i,u\}}$

$kh \rightarrow k$   
 $k \text{ ts} \rightarrow g \text{ dz} / n\_$   
 $h \rightarrow \emptyset / \text{ts}\_$   
 $tʃh \rightarrow ʃ$   
 $tʃ' \rightarrow tʃ$   
 $tʂ \rightarrow s / \_K$   
 $tʂ \rightarrow tʃ / \_V$   
 $tʂ' \rightarrow ts$   
 $\Phi \rightarrow p^h / \_V$   
 $\Phi \rightarrow b / \_j$   
 $s \rightarrow ʃ / \_C[+alveolar]$   
 $\mathfrak{s} \rightarrow ʃ$   
 $\chi \rightarrow k^h \#\_$   
 $n \rightarrow n / ! \text{ h.i}$   
 $\Lambda \rightarrow \mathfrak{z} / \_ \{a,u\}$

## 28.8 Proto-Quechumaran to Santiago

*Pogostick Man*, from Orr, Carolyn, and Robert E. Longacre (1968), “Proto-Quechumaran”.  
*Language* 44(3):528 – 555

$p' \text{ t}' \text{ tʃ}' \text{ k}' \text{ q}' \rightarrow p \text{ t} \text{ tʃ} \text{ k} \text{ q}$   
 $h \rightarrow \emptyset / \{p,t,k\}\_$   
 $\{k,q\} \rightarrow h / \_ \{C,\#\}$   
 $k \rightarrow c / j\_ (?)$   
 $ts(h) \rightarrow tʃ$   
 $tʃ \rightarrow ʃ / \_q$   
 $tʂ \rightarrow ʃ / \_K$   
 $tʂ \rightarrow tʃ / \_V$   
 $\Phi(,^h) \rightarrow p$   
 $ʃ \rightarrow s / ! \text{ i.i or } \_S$   
 $\mathfrak{s} \rightarrow \emptyset / \_ \{a,i\}$   
 $\mathfrak{s} \rightarrow h / \_u$   
 $h \rightarrow \emptyset / \#\_$   
 $\Lambda \rightarrow \mathfrak{z} / \_ \{a,u\}$   
 $w \rightarrow \emptyset / V\_V$   
 $w \rightarrow m / \_ \%N$   
 $j \rightarrow \emptyset / i\_ \{a,u\}$   
 $j \rightarrow \emptyset / u\_ \Lambda$

## 28.9 Proto-Quechumaran to Tena

*Pogostick Man*, from Orr, Carolyn, and Robert E. Longacre (1968), “Proto-Quechumaran”.  
*Language* 44(3):528 – 555

$q(h) \rightarrow k$   
 $p' \ t' \ k' \ q' \rightarrow p \ t \ k \ q$   
 $p \rightarrow b / m_-$   
 $t^{(h)} \rightarrow d / n_-$   
 $t^h \rightarrow t$   
 $k \rightarrow g / n_-$   
 $k \rightarrow g / \_ \{L, j\}$   
 $h \rightarrow \emptyset / ts_-$   
 $tj \rightarrow j / \_ C$   
 $tjh \rightarrow j$   
 $tj' \rightarrow tj$   
 $ts \rightarrow j / \_ K$   
 $ts \rightarrow tj / \_ V$   
 $ts' \rightarrow tj$   
 $\Phi(',^h) \rightarrow p$   
 $s \rightarrow j$   
 $h \rightarrow \emptyset / \#_-$   
 $\chi \rightarrow k / \#_-$   
 $n \rightarrow n / \_ i$   
 $w \rightarrow \emptyset / \# \_ i$

## 29 Salishan

Kuipers (1981) gives the following reconstruction for the Proto-Salish phoneme inventory (converted into IPA):

	Labial	Coronal	Palatal	Velar	Postvelar	Glottal
Nasal	m m <sup>2</sup>	n n <sup>2</sup>				
Stop	p p'	t t'		k k <sup>w</sup> k' k <sup>w'</sup>	q q <sup>w</sup> q' q <sup>w'</sup>	ʔ
Fricative		s ɬ		x x <sup>w</sup>	χ χ <sup>w</sup>	h
Affricate		ts ts' tɬ'				
Resonant		r r <sup>2</sup> l l <sup>2</sup>	j j <sup>2</sup>	ɰ ɰ <sup>2</sup> w w <sup>2</sup>	ʃ ʃ <sup>w</sup> ʃ' ʃ <sup>w'</sup>	
			Front	Central	Back	
		High	i		u	
		Mid		ə		
		Low		a		

For the following changes, the superscript numerals <sup>1</sup>, <sup>2</sup>, and <sup>3</sup> refer to low, mid, and high tones, respectively. Not all Salishan languages have all three tones; for most, there is no tone <sup>2</sup> (mid). Vowel pairs in between curly braces { } and with a tilde between are pairs which apparently existed in some sort of ablaut-like alternation.

(From Kuipers, Aert H. (1981), “On Reconstructing the Proto-Salish Sound System”. *International Journal of American Linguistics* 47(4):323 – 335; and Galloway, Brent (1982), “Proto-Central Salish Phonology and Sound Correspondences”. From the *17th International Conference on Salish and Neighboring Languages*)

### 29.1 Central Salish

#### 29.1.1 Proto-Central Salish to Comox

*Pogostick Man*, from Galloway, Brent (1982), “Proto-Central Salish Phonology and Sound Correspondences”. From the *17th International Conference on Salish and Neighboring Languages*

ts(ʔ) → θ(ʔ)  
 l(j) → w / \_u  
 l(j) → w / u\_  
 l(j) → j / else  
 s → Ø / #\_C  
 s → Ø / #\_{wa,wi}  
 w j → g dʒ / \_V

$V^3\text{?} \rightarrow V^3(\text{:})\text{?} / \text{-}\#$   
 $\text{?} \rightarrow \emptyset \text{ } V^3\text{-RV}$   
 $\text{?} \rightarrow \emptyset \text{ } V^3\text{R-V}$   
 $\{\text{a}^3\sim\text{ə}^3\} \rightarrow \{\text{ə}^3,\text{a}^3\}$   
 $\{\text{a}^3\sim\text{i}^3\} \rightarrow \text{i}^3$   
 $\{\text{a}^1\sim\text{i}^1\} \rightarrow \{\text{a}^1,\text{ə}^1\}$   
 $\{\text{i}^3\sim\text{ə}^3\} \rightarrow \text{ə}^3$   
 $\{\text{i}^3\sim\text{ə}^1\} \rightarrow \{\text{ə}^1,\text{i}^1,\text{i}^3\}$   
 $\{\text{i}^1\sim\text{ə}^1\} \rightarrow \text{i}^1$

### 29.1.2 Proto-Central Salish to Chilliwack Halkomelem

*Pogostick Man*, from Galloway, Brent (1982), “Proto-Central Salish Phonology and Sound Correspondences”. From the *17th International Conference on Salish and Neighboring Languages*

$\text{n} \rightarrow \text{l}$   
 $\text{?n} \rightarrow \emptyset / \text{m-}$   
 $\text{ts}(\text{'}) \text{ tʃ}(\text{'}) \rightarrow \theta(\text{'}) \text{ ts}(\text{'})$   
 $\text{ʃ} \rightarrow \text{l}$   
 $V^3\text{h} \rightarrow V^3\text{:} / \text{-C}$   
 $V^3\text{?} \rightarrow V^3(\text{:}) / \text{-}\#$   
 $\text{?} \rightarrow \emptyset / V^1\text{-}\#$   
 $V^3\text{?} \rightarrow V^3\text{:} / \text{-O}$   
 $\emptyset \rightarrow V_0 / \text{'V}_0^3\text{-}$   
 $V^3\text{?R} \rightarrow V^3\text{:R}$   
 $\text{?} \rightarrow \emptyset / \text{VR-V}^3$   
 $\text{l?n} \rightarrow \text{l:} / V^3\text{-V}$   
 $\text{?} \rightarrow \emptyset / V^1\text{-}\#$   
 $\text{u}^3 \{\text{u}^1,\text{a}^1\} \text{ a}^3 \text{ i}^1 \rightarrow \text{a}^3 \text{ ə}^1 \text{ ɛ}^3 \{\text{i}^1,\text{ə}^1\}$   
 $\{\text{u}^3\sim\text{ə}^3\} \rightarrow \{\text{o}^3,\text{ə}^3,\text{a}^3\}$   
 $\{\text{a}^3\sim\text{ə}^3\} \rightarrow \{\text{ɛ}^3,\text{ə}^3\}$   
 $\{\text{a}^3\sim\text{i}^3\} \rightarrow \text{ɛ}^3$   
 $\{\text{i}^3\sim\text{ə}^3\} \rightarrow \{\text{ə}^3,\text{i}^3\}$   
 $\{\text{i}^3\sim\text{ə}^1\} \rightarrow \text{ə}^1$   
 $\{\text{i}^1\sim\text{ə}^1\} \rightarrow \text{ə}^1$

### 29.1.3 Proto-Central Salish to Cowichan Halkomelem

*Pogostick Man*, from Galloway, Brent (1982), “Proto-Central Salish Phonology and Sound Correspondences”. From the *17th International Conference on Salish and Neighboring Languages*

$$\begin{aligned}
 ts(\cdot) \quad tf(\cdot) &\rightarrow \theta(\cdot) \quad ts(\cdot) \\
 s &\rightarrow \int / \_x^w \\
 x^j &\rightarrow \int \\
 V^3h &\rightarrow V^3: / \_C \\
 V_0^3? (V_0) &\rightarrow \{V_0^3:, V_0^3?V_0\} \\
 V^3?R &\rightarrow \{V^3?R, V^3:R?\} / \_V \\
 a^3 \quad u^3 \quad \{a^1, u^1\} \quad i^1 &\rightarrow \varepsilon^3 \quad a^3 \quad \varnothing^1 \quad \{i^1, \varnothing^1\} \\
 \{a^3 \sim \varnothing^3\} &\rightarrow \varnothing^3 \\
 \{a^3 \sim i^3\} &\rightarrow a^3 \\
 \{a^1 \sim i^1\} &\rightarrow \varnothing^1 \\
 \{i^3 \sim e^3\} &\rightarrow \{\varnothing^3, i^3\} \\
 \{i^3 \sim \varnothing^1\} &\rightarrow \varnothing^1 \\
 \{i^1 \sim \varnothing^1\} &\rightarrow \varnothing^1
 \end{aligned}$$

### 29.1.4 Proto-Central Salish to Musqueam Halkomelem

*Pogostick Man*, from Galloway, Brent (1982), “Proto-Central Salish Phonology and Sound Correspondences”. From the *17th International Conference on Salish and Neighboring Languages*

$$\begin{aligned}
 ?n &\rightarrow \emptyset / m\_ \\
 ts(\cdot) \quad tf(\cdot) &\rightarrow \theta(\cdot) \quad ts(\cdot) \\
 ?j &\rightarrow l \\
 V^3h &\rightarrow V^3: / \_C \\
 V^3? &\rightarrow V^3\{:, ?\} / \_O \\
 V_0^3?V_0 &\rightarrow \{V^3:, V_0^3?V_0\} \\
 V^3?R &\rightarrow \{V^3?R, V^3:R?\} / \_V \\
 u^3 \quad \{u^1, a^1\} \quad a^3 \quad i^1 &\rightarrow a^3 \quad \varnothing^1 \quad \varepsilon^3 \quad \{i^1, \varnothing^1\} \\
 \{u^3 \sim \varnothing^3\} &\rightarrow \varnothing^3 \\
 \{a^3 \sim \varnothing^3\} &\rightarrow \{\varepsilon^3, \varnothing^3\} \\
 \{a^3 \sim i^3\} &\rightarrow \{a^3, \varepsilon^3\} \\
 \{a^1 \sim i^1\} &\rightarrow \{\varnothing^1, \varepsilon^1\} \\
 \{i^3 \sim e^3\} &\rightarrow \{\varnothing^3, i^3\} \\
 \{i^3 \sim \varnothing^1\} &\rightarrow \varnothing^1 \\
 \{i^1 \sim \varnothing^1\} &\rightarrow \varnothing^1
 \end{aligned}$$



### 29.1.5 Proto-Central Salish to Klallam

*Pogostick Man*, from Galloway, Brent (1982), “Proto-Central Salish Phonology and Sound Correspondences”. From the *17th International Conference on Salish and Neighboring Languages*

$mʔn \rightarrow nʔ$   
 $p(ʔ) m \rightarrow ts(ʔ) \eta / ! \_u$   
 $l^{(j)} \rightarrow j$   
 $x^j \rightarrow \{s,ʃ\}$  (the latter mainly from borrowings?)  
 $tʃ \rightarrow ts$   
 $tʃʔ \rightarrow tsʔ /$  medially  
 $w j \rightarrow k^w tʃ / \_V$   
 $V_0^3 \eta (V_0) \rightarrow V_0^3 \eta V_0$   
 $u^1 \rightarrow \vartheta^1$   
 $a^3 \rightarrow u^3 / \{C^w[+uvular], K^w, w\}$   
 $a^3 \rightarrow u^3 / \_ \{Cu, C^w[+uvular], w\}$   
 $a^1 \rightarrow \vartheta^1$   
 $\{u^3 \sim \vartheta^3\} \rightarrow \vartheta^3$   
 $\{a^3 \sim \vartheta^3\} \rightarrow \vartheta^3$   
 $\{a^3 \sim i^3\} \rightarrow \vartheta^3$   
 $\{a^1 \sim i^1\} \rightarrow \vartheta^1$   
 $\{i^3 \sim \vartheta^3\} \rightarrow \vartheta^3$   
 $\{i^3 \sim \vartheta^1\} \rightarrow \vartheta^1$   
 $\{i^1 \sim \vartheta^1\} \rightarrow \vartheta^1$

### 29.1.6 Proto-Central Salish to Lushootseed

*Pogostick Man*, from Galloway, Brent (1982), “Proto-Central Salish Phonology and Sound Correspondences”. From the *17th International Conference on Salish and Neighboring Languages*

$mʔn \rightarrow d$   
 $m n \rightarrow b d$   
 $l^j \rightarrow l$   
 $s \rightarrow \{ʃ, s\} / \_x^w$   
 $x^j \rightarrow ʃ$   
 $w j \rightarrow g^w dz / \_V$   
 $V^3 h \rightarrow V^3 \{i, \eta\} / \_C$   
 $V^3 \eta \rightarrow V^3 (\eta) / \_O$   
 $R\eta \rightarrow \eta R / V^3 C$

$i^1 \rightarrow \{i^1, \emptyset^1\}$   
 $\{u^3 \sim \emptyset^3\} \rightarrow a^3$   
 $\{a^3 \sim \emptyset^3\} \rightarrow \{\emptyset^3, a^3\}$   
 $\{a^1 \sim i^1\} \rightarrow i^1$   
 $\{i^3 \sim \emptyset^3\} \rightarrow \{i^1, \emptyset^1\}$   
 $\{i^3 \sim \emptyset^1\} \rightarrow \{i^3, i^1\}$   
 $\{i^1 \sim \emptyset^1\} \rightarrow \{\emptyset^1, i^1\}$

### 29.1.7 Proto-Central Salish to Nooksack

*Pogostick Man*, from Galloway, Brent (1982), “Proto-Central Salish Phonology and Sound Correspondences”. From the *17th International Conference on Salish and Neighboring Languages*

$n \rightarrow \emptyset / m\eta_-$   
 $\text{ɬ} \rightarrow l$   
 $s \rightarrow \{s, \text{ʃ}\} / \_x^w$   
 $s \rightarrow \int / \# \_ \{x^l, w\{i, a\}, q^w a\}$   
 $x^j \rightarrow \int$   
 $\emptyset \rightarrow V_0 / \text{ }^n V_0^3 \eta_-$   
 $\eta R \rightarrow \{\eta S, R\} / V^3 \_ V$   
 $\eta \rightarrow \emptyset / VR \_ V^3$   
 $\eta \rightarrow \emptyset / V^3 R \_ \{C, \#\}$   
 $\eta \rightarrow \emptyset / V^1 R \_ \#$   
 $\eta \rightarrow \emptyset / V^1 \_ \#$   
 $a^1 u^3 u^1 i^1 \rightarrow \text{æ}^2 o^3 o^1 i^2$   
 $\emptyset^1 \rightarrow \text{æ}^2 / a^3 C(C) \_$   
 $\emptyset^1 \rightarrow \text{æ}^2 / \_ C(C) a^3$   
 $\emptyset^1 \rightarrow \text{æ}^2 / \text{ in some other unspecified circumstances}$   
 $\{u^3 \sim \emptyset^3\} \rightarrow o^3$   
 $\{a^3 \sim \emptyset^3\} \rightarrow \text{æ}^3$   
 $\{a^3 \sim i^3\} \rightarrow \text{æ}^3$   
 $\{a^1 \sim i^1\} \rightarrow \text{æ}^2$   
 $\{i^3 \sim \emptyset^3\} \rightarrow \{i^3, \emptyset^3\}$   
 $\{i^3 \sim \emptyset^1\} \rightarrow i^3$   
 $\{i^1 \sim \emptyset^1\} \rightarrow \{i^2, \emptyset^1\}$

### 29.1.8 Proto-Central Salish to Lummi Northern Straits

*Pogostick Man*, from Galloway, Brent (1982), “Proto-Central Salish Phonology and Sound Correspondences”. From the *17th International Conference on Salish and Neighboring Languages*

$p(ʔ) m \rightarrow tʃ(ʔ) \eta / ! \_u$   
 $mʔ \rightarrow \emptyset / \_n$   
 $ts \rightarrow s$   
 $l^j \rightarrow l$   
 $s \rightarrow ʃ / \_x^w$   
 $tʃ \rightarrow s$   
 $tʃʔ \rightarrow tsʔ / \text{medially}$   
 $j \rightarrow tʃ / \_V$   
 $ʔ \rightarrow \emptyset / V^3 l \_n V$   
 $ʔ \rightarrow \{\emptyset, ʔ\} / V^3 R \_ \{C, \#\}$   
 $u^3 u^1 \rightarrow o^3 \vartheta^1$   
 $a^3 \rightarrow o^3 / \{\{C[+ \text{uvular}], K\}^w, w\} \_$   
 $a^3 \rightarrow o^3 / \_ \{Cu, C[+ \text{uvular}]^w, w\}$   
 $a^3 \rightarrow e^3 / \text{else}$   
 $a^1 \rightarrow \vartheta^1$   
 $\{u^3 \sim \vartheta^3\} \rightarrow \vartheta^1$   
 $\{a^3 \sim \vartheta^3\} \rightarrow \vartheta^3$   
 $\{a^3 \sim i^3\} \rightarrow \vartheta^3$   
 $\{a^1 \sim i^1\} \rightarrow \vartheta^1$   
 $\{i^3 \sim e^3\} \rightarrow \vartheta^3$   
 $\{i^3 \sim \vartheta^1\} \rightarrow \vartheta^1$   
 $\{i^1 \sim \vartheta^1\} \rightarrow \vartheta^1$

### 29.1.9 Proto-Central Salish to Saanich Northern Straits

*Pogostick Man*, from Galloway, Brent (1982), “Proto-Central Salish Phonology and Sound Correspondences”. From the *17th International Conference on Salish and Neighboring Languages*

$p(ʔ) m \rightarrow tʃ(ʔ) \eta / ! \_u$   
 $mʔn \rightarrow nʔ$   
 $ts tsʔ \rightarrow \{\emptyset, s\} \emptysetʔ$   
 $l^j \rightarrow l$   
 $s \rightarrow \{ʃ, s\} / \_x^w$   
 $x^j \rightarrow s$

$tʃ \rightarrow s$   
 $tʃ' \rightarrow \theta' / \text{medially}$   
 $j \ w \rightarrow tʃ \ k^w / \_V$   
 $V^3h \rightarrow V^3(\text{z}) / \_C$   
 $?R \rightarrow R? / V^3\_V$   
 $u^3 \ u^1 \rightarrow a^3 \ \text{ə}^1$   
 $a^3 \rightarrow e^3 / ! \{ \{C[+ \text{uvular}], K\}^w, w\}_- \text{ or when } \_ \{Cu, C[+ \text{uvular}]^w, w\}$   
 $a^1 \rightarrow \text{ə}^1$   
 $\{a^3 \sim \text{ə}^3\} \rightarrow \{\text{ə}^3, e^3\}$   
 $\{a^3 \sim i^3\} \rightarrow \text{ə}^3$   
 $\{a^1 \sim i^1\} \rightarrow \text{ə}^1$   
 $\{i^3 \sim e^3\} \rightarrow \{\text{ə}^3, i^3\}$   
 $\{i^3 \sim \text{ə}^1\} \rightarrow \text{ə}^1$   
 $\{i^1 \sim \text{ə}^1\} \rightarrow \{\text{ə}^1, i^1\}$

#### 29.1.10 Proto-Central Salish to Songish Northern Straits

*Pogostick Man*, from Galloway, Brent (1982), “Proto-Central Salish Phonology and Sound Correspondences”. From the *17th International Conference on Salish and Neighboring Languages*

$p(\text{'}) \ m \rightarrow tʃ(\text{'}) \ \eta / ! \_u$   
 $m?n \rightarrow n?$   
 $ts \rightarrow s$   
 $l^j \rightarrow l$   
 $s \rightarrow \{ʃ, s\} / \_x^w$   
 $x^j \rightarrow \{s, ʃ\}$  (the latter mainly from borrowings?)  
 $tʃ' \rightarrow ts' / \text{medially}$   
 $j \ w \rightarrow tʃ \ k^w / \_V$   
 $V^3h \rightarrow V^3\text{:} / \_C$   
 $u^3 \ u^1 \rightarrow a^3 \ \text{ə}^1$   
 $a^3 \rightarrow a^3 / \{ \{C[+ \text{uvular}], K\}^w, w\}_-$   
 $a^3 \rightarrow a^3 / \_ \{Cu, C[+ \text{uvular}]^w, w\}$   
 $a^1 \rightarrow \text{ə}^1$   
 $\{u^3 \sim \text{ə}^3\} \rightarrow \text{ə}^3$   
 $\{a^3 \sim \text{ə}^3\} \rightarrow \text{ə}^3$   
 $\{a^3 \sim i^3\} \rightarrow \text{ə}^3$   
 $\{a^1 \sim i^1\} \rightarrow \{\text{ə}^1, e^1\}$   
 $\{i^3 \sim e^3\} \rightarrow \text{ə}^3$   
 $\{i^3 \sim \text{ə}^1\} \rightarrow \text{ə}^1$   
 $\{i^1 \sim \text{ə}^1\} \rightarrow \text{ə}^1$

### 29.1.11 Proto-Central Salish to Sooke Northern Straits

*Pogostick Man*, from Galloway, Brent (1982), “Proto-Central Salish Phonology and Sound Correspondences”. From the *17th International Conference on Salish and Neighboring Languages*

$p(?) \rightarrow tf(?) \quad \eta / ! \quad \_u$   
 $m?n \rightarrow n?$   
 $ts \rightarrow s$   
 $l^{(j)} \rightarrow j$   
 $x^j \rightarrow \{s, f\}$  (the latter mainly from borrowings?)  
 $tf \rightarrow s$   
 $tf' \rightarrow ts' /$  medially  
 $j \quad w \rightarrow tf \quad k^w / \_V$   
 $u^3 \quad u^1 \rightarrow a^3 \quad \vartheta^1$   
 $a^3 \rightarrow \{a^3, o^3\} / \{\{C[+ \text{uvular}], K\}^w, w\} \_$   
 $a^3 \rightarrow e^3$   
 $a^1 \rightarrow \vartheta^1$   
 $\{u^3 \sim \vartheta^3\} \rightarrow \vartheta^3$   
 $\{a^3 \sim \vartheta^3\} \rightarrow \vartheta^3$   
 $\{a^3 \sim i^3\} \rightarrow \vartheta^3$   
 $\{a^1 \sim i^1\} \rightarrow \vartheta^1$   
 $\{i^3 \sim e^3\} \rightarrow \vartheta^3$   
 $\{i^3 \sim \vartheta^1\} \rightarrow \vartheta^1$   
 $\{i^1 \sim \vartheta^1\} \rightarrow \vartheta^1$

### 29.1.12 Proto-Central Salish to Pentlatch

*Pogostick Man*, from Galloway, Brent (1982), “Proto-Central Salish Phonology and Sound Correspondences”. From the *17th International Conference on Salish and Neighboring Languages*

$ts \quad ts' \rightarrow s \quad ts'$   
 $l^j \rightarrow l$   
 $x^j \rightarrow f$   
 $? \rightarrow \emptyset / V^3 \_O$   
 $? \rightarrow \emptyset / V^3 R \_ \{V, \#\}$   
 $i^1 \rightarrow \vartheta^1$   
 $\{a^3 \sim \vartheta^3\} \rightarrow \vartheta^3$   
 $\{a^1 \sim i^1\} \rightarrow \{i^1, \vartheta^1\}$   
 $\{i^3 \sim e^3\} \rightarrow \{\vartheta^3, i^3\}$

$$\begin{aligned}\{i^3 \sim \emptyset^1\} &\rightarrow i^3 \\ \{i^1 \sim \emptyset^1\} &\rightarrow \{i^1, \emptyset\}\end{aligned}$$

### 29.1.13 Proto-Central Salish to Sechelt

*Pogostick Man*, from Galloway, Brent (1982), “Proto-Central Salish Phonology and Sound Correspondences”. From the *17th International Conference on Salish and Neighboring Languages*

$$\begin{aligned}\text{ʔ} &\rightarrow \emptyset / \text{m\_n} \\ \text{p}^j &\rightarrow \text{p} \\ \text{x}^j &\rightarrow \text{ʃ} \\ \text{ʔ} &\rightarrow \emptyset / \text{V\_V}^3 \\ \text{ʔ} &\rightarrow \emptyset / \text{V}^1 \_ \# \\ i^1 &\rightarrow \{i^1, \emptyset^1\} \\ \{u^3 \sim \emptyset^3\} &\rightarrow u^3 \\ \{a^3 \sim \emptyset^3\} &\rightarrow \emptyset^3 \\ \{a^3 \sim i^3\} &\rightarrow i^3 \\ \{a^1 \sim i^1\} &\rightarrow \{i^1, \emptyset^1\} \\ \{i^3 \sim e^3\} &\rightarrow \{\emptyset^3, i^3\} \\ \{i^3 \sim \emptyset^1\} &\rightarrow i^3 \\ \{i^1 \sim \emptyset^1\} &\rightarrow \{i^1, \emptyset\}\end{aligned}$$

### 29.1.14 Proto-Central Salish to Squamish

*Pogostick Man*, from Galloway, Brent (1982), “Proto-Central Salish Phonology and Sound Correspondences”. From the *17th International Conference on Salish and Neighboring Languages*

$$\begin{aligned}\text{n} &\rightarrow \emptyset / \text{mʔ\_} \\ \text{p}^j &\rightarrow \text{j} \\ \text{x}^j &\rightarrow \text{ʃ} \\ \text{ʔR} &\rightarrow \text{Rʔ} / \text{V}^3 \_ \text{V} \\ u^1 &\rightarrow \{u^1, \emptyset^1\} \\ \{u^3 \sim \emptyset^3\} &\rightarrow \emptyset^3 \\ \{a^3 \sim \emptyset^3\} &\rightarrow \{a^3, \emptyset^3\} \\ \{a^3 \sim i^3\} &\rightarrow i^3 \\ \{a^1 \sim i^1\} &\rightarrow i^1 \\ \{i^3 \sim e^3\} &\rightarrow \{\emptyset^3, i^3\}\end{aligned}$$

$$\begin{aligned}\{i^3 \sim \emptyset^1\} &\rightarrow i^3 \\ \{i^1 \sim \emptyset^1\} &\rightarrow \{i^1, \emptyset\}\end{aligned}$$

### 29.1.15 Proto-Central Salish to Twana

*Pogostick Man*, from Galloway, Brent (1982), “Proto-Central Salish Phonology and Sound Correspondences”. From the *17th International Conference on Salish and Neighboring Languages*

$$\begin{aligned}m\ n &\rightarrow b\ d \\ l^j &\rightarrow l \\ s &\rightarrow \{ʃ, s\} / \_x^w \\ x^j &\rightarrow ʃ \\ ?R &\rightarrow ?\{R, b\} / V^3\_V \\ R? &\rightarrow ?R / V^3\_# \\ ? &\rightarrow \emptyset / V^1R\_# \\ ? &\rightarrow \emptyset / V^3R\_C \\ u^3\ u^1 &\rightarrow o^3\ \emptyset^1 \\ \{a^3 \sim \emptyset^3\} &\rightarrow \{\emptyset^3, a^3\} \\ \{a^3 \sim i^3\} &\rightarrow a^3 \\ \{a^1 \sim i^1\} &\rightarrow \{i^1, \emptyset^1\} \\ \{i^3 \sim e^3\} &\rightarrow \{i^3, \emptyset^3\} \\ \{i^3 \sim \emptyset^1\} &\rightarrow \{i^3, i^1\} \\ \{i^1 \sim \emptyset^1\} &\rightarrow i^1\end{aligned}$$

## 29.2 Interior Salish

### 29.2.1 Proto-Interior Salish to Columbian and Okanagan Nasal-to-Vowel Shifts

*Pogostick Man*, from Kinkade, Dale M. “Shifts of Nasals to Vowels in Interior Salish”

$$n^? \rightarrow a^? / \_# \text{ (all other Interior Salishan languages have } /e^?/ \text{ in this position)}$$

### 29.2.2 Proto-Interior Salish to Thompson Nasal-to-Vowel Shifts

*Pogostick Man*, from Kinkade, Dale M. “Shifts of Nasals to Vowels in Interior Salish”

$$N[- \text{ glottalized}] \rightarrow e / \_O[+ \text{ same POA}] \text{ “in primary forms”}$$

$$n \rightarrow e / n\_ \text{ (this is admittedly a bit conjectural; the paper is not being very clear here)}$$

### 29.3 Shuswap to Eastern Shuswap Nasal-to-Vowel Shifts

*Pogostick Man*, from Kinkade, Dale M. “Shifts of Nasals to Vowels in Interior Salish”

em em<sup>?</sup> → u u<sup>?</sup> / w<sub>-</sub> in U[- stressed]  
em em<sup>?</sup> → a a<sup>?</sup> / in U[- stressed] ! {p(′),m(′)}<sub>-</sub>  
en en<sup>?</sup> → i i<sup>?</sup> / {ts(′),s,j(′)}<sub>-</sub> in U[- stressed]  
en en<sup>?</sup> → a ? / in U[- stressed] ! {t(′),ʈ,{n,l}(′)}<sub>-</sub>

### 29.4 Shuswap to Spokane-Kalispel Shuswap Nasal-to-Vowel Shifts

*Pogostick Man*, from Kinkade, Dale M. “Shifts of Nasals to Vowels in Interior Salish”

n n<sup>?</sup> → i i<sup>?</sup> / C<sub>s</sub>  
n n<sup>?</sup> → i i<sup>?</sup> / <sub>-</sub>{i,j} (sporadic)



## 30 Sino-Tibetan

### 30.1 Proto-Sino-Tibetan to Middle Chinese

*Ran & thedukeofnuke*, from Handel, Z. (1998), *The Medial Systems of Old Chinese and Proto-Sino-Tibetan*

NB: “P T Ṭ K represent labial, dental, retroflex, and velar obstruents respectively. \*r is reconstructed as being an approximant ɹ. . . .PST and OC lacked any initial/medial clusters of the form Tr- and Tl-. . . .The initials and medials for Old Chinese are the same as those for PST. Note that initial consonants separated by a hyphen (e.g., C-r-) are derived from prefixes and are not true consonant clusters.

(C-)r- → l-  
s(-)r → ʃ-  
r → Ø / C-  
r-T- → Ṭ  
(C-)l- → {d,ʃi}-  
s-l- → {t<sup>h</sup>,z}-  
l → Ø / s-  
{m,ŋ}l- → dʒ-  
Cl- → T(z)-  
Kw → K<sup>w</sup>- / \_a-  
Kwə- → K<sup>w</sup>i-  
w → r → Ø / P\_-

#### 30.1.1 Late Middle Chinese to Old Mandarin

*Ran*, from Hsueh, F.S. (1975), *Phonology of Old Mandarin*

NB: *Ran* says, “The author uses V1, V2, V3, V4, Vn, Vch, and Vta to represent Late Middle Chinese vowels. I am going to **very tentatively assign the values of o, a, ia, e,?, a(ch) and a(ta) to these vowels** [emphasis added]. These should be taken as orthographical convenience rather than actual speculation.” It should be noted that the vowel represented by <?> could be palatalized. *Ran* adds, “I am also going to number tones according to their traditional order, i.e. F1, F2, F3, F4, F5. Since tones change rapidly, it is impossible to accurately reconstruct their values; we can only know how many there were, and agree on an order to renumerate them. Middle Chinese starts out with no F2.” For the purposes of this list of sound changes, tones are superscript numbers following vowel markers.

$\emptyset \rightarrow w / P\_V$   
 $x\dot{f}i \rightarrow \emptyset / \_j(w)\{?,ia,a(ta)\}$   
 $C^j \rightarrow C \{A,F\}\_-$   
 $C^j \rightarrow \dot{C}$   
 $\eta \rightarrow \tau$   
 $V^1 \rightarrow V^2 / \text{in syllables with } /fi/, \text{ a nasal, or a liquid}$   
 $V^3 \rightarrow V^4 / \text{in syllables with } /fi/$   
 $? \rightarrow \emptyset$   
 $V^5 \rightarrow V^2 / \text{in syllables with } /fi/$   
 $V^5 \rightarrow V^4 / \text{in syllables with a nasal or liquid}$   
 $V^5 \rightarrow V^3 / \text{else}$   
 $\dot{f}i \rightarrow h / S\_V^2$   
 $\dot{f}i \rightarrow \emptyset / \text{else}$   
 $C^j \rightarrow C / \{f,v\}\_-$   
 $w \rightarrow o / C^j\_?w$   
 $i \rightarrow \emptyset / C(w)\_a$   
 $ia \rightarrow e / \text{else}$   
 $C \rightarrow C^j / \{K,C[+pharyngeal]\}\_ \{a,a(ch)\}$   
 $o \rightarrow a / C\_w ! C = \{K,C[+pharyngeal]\}$   
 $\eta \rightarrow n / n\_C^ja(ta)$   
 $\eta \rightarrow \emptyset / \#\_ ! \#\_o(w)$   
 $k \rightarrow j / \{e,a,o\}\_$   
 $k \rightarrow w / V\_$   
 $\{o,a\} \{a(ta),a(ch)\} \rightarrow e a / \_ \eta$   
 $\{a(ta),a(ch)\} \rightarrow o / \text{else}$   
 $? \rightarrow o / \_ \eta$   
 $\{A^j,F^j\}[+alveolar] \rightarrow \{A,F\} / \_ ?^j$   
 $t \rightarrow t\mathfrak{s} / \_ r$   
 $C \rightarrow C^j / ?^j\{p,t\}\_$   
 $\{p,t\} \rightarrow \emptyset / V\_$   
 $o \rightarrow a / C^j\_w$   
 $\emptyset \rightarrow w / C\_o\# ! C = \{K,C[+pharyngeal]\}$   
 $w \rightarrow \emptyset / \dot{C}C^j\_?w$  (“optional”)  
 $w \rightarrow \emptyset / w?\_$   
 $? \rightarrow a / Cw\_C^j$   
 $\{o,e\} \rightarrow ? / \_ C^j$   
 $w^j \rightarrow w / \_ ?C^j$   
 $\emptyset \rightarrow w / \dot{C}\_a\eta$   
 $e \rightarrow o / w\_ \eta$   
 $w^j \rightarrow w / \_ a\eta$   
 $w^j \rightarrow w / \dot{C}\_o\eta$

**30.1.1.1 Old Mandarin to Modern Pekingese** *Ran*, from Hsueh, F.S. (1975), *Phonology of Old Mandarin*

$\eta \rightarrow \emptyset / \#\_$   
 $\{e,o\} \rightarrow a / \_w$   
 $m \rightarrow n / V\_$   
 $o \rightarrow e / \_ \eta$   
 $i \rightarrow e / C\_?$   
 $? \rightarrow \emptyset$   
 $j \rightarrow \emptyset / j\hat{i}\_$   
 $\#r \dots \hat{i}\# \rightarrow \#\hat{i} \dots r$   
 $v \rightarrow \emptyset$   
 $j \rightarrow \emptyset / C\_$   
 $o \rightarrow e / \_ \#$   
 $\hat{i} \rightarrow e / \_ C\# ! C = r$   
 $j \rightarrow \emptyset / C\_we\eta$   
 $k^{(h)} h \rightarrow \hat{c}^{(h)} c / \_j$

**30.2 Sin Sukchu to Guānhuà**

*Pogostick Man*, from Coblin, W. South (2000), “A Diachronic Study of Míng *Guānhuà* Phonology”. *Monumenta Serica* 48:267 – 335

**Initials:**

$b \ d \ dz \ g \rightarrow \{p,p'\} \{t,t'\} \{ts,ts'\} \{k,k'\}$   
 $\eta \rightarrow \emptyset / \_ \{i,j,w,y\}$   
 $\eta \rightarrow \emptyset / \_ u / \_ V$   
 $w \rightarrow u / \_ V$   
 $v \ v \rightarrow f \ v$   
 $z \rightarrow \{s,ts'\}$  (the former “without exception” “in oblique tone words”)  
 $d_z \rightarrow t_s /$  “[i]n oblique tone syllables”  
 $d_z \rightarrow t_s' /$  “in *píng*-tone syllables”  
 $z \rightarrow s$   
 $r \rightarrow z$  (Apparently there was some situation where this went to  $\emptyset$ , and then something happened with the output syllable being  $[\partial^v]$ )  
 $? \rightarrow \eta / \_ V[-high]$   
 $? \rightarrow \emptyset / \_ \{j,i,y\}$   
 $? \rightarrow \emptyset / \_ u$  (not always? Perhaps some variation with  $[y]$  here?)  
 $y \rightarrow x$   
 $j \rightarrow i$   
 There seems to have been some stuff going on with palatalized  $[\eta] \rightarrow \{j,n\}$  but it seems

highly dialectal and I'm not entirely sure just what exactly was going on here

w → {v,u}

uj → (ʏ)u

### **Finals:**

m → n

long-tail vowel thing → i (or [truncated vowel-thing] “where GH sibilant initial variants occur”)

{long-tail vowel thingʔ,əʔ} → εʔ

i → [long-tail vowel thing] / ʈ<sub>-</sub> (“sometimes”, in “variant readings”); when following /s z/, sometimes yields [ʂi], other times [s truncated vowel-thing]

iʔ iw → eʔ ew / ʈ<sub>-</sub> (the latter with variant iεuʔ)

iʔ → ieʔ (→ i[truncated vowel-thing]ʔʔ)

uʔ → oʔ (occasionally → ueʔʔ)

uj → u(ε)i / m<sub>-</sub>

uj → uei / {P,C[+guttural],Ø}<sub>-</sub>

uj → ui / {C[+dental],C[+sibilant]}<sub>-</sub>

ujʔ → ueʔ (dialectally → uɔʔʔ)

un → uεn / ! {C[+dental],C[+sibilant]}<sub>-</sub>

uεn → εn / v<sub>-</sub>

uŋ → oŋ (in one source?)

juŋ → iuŋ / -{Ø,x,v,ʔ}

juŋ → iuŋ / -g[+ping tone]

juŋ → uŋ (→ oŋ dialectally?)

jujŋ ujŋ → iuŋ uŋ

y → ʏ (→ y~u dialectally?) / ʈ<sub>-</sub>

yʔ → yεʔ / {l,C[+dental +sibilant]}<sub>-</sub> in “QYS -juət-type” finals, dialectally?

yʔ → oʔ (eventually → {ʊʔ,(i)uʔʔ}) / {l,C[+dental +sibilant]}<sub>-</sub>, in “QYS -k-types”

yʔ → yʔ(˜yεʔʔ) / {Ø,C[+guttural]}, in -juət-types

yʔ → ioʔ (→ iʊʔ dialectally?) / {Ø,C[+guttural]}<sub>-</sub>, in -k-types

yʔ → {ʏʔ,yʔ,uʔ} / ʈ<sub>-</sub>, in -juət-types

yʔ → oʔ (→ ʊʔʔ) / ʈ<sub>-</sub>, in -k-types

yjʔ → yʔ

yn → un / ʈ<sub>-</sub> (may have stayed yn or → ʏn in at least one area?)

je jeʔ yeʔ → ε εʔ ueʔ / ʈ<sub>-</sub>

je jeʔ → iε iεʔ

yeʔ → yεʔ (→ {uɔʔ,yɔʔ} in southern speech?)

ye jej → yε i

jew → au / ʈ(C?)<sub>-</sub>

jew → iau / else

{jem,jen} → iεn / sometimes after ʈ<sub>-</sub> (but ! z<sub>-</sub>) (only in one variety?)

yen → uɛn / ɕ\_-  
 yen → yɛn  
 ɔ → a / in two cases cited; extremely rare change  
 wɔ → ɔ (occasionally → uɔ after a guttural?)  
 wɔʔ → uɔʔ / C[+guttural]\_-  
 wɔʔ → ɔʔ / else  
 ɔn → an; “[t]his final occurs exclusively after SR gutturals”  
 wɔn ja wa → uɔn ia ua  
 aʔ → ɔʔ / C[+guttural]\_-  
 jaʔ → iaʔ  
 waʔ → aʔ / C[+labiodental]\_-  
 waʔ → uaʔ  
 aj jaj waj aw jaw → ai iai uai au iau  
 awʔ → ɔʔ (“Trigault gives a variant in -ɛʔ, which becomes general in the later GH varieties”)  
 {jawʔ, wawʔ} → ɔʔ / ɕ\_-  
 jawʔ wawʔ → iɔʔ uɔʔ  
 am → an  
 {jam, jan} → iɛn  
 wan → an / C[+labiodental]\_-  
 wan → uan / else  
 aŋ jaŋ → uaŋ aŋ / ɕ\_-  
 waŋ → uaŋ  
 əjʔ əw {əm, ɔn} → eʔ ɛu ɛn  
 əjŋ → ɛn (varies with ɛn?)

#### **Tones:**

qīng píng → yīn píng  
 zhuó píng → yáng píng  
 qīng shǎng → shǎng  
 zhuó shǎng → qù

(There seems to be some conflict between *shǎng* tones and *qù* tones, the latter noted as being the spoken forms)

### **30.3 Tibeto-Burman**

#### **30.3.1 Qiangic**

**30.3.1.1 Proto-Naish to Laze** *Pogostick Man*, from Jacques, Guillaume, and Alexis Michaud (2011), “Approaching the historical phonology of three highly eroded Sino-Tibetan languages: Naxi, Na and Laze”. *Diachronica* 28:4 (2011), 468 – 498

$a \rightarrow i$  /  $\{y, w\} \_ \%$   
 $a \rightarrow w$  /  $\{K, \eta\} w \_ \%$   
 $\{a, i\} \rightarrow \text{ɯ}$  /  $R \_ \%$   
 $a \rightarrow ie$  /  $! K \_ \%$   
 $a aS \rightarrow \alpha \{a, u\}$   
 $iN \rightarrow \text{æ}$  /  $\{P, C\} r \_ \%$   
 $i \rightarrow \text{ɥ}$  /  $m \_ \%$   
 $u o \rightarrow \text{ɥ} u$   
 $B \rightarrow o$  /  $\{q^h, (N)q\} \_$   
 $V \% \rightarrow$  low tone  
 $\{Np, mb\} \rightarrow b$  /  $\_ V$  (the paper implies similar developments occurred at other POAs)  
 $\{r, s\} p^{(h)} \{r, s\} \{Np, (m)b\} \rightarrow f v$  /  $\_ V$  (the paper implies similar developments occurred at other POAs)  
 $\{r, s\} k \{r, s\} Nk \rightarrow f w$  /  $\_ V$   
 $S\{b, g\} Sk \rightarrow v h$  /  $\_ V$   
 $\{r, s\} l \{r, s\} n \rightarrow \text{ɿ} N$  /  $\% \_ V$   
 $n \rightarrow \text{ɿ}$  /  $\% \_ V$   
 $NV \rightarrow h \tilde{V}$   
 $\text{ɿ} \rightarrow \text{ɿ}$  /  $\% \_ V$

**30.3.1.2 Proto-Naish to Mosuo (Na)** *Pogostick Man*, from Jacques, Guillaume, and Alexis Michaud (2011), “Approaching the historical phonology of three highly eroded Sino-Tibetan languages: Naxi, Na and Laze”. *Diachronica* 28:4 (2011), 468 – 498

$a \rightarrow e$  /  $\{R, T\} \_ \%$   
 $a \rightarrow w$  /  $\{K, \eta\} w \_ \%$   
 $a \rightarrow i$  /  $! K \_ \%$   
 $iN \rightarrow \text{æ}$  /  $\{P, C\} r \_$   
 $\{iN, u\} i \rightarrow i \text{ɯ}$  /  $T \_$   
 $i \rightarrow \text{ɯ}$  /  $\{R, Kr\} \_$   
 $i \rightarrow \text{ɥ}$  /  $m \_$   
 $u o \rightarrow \text{ɥ} u$   
 $B \rightarrow \text{ɔ}$  /  $\{q^h, (N)q\} \_$   
 $V \% \rightarrow$  high rising  
 $\{Np, mb\} \rightarrow b$  /  $\_ V$   
 $\{r, s\} p^h \{r, s\} \{(N)p, (m)b\} \rightarrow p^h p b$  /  $\_ V$  (the paper implies similar developments occurred with stops at other POAs)  
 $\{r, s\} k \{r, s\} Nk \rightarrow k \text{ɸ}$  /  $\_ V$   
 $S\{b, g\} Sk \rightarrow \emptyset h$

$\underset{\circ}{n} \rightarrow \underset{\circ}{l} / \%_V$   
 $\underset{\circ}{N}V \rightarrow h\tilde{V}$   
 $\underset{\circ}{l} \rightarrow \text{ɬ} / \%_V$

**30.3.1.3 Proto-Naish to Naxi** *Pogostick Man*, from Jacques, Guillaume, and Alexis Michaud (2011), “Approaching the historical phonology of three highly eroded Sino-Tibetan languages: Naxi, Na and Laze”. *Diachronica* 28:4 (2011), 468 – 498

$a \text{ iN } \{i, u\} \rightarrow e \text{ əʷ} / T\_ \%$   
 $a \rightarrow i / \eta\_ \%$   
 $a \rightarrow \text{ʍ} / \{R, w\}_\_ \%$   
 $a \rightarrow wa / \{K, \eta\}w\_ \%$   
 $a \rightarrow e / ! K\_ \%$   
 $a \text{ aS } \rightarrow \alpha \{a, o\} / \_ \%$   
 $iN \rightarrow \text{əʷ} / \{P, C\}r\_ \%$   
 $i \rightarrow \text{ʍ} / \{R, kr\}_\_ \%$   
 $u \rightarrow \text{əʷ} / Pr\_ \%$   
 $u \text{ o } \rightarrow \text{ɥ} u$   
 $B \rightarrow \text{ɥ} / \{q^h, (\eta)q\}_-$   
 $V\% \rightarrow \text{mid tone} / C\_ru$   
 $V\% \rightarrow \text{high tone} / \text{else}$   
 $N \rightarrow \emptyset / \_pV$   
 $\{r, s\}p^h \{r, s\}(N)p \{r, s\}b \{r, s\}mb \rightarrow p^h p b mb / \_V$  (the paper implies similar developments occurred with stops at other POAs)  
 $\{r, s\}(N)k \rightarrow k / \_V$   
 $Sb \text{ Sk } Sg \rightarrow b \text{ ? } g / \_V$   
 $\underset{\circ}{n} \rightarrow \underset{\circ}{l} \rightarrow h / \%_V$   
 $\{r, s\} \rightarrow \emptyset / \%_V$   
 $\{r, s\}N \rightarrow \underset{\circ}{N} \rightarrow h\tilde{V} \rightarrow hV$

## 31 Siouan-Iroquoian

Based upon Julian and Chafe, Proto-Siouan-Iroquoian, if it existed, appears to have had the following phonetic inventory:

	Bilabial	Dental	Alveolar	Postalveolar	Palatal	Velar	Glottal
Nasal	m		n				
Plosive	p p <sup>h</sup>		t t <sup>h</sup>			k k <sup>h</sup>	ʔ
Fricative		θ	s	ʃ		x	h
Liquid			r		j	w	

  

	Front	Central	Back
High	i ī		u ũ
Mid	e ě		o õ
Low		a ã	

For this following section, the sound transcribed here as ⟨r⟩ may in actuality represent something akin to /ɾ/. Additionally, [on liquids in Siouan languages].

Siouan-Iroquoian, and for that matter the inclusion of Yuchian and Caddoan within the former and the latter, respectively, is far from universally accepted; their inclusion here is in large part due to the available sources giving correspondences for each. It was unknown whether Proto-Caddoan was the same as the Proto-Iroquois-Caddoan indicated in Cafe’s paper, so the Caddoan changes have been presented after the main Iroquoian changes.

Per KneeQuickie, Whimemsz wishes to “[n]ote that Siouan-Iroquoian is a proposed, rather than firmly-demonstrated, language grouping”.

(From Chafe, Wallace L. (1964), “Another Look at Siouan and Iroquoian”. *American Anthropologist New Series*, 66:852 – 862; Julian, Charles (2010), “A History of the Iroquoian Languages”, University of Manitoba, Winnipeg; and from cedh aumdmah’s Iroquoian changes)

### 31.1 Proto-Siouan-Iroquoian to Proto-Iroquoian

*Pogostick Man*, from Chafe, Wallace L. (1964), “Another Look at Siouan and Iroquoian”. *American Anthropologist New Series*, 66:852 – 862; and from cedh aumdmah’s Iroquoian changes

w → Ø / \_{o,õ,ĩ}  
m → w / \_ã  
t → ts / \_{i,ĩ}



$t^h \rightarrow ts / \_i$   
 $t^h \rightarrow n / \text{else}$   
 $\tilde{a} \rightarrow \tilde{e}$   
 $e \rightarrow i / r\_?$   
 $r \rightarrow ts / \_i$   
 $\tilde{i} \rightarrow i$   
 $k \rightarrow \emptyset / t\_$   
 $k^h \rightarrow r$   
 $m \rightarrow n$   
 $p \rightarrow \emptyset / C\_! s\_$   
 $p \rightarrow k^w / \text{else}$   
 $p^h \rightarrow \mathfrak{m}$  (this is a bit of a guess; the paper proper has ⟨hw⟩ here)  
 $\int \theta \rightarrow s t$   
 The paper is unclear about what happened to /u/.  
 $x \rightarrow \emptyset / \_k$   
 $x \rightarrow h / \_C! C\_C$   
 $x \rightarrow k$   
 $? \rightarrow \emptyset / C\_$

### 31.1.1 Proto-Iroquoian to Cherokee

*cedh audmanh*, from Julian, Charles (2010), “A History of the Iroquoian Languages”, University of Manitoba, Winnipeg

$k k^w \rightarrow ts k / \_i$   
 $w \rightarrow \emptyset / h\_i$   
 $w \rightarrow \emptyset / t(h)\_$   
 $\{wV, jV\} \rightarrow V: [+low \text{ falling tone}]$   
 $V \rightarrow \emptyset / C\_hC$   
 $V? \rightarrow V: [+low \text{ falling tone}] / \_C$   
 $\{Vh, V?\} \rightarrow V: / \_ \#$   
 $a(:)w\tilde{e}(:) \rightarrow a(:)ma(:)$   
 $V[+nas] \rightarrow a: [+high \text{ rising tone}]$   
 $\emptyset \rightarrow V: [+high \text{ rising tone}] / C\_ \#$  (“usually one of [a: i:  $\tilde{a}:$  / with this tone], the conditions are unclear”)  
 $iji \rightarrow i:$   
 $tsn \rightarrow hst$   
 $n \rightarrow h / \_st$   
 $\{n, r\} \rightarrow \emptyset / \_j$   
 $t \rightarrow \emptyset / \_ \{k, n\}$   
 $t \rightarrow \emptyset / n\_$

$j \rightarrow \emptyset / ts\_$   
 $\emptyset \rightarrow i / C\_R$   
 $s \rightarrow \emptyset / \#h\_V$   
 $ts \rightarrow s / h\_$   
 $ks \rightarrow ts / \_V$   
 $nh \rightarrow hn$   
 $\tilde{e}(:) \tilde{o}(:) \rightarrow o(:) \tilde{\Lambda}(:)$   
 $r \rightarrow l$

“Some additional changes seem to have taken place in one or more Cherokee dialects, affecting consonant clusters whose reconstructed identity is in most cases uncertain. Example correspondences include  $/hs \sim lh \sim thl/$  (probably  $< */hs\iota/$ ) or  $/ts \sim tl \sim thl/$  (maybe  $< */ts\iota/?$ )”

“[A] synchronic allophonic rule:”  $t \ ts \ k \ k^w \rightarrow d \ dz \ g \ g^w / \_V$

### 31.1.2 Proto-Iroquoian to Proto-Northern Iroquoian

*cedh audmanh*, from Julian, Charles (2010), “A History of the Iroquoian Languages”, University of Manitoba, Winnipeg

$o(:) \ u(:) \rightarrow a(:) \ o(:)$   
 $iji(:) \rightarrow hi(:) / \{k,s\}_-$  “(possibly after all non-glottal obstruents)”  
 $i \rightarrow e / ! \_hCC$  (“short only”)  
 $\emptyset \rightarrow i(:) / \#\_ (C)(C)CVC(C)(C)\#$   
 $V \rightarrow \text{”}V /$  “in antepenultimate syllables, if the vowel of the penultimate syllable was short  $*/a/$  followed by a single non-glottal consonant”  
 $V \rightarrow \text{”}V /$  “in penultimate syllables not preceded by an accented antepenult”  
 $V\text{:} \rightarrow V[\text{-long}] / ! \text{ in } U\#$   
 $\text{”}V \rightarrow \text{”}V\text{:} /$  “in open penultimate syllables followed by a non-glottal consonant”  
 $h \rightarrow \emptyset / \#\_s$   
 $n \rightarrow \emptyset / \_ti$   
 $t \rightarrow \emptyset / n\_V$

#### 31.1.2.1 Proto-Northern Iroquoian to Cayuga *cedh audmanh*, from Julian, Charles (2010), “A History of the Iroquoian Languages”, University of Manitoba, Winnipeg

$\emptyset \rightarrow a / w\_j$   
 $\text{”}V(C)(C)CaCV \rightarrow V(C)\text{”}(C)CaCV / \_ \#$   
 $h \rightarrow \emptyset / \_nh$   
 $? \rightarrow \emptyset / \_nk^{(w)}$   
 $n \rightarrow t / \_k^{(w)}$

$ts \rightarrow hs / V\_ ! \_ \{h,i,j,r\}$   
 $ts \rightarrow s / ! \_ \{h,i,j,r\}$   
 $ns \rightarrow ts / \_ k^{(w)}$   
 $V \rightarrow V\colon / \_ C[-glottal]$  “in even-numbered syllables when accented or immediately before the accent”  
 “[A]ccented short vowels in odd-numbered penults lose their accent”  
 “[W]ords with no accent acquire a new accent on the vowel of the last non-final even syllable of the word”  
 $V? \rightarrow ?V /$  “in odd-numbered unaccented non-final syllables;”  $! \{?,h\}\_$   
 $j \rightarrow \emptyset / ts\_$   
 $h \rightarrow \emptyset / s\_w$   
 $r \rightarrow n / \_ (h)j$   
 $r \rightarrow w / \{o(\colon), \tilde{o}(\colon)\} \_ \{a(\colon), e(\colon), \tilde{e}(\colon), i(\colon)\}$   
 $r \rightarrow j / \{e(\colon), \tilde{e}(\colon), i(\colon)\} \_ \{a(\colon), o(\colon), \tilde{o}(\colon)\}$   
 $r \rightarrow \emptyset / VH\_$   
 $r \rightarrow \emptyset / \_ H$   
 $r \rightarrow \emptyset / w\_$   
 $r \rightarrow \emptyset / V\_V$   
 $V_1"V_2"V_1\colon V_2 \rightarrow "V_1V_2"V_1[-long]V_2$   
 $e(\colon) \rightarrow \tilde{e} / \_ \tilde{e}(\colon)$   
 $o(\colon) \rightarrow \tilde{o} / \_ \tilde{o}(\colon)$   
 $"V_0V_0 \rightarrow V_0\colon[-accent]$   
 $R \rightarrow \emptyset / ?\_\#$   
 $C \rightarrow \emptyset / \{s,k\}\_\#$   
 $Ch \rightarrow \emptyset / \_ s\#$   
 $h \rightarrow \emptyset / V\colon\_\#$   
 $t \rightarrow h / \_ t$   
 $ths \rightarrow tsh$   
 $\emptyset \rightarrow h / \{t,k\}\_n$

**31.1.2.1.1 Cayuga to Upper Cayuga** *cedh audmanh*, from Julian, Charles (2010), “A History of the Iroquoian Languages”, University of Manitoba, Winnipeg

$s \rightarrow f / h\_r$   
 $ts \rightarrow s / \_ (h)r$

“Allophonic changes:”

$s \rightarrow \int / \_ \{r,j\}$   
 $t k k^w \rightarrow d g g^w / \_ \{V,R\}$

**31.1.2.1.2 Cayuga to Lower Cayuga** *cedh audmanh*, from Julian, Charles (2010), “A History of the Iroquoian Languages”, University of Manitoba, Winnipeg

ts → t / <sub>-</sub>(h)r  
t → k / <sub>-</sub>j  
V → V[-voiced] / <sub>-</sub>h “(odd syllables only)”  
tʔ tsʔ kʔ kʷʔ → tʔ tsʔ kʔ kʷʔ

“Allophonic changes:”

s → ʃ / <sub>-</sub>{r,j}  
t k kʷ → d g gʷ / <sub>-</sub>{V,R} ! <sub>-</sub>V[-voiced]

**31.1.2.2 Proto-Northern Iroquoian to Huron** *cedh audmanh*, from Julian, Charles (2010), “A History of the Iroquoian Languages”, University of Manitoba, Winnipeg

s → ʃ / ! <sub>-</sub>{n,t,k<sup>(w)</sup>,w} “or when part of the affricate /ts/”  
ts → ʃ / <sub>-</sub>r  
ts → s / ! <sub>-</sub>{i,j}  
n → Ø / t(h)<sub>-</sub>  
n → Ø / <sub>-</sub>s  
n → Ø / <sub>-</sub>i “(in pronominal prefixes only)”  
k → i / #<sub>-</sub>n  
k → Ø / <sub>-</sub>n  
n hn sC → t th Ch / s<sub>-</sub>  
k → h / <sub>-</sub>{t,ts,s,ʃ}  
k → x / {#,R,ʔ,V}<sub>-</sub>{V,ʔ,R,#}  
kʷ → xʷ / V<sub>-</sub>V  
t → k / <sub>-</sub>(h)w  
t → Ø / <sub>-</sub>k<sup>(w)</sup>  
j → Ø / ts<sub>-</sub>  
j → Ø / #<sub>-</sub>V  
j → Ø / V<sub>-</sub>{V,#}  
{r,w} → Ø / <sub>-</sub>j  
w → Ø / #<sub>-</sub>  
w → Ø / <sub>-</sub>{r,#}  
h → Ø / #<sub>-</sub>w  
Ø → k / s<sub>-</sub>(h)w  
Ø → a / CC<sub>-</sub>ʔ

“Some known changes in dialects other than pre-Wyandot:”

r → h / ʃ<sub>-</sub>  
t → k / <sub>-</sub>r

**31.1.2.2.1 Huron to Wyandot** *cedh audmanh*, from Julian, Charles (2010), “A History of the Iroquoian Languages”, University of Manitoba, Winnipeg

V: → ”V / in U#; “this change may have been present in Huron already”

t → k / \_j

x<sup>w</sup> → w

{ʔ,h} → Ø / \_nh

n → t / \_h

h → Ø / {t,ts,s,k}-

Vh → V: / \_R

Ø → w / {o(:),ō(:)}-V

Ø → j / {e(:),ē(:),i(:)}-V

x → Ø / \_{i,j}

x → e / #\_r

w j → m j / between two vowels of unlike nasality

j → ʒ / {#,ʔ,V}-V

x → j / \_V

x → Ø

k → Ø / \_#

ē(:) ò(:) o(:) → ē(:) ò(:) u(:)

n → <sup>n</sup>d / \_{V[-nas],r}

n → ŋ / \_{j,w}

ē(:) → ā(:) / w\_

**31.1.2.3 Proto-Northern Iroquoian to Onondaga** *cedh audmanh*, from Julian, Charles (2010), “A History of the Iroquoian Languages”, University of Manitoba, Winnipeg

s → ʃ / ! n\_ “or when part of the unit affricate /ts/”

ts → hs / V\_V ! \_i

ts → s / ! \_{h,i,j}

ns → ts / \_k<sup>(w)</sup>

n → Ø / \_s

”V(:)(C)(C)V: → V[-long](C)”(C)CV[-long] / \_#

ara → a: / “unaccented syllables only”

jh → hj

n → t / \_k<sup>(w)</sup>

”V(C)(C)CaCV → V(C)”(C)CaCV / \_#

$\int \rightarrow s$   
 $n \rightarrow \emptyset / h\_r$   
 $h \rightarrow \emptyset / w\_j$   
 $Vw \rightarrow V: / \_ \{r,j\}$   
 $"V \rightarrow "V: / \_ C(R)V$   
 $hs \rightarrow sh / C\_$   
 $hts \rightarrow tsh / C\_V$   
 $V \rightarrow V: / \_ "C[-glottal](R)V\{:,H\}$  in "even numbered syllables only"  
 $V \rightarrow V: / \_ KRV$  "in the second syllable of a word"  
 $V \rightarrow V[+high\ tone] / \_ \$"V$   
 $a(:) o(:) \tilde{o}(:) \rightarrow \ae(:) e(:) \tilde{e}(:) / r\_$   
 $Vr \rightarrow V: / \_ C$   
 $rV \rightarrow V: / C\_$   
 $r \rightarrow j / \{e(:),\tilde{e}(:),i(:)\}_-V$   
 $r \rightarrow w / \{o(:),\tilde{o}(:)\}_-V$   
 $r \rightarrow \emptyset$   
 $h \rightarrow \emptyset / \_ sn$   
 $h \rightarrow \emptyset / \_ \{k,t,ts,s\}\#$   
 $k \rightarrow h / \_ k$   
 $\tilde{o}(:) \rightarrow \tilde{u}(:)$   
 "Allophonic changes:"  
 $ts \rightarrow t\int / \_ \{(h)i,(h)j\}$   
 $s \rightarrow \int / \_ \{hi,hj\}$   
 $t\ t\int\ k^{(w)} \rightarrow d\ d\int\ g^{(w)} / \_ \{V,R\}$

**31.1.2.4 Proto-Northern Iroquoian to Proto-Mohawk-Oneida** *cedh audmanh*,  
 from Julian, Charles (2010), "A History of the Iroquoian Languages", University of Mani-  
 toba, Winnipeg

$\tilde{e}(:) \tilde{o}(:) \rightarrow \tilde{\Lambda}(:) \tilde{u}(:)$   
 $ts \rightarrow hs / V\_ \{t,k^{(w)}\}$   
 $ts \rightarrow s / ! \_ \{h,i,j\}$   
 $ns \rightarrow ts / \_ \{t,k^{(w)}\}$   
 $n \rightarrow \emptyset / \_ s$   
 $"V \rightarrow "V:[+falling\ tone] / \_ \{?,hR\}$   
 $? \rightarrow \emptyset / "V:[+falling\ tone] \_ C$   
 $h \rightarrow \emptyset / "V:[+falling\ tone] \_ R$   
 $h \rightarrow \emptyset / \_ \#$   
 $h \rightarrow \emptyset / \# \_ w$   
 $V: \rightarrow V / \_ (C)(C)(C)\#$

$C?V_0 \rightarrow CV_0?V_0$   
 $\emptyset \rightarrow e / w_r$  (and “probably. . .in other environments”)

**31.1.2.4.1 Proto-Mohawk-Oneida to Mohawk** *cedh audmanh*, from Julian, Charles (2010), “A History of the Iroquoian Languages”, University of Manitoba, Winnipeg

$V_0 \rightarrow \emptyset / "VC(C)(C)V_0?_C(C)(C)\#$   
 $\emptyset \rightarrow e / \{tsh,s,n\}_r$   
 $w \rightarrow \emptyset / \_jh$   
 $h \rightarrow \emptyset / w\_j$   
 $jh \rightarrow hj$   
 $\emptyset \rightarrow e / w\_j$   
 $\emptyset \rightarrow e / n.k^{(w)}$   
 $\emptyset \rightarrow e / \{t,k\}\_-\{r,n\}$   
 $\emptyset \rightarrow e / \{\#,V\}s.n$   
 $\emptyset \rightarrow e / t\_w$   
 $\emptyset \rightarrow e / \{\#,V\}s\_w$

“Dialectal changes include:”

—  $r \rightarrow l$   
 —  $t \rightarrow k / \_j$   
 —  $k \rightarrow t / \_j$   
 —  $w\tilde{a} \rightarrow \tilde{u} / \{h,s\}\_$   
 —  $j \rightarrow \emptyset / ts\_$   
 —  $t \rightarrow t_f / \_-(h)j$   
 —  $wh \rightarrow f$

“Allophonic changes:”

—  $ts \rightarrow t_f / \_-\{(h)i,(h)j\}$   
 —  $t\ t_f\ k^{(w)} \rightarrow d\ d_3\ g^{(w)} / \_-\{V,R\}$   
 —  $s \rightarrow \int / \_-(h)j$   
 —  $s \rightarrow z / \{\#,V\}\_-\{V,R\} ! R = j$

**31.1.2.4.2 Proto-Mohawk-Oneida to Oneida** *cedh audmanh*, from Julian, Charles (2010), “A History of the Iroquoian Languages”, University of Manitoba, Winnipeg

$"V:[-falling\ tone]CV \rightarrow V:"CV$   
 $"V \rightarrow "V: / \_?$   
 $? \rightarrow \emptyset / "V: \_$   
 $\emptyset \rightarrow i / \{V,t\}n.k^{(w)}V$

ths → tsh  
 hs → sh /  $_{-}\{n,w\}$   
 h → Ø /  $_{-}Ch$   
 h → Ø /  $k_{-}\{s,ts\}$   
 h → Ø /  $_{-}\{sk,st\}$   
 h → Ø /  $\{st,tst\}_{-}$   
 h → Ø /  $ts_r$  ! “in pre-pausal forms, see also below”  
 $\{h,\varnothing\} \rightarrow \varnothing / _R$  “in post-tonic syllables”  
 $\varnothing \rightarrow h / _C$  “in post-tonic syllables”  
 r → l  
 ”V:[+falling tone] → ”V[-long -falling tone]  
 V: → V[-long]  $_{-}C(C)(C)V$  (“this change happens only in the Ontario dialect”)  
 “In addition, a number of sound changes have applied to words *only in the pre-pausal position*. Most of these changes are characterized by the devoicing of one or more segments at the end of a word:  
 — Ø → e /  $C_{-}\{n,l\}V(H)\#$   
 — Ø → o /  $C_wV(H)\#$   
 — Ø → i /  $C_jV(H)\#$   
 — V:[+falling tone] $C(C)V(H) \rightarrow \dot{V}$ :[+falling tone] $\dot{C}(\dot{C})\dot{V}(\dot{H}) / _\#$   
 — CV:[+falling tone] →  $\dot{C}\dot{V}$ :[+falling tone] /  $_{-}\#$   
 — CV? →  $\dot{C}\dot{V}\dot{?}$  /  $_{-}\#$   
 — V[-long] →  $\dot{V} / R_{-}\#$   
 — OV[-long] →  $\dot{O}\dot{V} / _\#$   
 — jV → Ø /  $Ci_{-}(H)\#$   
 — ? → h /  $_{-}C\#$   
 — R →  $\dot{R} / _\#$   
 “Allophonic changes:”  
 ts → tʃ /  $_{-}\{(h)i,(h)j\}$   
 t tʃ k<sup>(w)</sup> → d dʒ g<sup>(w)</sup> /  $_{-}\{V,R\}$   
 s → ʃ /  $_{-}(h)j$   
 s → z /  $\{\#,V\}_{-}\{V,R\}$

**31.1.2.5 Proto-Northern Iroquoian to Seneca** *cedh audmanh*, from Julian, Charles (2010), “A History of the Iroquoian Languages”, University of Manitoba, Winnipeg

ts → s /  $!\{i,j\}$   
 n → Ø /  $_{-}s$   
 j → Ø /  $_{-}ts$   
 V → V: /  $_{-}\{t,k^{(w)},s,n,r,j,w\}$  “in even penultimate syllables”  
 “The inherited accent system is replaced by a new one, by which...



— “the accent falls on the last nonfinal even short syllable of a word if this vowel is followed directly

—— “by a single glottal consonant,

—— “by /sn/ or /sw/,

—— “by any two-consonant cluster that does not end in a resonant,

—— “or by any three consonant cluster;

— “failing that, the accent falls on the last non-final even short syllable that is followed by a non-final syllable such as that just described;

— “failing that, a word has no accent.”

a → æ / \_ra(:)

a → e / \_ro(:)

ã → ã / \_rõ:

a(:) → æ(:) / r\_

h → Ø / \_{tk,nh,sC,C#}

h → Ø / #\_w

h → Ø / w\_j

hw → Ø / õ\_

w → Ø / \_{r,j}

r → n / \_{(h)j}

r → Ø / Vh\_

Vh → V: / \_{n,w,j}

h → Ø / V\_V

r → j / C[-glottal](h)\_ {o(:),õ(:)}

r → h / s\_

r → j / i(:)\_V

r → w / {o(:),õ(:)}\_V

r → Ø

o → o: / \_{a:,æ:}

V: → V / V\_

V<sub>1</sub>”V<sub>2</sub> → ”V<sub>1</sub>V<sub>2</sub>

a(:) → ã(:) / adjacent to a nasal vowel

ẽ(:) → e(:) / \_{e(:),o(:)}

? → Ø / \_nk<sup>(w)</sup>

n → t / \_k<sup>(w)</sup>

n → t / ?\_#

R → Ø / \_h

C → Ø / s\_#

C[-glottal] → Ø / \_s#

k → Ø / \_hts

t → h / \_{n,t}

t → Ø / k\_#

$\{ths, tts\} \rightarrow tsh$   
 $a(:) \ \text{æ}(:) \rightarrow \tilde{o}(:) \ \tilde{e}(:) / n\_$   
 $a(:) \rightarrow \tilde{o}(:) / V[+nas]H\_$   
 $a(:) \rightarrow \tilde{o}(:) / V[+nas](\{?, s\})w\_$   
 $\tilde{e}(:) \ \tilde{o}(:) \rightarrow \tilde{\epsilon}(:) \ \tilde{\omega}(:)$   
 $\emptyset \rightarrow h / k\_n$

“Allophonic changes:” —  $t \ k^{(w)} \rightarrow d \ g^{(w)} / \_ \{V, R\}$   
 —  $s \rightarrow \int / \_ j$   
 —  $a \ e \ o \rightarrow \text{ə} \ \text{ɪ} \ \text{ʊ} / C\_ \{C, i[-long]\}$

**31.1.2.6 Proto-Northern Iroquoian to Tuscarora** *cedh audmanh*, from Julian, Charles (2010), “A History of the Iroquoian Languages”, University of Manitoba, Winnipeg

$ts \rightarrow t\int / \_ \{h, i, j\}$   
 $ths \rightarrow t\int$   
 $j \rightarrow \emptyset / t\int\_$   
 $t \rightarrow ?t$   
 ${}^nV \rightarrow {}^nV: / \_ n$  in “penultimate syllables only”  
 $n \rightarrow t / ! \_ \{h, k^{(w)}, V[+nas]\}$   
 ${}^nV \rightarrow {}^nV: / \_ \{k^{(w)}, (?)t\} \{s, R, H\}$  (“penultimate syllables only”)  
 ${}^nV \rightarrow {}^nV: / \_ RR$   
 $\{\tilde{e}(:), \tilde{o}(:)\} \rightarrow \tilde{\omega}(:)$   
 $ts \rightarrow \theta$   
 $?t \rightarrow t? / \_ ?t$   
 $?t \rightarrow \emptyset / \_ t$   
 $?t \rightarrow ? / \_ r$   
 $?t \rightarrow ?n / V\_ \{V, w, j\}$   
 $?t \rightarrow n / \{ \#, C \} \_ \{V, w, j\}$   
 $?t \rightarrow t$   
 $h \rightarrow \emptyset / \_ nh$   
 $h \rightarrow \emptyset / \# \_ w$   
 $h \rightarrow \emptyset / k\_ \{s, ts, t\int\}$   
 $h \rightarrow \emptyset / V: \_ \#$   
 $w \rightarrow \emptyset / \_ jh$   
 $n \rightarrow t / \_ k^{(w)}$   
 $\emptyset \rightarrow t / hs\_r$   
 $\emptyset \rightarrow j / k\_e(:)$   
 $r$  becomes a trill

$e(:) \rightarrow \varepsilon(:)$   
 $\tilde{a}(:) \rightarrow \tilde{i}(:) / !$  “when both short and stressed”  
 $a(:) o(:) \rightarrow \circ(:) u(:) / !$  “when both short and unstressed”  
 $t k^{(w)} \rightarrow d g^{(w)} / -\{V, R\}$   
 $n r w j \rightarrow \underset{\circ}{n} \underset{\circ}{r} \underset{\circ}{w} \underset{\circ}{j} / -\{\#, O\}$

**31.1.2.6.1 Tuscarora to Western Tuscarora** *cedh audmanh*, from Julian, Charles (2010), “A History of the Iroquoian Languages”, University of Manitoba, Winnipeg

$\theta \rightarrow s$   
 $w \rightarrow \emptyset / -j$   
 $j? \rightarrow ?j$   
 $\underset{\circ}{r} \underset{\circ}{w} \underset{\circ}{j} \rightarrow s f j$

**31.1.2.6.2 Tuscarora to Eastern Tuscarora** *cedh audmanh*, from Julian, Charles (2010), “A History of the Iroquoian Languages”, University of Manitoba, Winnipeg

$r \rightarrow \emptyset / st\_$   
 $\tilde{a}(:) a(:) o(:) \rightarrow \tilde{i}(:) \circ(:) u(:)$  (“in all positions”)

## 31.2 Proto-Siouan-Iroquoian to Proto-Siouan

*Pogostick Man*, from Chafe, Wallace L. (1964), “Another Look at Siouan and Iroquoian”. *American Anthropologist New Series*, 66:852 – 862; and from cedh aumdanh’s Iroquoian changes

$\tilde{e} \tilde{o} \rightarrow \tilde{i} \tilde{u}$   
 $\{t, h\} \rightarrow \emptyset / s\_$   
 $h \rightarrow \emptyset / V\_C$   
 $s \rightarrow \emptyset / h\_$   
 $\theta \rightarrow r$   
 $? \rightarrow \emptyset / V\_$   
 $x \rightarrow \varsigma / -\{i, u\}$

Also, apparently  $/t^j/$  got picked up and added to the phonology somewhere along the line, but the circumstances are unclear

### 31.2.1 Proto-Siouan to Catawba

*Pogostick Man*, from Wolff, Hans (1950), “Comparative Siouan I”. *International Journal of American Linguistics* 16(2):61 – 66; Wolff, Hans (1950), “Comparative Siouan II” *Interna-*

*tional Journal of American Linguistics* 16(3):113 – 121; Wolff, Hans (1950), “Comparative Siouan III”. *International Journal of American Linguistics* 16(4):168 – 178; and cedh audmanh’s changes above, which assisted me in deciphering the vintage phonetic transcription scheme

*NB: Does not include developments in unstressed non-nasal vowels. L was apparently either /ɪ/ or /l/; L<sup>j</sup> (L<sup>y</sup> in the text) was apparently /j/, or maybe /ɿ/. Also, the changes of /p/ before a consonant are unclear, as described within the text. Changes appended with an asterisk are putative; there was a seeming lack of material for this language, so I’ve attempted to do some tracking work from the examples given in the text.*

ɕ x → x ʃ  
 p → {p,b,m,w} / \_C  
 p → b / V\_V (\*)  
 t<sup>j</sup> → ʃ / in ”U  
 t<sup>j</sup> → ʒ / else  
 t → Ø / \_k, when medial  
 ”V[+nas] → Vn (\*)  
 Ø → ? / C\_# (only sometimes?) (\*)

### 31.2.2 Proto-Siouan to Dakota

*Pogostick Man*, from Wolff, Hans (1950), “Comparative Siouan I”. *International Journal of American Linguistics* 16(2):61 – 66; Wolff, Hans (1950), “Comparative Siouan II” *International Journal of American Linguistics* 16(3):113 – 121; Wolff, Hans (1950), “Comparative Siouan III”. *International Journal of American Linguistics* 16(4):168 – 178; and cedh audmanh’s changes above, which assisted me in deciphering the vintage phonetic transcription scheme

*NB: Does not include developments in unstressed non-nasal vowels. L was apparently either /ɪ/ or /l/; L<sup>j</sup> (L<sup>y</sup> in the text) was apparently /j/, or maybe /ɿ/. Also, the changes of /p/ before a consonant are unclear, as described within the text.*

ɕ x → x {ʃ,ʒ}  
 p → {p,b,m,w}  
 t<sup>j</sup> → ʃ / in ”U  
 t<sup>j</sup> → ʒ / else  
 s → z / in U[-stress]  
 s → z / V\_V  
 r → d / s\_  
 t<sup>j</sup>r → {st,ʃt}  
 r → d / x\_

$mn \rightarrow mV_0nV_0 / \#_-$   
 $km \rightarrow kV_0mV_0$   
 $w \rightarrow p / \_t$   
 $t \rightarrow \emptyset / \_k$ , when medial  
 $hk \rightarrow tʃ$   
 $k \rightarrow \emptyset / \_x"V$   
 $x \rightarrow ? / "Vk_-$

**31.2.2.1 Dakota to Santee Dakota** *Pogostick Man*, from Wolff, Hans (1950), “Comparative Siouan I”. *International Journal of American Linguistics* 16(2):61 – 66; Wolff, Hans (1950), “Comparative Siouan II” *International Journal of American Linguistics* 16(3):113 – 121; Wolff, Hans (1950), “Comparative Siouan III”. *International Journal of American Linguistics* 16(4):168 – 178; and cedh audmanh’s changes above, which assisted me in deciphering the vintage phonetic transcription scheme

*NB: Does not include developments in unstressed non-nasal vowels.*

$\{pr,mt\} \rightarrow md$   
 $kr \rightarrow hd / \#_-$   
 $kr \rightarrow gj / \text{medial}$

**31.2.2.2 Dakota to Teton Dakota** *Pogostick Man*, from Wolff, Hans (1950), “Comparative Siouan I”. *International Journal of American Linguistics* 16(2):61 – 66; Wolff, Hans (1950), “Comparative Siouan II” *International Journal of American Linguistics* 16(3):113 – 121; Wolff, Hans (1950), “Comparative Siouan III”. *International Journal of American Linguistics* 16(4):168 – 178; and cedh audmanh’s changes above, which assisted me in deciphering the vintage phonetic transcription scheme

*NB: Does not include developments in unstressed non-nasal vowels.*

$\{pr,mt\} \quad kr \rightarrow bl \quad gl$

**31.2.2.3 Dakota to Yankton Dakota** *Pogostick Man*, from Wolff, Hans (1950), “Comparative Siouan I”. *International Journal of American Linguistics* 16(2):61 – 66; Wolff, Hans (1950), “Comparative Siouan II” *International Journal of American Linguistics* 16(3):113 – 121; Wolff, Hans (1950), “Comparative Siouan III”. *International Journal of American Linguistics* 16(4):168 – 178; and cedh audmanh’s changes above, which assisted me in deciphering the vintage phonetic transcription scheme

*NB: Does not include developments in unstressed non-nasal vowels.*

$r \rightarrow d / k_-$

### 31.2.3 Proto-Siouan to Mandan

*Pogostick Man*, from Wolff, Hans (1950), “Comparative Siouan I”. *International Journal of American Linguistics* 16(2):61 – 66; Wolff, Hans (1950), “Comparative Siouan II” *International Journal of American Linguistics* 16(3):113 – 121; Wolff, Hans (1950), “Comparative Siouan III”. *International Journal of American Linguistics* 16(4):168 – 178; and cedh audmanh’s changes above, which assisted me in deciphering the vintage phonetic transcription scheme

*NB: Does not include developments in unstressed non-nasal vowels. L was apparently either /ɪ/ or /l/; L<sup>j</sup> (L<sup>y</sup> in the text) was apparently /j/, or maybe /ʎ/.*

s → ʃ  
t → Ø / \_s  
ʃ → x  
w → m  
L<sup>j</sup> → n / \_V[+nas]  
L → r / \_V[-nas]  
ã → a / in ”U (sporadic)  
“Phonemic vowel length was gained somehow.”  
t<sup>j</sup> → s / \_ʔV  
CʔV<sub>0</sub> → CV<sub>0</sub>ʔV<sub>0</sub>  
t<sup>j</sup>r → sV<sub>0</sub>rV<sub>0</sub>  
r → Ø / k\_  
mn → mV<sub>0</sub>nV<sub>0</sub> / #-  
mn → mV<sub>0</sub>nV<sub>0</sub> / {C,V}-{C,V}  
sn → {ʃV<sub>0</sub>nV<sub>0</sub>,sV<sub>0</sub>rV<sub>0</sub>}  
km → kV<sub>0</sub>pV<sub>0</sub>  
t → Ø / \_k, when medial  
sk → ʃ / \_”V

### 31.2.4 Proto-Siouan to Proto-Čiwere-Winnebago

*Pogostick Man*, from Wolff, Hans (1950), “Comparative Siouan I”. *International Journal of American Linguistics* 16(2):61 – 66; Wolff, Hans (1950), “Comparative Siouan II” *International Journal of American Linguistics* 16(3):113 – 121; Wolff, Hans (1950), “Comparative Siouan III”. *International Journal of American Linguistics* 16(4):168 – 178; and cedh audmanh’s changes above, which assisted me in deciphering the vintage phonetic transcription scheme

*NB: Does not include developments in unstressed non-nasal vowels. L was apparently*

either /ɹ/ or /l/;  $L^j$  ( $L^y$  in the text) was apparently /j/, or maybe /ɿ/. Also, the changes of /p/ before a consonant are unclear, as described within the text.

$\varsigma x \rightarrow x \{j, 3\}$   
 $p \rightarrow \{p, b, m, w\}$   
 $w \rightarrow \emptyset / \_t$   
 $t \rightarrow tʃ / \_”E$   
 $t \rightarrow dʒ / \_E[-stress]$   
 $t^j \rightarrow ʃ / in ”U$   
 $t^j s \rightarrow ʒ z / in U[-stress]$   
 $k \rightarrow g / V[+nas] \_ ! \_ \#$   
 $k \rightarrow g / \_ ?$   
 $kr \rightarrow kV_0rV_0$   
 $m \rightarrow \emptyset / \_n ! \_n \#$

**31.2.4.1 Proto-Čiwere-Winnebago to Čiwere** *Pogostick Man*, from Wolff, Hans (1950), “Comparative Siouan I”. *International Journal of American Linguistics* 16(2):61 – 66; Wolff, Hans (1950), “Comparative Siouan II” *International Journal of American Linguistics* 16(3):113 – 121; Wolff, Hans (1950), “Comparative Siouan III”. *International Journal of American Linguistics* 16(4):168 – 178; and cedh audmanh’s changes above, which assisted me in deciphering the vintage phonetic transcription scheme

*NB: Does not include developments in unstressed non-nasal vowels.  $L$  was apparently either /ɹ/ or /l/;  $L^j$  ( $L^y$  in the text) was apparently /j/, or maybe /ɿ/. Also, the changes of /p/ before a consonant are unclear, as described within the text.*

$p \rightarrow \{p, b, m, w\} / \_C$   
 $p \rightarrow w / V\_V$   
 $g \rightarrow \eta$   
 $k \rightarrow g / ”V\_$   
 $s z \rightarrow \theta \delta$  (sporadic)  
 $L \rightarrow l$   
 $L^j \rightarrow n / \_V[+nas]$   
 $L^j \rightarrow r / \_V[-nas]$   
 $t \rightarrow tʃ / \_ ?$   
 $pr \rightarrow bl$   
 $sr \rightarrow \{\theta l, j l\}$   
 $t^j r \rightarrow ʃV_0rV_0$   
 $kr \rightarrow gl$   
 $r \rightarrow l / x\_$   
 $k \rightarrow h / \_m$

$k \rightarrow \emptyset / \#t\_$   
 $tk \rightarrow g / \text{when medial}$   
 $x \rightarrow \emptyset / \_k$   
 $x \rightarrow \emptyset / k\_V$

**31.2.4.2 Proto-Čiwere-Winnebago to Winnebago** *Pogostick Man*, from Wolff, Hans (1950), “Comparative Siouan I”. *International Journal of American Linguistics* 16(2):61 – 66; Wolff, Hans (1950), “Comparative Siouan II” *International Journal of American Linguistics* 16(3):113 – 121; Wolff, Hans (1950), “Comparative Siouan III”. *International Journal of American Linguistics* 16(4):168 – 178; and cedh audmanh’s changes above, which assisted me in deciphering the vintage phonetic transcription scheme

*NB: Does not include developments in unstressed non-nasal vowels. L was apparently either /ɪ/ or /l/; L<sup>j</sup> (L<sup>y</sup> in the text) was apparently /j/, or maybe /ɛ/. Also, the changes of /p/ before a consonant are unclear, as described within the text.*

$p \rightarrow \{p, b, m, w\} / \_C$   
 $V \rightarrow \emptyset / \_ \#$   
 $p \rightarrow b / V\_V$   
 $t \rightarrow \{tʃ, dʒ\}$

Wolff says that “Winnebago preserved the intermediate stages of \*k reflexes”

$L \rightarrow r$   
 $L^j \rightarrow n / \_V[+nas]$   
 $L^j \rightarrow r / \_V[-nas]$   
 $t^j \rightarrow x / \_?$   
 $pr \{sr, xr\} \text{ } sn \text{ } km \rightarrow pV_0rV_0 \text{ } fV_0rV_0 \text{ } sV_0nV_0 \text{ } kV_0wV_0$   
 $mt \rightarrow r$   
 $tk \rightarrow \{tʃk, tʃg\} / \#\_$   
 $t \rightarrow \emptyset / \_k, \text{when medial}$   
 $xk \rightarrow g$

### 31.2.5 Proto-Siouan to Proto-Crow-Hidatsa

*Pogostick Man*, from Wolff, Hans (1950), “Comparative Siouan I”. *International Journal of American Linguistics* 16(2):61 – 66; Wolff, Hans (1950), “Comparative Siouan II” *International Journal of American Linguistics* 16(3):113 – 121; Wolff, Hans (1950), “Comparative Siouan III”. *International Journal of American Linguistics* 16(4):168 – 178; and cedh audmanh’s changes above, which assisted me in deciphering the vintage phonetic transcription scheme



*NB: Does not include developments in unstressed non-nasal vowels. L was apparently either /ɹ/ or /l/; L<sup>j</sup> (L<sup>y</sup> in the text) was apparently /j/, or maybe /ɿ/.*

s ɕ {t<sup>j</sup>, x} → ts x ʃ

m → w (Crow seems to have gained a phonemic /m/ after this, however)

L(j) → r

ã ã ã → a i u

Phonemic vowel length was gained somehow.

wt → wV<sub>0</sub>tV<sub>0</sub>

t → Ø / \_k, when medial

**31.2.5.1 Proto-Crow-Hidatsa to Crow** *Pogostick Man*, from Wolff, Hans (1950), “Comparative Siouan I”. *International Journal of American Linguistics* 16(2):61 – 66; Wolff, Hans (1950), “Comparative Siouan II” *International Journal of American Linguistics* 16(3):113 – 121; Wolff, Hans (1950), “Comparative Siouan III”. *International Journal of American Linguistics* 16(4):168 – 178; and cedh audmanh’s changes above, which assisted me in deciphering the vintage phonetic transcription scheme

*NB: Does not include developments in unstressed non-nasal vowels.*

t → ʃ / \_E

t → s / \_V

k → ts / \_i

n → r / ! at word boundaries

t → ʃ / \_ʔ

ʔ → Ø / \_C

sk → tsk / \_”V

x → Ø / k\_”V

**31.2.5.2 Proto-Crow-Hidatsa to Hidatsa** *Pogostick Man*, from Wolff, Hans (1950), “Comparative Siouan I”. *International Journal of American Linguistics* 16(2):61 – 66; Wolff, Hans (1950), “Comparative Siouan II” *International Journal of American Linguistics* 16(3):113 – 121; Wolff, Hans (1950), “Comparative Siouan III”. *International Journal of American Linguistics* 16(4):168 – 178; and cedh audmanh’s changes above, which assisted me in deciphering the vintage phonetic transcription scheme

*NB: Does not include developments in unstressed non-nasal vowels.*

n → r

ʔ → Ø / C\_

kr → kV<sub>0</sub>rV<sub>0</sub> / #\_

r → Ø / {C,V}k\_ {C,V}

$mn \rightarrow w / \{C,V\} - \{C,V\}$   
 $sn \rightarrow tsV_0 rV_0$   
 $km \rightarrow hp$   
 $sk \rightarrow tsuk / \_ "u$   
 $sk\ kx \rightarrow tsk\ hk / \_ "V$   
 $sk \rightarrow hts / "V\_$   
 $\emptyset \rightarrow V / x\_k$

### 31.2.6 Proto-Siouan to Proto-Dhegiha

*Pogostick Man*, from Wolff, Hans (1950), "Comparative Siouan I". *International Journal of American Linguistics* 16(2):61 – 66; Wolff, Hans (1950), "Comparative Siouan II" *International Journal of American Linguistics* 16(3):113 – 121; Wolff, Hans (1950), "Comparative Siouan III". *International Journal of American Linguistics* 16(4):168 – 178; and cedh audmanh's changes above, which assisted me in deciphering the vintage phonetic transcription scheme

*NB: Does not include developments in unstressed non-nasal vowels. L was apparently either /ɹ/ or /l/; L<sup>j</sup> (L<sup>y</sup> in the text) was apparently /j/, or maybe /ɿ/. Also, the changes of /p/ before a consonant are unclear, as described within the text.*

$p \rightarrow \{p,b,m,w\} / \_ C$   
 $w \rightarrow \emptyset / \_ t$   
 $t\ t^j\ s \rightarrow d\ ʒ\ z / \text{in } U[-\text{stress}]$   
 $t^j \rightarrow ʃ / \text{in } "U$   
 $k \rightarrow g / "V\_$   
 $s \rightarrow z / V\_V$   
 $L\ L^j \rightarrow \{\partial,j\}\ ʒ / \_ "V$   
 $L \rightarrow d / "V\_$   
 $w \rightarrow \beta$  (sporadic, allophonic)  
 $u \rightarrow i / \text{in } "U$  (sporadic)  
 $k \rightarrow \emptyset \#t\_$  (in morphemes)  
 $tk \rightarrow g /$  when medial

**31.2.6.1 Proto-Dhegiha to Kansa** *Pogostick Man*, from Wolff, Hans (1950), "Comparative Siouan I". *International Journal of American Linguistics* 16(2):61 – 66; Wolff, Hans (1950), "Comparative Siouan II" *International Journal of American Linguistics* 16(3):113 – 121; Wolff, Hans (1950), "Comparative Siouan III". *International Journal of American Linguistics* 16(4):168 – 178; and cedh audmanh's changes above, which assisted me in deciphering the vintage phonetic transcription scheme

*NB: Does not include developments in unstressed non-nasal vowels. L was apparently either /ɪ/ or /l/; L<sup>j</sup> (L<sup>y</sup> in the text) was apparently /j/, or maybe /ɿ/. Also, the changes of /p/ before a consonant are unclear, as described within the text. Changes appended with an asterisk are putative; there was a seeming lack of material for this language, so I've attempted to do some tracking work from the examples given in the text.*

V[+nas] → V[-nas]n  
 p → {p,b,m,w} / \_C  
 w → b / #\_  
 r L<sup>j</sup> → d j / #\_ (\*)  
 L → bl / #\_e (\*)  
 V → V[+nas] / N\_  
 N → S / V\_V  
 ũ → aN / stressed  
 t → ts / \_?  
 t<sup>j</sup>r kr → ft l  
 mn → bl / {C,V}-{C,V}  
 mt → d

**31.2.6.2 Proto-Dhegiha to Omaha-Ponca** *Pogostick Man*, from Wolff, Hans (1950), “Comparative Siouan I”. *International Journal of American Linguistics* 16(2):61 – 66; Wolff, Hans (1950), “Comparative Siouan II” *International Journal of American Linguistics* 16(3):113 – 121; Wolff, Hans (1950), “Comparative Siouan III”. *International Journal of American Linguistics* 16(4):168 – 178; and cedh audmanh’s changes above, which assisted me in deciphering the vintage phonetic transcription scheme

*NB: Does not include developments in unstressed non-nasal vowels. L was apparently either /ɪ/ or /l/; L<sup>j</sup> (L<sup>y</sup> in the text) was apparently /j/, or maybe /ɿ/.*

p → b / V\_V  
 n → θ / \_{ã,ẽ,õ}  
 w → m / #\_  
 L → θ / \_"V  
 d → n / "V\_  
 L<sup>j</sup> → {θ,n} / \_V[+nas -stress]  
 ũ → ã / stressed  
 k → Ø / \_?  
 pr sr t<sup>j</sup>r kr → bθ sn fn gθ  
 mn → mV<sub>0</sub>nV<sub>0</sub> / #\_  
 mn → bθ / {C,V}-{C,V}  
 mt → n

**31.2.6.3 Proto-Dhegiha to Osage** *Pogostick Man*, from Wolff, Hans (1950), “Comparative Siouan I”. *International Journal of American Linguistics* 16(2):61 – 66; Wolff, Hans (1950), “Comparative Siouan II” *International Journal of American Linguistics* 16(3):113 – 121; Wolff, Hans (1950), “Comparative Siouan III”. *International Journal of American Linguistics* 16(4):168 – 178; and cedh audmanh’s changes above, which assisted me in deciphering the vintage phonetic transcription scheme

*NB: Does not include developments in unstressed non-nasal vowels. L was apparently either /ɪ/ or /l/; L<sup>j</sup> (L<sup>y</sup> in the text) was apparently /j/, or maybe /ɿ/.*

p → {p,b,m,w} / \_C  
t → ts / \_E  
s → θ  
{ç,x} → z (sporadic) n → ð / \_{ã,ẽ,õ}  
w → b / #\_  
L<sup>j</sup> → ð / \_V[+nas -stress]  
ʔ → Ø / p\_  
t → ts / \_ʔ  
pr sr t<sup>j</sup>r kr → bð sts ʃd gð  
r → ð / x\_  
m → Ø / #\_n  
mn → bð / {C,V}\_-{C,V}  
sn mt → hn d  
ʃ → s / ”V\_k  
xk → (ʃ)k / \_”V  
xk → g / ”V\_  
x → ʔ / k\_”V

**31.2.6.4 Proto-Dhegiha to Quapaw** *Pogostick Man*, from Wolff, Hans (1950), “Comparative Siouan I”. *International Journal of American Linguistics* 16(2):61 – 66; Wolff, Hans (1950), “Comparative Siouan II” *International Journal of American Linguistics* 16(3):113 – 121; Wolff, Hans (1950), “Comparative Siouan III”. *International Journal of American Linguistics* 16(4):168 – 178; and cedh audmanh’s changes above, which assisted me in deciphering the vintage phonetic transcription scheme

*NB: Does not include developments in unstressed non-nasal vowels. L was apparently either /ɪ/ or /l/; L<sup>j</sup> (L<sup>y</sup> in the text) was apparently /j/, or maybe /ɿ/. Also, the changes of /p/ before a consonant are unclear, as described within the text. Changes appended with an asterisk are putative; there was a seeming lack of material for this language, so I’ve attempted to do some tracking work from the examples given in the text.*

p → {p,b,m,w} / \_C

$t^j \rightarrow \int$   
 $L \rightarrow d / \#\_$   
 $x \rightarrow ʒ (*)$   
 $L^j \rightarrow j / \#\_ \tilde{o} (*)$   
 $L^j \rightarrow t / \#\_ \tilde{a} (*)$   
 $\tilde{a} \rightarrow \tilde{o} (*)$   
 $\tilde{u} \rightarrow \tilde{a} / \text{stressed} (*)$   
 $m \rightarrow \emptyset / \#\_n \text{ (in morphemes)} (*)$

### 31.2.7 Proto-Siouan to Proto-Ohio-Valley

*Pogostick Man*, from Wolff, Hans (1950), “Comparative Siouan I”. *International Journal of American Linguistics* 16(2):61 – 66; Wolff, Hans (1950), “Comparative Siouan II” *International Journal of American Linguistics* 16(3):113 – 121; Wolff, Hans (1950), “Comparative Siouan III”. *International Journal of American Linguistics* 16(4):168 – 178; and cedh audmanh’s changes above, which assisted me in deciphering the vintage phonetic transcription scheme

*NB: Does not include developments in unstressed non-nasal vowels. L was apparently either /ɪ/ or /l/; L<sup>j</sup> (L<sup>y</sup> in the text) was apparently /j/, or maybe /ɤ/. Also, the changes of /p/ before a consonant are unclear, as described within the text.*

$p \rightarrow \{p, b, m, w\} / \_C$   
 $t^j L^j \rightarrow t \int j$   
 $m \rightarrow \emptyset / \{C, V\}_n \{C, V\}$   
 $\{w, m\} \rightarrow \emptyset / \_t$

**31.2.7.1 Proto-Ohio-Valley to Biloxi** *Pogostick Man*, from Wolff, Hans (1950), “Comparative Siouan I”. *International Journal of American Linguistics* 16(2):61 – 66; Wolff, Hans (1950), “Comparative Siouan II” *International Journal of American Linguistics* 16(3):113 – 121; Wolff, Hans (1950), “Comparative Siouan III”. *International Journal of American Linguistics* 16(4):168 – 178; and cedh audmanh’s changes above, which assisted me in deciphering the vintage phonetic transcription scheme

*NB: Does not include developments in unstressed non-nasal vowels. L was apparently either /ɪ/ or /l/; L<sup>j</sup> (L<sup>y</sup> in the text) was apparently /j/, or maybe /ɤ/. Also, the changes of /p/ before a consonant are unclear, as described within the text.*

$p \rightarrow \{p, b, m, w\} / \_C$   
 $p \rightarrow w / V\_V$ , apparently as a result of some dissimilation, as this appears to be an allophone of /p/ here, IIUC

$w \rightarrow \emptyset / \#_-$  (sporadic)  
 $m \rightarrow w / \#_-$   
 $L \rightarrow d$   
 $\tilde{a} \rightarrow an$  (sporadic)  
 $? \rightarrow \emptyset / C_-$   
 $r \rightarrow \{d, n\}$   
 $m \rightarrow \emptyset / \#_n$   
 $k \rightarrow \emptyset / \#t_-$   
 $k \rightarrow \emptyset / "Vs_-$   
 $k \rightarrow \emptyset / \_x"V$   
 $kx \rightarrow xk / "V_-$

**31.2.7.2 Proto-Ohio-Valley to Ofo** *Pogostick Man*, from Wolff, Hans (1950), “Comparative Siouan I”. *International Journal of American Linguistics* 16(2):61 – 66; Wolff, Hans (1950), “Comparative Siouan II” *International Journal of American Linguistics* 16(3):113 – 121; Wolff, Hans (1950), “Comparative Siouan III”. *International Journal of American Linguistics* 16(4):168 – 178; and cedh audmanh’s changes above, which assisted me in deciphering the vintage phonetic transcription scheme

*NB: Does not include developments in unstressed non-nasal vowels. L was apparently either /ɪ/ or /l/; L<sup>j</sup> (L<sup>y</sup> in the text) was apparently /j/, or maybe /ɤ/. Also, the changes of /p/ before a consonant are unclear, as described within the text.*

$p \rightarrow \{p, b, m, w\} / \_C$   
 $s \{\zeta, x\} \rightarrow f s$   
 $w \rightarrow \emptyset / \#_-$  (sporadic)  
 $m \rightarrow w / \#_-$   
 $L j \rightarrow t t_j$   
 $\tilde{a} \rightarrow \{an, \tilde{o}\}$   
 $? \rightarrow \emptyset / C_-$   
 $sr kr \rightarrow ft kV_0lV_0$   
 $m \rightarrow \emptyset / \#_n$   
 $\emptyset \rightarrow V / k\_m$   
 $k \rightarrow \emptyset / \#t_-$   
 $sk \rightarrow f / "V_-$   
 $x \rightarrow s / \_k$   
 $kx \rightarrow sk / "V_-$   
 $kx \rightarrow s$

**31.2.7.3 Proto-Ohio-Valley to Tutelo** *Pogostick Man*, from Wolff, Hans (1950),

“Comparative Siouan I”. *International Journal of American Linguistics* 16(2):61 – 66; Wolff, Hans (1950), “Comparative Siouan II” *International Journal of American Linguistics* 16(3):113 – 121; Wolff, Hans (1950), “Comparative Siouan III”. *International Journal of American Linguistics* 16(4):168 – 178; and cedh audmanh’s changes above, which assisted me in deciphering the vintage phonetic transcription scheme

*NB: Does not include developments in unstressed non-nasal vowels. L was apparently either /ɪ/ or /l/; L<sup>j</sup> (L<sup>y</sup> in the text) was apparently /j/, or maybe /ɿ/. Also, the changes of /p/ before a consonant are unclear, as described within the text. Changes appended with an asterisk are putative; there was a seeming lack of material for this language, so I’ve attempted to do some tracking work from the examples given in the text.*

p → {p,b,m,w} / \_C

L → l

k → ʔk / \_ʔ

ʔ → Ø / C\_

mn → mV<sub>0</sub>nV<sub>0</sub> / #\_ (in morphemes)

sn → sV<sub>0</sub>nV<sub>0</sub>

Ø → V / k\_m

s → ʃ / ”V\_k

## 32 Tanoan

Proto-Tanoan is reconstructed as having had the following consonantal phonology, at least for phones in initial position:

	Bilabial	Alveolar	Velar	Glottal
Nasal	m	n		
Stop	p p <sup>h</sup> p' b	t ts t <sup>h</sup> ts <sup>h</sup> t' ts' d dz	k k <sup>w</sup> k <sup>h</sup> k <sup>wh</sup> k' k <sup>w</sup> ' g g <sup>w</sup>	ʔ
Fricative		s		h
Glide	w			

Only initials are reconstructed here. Vowels are believed to have had nasality and possibly length, though no correspondences are given here for sure. The affricates, as per Hale (1967), appear to have patterned as stops.

(From Hale, Kenneth (1967), “Toward a Reconstruction of Kiowa-Tanoan Phonology”. *International Journal of American Linguistics*, 33.2:112 – 120; and Wikipedia contributors (2012), “Tanoan languages”. *Wikipedia, the Free Encyclopedia*. [http://en.wikipedia.org/w/index.php?title=Tanoan\\_languages&oldid=496916321](http://en.wikipedia.org/w/index.php?title=Tanoan_languages&oldid=496916321))

### 32.1 Proto-Tanoan to Jimez

*Pogostick Man*, from Wikipedia contributors (2012), “Tanoan languages”. *Wikipedia, the Free Encyclopedia*. [http://en.wikipedia.org/w/index.php?title=Tanoan\\_languages&oldid=496916321](http://en.wikipedia.org/w/index.php?title=Tanoan_languages&oldid=496916321), citing Hale, Kenneth (1967), “Toward a Reconstruction of Kiowa-Tanoan Phonology”. *International Journal of American Linguistics*, 33.2:112 – 120

h → Ø  
p b → φ ɲ  
ts dz → s z  
{t<sup>h</sup>, ts<sup>h</sup>} → ʃ  
s → c  
ts' → t'  
d → n / \_V[+nas]  
k<sup>(w)</sup> k<sup>(w)</sup> k<sup>(w)</sup> g g<sup>w</sup> → h g k k<sup>w</sup>

### 32.2 Proto-Tanoan to Kiowa

*Pogostick Man*, from Wikipedia contributors (2012), “Tanoan languages”. *Wikipedia, the Free Encyclopedia*. [http://en.wikipedia.org/w/index.php?title=Tanoan\\_languages&oldid=496916321](http://en.wikipedia.org/w/index.php?title=Tanoan_languages&oldid=496916321)



oldid=496916321, citing Hale, Kenneth (1967), “Toward a Reconstruction of Kiowa-Tanoan Phonology”. *International Journal of American Linguistics*, 33.2:112 – 120

$\text{ʔ} \rightarrow \emptyset$   
 $\text{ts ts}^h \text{ ts}' \text{ dz} \rightarrow \text{t t}^h \text{ t}' \text{ d}$   
 $\text{w} \rightarrow \text{j}$   
 $\text{k}^w \text{ k}^{wh} \text{ k}^w \text{ g}^w \rightarrow \text{k k}^h \text{ k}' \text{ g}$

### 32.3 Proto-Tanoan to Taos

*Pogostick Man*, from Wikipedia contributors (2012), “Tanoan languages”. *Wikipedia, the Free Encyclopedia*. [http://en.wikipedia.org/w/index.php?title=Tanoan\\_languages&oldid=496916321](http://en.wikipedia.org/w/index.php?title=Tanoan_languages&oldid=496916321), citing Hale, Kenneth (1967), “Toward a Reconstruction of Kiowa-Tanoan Phonology”. *International Journal of American Linguistics*, 33.2:112 – 120

$\text{b} \rightarrow \text{m}$   
 $\text{s} \rightarrow \text{ʈ}$   
 $\text{ts ts}^h \text{ ts}' \text{ dz} \rightarrow \text{tʃ s tʃ} \text{ j}$   
 $\text{d} \rightarrow \text{l} / \_V[-\text{nas}]$   
 $\text{d} \rightarrow \text{n} / \_V[+\text{nas}]$   
 $\text{k}^h \text{ k}^{hw} \text{ g g}^w \rightarrow \text{x x}^w \text{ k w}$

### 32.4 Proto-Tanoan to Tewa

*Pogostick Man*, from Wikipedia contributors (2012), “Tanoan languages”. *Wikipedia, the Free Encyclopedia*. [http://en.wikipedia.org/w/index.php?title=Tanoan\\_languages&oldid=496916321](http://en.wikipedia.org/w/index.php?title=Tanoan_languages&oldid=496916321), citing Hale, Kenneth (1967), “Toward a Reconstruction of Kiowa-Tanoan Phonology”. *International Journal of American Linguistics*, 33.2:112 – 120

$\text{p}^h \text{ t}^h \text{ ts}^h \rightarrow \text{f } \theta \text{ s}$   
 $\text{b} \rightarrow \text{m}$   
 $\text{dz} \rightarrow \{\text{j}, \text{dʒ}\}$   
 $\text{k}^h \text{ k}^{wh} \text{ g}^w \rightarrow \text{x x}^w \text{ w}$

### 33 Trans-New Guinea

Pawley (2012) reconstructs the following inventory for Proto-Trans New Guinea. The use of the terms “apical” and “laminal” is his, but the table has been restructured somewhat.

	Labial	Apical	Laminal	Velar
Stop	p <sup>m</sup> b	t <sup>n</sup> d	c <sup>ɲ</sup> ʃ	k <sup>ŋ</sup> g
Nasal	m	n		ŋ
Fricative			s	
Approximant	w	l	j	
	Front	Central	Back	
High	i		u	
Mid	e		o	
Low		a		

(From Pawley, Andrew (2012). “How Reconstructible is Proto Trans New Guinea? Problems, Progress, Prospects”. In *Languages & Linguistics in Melanesia* Special Issue I:89 – 164)

#### 33.1 Proto-Trans New Guinea to Apali

*Pogostick Man*, from Pawley, Andrew (2012). “How Reconstructible is Proto Trans New Guinea? Problems, Progress, Prospects”. In *Languages & Linguistics in Melanesia* Special Issue I:89 – 164

t k ŋ → {l,t} {h,k} n / #<sub>-</sub>  
p k <sup>n</sup>d → β {h,k} nj / V\_V  
{p,t} → Ø / \_#  
e u i → a {u,i} {i,i}

#### 33.2 Proto-Trans New Guinea to Asmat

*Pogostick Man*, from Pawley, Andrew (2012). “How Reconstructible is Proto Trans New Guinea? Problems, Progress, Prospects”. In *Languages & Linguistics in Melanesia* Special Issue I:89 – 164

p → f / #\_ (?)  
t → s / #\_i  
k s → Ø {t,s} / #\_

${}^m\text{b } \text{ʉg} \rightarrow \text{p k} / \text{V\_V}$   
 $\text{p t nj} \rightarrow \{\text{t,r}\} \{\text{r,s,t}\} \text{s} / \text{-\#}$

### 33.3 Proto-Trans New Guinea to Binandere

*Pogostick Man*, from Pawley, Andrew (2012). “How Reconstructible is Proto Trans New Guinea? Problems, Progress, Prospects”. In *Languages & Linguistics in Melanesia* Special Issue I:89 – 164

$\text{t} \rightarrow \text{j} / \text{\#\_i}$   
 $\text{ʉ } \text{ʉg} \rightarrow \emptyset \text{ g} / \text{\#\_}$   
 $\text{nj} \rightarrow \text{s} / \text{\#\_} (?)$   
 $\text{t} \rightarrow \{\text{r,s}\} / \text{V\_i}$   
 ${}^m\text{b } {}^n\text{d } \text{ʉg nj} \rightarrow \{\text{p}, {}^m\text{b}\} \{\text{}^n\text{d,z}\} \text{k z} / \text{V\_V}$   
 $\text{a} \rightarrow \{\text{a,o}\}$

### 33.4 Proto-Trans New Guinea to Kaeti

*Pogostick Man*, from Pawley, Andrew (2012). “How Reconstructible is Proto Trans New Guinea? Problems, Progress, Prospects”. In *Languages & Linguistics in Melanesia* Special Issue I:89 – 164

$\{\text{p}, {}^m\text{b}\} \text{ʉg} \rightarrow \text{b g} / \text{\#\_}$   
 $\text{ʉg} \rightarrow \text{g}$   
 ${}^n\text{d } \text{ʉg} \rightarrow \text{d k}$   
 $\text{u a} \rightarrow \{\text{u,o,y}\} \{\text{a,o}\}$

### 33.5 Proto-Trans New Guinea to Kalam

*Pogostick Man*, from Pawley, Andrew (2012). “How Reconstructible is Proto Trans New Guinea? Problems, Progress, Prospects”. In *Languages & Linguistics in Melanesia* Special Issue I:89 – 164

$\text{t} \rightarrow \{\text{t}, \emptyset\} / \text{-\#}$   
 $\text{l} \rightarrow \text{ɽ}$

Frequent insertion of “epenthetic vowels, often realized as very short [ɪ], but in some contexts as a copy of a neighboring full vowel. In some cases the epenthetic vowels appear to be, historically, reductions of full vowels”

### 33.6 Proto-Trans New Guinea to Kâte

*Pogostick Man*, from Pawley, Andrew (2012). “How Reconstructible is Proto Trans New Guinea? Problems, Progress, Prospects”. In *Languages & Linguistics in Melanesia* Special Issue I:89 – 164

$k^m b^n d \rightarrow \{k, h\} b \{s, t\} / \#_-$   
 $^m b^n d \rightarrow \{^m b, p\} s / V\_V$   
 $p k \rightarrow t \text{ ? } / \_ \#$   
 $p \rightarrow f$   
 $u a \rightarrow \{u, \text{ɔ}\} \{\text{ɔ}, a\}$

### 33.7 Proto-Trans New Guinea to Kiwai

*Pogostick Man*, from Pawley, Andrew (2012). “How Reconstructible is Proto Trans New Guinea? Problems, Progress, Prospects”. In *Languages & Linguistics in Melanesia* Special Issue I:89 – 164

$t k^m b \rightarrow \{s, t\} \{g, \emptyset\} \{b, p\} / \#_-$   
 $t^m b^n d \{k, \text{ŋ}g\} \text{nj} \rightarrow \{r, t\} p \{d, t\} g r / V\_V$   
 $s \rightarrow \{s, t\} / \#_- (?)$   
 $u i \rightarrow \{u, o\} \{i, e\}$

### 33.8 Proto-Trans New Guinea to Selepet

*Pogostick Man*, from Pawley, Andrew (2012). “How Reconstructible is Proto Trans New Guinea? Problems, Progress, Prospects”. In *Languages & Linguistics in Melanesia* Special Issue I:89 – 164

$^m b^n d s \rightarrow b \{s, t\} \{t, s\} / \#_-$   
 $t^m b \text{nj} s \rightarrow r \{b, p\} ^n d \{s, d\} / V\_V$   
 $t \rightarrow t / \_ \# (?)$   
 $\text{ŋ} \rightarrow \{m, \text{ŋ}\} / \_ \#$   
 $\text{ŋ}g \rightarrow g$   
 $u o a e \rightarrow \{u, \text{ɔ}\} \{o, \text{ɔ}\} \{a, \text{ɔ}\} \{e, o\}$

### 33.9 Proto-Trans New Guinea to Telefol

*Pogostick Man*, from Pawley, Andrew (2012). “How Reconstructible is Proto Trans New Guinea? Problems, Progress, Prospects”. In *Languages & Linguistics in Melanesia* Special

Issue I:89 – 164

$\{p, {}^mb\} \rightarrow f / \#_-$

$s \rightarrow s / \#_- (?)$

${}^mb \ {}^nd \ {}^ng \rightarrow b \ n \ k / V\_V$

### 33.10 Proto-Trans New Guinea to Middle Wahgi

*Pogostick Man*, from Pawley, Andrew (2012). “How Reconstructible is Proto Trans New Guinea? Problems, Progress, Prospects”. In *Languages & Linguistics in Melanesia* Special Issue I:89 – 164

$n \ \eta \rightarrow m \ n / \#_-$

${}^ng \rightarrow \{{}^ng, \eta\} / V\_V$

$i \rightarrow \{i, e\}$

## 34 Uralic

The following reconstructed phonology for Proto-Uralic is adapted from the Wikipedia:

	Bilabial	Dental	Alv.	Alv.-pal.	Palatal	Postalv.	Velar	(Unk.)
Nasal	m		n nʲ				ŋ	
Plosive	p		t				k	
Fricative		ð ðʲ	s	ɕ	ʃ			
Trill			r					
Approximant	w		l lʲ					
Unknown								x

  

	Front	Back
Close	i y	ɯ u
Mid	e	o
Open	æ	ɑ

For the series of changes starting with Proto-Uralic to Pre-Finnic and ending with Proto-Finnic to Livonian and in several other of Tropylium's contributions, the following alterations to the stand-in variable list apply.

- /@/ means that a vowel assimilates to the one that comes before it.
- /A O U/ assimilate to [ɑ o u] or to [æ ø y], with the specific phone dependent upon the vowel harmony.
- ê ô may have been semi-rounded forms of /ɪ ʊ/.
- <sup>x</sup> is a final which geminates the next word's first consonant; if no such consonant begins the word, [ʔ:] or hiatus occurs here.
- X stands for the second mora of a syllable, be it a consonant, as part of a diphthong, or as a segment of a long vowel.

Changes marked with an asterisk are somewhat contentious.

Tropylium wishes to note that his sound changes are subject to change. (Note 2014/06/21: As per a Tumblr post of his, <http://tropylium.tumblr.com/post/81916666722/index-diachronica-4-2>, many of the compilations presented here are out of date or erroneous, and he still is updating his page on Finnic, <http://www.frathwiki.com/Finnish>.)

(From Wikipedia contributors (2011), "Proto-Uralic language". *Wikipedia, The Free Encyclopedia*. [http://en.wikipedia.org/w/index.php?title=Proto-Uralic\\_language&oldid=442512196](http://en.wikipedia.org/w/index.php?title=Proto-Uralic_language&oldid=442512196); the TCL thread and KQ pages proper; and Tropylium.)

### 34.1 Proto-Uralic to Pre-Finnic

*Tropylium*, from Hakulinen, Lauri (1979), “Suomen kielen rakenne ja kehitys”. *Otava*; Häkkinen, Kaisa (2004), “Nykysuomen etymologinen sanakirja”. *WSOY*; Kallio, Petri (2007), “Kantasuomen konsonanttihistoriaa”. *Mémoires de la Société Finno-Ougrienne* 253. [http://www.sgr.fi/sust/sust253/sust253\\_kallio.pdf](http://www.sgr.fi/sust/sust253/sust253_kallio.pdf); and from Janhunen, Juha (2007), “The primary laryngeal in Uralic and beyond”. *Mémoires de la Société Finno-Ougrienne* 253. [http://www.sgr.fi/sust/sust253/sust253\\_janhunen.pdf](http://www.sgr.fi/sust/sust253/sust253_janhunen.pdf)

$\eta \rightarrow k / \_ \#$ , in latives  
 $\eta \rightarrow n / \_ \#$  else  
 $iw\ ow \rightarrow y\ u: / \_ (C) (*)$   
 $x \rightarrow @ / \_ C$   
 $m \rightarrow n / \_ \{t, ts^j, \#\}$   
 $\gamma(?)\ a: \ae: \rightarrow a(?)\ o: e: /$  stressed  
 $a \rightarrow \ae / \{a, e, \hat{e}, i, y\} (X) (C) (C) \_$ , when unstressed  
 $Aw \rightarrow o /$  unstressed (possibly analogical)  
 $i \rightarrow e / \_ C$ , when unstressed  
 $iw \rightarrow u /$  unstressed

#### 34.1.1 Pre-Finnic to Proto-Finnic

*Tropylium*, from Hakulinen, Lauri (1979), “Suomen kielen rakenne ja kehitys”. *Otava*; Häkkinen, Kaisa (2004), “Nykysuomen etymologinen sanakirja”. *WSOY*; Kallio, Petri (2007), “Kantasuomen konsonanttihistoriaa”. *Mémoires de la Société Finno-Ougrienne* 253. [http://www.sgr.fi/sust/sust253/sust253\\_kallio.pdf](http://www.sgr.fi/sust/sust253/sust253_kallio.pdf); and from Janhunen, Juha (2007), “The primary laryngeal in Uralic and beyond”. *Mémoires de la Société Finno-Ougrienne* 253. [http://www.sgr.fi/sust/sust253/sust253\\_janhunen.pdf](http://www.sgr.fi/sust/sust253/sust253_janhunen.pdf)

$V \rightarrow V: / \_ \#$   
 $\hat{e}\ \hat{o} \rightarrow e\ o / \_ (X) Ci$   
 $\hat{e} \rightarrow y / \_ (X) CA$   
 $\hat{o} \rightarrow \text{u} \rightarrow i / \_ (X) CA$   
 $ej \rightarrow i /$  unstressed  
 $\ae \rightarrow e / \_ j$ , unstressed  
 $a \rightarrow e / \_ \{o, u\} (X) C \_ j$   
 $a \rightarrow o / \_ \{a, e, i\} (X) C \_ j$   
 $ixi\ uxu \rightarrow \emptyset: o:$   
 $xi \rightarrow @ /$  else  
 $x \rightarrow w / \{U, O\} \_ C$   
 $x \rightarrow j / \{I, E\} \_ C$

UηA eηi → O: ø:  
 ηi → @ / V\_  
 η → n / \_t (?)  
 η → j / \_C<sup>j</sup> (possibly \_F instead?)  
 η → w / \_{A,O,U}  
 η → w / {O,U}\_  
 η → w / \_C ! \_k  
 η → w / C\_  
 uwa → o: (\*)  
 Uwi ewi → o: ø:  
 i → Ø / æw\_  
 wI → i  
 ji → O / {i,e,y}  
 i → Ø / Aj-#  
 i → Ø / {o,u}j\_  
 j → Ø / C\_i{C,#}  
 yje → ø: → jø (?)  
 uw ij → ow ej / \_C  
 tʃ ts<sup>j</sup> → ʃ s<sup>j</sup> / #-  
 ʃ<sup>j</sup> s<sup>j</sup> ts<sup>j</sup>(:) l<sup>j</sup> → ʃ s ts(:) l  
 n<sup>j</sup> → ni / #(C)i\_V  
 n<sup>j</sup> → in / V\_V  
 n<sup>j</sup> → n / else  
 n → Ø / \_t:  
 w → Ø / o\_st (\*)  
 ʃ → t  
 tʃ → ts / \_k, in South Estonian  
 tk → k / in Pre-Livonian (?)  
 tʃ tʃ: → t tʃ  
 t → ts / \_i ! following a coronal obstruent or “before a derivational suffix”  
 tj → ts / ! following a coronal obstruent or “before a derivational suffix”  
 ʃ → ʃ → x  
 s → x / \_l  
 n → Ø / \_{s,ts}  
 w → v

**34.1.1.1 Proto-Finnic to Proto-Finnish** *Tropylum*, from Hakulinen, Lauri (1979), “Suomen kielen rakenne ja kehitys”. *Otava*; Häkkinen, Kaisa (2004), “Nykysuomen etymologinen sanakirja”. *WSOY*; Kallio, Petri (2007), “Kantasuomen konsonanttihistoriaa”. *Mémoires de la Société Finno-Ougrienne* 253. <http://www.sgr.fi/sust/sust253/>



sust253\_kallio.pdf; and from Janhunen, Juha (2007), “The primary laryngeal in Uralic and beyond”. *Mémoires de la Société Finno-Ougrienne* 253. [http://www.sgr.fi/sust/sust253/sust253\\_janhunen.pdf](http://www.sgr.fi/sust/sust253/sust253_janhunen.pdf)

$j\ w \rightarrow i\ U / V_{-}\{C,\#\}$   
 $i \rightarrow \emptyset / \{VC,ks\}_{-}$  at the ends of a suffix  
 $e \rightarrow \emptyset / C[+\text{coronal}]_{-}\%$   
 $p: t: ts: k: \rightarrow p' t' ts' k'$   
 $p\ t\ ts\ s\ k \rightarrow b\ d\ s\ z\ g$   
 $b\ d\ g \rightarrow \beta\ \delta\ \gamma / !\ N_{-}$   
 $\gamma \rightarrow j\sim v$   
 $\beta i \rightarrow U / \_ \#$   
 $f \rightarrow v / \#_{-}$   
 $v \rightarrow \emptyset / \#_{-}\{o,u,y\}$   
 $j \rightarrow \emptyset / \_ i\ (*)$   
 $\emptyset \rightarrow v / \#_{-}\{y:, \emptyset:, o:\}$   
 $oi \rightarrow o / \text{unstressed}$   
 $V: \rightarrow V[-\text{long}] / \_ i$   
 $\{kt,pt\} \{kts,pts\} \rightarrow t: t:s$   
 $xk \rightarrow k: (\text{even across word boundaries})$   
 $(t(:))sn\ kx(tx)\ rn\ ln \rightarrow s: x: r: l:$   
 $\{p,t,k\}(\{p,t,k\})n\ \{p,t,k\}(\{p,t,k\})m \rightarrow n: m:$   
 $\{p,t,k\} \rightarrow \emptyset / \_ st$   
 $\{ks,nts\} nt \rightarrow s\ t / \_ \#$   
 $ts\ ts' ts: \rightarrow s\ \theta' \theta:$   
 $\{z,x(:)\} \rightarrow h$   
 $e \rightarrow @ / h_{-} (\text{suffixal})$   
 $\{p,k\} \rightarrow h / \_ t$

**34.1.1.1.1 Proto-Finnish to Standard Finnish** *Tropylum*, from Hakulinen, Lauri (1979), “Suomen kielen rakenne ja kehitys”. *Otava*; Häkkinen, Kaisa (2004), “Nyky-suomen etymologinen sanakirja”. *WSOY*; Kallio, Petri (2007), “Kantasuomen konsonanttihistoriaa”. *Mémoires de la Société Finno-Ougrienne* 253. [http://www.sgr.fi/sust/sust253/sust253\\_kallio.pdf](http://www.sgr.fi/sust/sust253/sust253_kallio.pdf); and from Janhunen, Juha (2007), “The primary laryngeal in Uralic and beyond”. *Mémoires de la Société Finno-Ougrienne* 253. [http://www.sgr.fi/sust/sust253/sust253\\_janhunen.pdf](http://www.sgr.fi/sust/sust253/sust253_janhunen.pdf)

$mb\ nd\ \eta g \rightarrow m: n: \eta:$   
 $e: \emptyset: o: \rightarrow ie\ y\emptyset\ uo$   
 $p' t' \theta' k' \rightarrow p\ t\ \theta\ k$   
 $j \rightarrow i / C_{-}$ , when initial in a suffix

$Vh \rightarrow hV / \{j,v,n,r,l\} \_ \#$  (also some double-metathesis triggered by the condition of being  $m\_?$ )  
 $sn \rightarrow ns$   
 $V \rightarrow V: / h\_hC$   
 $V \rightarrow V: / \_hC$  (sporadic)  
 $\{k,x\} \rightarrow ^x / \_ \#$   
 $t \rightarrow \emptyset / s\_r$   
 $p \rightarrow \beta \rightarrow U / \_R$   
 $t \rightarrow z \rightarrow U / \_r\{A,O\}$   
 $t \rightarrow z \rightarrow @ / \_r\{i,e\}$   
 $k \rightarrow z \rightarrow @ / \_j$   
 $k \rightarrow \gamma i / \{i,e\} \_R\{i,e\}$   
 $k \rightarrow \gamma \rightarrow U / \{A,O,U\} \_R ! R = j$   
 $\beta \rightarrow v$   
 $v \rightarrow \emptyset / \_UC$   
 $i\check{\theta} \rightarrow j / "V\_V$   
 $l\check{\theta} r\check{\theta} \rightarrow l: r:$   
 $\check{\theta} \rightarrow \emptyset / ! "V(X)\_$   
 $\gamma \rightarrow j / C\_e$   
 $\gamma \rightarrow v / U\_U$   
 $\gamma \rightarrow ? / VV_0 \_ V_0 ! V_0 = U$   
 $\gamma \rightarrow \emptyset / \text{else}$   
 $h \rightarrow \emptyset / V[-\text{stress}](X)\_V$   
 $AO \rightarrow \{A,O,U\}: / \text{unstressed}$   
 $e \rightarrow i / A\_, \text{ when unstressed}$   
 $Ue \rightarrow e: / \text{unstressed}$   
 $VU \rightarrow V: / \_ \#$   
 $iU OU \rightarrow U: O:$   
 $\text{æ} \rightarrow a / e(C\ldots)\_(C\ldots)o$   
 $e \rightarrow \emptyset / \#(C\ldots)\_y$   
 $i \rightarrow y / \#(C\ldots)l\_y$   
 $i \rightarrow y / \#(C\ldots)\_v\text{æ}$   
 $\theta(:) \check{\theta} \rightarrow ts d$  (this latter does have some *highly* sporadic exceptions; additionally, in some dialects these may become  $\{t(:),h\sim t\}$  and  $\{r,\emptyset\}$ , respectively)

**34.1.1.1.2 Standard Finnish to Modern Standard Finnish** *Tropylum*, from Hakulinen, Lauri (1979), “Suomen kielen rakenne ja kehitys”. *Otava*; Häkkinen, Kaisa (2004), “Nyky-suomen etymologinen sanakirja”. *WSOY*; Kallio, Petri (2007), “Kantasuomen konsonanttihistoriaa”. *Mémoires de la Société Finno-Ougrienne* 253. [http://www.sgr.fi/sust/sust253/sust253\\_kallio.pdf](http://www.sgr.fi/sust/sust253/sust253_kallio.pdf); and from Janhunen, Juha (2007), “The primary la-

ryngeal in Uralic and beyond”. *Mémoires de la Société Finno-Ougrienne* 253. [http://www.sgr.fi/sust/sust253/sust253\\_janhunen.pdf](http://www.sgr.fi/sust/sust253/sust253_janhunen.pdf)

$n \rightarrow \emptyset / \_ \#$   
 $d \rightarrow \emptyset / \_ r$  “in inherited vocabulary”  
 $Va \rightarrow V:$  / unstressed  
 $ie\ y\ uo \rightarrow i: y: u:$  /  $\_ A$

### 34.1.2 Proto-Finnic to Livonian

*Tropylum*, from Hakulinen, Lauri (1979), “Suomen kielen rakenne ja kehitys”. *Otava*; Häkkinen, Kaisa (2004), “Nykysuomen etymologinen sanakirja”. *WSOY*; Kallio, Petri (2007), “Kantasuomen konsonanttihistoriaa”. *Mémoires de la Société Finno-Ougrienne* 253. [http://www.sgr.fi/sust/sust253/sust253\\_kallio.pdf](http://www.sgr.fi/sust/sust253/sust253_kallio.pdf); and from Janhunen, Juha (2007), “The primary laryngeal in Uralic and beyond”. *Mémoires de la Société Finno-Ougrienne* 253. [http://www.sgr.fi/sust/sust253/sust253\\_janhunen.pdf](http://www.sgr.fi/sust/sust253/sust253_janhunen.pdf)

$t\ ts\ s(C)\ n\ l\ r \rightarrow t^j\ ts^j\ s^j(C)\ n^j\ l^j\ r^j / \_ i$   
 $ts^{(j)} \rightarrow s^{(j)} / \_ !\ n\_$   
 $e \rightarrow \text{ɤ} / \_ C(C)\{a,o,u\}$   
 $\text{æ} \rightarrow \text{ɑ} / \text{unstressed}$   
 $h \rightarrow \emptyset / \{ \#, C \}_-$   
 $Vn \rightarrow V:$  /  $\_ s$   
 $\text{ɑ}\ \text{æ} \rightarrow \text{æe} / \_ (C \dots) i$   
 $V \rightarrow \text{ə} / \text{unstressed} \ !\ V = \text{ɑ}$   
 $\text{ɑ} \rightarrow \text{ə} / VC(C)\text{ɑ}C(C)\_ \#$  when unstressed  
 $Vh \rightarrow V:\text{fi} / \_ C$ , except maybe  $\_ j$  and/or  $\_ v$   
 $LV \rightarrow VL / \{ \#, V, O \}_-$   
 $p\ t^{(j)}\ s^{(j)}\ k \rightarrow b\ d^{(j)}\ z^{(j)}\ g / \_ !\ \#\_$  or adjacent to  $C[-\text{voice}]$   
 $\emptyset \rightarrow \text{ʔ} / (C)V\_CV$   
 $\text{ə} \rightarrow \emptyset / \_ \#$   
 $\text{ə} \rightarrow \emptyset / VC\_CV$   
 $C \rightarrow C:$  /  $\text{ʔ}\_V$   
 $dj\ lj\ rj\ gj \rightarrow d^j\ l^j\ r^j\ jg$   
 $v \rightarrow \emptyset / \{ d, z \}_-$   
 $lv\ rv\ jv \rightarrow l: r: j:$   
 $v \rightarrow \emptyset / C\_$   
 $VC:\text{ɑ} \rightarrow V:C\text{ɑ}$   
 $C: \rightarrow C[-\text{long}] / \_ !$  in verbal forms when  $V\_ \text{ə}$   
 $\text{ɑ}:\text{au} \rightarrow \text{ɔ}:\text{ou}$  (though sometimes  $\text{ɑ}:$  develops, apparently at least partially due to metathesis?)

$e: \emptyset: o: \mathfrak{x}(:) \rightarrow i:e y:\emptyset u:o i(:)$   
 $\mathfrak{h} \rightarrow \mathfrak{?}$   
 $s^j ts^j z^j dz^j \rightarrow \mathfrak{f}^j t\mathfrak{f}^j \mathfrak{z}^j d\mathfrak{z}^j$   
 $\text{æy ey} \rightarrow \text{æu eu}$   
 $y \emptyset \rightarrow i e / \text{else}$   
 $V \rightarrow V: / \_RC(C)\alpha$  (includes diphthongs)  
 $a \rightarrow a: / VC\_$   
 $e o \rightarrow e: o: / \_C\alpha$   
 $o \rightarrow o: / \_ \{RC\#, i\}$   
 $e: o: \rightarrow je wo$   
 $w \rightarrow v / \#\_o$   
 $wo \rightarrow \mathfrak{v} / P\_$   
 $\mathfrak{o}(:) \rightarrow o(:)$

## 35 Uto-Aztecan

The Wikipedia provides the following reconstruction for the phonology of Proto-Uto-Aztecan, which here is adapted with slight modifications as to the layout:

	Bilabial	Coronal	Palatal	Velar	Glottal
Nasal	m	n		ŋ	
Plosive	p	t		k k <sup>w</sup>	ʔ
Fricative		s			
Affricate		ts			
Rhotic		r			
Approximant			j	w	

  

	Front	Central	Back
Close	i	ɨ	u
Mid			o
Open		a	

Quoth the Wiki, “\*n and \*ŋ may have actually been \*l and \*n, respectively.” It should be noted that there exists some discrepancy between this given reconstruction and in that set up for the studies deriving the reconstructions below. Radius Solis includes \*h and \*l as distinct phonemes as per the source he cited.

For the following Uto-Aztecan changes,  $V_u$ ,  $V_s$ , and  $V_n$  refer to normal (“unaffected”), “suspending”, and “nasalizing” vowels, respectively. According to Radius Solis, “Reconstructed PUA had three sets of vowels; this book calls them ‘suspending’, ‘unaltering’, and ‘nasalizing’. The nasalizing vowels likely were actually nasal, but it’s uncertain; their existence was deduced only by the sound changes that revolved around them. There’s few good guesses yet about the nature of the ‘suspending’ vowels, but their existence is likewise deducible from the sound changes that have been affected by them across a majority of the UA family - more changes than from the nasalizing series, occurring in all UA branches, enough to be pretty certain that it was a reality in PUA.”

(From Wikipedia contributors (2011), Proto-Uto-Aztecan language. *Wikipedia, the Free Encyclopedia*. [http://en.wikipedia.org/w/index.php?title=Proto-Uto-Aztecan\\_language&oldid=406159488](http://en.wikipedia.org/w/index.php?title=Proto-Uto-Aztecan_language&oldid=406159488); and from Radius Solis changes listed on KneeQuickie and in the TCL thread proper)

### 35.1 Proto-Uto-Aztecan to Comanche

*Radius Solis*, from from Voegelin, Charles F., Florence M. Voegelin, & Kenneth L. Hale (1962), “Typological and Comparative Grammar of Uto-Aztecan: I (Phonology)”. *Inter-*

*national Journal of American Linguistics* 28: Memoir 17

$p \ t \ ts \ s \rightarrow v \ r \ \emptyset \ h$   
 $\emptyset \rightarrow h \ / \ V_u \_k$   
 $s \rightarrow \emptyset \ / \ V_{n-}$   
 $\{\eta, l\} \rightarrow n$   
 $\{w, j\} \rightarrow \emptyset \ / \ \text{medial}$

### 35.2 Proto-Uto-Aztecan to Hopi

*Radius Solis*, from from Voegelin, Charles F., Florence M. Voegelin, & Kenneth L. Hale (1962), “Typological and Comparative Grammar of Uto-Aztecan: I (Phonology). *International Journal of American Linguistics* 28: Memoir 17

$p \rightarrow v \ / \ V_{n-}$   
 $k \rightarrow q \ / \ \_V[+low]$   
 $i \rightarrow j \ / \ h \_ ! \ \_ \#$   
 $l \ h \rightarrow n \ \emptyset \ / \ \text{medially}$   
 $w \rightarrow l \ / \ \{\#, V[+low]\} \_ V[+low]$   
 $w \rightarrow \eta^w \ / \ i_{n-}$   
 $o \rightarrow \emptyset$

### 35.3 Proto-Uto-Aztecan to Luiseño

*Radius Solis*, from from Voegelin, Charles F., Florence M. Voegelin, & Kenneth L. Hale (1962), “Typological and Comparative Grammar of Uto-Aztecan: I (Phonology). *International Journal of American Linguistics* 28: Memoir 17

$p \rightarrow v \ / \ \{V_n, i\} \_ \text{(the latter “sometimes”)}$   
 $p \rightarrow v \ / \ \text{“other conditions not known”}$   
 $t \rightarrow l \ / \ \text{medially}$   
 $ts \rightarrow tʃ$   
 $k \rightarrow q \ / \ \# \_ V[+low]$   
 $k \rightarrow q \ / \ a_{n-}$   
 $\text{“[I]solated other instances of } k \rightarrow q \text{ occur with uncertain conditions”}$   
 $k \rightarrow x \ / \ a \_$   
 $? \rightarrow \emptyset \ / \ \# \_$   
 $s \rightarrow ʃ$   
 $l \rightarrow n \ / \ \text{medially}$   
 $o \ i \rightarrow e \ o$   
 $V \rightarrow \emptyset \ / \ \text{“in some final syllables (conditions are unknown and it varies by dialect)”}$

### 35.4 Proto-Uto-Aztecan to Nahuatl

*Radius Solis*, from from Voegelin, Charles F., Florence M. Voegelin, & Kenneth L. Hale (1962), “Typological and Comparative Grammar of Uto-Aztecan: I (Phonology). *International Journal of American Linguistics* 28: Memoir 17

$t \rightarrow t\dot{t} / \_ \{a,u\}$

$p \rightarrow \emptyset / \{\#,V_s\}_-$

$s \ ts \rightarrow \int \ t\int / \_ i$

$\{\int,h\} \rightarrow \emptyset$

$\eta \rightarrow n$

$m \rightarrow n / \_ \#$

$l \rightarrow n / \#_-$

$w \rightarrow \emptyset / \_ o$

$i \ u \rightarrow e \ \{i,e\}$  “(all \*/u/ affected, but conditions for when it became /i/ or /e/ are not known)”

“(What happened to PUA \*/r/ is not known. Nahuatl has no cognates that would have a reflex.)”

### 35.5 Proto-Uto-Aztecan to Tohono O’odham

*Radius Solis*, from from Voegelin, Charles F., Florence M. Voegelin, & Kenneth L. Hale (1962), “Typological and Comparative Grammar of Uto-Aztecan: I (Phonology). *International Journal of American Linguistics* 28: Memoir 17

$p \rightarrow w / \{\#,V_s\}_-$

$t \rightarrow t\int / \_ V[+high]$

$ts \rightarrow s / \_ i$

$k^w \rightarrow b$

$h \rightarrow \int / \#_-$

$s \ \eta \rightarrow h \ n$

$n \rightarrow \eta / \_ V[+high]$

$l \rightarrow \eta / \#_-$  “(in doubt; initial \*l occurs in too few cognates to be sure. Apparently PUA initial \*l was rare and is of questionable certainty whether it existed at all.)”

$l \rightarrow \text{[l]}$

$\text{[l]} \rightarrow \text{[d]} / \_ a$

$w \rightarrow g$

$j \rightarrow d\int / \_ V[+high]$

$j \rightarrow d / \_ V[+low]$

$V \rightarrow \emptyset /$  “when in the first syllable of a bisyllabic morpheme, if after a morpheme boundary in the word (all other first-syllable vowels have non-zero reflexes)”

i → Ø / ts\_#

l → i / {p,m,k<sup>w</sup>},w}\_# “in all dialects, and varies by dialect after other consonants”

“What happened to PUA \*/r/ in O’odham is difficult to say. There are only two known cognates, each showing a different reflex: /ɭ/ and /ɖ/”



### 36 Vasconic

The following phonology for Proto-Basque (*not* Proto-Vasconic) is adapted from Egurtzegi (2013), citing Martinet (1974 [1950]: 533), but differs from that given in Tables 4.3 – 4.6 when accounting for other data in the paper. Capital letters indicate fortis phonemes, and the affricates were fortis as well.

	Labial	Dental	Alveolar	Palatal	Velar	Glottal
Nasal		n N				
Stop	p (P)	t T			k K	
Fricative	f ?		ʃ ʃ			h
Affricate			tʃ tʃ			
Liquid			r R l L			
Glide				j	w	

5[

	Front	Central	Back
High	i		u
Mid	e		o
Low		a	

(From Egurtzegi, Ander (2013), “Phonetics and Phonology”, in *Basque and Proto-Basque*. [https://www.academia.edu/3570162/2013a\\_-\\_Basque\\_and\\_Protobasque\\_Phonetics\\_and\\_Phonology](https://www.academia.edu/3570162/2013a_-_Basque_and_Protobasque_Phonetics_and_Phonology))

#### 36.1 Proto-Vasconic to Aquitanian

*Pogostick Man*, from Egurtzegi, Ander (2013), “Phonetics and Phonology”, in *Basque and Proto-Basque*. [https://www.academia.edu/3570162/2013a\\_-\\_Basque\\_and\\_Protobasque\\_Phonetics\\_and\\_Phonology](https://www.academia.edu/3570162/2013a_-_Basque_and_Protobasque_Phonetics_and_Phonology); Owstrowski, Manfred, “History of the Basque Language”. <http://hisp462.tamu.edu/Classes/603/Lects/BasqueHist.pdf>; Wikipedia contributors (2014), “Aquitanian langauge”. *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=Aquitanian\\_language&oldid=609638407](https://en.wikipedia.org/w/index.php?title=Aquitanian_language&oldid=609638407); Wikipedia contributors (2014), ”Basque language”. *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=Basque\\_language&oldid=610796497](https://en.wikipedia.org/w/index.php?title=Basque_language&oldid=610796497); and Wikipedia contributors (2014), “Vasconic languages”. *Wikipedia, the Free Encyclopedia*. [http://en.wikipedia.org/w/index.php?title=Vasconic\\_languages&oldid=607530415](http://en.wikipedia.org/w/index.php?title=Vasconic_languages&oldid=607530415)

ś → {s(:),ʃ} / -#  
ś → s  
s → ʃ / i\_#

ts may become js or s?: The written forms are ⟨xs⟩ and ⟨ss⟩  
 S[+ fortis] → S[- voice]: (specifically, the source lists t[+ fortis] k[+ fortis] → t(:) k(:), both of the tokens with optional length suffixes and \*aTa → ⟨atta⟩, so I'm extrapolating)  
 n[+ fortis] → n(:) / V\_V  
 n[- fortis] n[+ fortis] → {n,r}(?) n  
 N → [+ same POA] / \_S  
 r[+ fortis] → r / \_#  
 r[+ fortis] → r  
 Fortis \*L is of uncertain outcome, being written as ⟨l⟩ or ⟨ll⟩  
 g → k / #\_ (sometimes?)  
 There seem to have been a few (variant?) forms which possibly show height assimilation in vowels

## 36.2 Proto-Basque to Basque

*Pogostick Man*, from Egurtzegi, Ander (2013), "Phonetics and Phonology", in *Basque and Proto-Basque*. [https://www.academia.edu/3570162/2013a\\_-\\_Basque\\_and\\_Protobasque\\_Phonetics\\_and\\_Phonology](https://www.academia.edu/3570162/2013a_-_Basque_and_Protobasque_Phonetics_and_Phonology); Owstrowski, Manfred, "History of the Basque Language" <http://hisp462.tamu.edu/Classes/603/Lects/BasqueHist.pdf>; Wikipedia contributors (2014), "Proto-Basque language". *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=Proto-Basque\\_language&oldid=605488703](https://en.wikipedia.org/w/index.php?title=Proto-Basque_language&oldid=605488703); Wikipedia contributors (2014), "Aquitanian language". *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=Aquitanian\\_language&oldid=609638407](https://en.wikipedia.org/w/index.php?title=Aquitanian_language&oldid=609638407); Wikipedia contributors (2014), "Basque language". *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=Basque\\_language&oldid=610796497](https://en.wikipedia.org/w/index.php?title=Basque_language&oldid=610796497); Wikipedia contributors (2014), "Iberian language". *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=Iberian\\_language&oldid=601317949](https://en.wikipedia.org/w/index.php?title=Iberian_language&oldid=601317949); Wikipedia contributors (2014), "Basque dialects". *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=Basque\\_dialects&oldid=595514648](https://en.wikipedia.org/w/index.php?title=Basque_dialects&oldid=595514648); Wikipedia contributors (2014), "Biscayan dialect". *Wikipedia, the Free Encyclopedia*. [http://en.wikipedia.org/w/index.php?title=Biscayan\\_dialect&oldid=613190357](http://en.wikipedia.org/w/index.php?title=Biscayan_dialect&oldid=613190357); Wikipedia contributors (2014), "Gipuzkoan dialect". *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=Gipuzkoan\\_dialect&oldid=606871281](https://en.wikipedia.org/w/index.php?title=Gipuzkoan_dialect&oldid=606871281); Wikipedia contributors (2014), "Vasconic languages". *Wikipedia, the Free Encyclopedia*. [http://en.wikipedia.org/w/index.php?title=Vasconic\\_languages&oldid=607530415](http://en.wikipedia.org/w/index.php?title=Vasconic_languages&oldid=607530415); and Wikipedia contributors (2014), "Navarro-Lapurdian dialect". *Wikipedia, the Free Encyclopedia*. [http://en.wikipedia.org/w/index.php?title=Navarro-Lapurdian\\_dialect&oldid=601150726](http://en.wikipedia.org/w/index.php?title=Navarro-Lapurdian_dialect&oldid=601150726); and Campbell, Lyle, "Language Isolates and Their History, or, What's Weird, Anyway?". <http://www2.hawaii.edu/~lylecamp/CAMPBELL%20BLS%20isolates.pdf>

Pre-Proto-Basque may have had some stuff involving reduplication that ended up dropping

the first consonant

fortis → aspirated / “in a prominent position” (*i.e.*, word-initially?)

fortis → [- voice] / else

lenis → devoiced / “in a prominent word-initial position”

lenis → voiced fricative (→ approximant, at least by the 12th Century?) / unstressed

lenis (voiced) → fricative / {l,r,s,ʒ,V} - {l,r,s,ʒ,V}

— At least one reconstruction seems to indicate \*s and \*ś, which may have been an affricate and /s/. Pretty reliably, \*-s tends to turn into -ts, and \*-ś → -ts, probably after the below-mentioned affrication. Beyond that, it’s messy. \*-tso seems to have become -tʃo/-tʃu, though.

S<sup>h</sup> → F → h (→ Ø) / #-

S → S[+ voiced] / #-

“[T]wo similar vocalic segments” usually contract, though some dialects (especially Biscayan) seem not to exhibit this

Vn →  $\tilde{V}$  / #- (seems to have been reverted in most dialects, except for Souletin)

Vn →  $\tilde{V}$  / -V (?)

V →  $\tilde{V}$  / -N (Souletin, perhaps in other dialects?)

d → l / #- (except verbs)

n → m / u-V

n → ɲ / {i,ɪ}-V

n →  $\tilde{h}$  / V-V

nb → m: → m

N → [+ same POA] / -C

b → m / -VN

{r,r} → Ø / #-

l → r / V-V

r → r / -C r → r / -#

C → Ø / r-

Cr → Cr → CVr (perhaps not a sound change *per se*, just a historical tendency)

r → Ø / V-V (Souletin)

L (fortis) → l (or \*lh → l:, which then lost gemination?)

ð → some sort of tap distinct from r (Biscayan, Guipuscoan, High Navarrese)

b → Ø / #-B (a few exceptions, mostly before -u)

F[+ voiced] → Ø / V-V (sometimes, usually involving “compound surnames”?)

S[+ voice] → S[- voice] / F[+ sibilant]-

$\tilde{V}$  → Vɲ / -V (not Souletin)

$\tilde{V}$  → Vn or a diphthong (not Souletin)

$\tilde{h}$  → h (not Souletin)

u  $\tilde{u}$  → y  $\tilde{y}$  / -r(p<sup>(h)</sup>),β,k<sup>(h)</sup>),ʃ,l,ʒ,ʒ,f,h) (Souletin)

u  $\tilde{u}$  → y  $\tilde{y}$  / -{ʒ,ts,ts} (but not -ʒ) (Souletin)

ō →  $\tilde{u}$  (Souletin)

$\emptyset \rightarrow a / \#_{-}\{ra,ro\}$  (sporadic)  
 $\emptyset \rightarrow e / \#_{-}r$   
 $\emptyset \rightarrow e / \#_{-}\{s,s\}C$   
 $i \rightarrow u / \#_{-}(C\dots)u$  (Roncalese)  
 $i \rightarrow y / \#_{-}(C\dots)y$  (Souletin)  
 $e \rightarrow o / \#_{-}(C\dots)o$  (eastern dialects, Bermeo Biscayan)  
 $e \rightarrow o / o(C\dots)_{-}$  (eastern dialects)  
 $a o e \rightarrow \varepsilon u i / \{i,u\}(C\dots)_{-}$  (this [ε] is tentatively marked as such; Egurtzegi transcribes it as /e/ but says it's not as close as /e/  
 $o \rightarrow u / \#_{-}\{C,\#\}$  (Souletin; some raising occurred elsewhere)  
 $a \rightarrow e / \#_{-}\$a$  (Biscayan, Alavese, some Guipuscoan)  
 $o e \rightarrow u i / \#_{-}\$a$  (raising of \*o is less common)  
 $e \rightarrow i / \#_{-}\{n,C[+sibilant]\}$  (sporadic)  
 $e \rightarrow a / \{V,C\}_{-}r$  ("mainly in the western dialects")  
 $u i \rightarrow o e / \#_{-}\{C,\#\}$   
 "[S]ome variations between /a/ and /e/ or /e/ and /i/" /  $\#_{-}\{C,\#\}$   
 $\emptyset \rightarrow j / V_{-}\{N,s,s\}S$   
 $\emptyset \rightarrow j / u.V$  (eastern dialects)  
 $\{w,y\} \rightarrow \emptyset / \#_{-}ja$   
 $\emptyset \rightarrow m / o\$V$  (Orozko Biscayan)  
 $\emptyset \rightarrow V / V\#_{-}\$$  (Zeberio Biscayan)  
 $e \rightarrow \emptyset / \#_{-}$  (Navarrese, rare)  
 $e \rightarrow j / \#_{-}V$  (at least a few times?)  
 $a \rightarrow \emptyset / \#_{-}V$   
 $V \rightarrow \emptyset / Vj_{-}$   
 $h \rightarrow \emptyset$  (western dialects)  
 $\{w,\beta\}h \rightarrow f$   
 $h$  may have metathesized given that it's only found in the first two syllables of proto-forms  
 $h\dots h \rightarrow \emptyset\dots h$  ("affect[s] both the oral /h/ and the nasalized aspiration")  
 $-r \rightarrow -h$  stuff in compounds  
 $l n \rightarrow \text{ɫ} n / E_{-}$   
 $\{r,r\} \rightarrow \text{ɫ} / \{i,j\}_{-}$  (eastern dialects)  
 $s_{-} t s_{-} \rightarrow \text{ʃ} t \text{ʃ} / \{E,j\}_{-}$  (mostly Biscayan)  
 $t \rightarrow c / \{E,j\}_{-}$  ("some areas")  
 $t \rightarrow \text{tʃ} / \{E,j\}_{-}$  (partially spread amongst Biscayan and Guipuscoan)  
 $d \text{ ʔ} \rightarrow \text{ʃ} j / \{E,j\}_{-}$  ? ("some dialects")  
 $d \text{ ʔ} \rightarrow \text{ʃ} j / \{\text{ɫ},n\}_{-}$  (Guipuscoan, High Navarrese)  
 $\{g,y\} \rightarrow \{j,j\} / \{E,j\}_{-}$   
 $g \rightarrow d\text{ʒ} / \{E,j\}_{-}$  ("in some Biscayan areas")  
 $j \rightarrow j \rightarrow j$  (northern High Navarrese, most Labourd, some Biscayan)  
 $j \rightarrow j \rightarrow \text{ʒ}$  (Souletin, sporadic in northwestern Biscayan)

$j \rightarrow j$  (some Biscayan and Navarrese)  
 $j \rightarrow j \rightarrow j$  (typical of Low Navarrese)  
 $j \rightarrow j \rightarrow ʒ \rightarrow dʒ$  (northwestern Biscayan)  
 $j \rightarrow j \rightarrow ʒ \rightarrow ʃ$  (Aescoan, Salazarese, Roncalese, most southern High Navarrese)  
 $j \rightarrow j \rightarrow ʒ \rightarrow ʃ \rightarrow x$  (Guipuscoan, northwestern High Navarrese, eastern Biscayan)  
 $j \rightarrow \chi$  (probably through intermediates like above, Wikipedia doesn't go into particulars of how and where)  
 $\lambda n \rightarrow jl jn$  ("common in Low Navarrese, Labourdin, and is even regular in the High Navarrese of Sakana")  
 Vowel syncope:  
 —  $V \rightarrow \emptyset / S_{-}\{r,l\}$  (more common in Roncalese and Salazarese, but also in Navarrese and Aescoan?)  
 —  $V \rightarrow \emptyset / C[+ \text{sibilant}]_{-}r$  (Roncalese and Salazarese)  
 —  $V \rightarrow \emptyset / \{O,r,r\}_{-}O$  (Roncalese, Salazarese, Navarrese, Aescoan)  
 $n[+ \text{fortis}] \rightarrow n$   
 Something about final devoicing of stops and initial stops losing voicing as a result of vowel deletion  
 $e \rightarrow \emptyset / \#Ur_{-}$   
 $a \rightarrow \emptyset / V_{-}\#$  (Guipuscoan; happens because of reanalysis of the definite article)  
 $V \rightarrow \emptyset / \#_{-}$ , in trisyllables  
 $i \rightarrow \emptyset / \#_{-}$ , in disyllables  
 $u \{o,e\} \rightarrow \emptyset a / \#_{-}$ , in disyllables (eastern dialects)  
 "a or -e from the definite article" is dropped Markina Biscayan and Getxo Biscayan  
 Some vowel metathesis only when vowels are matched in height  
 $hu hi \rightarrow u i / \{o,e\}_{-}$  (also happened with /a/ sometimes, but usually such sequences just dropped one vowel)  
 Something about diphthongs occurring where intervocalic /n/ was lost  
 $ViC \rightarrow VC^j$   
 Glide dissimilation if the homorganic vowel was in the following syllable, but usually the glide just deleted  
 $ai \rightarrow ei \rightarrow e$  (rare)  
 $au \rightarrow ai / !_\{r,r,s,s\}$  (Souletin, Roncalese)  
 $e\ddot{u} \rightarrow \{e,egu\}$   
 $ei \rightarrow e / \#_{-}$   
 $oi \rightarrow ui$  (rare)  
 $e\ddot{o} (\rightarrow e ?) \rightarrow j / \#_{-}V$   
 $e \rightarrow j / \#_{-}a$   
 $e \rightarrow \emptyset / \#_{-}e$   
 $ua \rightarrow o$  "especially after a velar stop"  
 $ue \rightarrow e$   
 $C[- \text{voice}] \rightarrow C[+ \text{voice}] / \{l,N\}_{-}$  (not Roncalese or Souletin)

Some speakers (Labourd and Low Navarrese?) have  $\mathfrak{r}$  for  $r$ , and a few have  $\mathfrak{ʁ}$  for  $r$   
 $l$  gets a velar(ized?) articulation in Souletin (possibly only in the coda?)  
Souletin preserves something involving historical aspiration in pretonic position, apparently  
Souletin keeps initial  $\mathfrak{f}$ - and  $\mathfrak{t}\mathfrak{f}$ - distinct; Labourdin only has  $\mathfrak{f}$ -, and the rest apparently only have  $\mathfrak{t}\mathfrak{f}$ -?  
 $C[+ \text{sibilant}] \rightarrow C[+ \text{affricate}] / \_ \#$   
 $\mathfrak{s} \ \mathfrak{t}\mathfrak{s} \rightarrow \mathfrak{s} \ \mathfrak{t}\mathfrak{s}$  (Biscayan, partially in Guipuscoan, Donostia, San Sebastián, though these latter two may be varieties of Guipuscoan)  
 $\mathfrak{s} \rightarrow \mathfrak{s} / \_ \{C, \#\}$  (sometimes)  
From the Wikipedia article on Biscayan: “Convergence of sibilants:  $z, x$  and  $s > x$ ,  $s$  and  $tz, tx$  and  $ts > tz$ .” I’m not sure what this means.  $\langle s \ z \rangle$  are apparently  $\mathfrak{s} \ \mathfrak{s}$ , and  $\langle x \rangle$  is  $\mathfrak{f}$ .  
 $it\mathfrak{s} \rightarrow \mathfrak{t}\mathfrak{f} / \_ \#$  (Biscayan)  
 $oa \ ea \rightarrow u(e) \ i(e) / \_ \#$   
Beterri Guipuscoan has  $VjV\#$  where Biscayan has  $VnV\#$  and regular Basque has  $VV\#$   
 $\mathfrak{s} \rightarrow \mathfrak{t}\mathfrak{f} / \# \_$  (Guipuscoan)  
 $\mathfrak{s} \rightarrow \int$  “for most French Basque speakers (Trask 1997:84), due to French influence” according to Campbell  
Accentual changes:  
— Navarrese and Labourdin seem to have gotten rid of phonemic accent; High Navarrese typically stresses the penult, while Low Navarrese and Labourdin are claimed to lack stress on the word level.  
— Guipuscona, southeastern Biscayan, and western varieties of Navarrese stress the second syllable (unless it is a disyllable, in which case the first syllable gets the accent, though a few varieties don’t do this).  
— North Biscayan does something with roots and affixes marked for prosody; “[m]ost native roots and almost all singular affixes are unaccented”; loans, “compounds and plural affixes” tend to be accented. Stress is typically assigned to the syllable immediately before the accent, but a few areas accent the penult or the antepenult.  
— Souletin does its own thing with accent. Stress usually falls on the penult, but contractions can mess with this (one of the examples given in the paper is “*alhába* ‘daughter’ + abs. sg. *-a* > *alhabá* ‘the daughter’”). Something similar is posited for “older... Salazarese”. Roncalese was much the same, but the stress was stem-oriented as opposed to word-oriented unless contraction occurred, and there’s some stuff about proparoxytones that Souletin didn’t have.

## 37 Vowel Shifts

A miscellaneous collection of vowel shifts.

### 37.1 7-to-5 Vowel Merger (Bantu)

*Pogostick Man*, from Schadeberg, Theo C. (1995), “Spirantization and the 7-to-5 Vowel Merger in Bantu”. In *Sound Change*, M. Dominiccy and D. Demolin (Eds.), Amsterdam: John Benjamins, 1995.

$S \rightarrow F / \_ \{i, u\}$  (Do not necessarily have to be fricatives at the same POA; in some cases, the phones go to null or to /l/)

$i \ u \rightarrow i \ u$

### 37.2 California Vowel Shift (English)

*Pogostick Man*, from Wikipedia contributors (2013), “California English”. *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=California\\_English&oldid=584388388](https://en.wikipedia.org/w/index.php?title=California_English&oldid=584388388); and Eckert, Penelope, “Vowel Shifts in Northern California and the Detroit Suburbs”. <http://www.stanford.edu/~eckert/vowels.html>

$\text{æ} \ i \rightarrow \text{e} \ i / \_ \text{ŋ}$ ; some speakers (esp. in southern regions) may also have PIN-PEN and “a single phoneme in contrast to the nasal diphthong [ãĩ] of the U.S. Northeast” (though the article doesn’t specify what this is; maybe it’s just plain ã)

/ɪ/ otherwise has a highly variable pronunciation

$\text{æ} \rightarrow \{ \text{e}_{\text{̃}}, \text{i}_{\text{̃}} \} / \_ \text{N}$

$\{ \text{æ}, \text{e} \} \rightarrow \text{ɛ} / \_ \text{ɪ}$

$\text{æ} \rightarrow \text{a}$

$\text{ʊ} \wedge \text{ɛ} \rightarrow \text{ʌ} \text{ ɛ} \text{ æ}$

$\text{ɑ} \rightarrow \text{ɔ}$  (does not occur in Sacramento)

$\text{u} \rightarrow \{ \text{i}_{\text{̃}}, \text{u}_{\text{̃}}, \text{ʊ} \}$

$\text{o}_{\text{̃}} \rightarrow \text{e}_{\text{̃}}$  (“common only within certain social groups”)

### 37.3 Belgian and Netherlandish Dutch Monophthongization

*Pogostick Man*, from Wikipedia contributors (2014), “Dutch Phonology”. *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=Dutch\\_phonology&oldid=602553868](https://en.wikipedia.org/w/index.php?title=Dutch_phonology&oldid=602553868)

$\text{ɛi} \ \text{œy} \ \text{ɔu} \rightarrow \text{ɛ} \text{:} \ \text{œ} \text{:} \ \text{ɔ} \text{:}$

### 37.4 Polder Dutch Vowel Shift

*Pogostick Man*, from Wikipedia contributors (2014), “Dutch Phonology”. *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=Dutch\\_phonology&oldid=602553868](https://en.wikipedia.org/w/index.php?title=Dutch_phonology&oldid=602553868)

ɛi œy ʌu → ai ay au

e: ø: o: → ei œy ɔu

### 37.5 Old-English-to-Scots Vowel Shifts

*Pogostick Man*, from Wikipedia contributors (2014), “Phonological history of Scots”. *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=Phonological\\_history\\_of\\_Scots&oldid=582962563](https://en.wikipedia.org/w/index.php?title=Phonological_history_of_Scots&oldid=582962563); and Wikipedia contributors (2014), “Scottish Vowel Length Rule”. *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=Scottish\\_vowel\\_length\\_rule&oldid=589349104](https://en.wikipedia.org/w/index.php?title=Scottish_vowel_length_rule&oldid=589349104)

ai → ei → əi / when stem-final

u: → ʌu / when-stem final, in northern varieties

ø: → wi / {k,g} (in Mid Northern dialects)

ø: → i (in northern dialects)

ø: → (j){u,ʌ} / \_{k,x} (outcome varies depending upon dialect)

a → i / \_n (in northern varieties)

a → e / \_n (otherwise)

a → {ɛ,e} / \_rC

ai oi ui ei au ou iu ɛ(o)u → e: oe əi i: {ɑ:,ɔ:} ʌu ju j(ʌ)u

ɛ: → ei (→ əi?) / in some northern varieties

i: e: ɛ: a: o: u: {ø:,y:} → əi i {i,e} e o u ø

æ → ɛ / \_C[+alveolar]

a ɔ u → {a,ɑ} ɔ ʌ

Application of the Scottish vowel-length rule:

— V → V: / \_{r,F[+voiced],\$,#}

— əi → ai / \_{r,F[+voiced],\$,#} (pursuant to the above)

### 37.6 Great Ngamo Tone Shift

*Pogostick Man*, from Schuh, Russel (2005), “The Great Ngamo Tone Shift”

In the Gudi dialect, the tone on a given domain (which can be more than one syllable/mora, as long as said syllables/morae are consecutive and share the same tone) shift to the following domain, with a low tone cropping up on the first domain. The original tone



of the word-final domain floats or tacks itself onto the next domain, depending upon the surrounding conditions. When utterance-final, these tones remain on that domain. This can cause a falling tone, but not a rising tone, which Ngamo does not permit; where such would occur, tone goes to high.

### 37.7 Great Vowel Shift (English)

*Jaaaaaa and Ran*, citing <http://www.peak.org/~jeremy/dictionary/chapters/history.php>

i: u: → əj əw → əj əw  
 e: o: → i: u:  
 ɛ: → e: → i:  
 a: ɔ: → ɛ: o: → e: ow → ej (əw)

### 37.8 Greek Vowel Shift

*Chris Zoller*, from Trask, R.L. (1996), *Historical Linguistics*

u(ː) → y(ː)  
 o: → u:  
 e: ɛ: → i: e:  
 ai oi → ε y:  
 e: → i:  
 y(ː) ɔ: → i(ː) ɔ  
 εu au → εv av

### 37.9 Kikuyu Tone Shift

*Pogostick Man*, from Schuh, Russel (2007), “The Great Ngamo Tone Shift (GNTS)”

Tones move to the following vowel with the initial syllable acquiring a low tone. Original final tones are lost.

### 37.10 Late Proto-Finnic to Savonian Vowel Shift

*PM\_Vanhanen*

“Long close-mid vowels have become diphthongs:”  
 e: ø: o: → ie yø uo

“In some dialects, they have shifted further to /ua/, /yæ/ and /iæ/ or /ia/ “depending on front-back vowel harmony: /tieto/ to /tiato/ but /tietæ/ to /tiætæ/.”

“These shifts have occurred in some eastern dialects.”

a: æ: ai æi → ua iæ ae æe

ei oi øi → e: oe øe

au ou → a: o:

æy øy → æ: ø:

eu → eo

li ni ri si → lʲi nʲi rʲi sʲi

### 37.11 Middle Chinese to Cantonese Vowel Shift (“The Inner-Outer Flip”)

*Lone Wolf*, from Newman, J. (1983). *Cahiers de Linguistique Asie Orientale* XII.1:65 – 79.

Relevant changes occurring before the shift:

a → ɔ / \_{ɲ,k}

uə yə → ɔ œ / \_{n,t}

ə → Ø / i\_{ɲ,k}

Ø → ə / C[+ labiovelar]\_i

Ø → ə / \_u

V → V: / \_#

The actual vowel shift:

ə → a

a → {a:,ə} “(the environments for these respective changes are somewhat unclear)”

ə → a / \_{i,u}

iəu → au

a → a: / \_{i,u}

a → ə → Ø / i\_u

Other relevant changes occurring at the same time:

ə → Ø / W\_

W → Ø / C\_

(Apparently, /i u/ either were or became glides in the appropriate positions)

## 37.12 Old Norse to Early Faroese Vowel Shift

*Pogostick Man*, from Wikipedia contributors (2015), “Faroese language”. *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=Faroese\\_language&oldid=664109713](https://en.wikipedia.org/w/index.php?title=Faroese_language&oldid=664109713)

i: → y:  
y → i  
ɔ ɛ → o e  
a: e: → ɔ: ɛ:  
au øy ei → ɔu œy æi

### 37.12.1 Early Faroese to Old North Faroese Vowel Shift

*Pogostick Man*, from Wikipedia contributors (2015), “Faroese language”. *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=Faroese\\_language&oldid=664109713](https://en.wikipedia.org/w/index.php?title=Faroese_language&oldid=664109713)

ɔ a → ø ɛ  
o: → ɜu  
u: y: → ɰu ʊɪ  
ɔu œy æi → ɛɪ ɔɪ aɪ

**37.12.1.1 Old North Faroese to Late Old North Faroese Vowel Shift** *Pogostick Man*, from Wikipedia contributors (2015), “Faroese language”. *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=Faroese\\_language&oldid=664109713](https://en.wikipedia.org/w/index.php?title=Faroese_language&oldid=664109713)

*NB: Slashes indicate long/short reflexes, respectively.*

u o ɔ øɛ e i → u:/ʊ o:/ɔ ɔ:a/ɔa ø:/œ ɛ:a/ɛa e:/ɛ i:/ɪ  
ɰu ɜu ʊɪ → ɰu/ɰy ɜu/ɜ ʊɪ/ʊɪ̃  
ɔɪ aɪ ɛɪ → ɔɪ/ɔɪ̃ aɪ/aĩ ɛɪ/ɛɪ̃

**37.12.1.1.1 Late Old North Faroese to New North Faroese Vowel Shift** *Pogostick Man*, from Wikipedia contributors (2015), “Faroese language”. *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=Faroese\\_language&oldid=664109713](https://en.wikipedia.org/w/index.php?title=Faroese_language&oldid=664109713)

$\text{ɥY} \rightarrow \text{Y}$   
 $\text{ʊI} \text{ ʊI} \rightarrow \text{ui} \text{ ʊI}$   
 $\text{ɔ:a} \text{ ɔa} \text{ ɛ:a} \text{ ɛa} \rightarrow \text{ɔa} \text{ ɔ} \text{ ɛa} \text{ a}$   
 $\{\text{ɔI}, \text{aI}\} \{\text{ɔI}, \text{aI}\} \text{ ɛI} \text{ ɛI} \rightarrow \text{ɔi} \text{ ɔ} \text{ ɛi} \text{ ɛ}$

### 37.12.2 Early Faroese to Old South Faroese Vowel Shift

*Pogostick Man*, from Wikipedia contributors (2015), “Faroese language”. *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=Faroese\\_language&oldid=664109713](https://en.wikipedia.org/w/index.php?title=Faroese_language&oldid=664109713)

*NB: Slashes indicate long/short reflexes, respectively.*

$\text{u} \text{ o} \text{ ɔ} \text{ ø} \text{ a} \text{ e} \text{ i} \rightarrow \text{u:} \text{ o} \text{ ø:} \text{ ɛ:} \text{ ø} \text{ e:} \text{ i:}$   
 $\text{u:} \text{ o:} \text{ ɔ:} \text{ y:} \text{ ɛ:} \rightarrow \text{ɥu} \text{ ɔu} \text{ ɔ:a} \text{ ɔa} \text{ u:} \text{ e:}$   
 $\text{ɔɥ} \text{ œy} \text{ æi} \rightarrow \text{ɛI} \text{ ɔI} \text{ aI}$

**37.12.2.1 Old South Faroese to Late Old South Faroese Vowel Shift** *Pogostick Man*, from Wikipedia contributors (2015), “Faroese language”. *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=Faroese\\_language&oldid=664109713](https://en.wikipedia.org/w/index.php?title=Faroese_language&oldid=664109713)

*NB: Slashes indicate long/short reflexes, respectively.*

$\text{u:} \text{ o} \text{ ø(ː)} \text{ ɛ:} \text{ e:} \text{ i:} \rightarrow \text{u:} \text{ / ʊ} \text{ o:} \text{ / ɔ} \text{ ø:} \text{ / œ} \text{ ɛ:a} \text{ / ɛa} \text{ e / ɛ} \text{ i:} \text{ / I}$   
 $\text{ɔu} \text{ ɥu} \text{ ʊI} \rightarrow \text{ɔu} \text{ / ɔ} \text{ ɥu} \text{ / ɥY} \text{ ʊI} \text{ / ʊI}$   
 $\text{ɔI} \text{ aI} \text{ ɛI} \rightarrow \text{ɔI} \text{ / ɔI} \text{ aI} \text{ / aI} \text{ ɛI} \text{ / ɛI}$

**37.12.2.1.1 Late Old South Faroese to New South Faroese Vowel Shift** *Pogostick Man*, from Wikipedia contributors (2015), “Faroese language”. *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=Faroese\\_language&oldid=664109713](https://en.wikipedia.org/w/index.php?title=Faroese_language&oldid=664109713)

$\{\text{œ}, \text{ɥY}\} \rightarrow \text{Y}$   
 $\text{ɔ:a} \text{ ɔa} \text{ ɛ:a} \text{ ɛa} \rightarrow \text{ɔa} \text{ ɔ} \text{ ɛa} \text{ a}$   
 $\text{ʊI} \text{ ʊI} \rightarrow \text{ui} \text{ ʊI}$   
 $\text{ɔi} \text{ ɛi} \rightarrow \text{ɔ} \text{ ɛ}$   
 $\text{aI} \text{ aI} \rightarrow \text{ai} \text{ aI}$

### 37.13 Northern Cities Vowel Shift (English)

*Pogostick Man*, from Wikipedia contributors (2013), “Northern Cities Vowel Shift”. *Wikipedia, the Free Encyclopedia*. [https://en.wikipedia.org/w/index.php?title=Northern\\_Cities\\_Vowel\\_Shift&oldid=581062574](https://en.wikipedia.org/w/index.php?title=Northern_Cities_Vowel_Shift&oldid=581062574)

æ raises and diphthongizes, typically becoming one of {ɛə eə ɪə}

ɑ ɔ → a ɑ

ɛ → ɐ

ʌ → ɔ

ɪ → ɪ̃

### 37.14 Old Norse to Faroese Vowel Shift

*johanpeturdam*

*NB: “The reflexes of the vowels are given in the order of their reflex when stressed/long, and unstressed/short”*

{a,æ:} → ɛa / a

a: → ɔa “(except NE of the Faroes → a:)” / ɔ

e → e: / ɛ

e: → ɛa “(except Suðuroy → e:)” / a “(except Suðuroy → ɛ)”

{i,y} → i: / ɪ

{i:,y:} → ui / u(i)

o → o: / ɔ

o: → {ɔu,ɛu,œu} / œ “(except Suðuroy → ɔ)”

u → u: / short: ʊ / unstressed: {o,ɔ}

u: → ʉu / ʏ

{œ,ɔ} → ø:/œ “(except Suðuroy → ʏ)”

### 37.15 Pre-Slavic Vowel Changes

*Macska*

“PIE \*a and \*o with their variants have merged in the Balto-Slavic period; below they’re written both as \*a.”

e: → æ

en an → ẽ ã

ej → i

ew → ju

$i \rightarrow \text{ĩ} [\text{ə?}] \rightarrow \{e, a\}$  (strong)/ $\emptyset$  (weak) “in modern languages”  
 $i: \rightarrow i$   
 $a \text{ a:} \rightarrow o \text{ a}$   
 $a j \rightarrow \{\text{æ}_2, i_2\}$  “(reduced)”  
 $aw \rightarrow u$   
 $u \rightarrow \text{ũ} [\text{ɤ?}] \rightarrow \{e, o, \text{ɤ}, a\}$  (strong)/ $\emptyset$  (weak) “in modern languages”  
 $u: \rightarrow i$

### 37.16 Proto-Japanese to Old Japanese Vowel Shift

*Pogostick Man*, from Frellesvig, Bjarke and John Witman (2005), “The Japanese-Korean vowel correspondences”

$e \text{ o} \rightarrow j \text{ e} \text{ wo} / \_ \#$   
 $e \text{ o} \rightarrow i \text{ u} / \text{ else}$   
 $\{i, \text{ə}\} \rightarrow o$   
 $\{u, i\} i \{, a, i \{ii, i\{a, \text{ə}\}\} u\{i, a, \text{ə}\} \rightarrow wi \text{ e} \text{ je} \text{ wo}$

### 37.17 Development of Proto-Lolo-Burmese -i(C)# and -u(C)# to Lahu

*Pogostick Man*, from Jacques, Guillaume, and Alexis Michaud (2011), “Approaching the historical phonology of three highly eroded Sino-Tibetan languages: Naxi, Na and Laze”. *Diachronica* 28:4 (2011), 468 – 498; citing Matisoff 2003:186, 248 – 249, 314

$-i \text{ -i}\{p, k\} \text{ -it} \text{ -i}\{m, \eta\} \text{ -in} \rightarrow -i \text{ -i?} \text{ -i?} \text{ -ε} \text{ -i}$   
 $-u \text{ -up} \text{ -ut} \text{ -uk} \text{ -um} \text{ -un} \text{ -uŋ} \rightarrow -u \text{ -ɔ?} \text{ -ə?} \text{ -u?} \text{ -ɔ} \text{ -ə} \text{ -ε}$

### 37.18 Proto-Maidun to Nisenian Vowel Shift

*Pogostick Man*, from Ultan, Russell (1964), “Proto-Maidun Phonology”. *International Journal of American Linguistics*, Vol. 30, No. 4 (Oct., 1964), 355 – 370.

$u \text{ i} \text{ e} \text{ a} \rightarrow y \text{ e} \text{ a} \text{ o}$

### 37.19 South African Chain Shift (English)

*Pogostick Man*, from Mesthrie, Rajend (2002), *Language in South Africa*

*NB: The author gives ĭ as the shifted vowel but calls it “centralized”; based on this description, I’m calling it /i/*

æ ɛ ɪ → ɛ e i

## 37.20 Southern [United States] Shift (English)

*Pogostick Man*, from Wikipedia contributors (2012), “Southern American English”.

ɛ → ɪ / \_N

“Lax and tense vowels often neutralize before /l/”

aɪ → aː / \_#

aɪ → aː / \_C[+ voiced]

aɪ → aɛː / else (only for some speakers)

aɪ → aː / else (only for some speakers)

æ ɛ ɪ → æj(ə) ɛj(ə) ɪj(ə)

ɛj(ə) ɪj(ə) i eɪ → ej(ə) ij(ə) ii ei

uʊ oʊ → ʊö öü (a bit of a guesstimate based upon the prose description in the article and the mean-formant-value chart cited from Labov, Ash & Bobert (2006))

ɔ → ɑʊ (for some speakers)

ɑɪ → ɒɪ (“often”)

z → d / \_n (not strictly a vowel shift but included here anyway because it’s cool, and also because it doesn’t occur in ⟨hasn’t⟩ because of the influence of ⟨hadn’t⟩)

Stress reassignment to the initial syllable (again, not strictly a vowel shift)

Merger of ɔɪ and ɑɪ (“in some regions”)

Loss of distinction between ɪɪ and ɪəɪ, and between ʊəɪ and ɔɪ

Pronunciation of the ⟨l⟩ in words like ⟨walk⟩ and ⟨talk⟩ (again, not really a vowel development)

æ/ɑː → æɪ

## 38 Most-Wanted Sound Changes

This section replicates the “Most wanted sound changes” article from Knee Quickie. It is presented mostly as it was found with the following modifications:

- The formatting rules are not adhered to any longer due to the format, and the preamble (and table of contents) are omitted.
- Some liberty has been taken with the presentation of the  $*f \rightarrow p$  change in Afro-Asiatic.
- Bullets are no longer present.
- Some corrections have been made (e.g., to the conditioning of the Ōkami change of  $*t \rightarrow k$ ).
- Instead of footnotes, sources (where cited) are listed next to the relevant entries.
- Some URLs have been shortened using `http://is.gd` due to potential conflict with the way L<sup>A</sup>T<sub>E</sub>X handles the  $\langle\% \rangle$  character.
- Subsection 4 is specifically listed as being “empty as of yet” for aesthetic purposes.
- Wikipedia URLs have been changed to `https://`.

### 38.1 List 1: Simple Consonant Changes

w → p (Navajo, some Polynesian languages)  
k<sup>j</sup> g<sup>j</sup> → k g (Danish)  
ś → k (Possibly unconditional; some Samoyedic langs)  
p<sup>j</sup> → k<sup>j</sup> (some Romanian dialects, Tsakonian)  
ts → t (unconditional; some Samoyedic langs)  
t → k (general Polynesian)  
n → ŋ (Samoan, but only in colloquial speech)  
j → p (some Polynesian languages, such as Levei and Drehet) ([https://en.wikipedia.org/wiki/Proto-Austronesian\\_language](https://en.wikipedia.org/wiki/Proto-Austronesian_language))  
b → #c, -nc- (Sundanese)  
ŋ → {x,h} (various Mayan languages)  
h → ŋ (Nyole)  
ʕ → ŋ (allegedly in European Hebrew, both Sephardic and Ashkenazi, but possibly not a *sound change* so much as a substitution) ([https://en.wikipedia.org/wiki/Hebrew\\_language#Varieties\\_of\\_ayin](https://en.wikipedia.org/wiki/Hebrew_language#Varieties_of_ayin), <http://sites.google.com/site/londonsephardiminhag/pronunciation>, <http://www.forward.com/articles/105938/>)  
f → p (? claimed to have occurred independently in Proto-Semitic and Proto-Omotc, and



to a limited extent in Egyptian (but this may be related to the Semitic change); note that the Wikipedia article is cited to a single source and that source is admittedly theoretical, and acknowledges on page 77 another reconstruction that doesn't believe Proto-Afro-Asiatic had /f/ at all) (Page 77 of <http://is.gd/WNyXdn>, [https://en.wikipedia.org/wiki/Proto-Afro-Asiatic\\_language](https://en.wikipedia.org/wiki/Proto-Afro-Asiatic_language))

tš → t (general Baltic-Finnic; may not be unconditional but was certainly the most common outcome)

r → g<sub>L</sub> → ɣ (Hiw) (<http://is.gd/jCDL01>)

mb nd → b dr (Nias)

## 38.2 List 2: Conditional or complex consonant changes

Western and Eastern Armenian often have swapped voicing in stop consonants: e.g. *vardapet* vs. *vartabed*. This is a result of changes related to aspiration.

w → f (Common Celtic; I'm not sure of the conditions)

m → n / ɪ (Tsakonian)

{t,k} → Ø / V\_V (Marathi) *probably with voiced stops as intermediates, since they also became silent*

p → w / V\_V (Marathi)

b d g → b: d: g: / V\_V (some dialects of Italian; there may be more to it than this, since words like “repubblica” are in standard Italian and not just dialects)

t → k / ɹ̥ (Ōgami) (NB: *The article doesn't have an underscore indicating whether this occurs before or after the /ɹ̥/, but the linked page indicates where this change occurred*) (<http://amritas.com/101023.htm#10192359>)

n → i / ɹ̥ and sometimes other fricatives (Montana Salish)

## 38.3 List 3: Vowels

y → u (some mainland Greek dialects, and Tsakonian; this particular sound change has been said in some places to be impossible) ([https://en.wikipedia.org/wiki/Tsakonian\\_language#Consonants](https://en.wikipedia.org/wiki/Tsakonian_language#Consonants))

i u → ɹ̥ ɹ̥ (Ōgami) (<http://amritas.com/101023.htm#10192359>)

## 38.4 List 4: Other

This section is empty as of yet.