

Index Diachronica v.10.0

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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; the page at 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^AT_EX 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 $\langle\%$; 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.

- **v.8.0** (2015/11/16) – Added Piscataway, Mi'kmaq, and Cree correspondences to the Algonquian section; added Kainantu-Goroka correspondences to the Trans-New Guinea section; added Vandalic correspondences; added some rGyalrongic and Tibetic correspondences to the Sino-Tibetan section; added Philippine and Oceanic correspondences to the Austronesian section; added Pai correspondences to the Yuman-Cochimí section; added Chumashan correspondences; added Ofaié-Jê correspondences; added Bakairi correspondences; added Lenmichian correspondences; added some Na-Dene correspondences and moved the Athabaskan section under Na-Dene. Fixed a formatting error in the changelog.
- **v.8.1** (2015/11/16) – Corrected some formatting errors.
- **v.8.2** (2016/02/18) – Added missing section on Cheyenne that was lost during the move from v.7.7 to v.8.1. Corrected some errors in the changeling.
- **v.9.0** (2016/02/22) – Added changes involving Sanskrit, Hupa, Southern Athabaskan, Totozoquean, Mande, and Luangiua. Fixed some formatting errors and updated the version number on the title page. Corrected Mi'kmaq changes as per correspondence with Alex Fink.
- **v.10.0** (2016/02/29) – Minor corrections for formatting and typos. Added Mi'kmaq corrections to v.9.0 changelog entry. Removed Proto-Norse sound changes due to inaccuracies per Elector Dark's request. Added an alternate set of changes to Scots and a set of changes from Scots to Falkirk Scots; added new changes for Proto-Norse, Old Norse, and Early Icelandic; added a section on the Muskogean languages; added changes to Orkney Norn and Shetland Norn; added correspondences from two Mono-Kawaiisu languages. Finished compiling sound changes from Proto-Nyulnyulan to Bardi; fixed the formatting in that section and added citations and a Proto-Nyulnyulan phonemic inventory. Created a section for Macro-Chibchan and moved Lenmichian under Macro-Chibchan. Added Chibchan correspondences. Replaced the original Tocharian sound changes with sound changes contributed by Nortaneous. Added rGyalrongic correspondences; added Tsouic correspondences. Added a section on the Tai-Kadai languages and added correspondences from Tai. Added Abenaki correspondences; replaced Sardinian correspondences with contributions from qwed117. Added Waray correspondences which I forgot to add to previous versions. Added some Gbe correspondences; added section on Macro-Panoan and added Tacanan correspondences. Added Cypriot Arabic correspondences.

5 Key to Abbreviations

Unless otherwise noted, the symbols below stand for:

- ” = Stress
- ! = Except when...
- (...X) = For any number of X remaining
- X₀ = The same/an identical X
- Xⁿ = 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
- Ṁ = 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)
- Ø = Nothing/Null/Zero
- A = Affricate
- B = Back vowel
- C = Consonant
- D = Voiced plosive
- E = Front vowel
- F = Fricative
- H = Laryngeal
- J = Approximant
- K = Velar
- Ḳ = Palatovelar
- L = Liquid
- M = Diphthong
- N = Nasal
- O = Obstruent
- P = Labial/Bilabial
- Q = Uvular consonant; click consonant (Khoisan)
- 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.

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 ^l d d ^l	c c' j	k k ^w k' k ^w ' g g ^w		ʔ
Fricative	f	s s' z		x x ^w ɣ ɣ ^w	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 ʃ tʃ → ʒ s₁ s₂
dʒ → tʃ → ʃ
t → Ø / _s#
ɬ → l
f → p
a(:) → e(:) / _{ɰ,q}\$
q ʕ → ʔ h

$a \rightarrow o / \#Cw_{-}\{(d)l,s_3\}$
 $w \rightarrow \emptyset / \#C_{-}V$, 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)*

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

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

l → n / #_VN
d' → 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' → b
z → d / Vj_
ts' → ʒ / V_
x₁ → k
x₂ → k / _#
x₂ → Ø / V_V
ʒ → {tʃ, ts}
ts → tʃ / _i
s_x → tʃ
s₁ → ʃ
ʔ → Ø
{h₁, h₂} → h
d' → 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 → w / _\$#
p → f / V_
z z: → j dʒ:
s → ʃ / !V_
ts' → tʃ'
x₁ → k
x₂ → k / #_
x₂ → Ø / V_V
{s₃, ʒ} → ʃ / #_
{ts, ʒ} → tʃ / V_
s₃ → ʃ / V_V
s₃ → s / V_\$\$#
ts' → tʃ'
ɲ → n
h₂ → 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)*

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

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

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

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
 $\{ts, tf\} z \text{ dz } \rightarrow \int d \text{ d} \int$
 $t \rightarrow r$ / 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
 $x \rightarrow \emptyset$
 $x^w \text{ } g^w \rightarrow w \text{ } y^w$
 $\{ts, tf\} dz \rightarrow \int d \int$
 $t \rightarrow j$ / 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
 $\text{?} \rightarrow \emptyset$

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
 $e: \ o: \rightarrow i \ u$
 $\{e, o\} \ \{i, u\} \rightarrow a \ \text{ə}$
 $\$VC\$ \rightarrow \$CV\$$ “(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)*

$a: \rightarrow a$
 $\text{ħ} \ \text{ʕ} \rightarrow h \ \text{ʔ}$
 $ts \ dz \ \{t, ts\}' \ tʃ' \rightarrow s \ z \ s' \ ʃ'$
 $\eta \rightarrow \emptyset$ / V_{\{ts, q\}}

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

$s' \rightarrow s$
 $h \rightarrow \text{ħ}$ / #_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)*

$\emptyset \rightarrow i$

$h \rightarrow \text{h}$ / $_ Vz$

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

$\text{ɬ} \rightarrow s$ / $_ \# VC$

$\{j, ts, z\} dz \text{ tʃ } \{t', tʃ'\} dʒ \rightarrow s z ts ts' dʒ$

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

$p' \rightarrow p$

$p \rightarrow b$ / $_ \# dIV _$

$xw \rightarrow \text{ɣ}w \rightarrow \text{h}$

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

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

$gwVq \rightarrow \text{ʕ}$

$k(w) \rightarrow \text{tʃ}$ / $_ \# Vt$

$g(w) \rightarrow dʒ$ / $_ \# Vd$

$xV \rightarrow k$ / $_ h$

$K^w \rightarrow K$

$q \rightarrow \emptyset$ / $_ i$

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

$\text{ʕ} \rightarrow i$ / $_ \# VR$

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

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

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

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

$\{h, \text{h}\} \rightarrow ?$ / $KV _$

$q \rightarrow ?$ / $h _$

$qh \rightarrow \text{ʕh}$

$y \rightarrow \text{ʕ}$ / $_ h _$

$tl' \rightarrow dl$ / $_ \# Vhr$

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

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

$r \rightarrow ?$ / $C _ \{t, w, j\} \# ! C = \{g, m, n, r, w, \text{ʃ}, x\}$

$l \rightarrow j / \#_i C ?$
 $l \rightarrow r / \#_n V_C$
 $l \rightarrow n$

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)*

$n \rightarrow l / \#_Vb$
 $n \rightarrow l / \#_ (V)\{s,f,h\}V\{m,b\}\#$
 $n \rightarrow l / \#_V\{m,b\}\{s,f,h\}$
 $n \rightarrow l / \#_Vk$
 $n \rightarrow l / mV_C$
 $n \rightarrow l / CV_m$
 $r \rightarrow l / \#(C)_c(C)\# ?$
 $r \rightarrow l / \#o_ \#$

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)*

$q \rightarrow \text{ʕ}$
 $\{i,u\} \rightarrow \text{ə}$
 $tl' \rightarrow \text{ʔ} / _C[+\text{sibilant}]$
 $y \rightarrow g / \#_VCH$
 $y(w) \rightarrow g / \#_Vx$
 $k'(w) \rightarrow k / \#dlV_$
 $w \rightarrow \emptyset / _C$
 $? \rightarrow \text{ʕ} / \#K_r\#$

6.2.2.1.5 Proto-Semitic to Classical Arabic *Khavaragh*

$p \rightarrow f$
 $\theta^{\text{ʕ}} k^{\text{ʕ}} \rightarrow \text{ð}^{\text{ʕ}} q$
 $g \rightarrow g^j \rightarrow dʒ$
 $s \rightarrow \{f,h\} /$ in “anaphora and certain derivational prefixes. . . [t]his is common to many other Semitic languages as well”
 $\int \rightarrow s$
 $\text{ʔ} \rightarrow \int$
 $\text{ʔ}^{\text{ʕ}} \rightarrow d\text{ʔ}^{\text{ʕ}} \rightarrow d^{\text{ʕ}}$

$m \rightarrow n$ / “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 Cypriot Arabic *Pogostick Man*, from Borg, Alexander (1985), *Cypriot Arabic*

NB: Changes may not be in chronological order.

$S[+ \text{voice}] \rightarrow S[- \text{voice}]$

$q \rightarrow k$

$S \rightarrow [+ \text{voice}] / \{V,R\}_-V$

$S \rightarrow [+ \text{voice}] / V_-R$

$\{\theta, \delta\} \{f, v\} \{x, \gamma\}$ voicing neutralized “in contact with other fricatives”

$S \rightarrow F / _S$

$f \theta \rightarrow p \ t / F_-$

$k \ x \rightarrow c \ \text{ç} / _ \{j, E\}$

$\{l, n\}j \rightarrow j:$

$j \rightarrow c / \{O, r\}$

$j \rightarrow \emptyset / Ck_ \$$

$nx \rightarrow x:$

$\emptyset \rightarrow F / N_ \{O, r\} ! \ m.f$

$\{\delta^f, d^f\} \rightarrow \delta$

$t^f \ s^f \rightarrow s \ t$

$? \ h \rightarrow \emptyset \ x$

$\emptyset \rightarrow i / \#al\$ _z$

$d\text{ɟ} \rightarrow z$

$\gamma \ h \rightarrow \text{ɣ} \ x$

$w \rightarrow v / _ \%$

$w: \rightarrow v$

$j(:) \rightarrow \emptyset / V_E$

$u: \ i: \rightarrow o: \ e: / _ \text{ɣ}$

$u: \ i: \rightarrow o: \ e: / \text{ɣ}_-$

$i \rightarrow a / C^f _ \{q, \gamma, \text{ɣ}\}$

$i \rightarrow a / \{q, \gamma, \text{ɣ}\} _ C^f$

$a \rightarrow i / _C(C)$, when stressed

$u \rightarrow o / _ \{\text{ɣ}, \gamma, x, r\}$

$u \rightarrow o / \{\text{ɣ}, \gamma, x, r\} _$

$\{u, a, i\} \rightarrow \emptyset / _ \%$, when stressed (short only)

Epenthesis in medial CCC clusters, often so that the syllable break is between the second and third consonants

u: i: → u i
 a → a / _C[+ dorsal]
 a → e / _ (C)(C)i(:)
 a: → a / ! _#
 a → {u,o} / P_
 a → {u,o} / _P
 a → Ø / _t, in the feminine ending
 a:ʔ → e / E(C)(C)_#
 a: → a / {C^ʕ,w}_#

6.2.2.1.7 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; 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

θ ð → 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’θi:r* → EA *kti:r*”

θ ð → s z

ð^ʕ → z^ʕ, occasionally t^ʕ

d^ʕ → z^ʕ (seems to be a sporadic change only affecting a few words, e.g. CA/MSA *’d^ʕa:bit^ʕ* → EA *’z^ʕa:bit^ʕ*)

dʒ → g

i u → e o / only when short, ! _#

u → {o,u} / short only, _#

aj aw → e: o: / in U[+closed]

V: → V / C_C {:,C} V

V → V: / C_CV in U[-stress]

V → V: / _# + suffix

{i,u} → Ø / VC_CV when unstressed (short only)

Some other short-vowel deletions

Ø → 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(:) → a(:) / near emphatics

a(:) → a(:) / if a(:) is elsewhere in the word

a(:) → æ(:) / else (sometimes it seems more like ε(:) to me)

q → ʔ / except in several words, two of which are *al-Qâhira* and *musîqâ*

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

$\{\{s,z\}(\text{ʕ}),\text{ʕ}\} \text{ʕ} \rightarrow \text{ʕ}$;
 $\text{ʕ} \rightarrow \{\text{ʕ}, \text{h}\} / _ \text{h}$
 Final short vowel loss
 $\text{h} \rightarrow \emptyset$ / in coda

6.2.2.1.8 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>

$\text{dʒ} \rightarrow \text{j}$, occasionally ɟ or dʒ in educated speech
 $\theta \ \delta \ \delta^{\text{ʕ}} \rightarrow \text{t} \ \text{d} \ \text{d}^{\text{ʕ}}$
 $\text{q} \rightarrow \text{g}$
 $\text{a:} \rightarrow \text{e:}$ / in Form VI (*tafā‘ala*) verbs, though these apparently coexist with forms having the original vowel as well, with semantic distinctions
 $\text{a:} \rightarrow \text{æ:}$ / when not near emphatics
 Epenthesis (it seems *i* is preferred) breaking up final consonant clusters
 $\text{V[-long]} \rightarrow \emptyset$ / $\# \text{C}_\text{C}$, in some words

6.2.2.1.9 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>

$\text{dʒ} \rightarrow \text{j}$, occasionally ɟ or dʒ in educated speech
 $\theta \ \delta \ \delta^{\text{ʕ}} \rightarrow \text{t} \ \text{d} \ \text{d}^{\text{ʕ}}$
 $\text{d}^{\text{ʕ}} \ \text{q} \rightarrow \delta^{\text{ʕ}} \ \text{g}$
 $\text{a:} \rightarrow \text{e:}$ / in Form VI (*tafā‘ala*) verbs, though these apparently coexist with forms having the original vowel as well, with semantic distinctions
 $\text{a:} \rightarrow \text{æ:}$ / when not near emphatics
 Epenthesis (it seems *i* is preferred) breaking up final consonant clusters
 $\text{V[-long]} \rightarrow \emptyset$ / $\# \text{C}_\text{C}$ (sporadic?)

6.2.2.1.10 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.

$\text{d}^{\text{ʕ}} \ \text{q} \rightarrow \delta^{\text{ʕ}} \ \text{g}$
 $\text{f} \ \theta \rightarrow \text{v} \ \text{z}$ (the article isn’t exactly clear on what this second phone is)
 $\text{ʔ} \rightarrow \{\emptyset, \text{j}, \text{w}\}$ / depending on the environment; again, the article is unclear

$x \rightarrow \chi$ (conjectured based upon the following but not outright stated in the article)

$y: \rightarrow \mathfrak{y}: \rightarrow q:$

$y \rightarrow \{\mathfrak{y}, q\}$

$V[-\text{long}] \rightarrow \emptyset / C_{-}\{C, \#\}$ (except for the feminine marker)

$aj \text{ aw} \rightarrow e:(^j) \text{ o}:(^w)$ (sometimes, the article is unclear)

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

— $j \text{ w} \rightarrow i \text{ u} / \#_{-}CV$

— $j \text{ w} \rightarrow i: \text{ u:} / \#_{-}CC$

6.2.2.1.11 Classical Arabic to Iraqi Arabic *Pogostick Man*, from http://en.wikipedia.org/wiki/Varieties_of_Arabic

$k \text{ q} \rightarrow t\mathfrak{f} \{g, q\}$ (g is more common)

$g^j \rightarrow j /$ in southern regions

$\mathfrak{f} \rightarrow \mathfrak{f}^{\mathfrak{f}}$

$aj \text{ aw} \rightarrow e: \text{ o:}$

6.2.2.1.12 Classical Arabic to Eastern Libyan Arabic *Pogostick Man*, from http://en.wikipedia.org/wiki/Libyan_Arabic

$d^{\mathfrak{f}} \text{ d}\mathfrak{z} \text{ q} \rightarrow \mathfrak{d}^{\mathfrak{f}} \mathfrak{z} \text{ g}$

$aj \text{ aw} \rightarrow e(\mathfrak{z}, j) \text{ o}(\mathfrak{z}, w)$

$\emptyset \rightarrow \mathfrak{a} / C_{-}CV(\mathfrak{z}, V)CC$

6.2.2.1.13 Classical Arabic to Western Libyan Arabic *Pogostick Man*, from http://en.wikipedia.org/wiki/Libyan_Arabic

$q \text{ d}\mathfrak{z} \rightarrow g \mathfrak{z}$

$\theta \mathfrak{d}(\mathfrak{f}) \rightarrow t \text{ d}(\mathfrak{f})$

$aj \text{ aw} \rightarrow e: \text{ o:}$

$\emptyset \rightarrow \mathfrak{a} / CCV(\mathfrak{z}, V)C_{-}C$

6.2.2.1.14 Classical Arabic to Moroccan Arabic *Pogostick Man*, from http://en.wikipedia.org/wiki/Moroccan_Arabic

$t \rightarrow t\mathfrak{s} /$ plain t only, distinguishable from the sequence ts

$\{a, i\} \rightarrow \mathfrak{a} /$ short only; the change of short a blocked for some speakers before h f

$u \rightarrow \mathfrak{a} /$ short only, except near “a labial or velar consonant”

$C[+\text{labial}/+\text{velar}] \rightarrow \mathfrak{w} /$ adjacent to short u

$\{u, \mathfrak{a}\} \rightarrow \emptyset / ! C_{-}C(C)\#$

$\text{ə} \rightarrow \text{a} / \text{near } \text{ħ} \text{ ʕ}$
 $\text{ə} \rightarrow \text{ɐ} / \text{near emphatics}$
 $\text{ə} \rightarrow \text{ɪ} / \text{else}$
 $\text{u} \rightarrow \text{ʊ} / \text{short only}$
 $\text{a:} \text{ i:} \text{ u:} \rightarrow \text{ɑ:} \text{ e:} \text{ o:} / \text{near emphatics}$
 $\text{a:} \rightarrow \text{æ:} / \text{else}$
 $\text{C}_1^{\text{ʕ}} \text{C}_2 \rightarrow \text{C}_1 \text{C}_2^{\text{ʕ}}$
 $\text{C}^{\text{ʕ}} \rightarrow \text{C} / \{\#, \text{V}\} \text{-V}$
 $\text{q} \rightarrow \{\text{q}, \text{g}\}$
 $\text{dʒ} \rightarrow \{\text{d}, \text{g}\} / \text{if s or z occur somewhere else in the word}$
 $\text{dʒ} \rightarrow \text{ʒ} / \text{else}$
 $\text{s} \rightarrow \text{ʃ} / \text{if ʃ is somewhere in the stem after it}$
 $\text{z} \rightarrow \text{ʒ} / \text{if ʒ is somewhere in the stem after it}$

6.2.2.1.15 Classical Arabic to Sa‘idi Arabic *Pogostick Man*, from http://en.wikipedia.org/wiki/Sa%27idi_Arabic

NB: This is probably highly incomplete.

$\text{q x ʔ} \rightarrow \text{g ɣ ʙ}$

6.2.2.1.16 Classical Arabic to Sudanese Arabic *Pogostick Man*, from http://en.wikipedia.org/wiki/Sudanese_Arabic

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

6.2.2.1.17 Classical Arabic to Tunisian Arabic *Pogostick Man*, from http://en.wikipedia.org/wiki/Tunisian_Arabic

$\text{a} \rightarrow \text{ɑ} / \text{near emphatics}$
 $\text{a} \rightarrow \text{ɛ} \text{ (sometimes)}$
 $\text{d}^{\text{ʕ}} \text{ q} \rightarrow \text{ð}^{\text{ʕ}} \{\text{g}, \text{q}\}$
 $\text{dʒ x ʔ} \rightarrow \text{ʒ ɣ ʙ}$
 $\text{aj aw} \rightarrow \{\text{aj}, \text{e:}, \text{i:} \text{ aw}, \text{o:}, \text{u:}\}$
 $\text{V:} \rightarrow \text{V[-long]} / \text{-\#} \text{ (except as below)}$
 $\text{V}(\text{:}) \rightarrow \text{V:} / \text{in accented or stressed monosyllables}$

6.2.2.1.18 Proto-Semitic to Biblical Hebrew *Maknas*, from 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.

θ θ^ɪ ð ð^ɪ ɪ^ɪ → ʃ ʃ^ɪ z s s^ɪ

x ɣ k^ɪ → ɧ ɪ 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,ɛ} (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 → ɛ: / _#

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

ɪ → Ø / _{ \$, # }

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

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

6.2.2.1.19 Biblical Hebrew to Modern Israeli Hebrew *Maknas*, from 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

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

$w \ \theta \ \delta \ \gamma \rightarrow v \ t \ d \ g$ (sometimes)

$x \ \text{ʕ} \rightarrow \chi \ \text{ʔ}$

$s^{\text{ʕ}} \ t^{\text{ʕ}} \ h \ q \rightarrow s \ t \ \chi \ k$

$h \rightarrow \emptyset / _ \#$

$\text{ʔ} \rightarrow \emptyset / \text{! in onset of } U[+\text{stress}]$ (colloquial)

$h \rightarrow \emptyset$ (colloquial)

$C: \rightarrow C[-\text{long}]$

$r \rightarrow \text{ʁ}$

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 /t/ 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>)

7.1 Proto-Algonquian to Kennebec River Abenaki

Pogostick Man with acknowledgment to dhok, from Warne, Janet Leila (1973), “A Historical Phonology of Abenaki”. <http://digitool.library.mcgill.ca/R/?func=dbin-jump-full&object_id=46078&local_base=GEN01-MCG02>

hl → s:
 ʔ → h / _l
 l → n / #_
 l → r
 nr → r:
 N → Ø / _O
 a: → a / _OO
 a → e / #C_OO
 a → Ø / #_OO
 V → Ø / _#
 iw → o / _#

$w \rightarrow \emptyset / _ \# ! k(:)_$
 $j \rightarrow \emptyset / _ \# ! p_$
 $w \rightarrow \emptyset / C_ ! C = K$
 $j \rightarrow \emptyset / _ C$
 $i \rightarrow \emptyset / \# w_$
 $\theta \rightarrow n / \#_$
 $\theta \rightarrow s / _ k$
 $\theta \rightarrow r$
 $\int t_f \rightarrow s \text{ ts}$
 $\{x, h\}S \rightarrow S:$
 $sk \rightarrow k: / ! _ a$
 $?s ?ts \rightarrow s: ts:$
 $o: a: e: i: \rightarrow o \tilde{o} a i$

7.2 Proto-Algonquian to St. Francis Abenaki

Pogostick Man with acknowledgment to dhok, from Warne, Janet Leila (1973), “A Historical Phonology of Abenaki”. <http://digitool.library.mcgill.ca/R/?func=dbin-jump-full&object_id=46078&local_base=GEN01-MCG02>

$n\theta \text{ nl} \rightarrow s: \{s:, hl\}$
 $? \rightarrow h / _ l$
 $N \rightarrow \emptyset / _ RO$
 $a: \rightarrow a / _ OO$
 $a: \rightarrow \tilde{o}$
 $V[- \text{ high} - \text{ long}] \rightarrow \emptyset / \# C_ OO$
 $a \rightarrow \emptyset / \# _ OO$
 $V \rightarrow \emptyset / _ \#$
 $iw \rightarrow o / _ \#$
 $w \rightarrow \emptyset / _ \# ! k(:)_$
 $j \rightarrow \emptyset / _ \# ! p_$
 $w \rightarrow \emptyset / C_ ! C = K$
 $j \rightarrow \emptyset / C_$
 $\{R, h\} \rightarrow \emptyset / V_ V \text{ (sporadic?)}$
 $\theta \rightarrow n / \#_$
 $\theta \rightarrow s / _ k$
 $\theta \rightarrow l$
 $\int t_f \rightarrow s \text{ ts}$
 $nj \rightarrow i / \#_$
 $\{x, h\}S \rightarrow S:$
 $?s ?ts \rightarrow s: ts:$

$sk \rightarrow k: / ! _a$
 $i \rightarrow e / _R$
 $o: e: i: \rightarrow o a i$

7.3 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

$(W)V \rightarrow \emptyset / _ \#$
 $we \rightarrow o$
 $o(:) \rightarrow i(:)$
 $W \rightarrow \emptyset / C i(:)$
 $e \rightarrow i / \# _$
 $\theta \rightarrow \int / C _$
 $\theta h \{s, m, n, r\} \rightarrow \int \emptyset ? / _ C$
 $t\int \rightarrow \int / _ p$
 $W \rightarrow j / C _$
 $W \rightarrow n / \{\#, V\} _$
 $p k \rightarrow k \emptyset$
 $s \rightarrow n / \# _$
 $s \rightarrow h / \{V, C\} _$
 $r \rightarrow n / \{\#, V\} _$
 $r \rightarrow h / C _$
 $t\int \rightarrow \theta$
 $V: \rightarrow V[-long] / _ CC$
 $a(:) \rightarrow o(:)$

7.3.1 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

$h? \rightarrow ?h$
 $(\{C, \#\}V)? \rightarrow (\{C, \#\}V:)\emptyset / _ C$
 $i(:) \rightarrow u(:) / o(:)(C[-dental])(C[-dental]) _$
 $\emptyset \rightarrow ? / CV[-long] _ \#$
 $\int m \rightarrow x w / _ B$
 $\int m \rightarrow x w / B _ \#$
 $\int m \rightarrow x b / o(:) _ e(:)$

$\int k m \rightarrow s t f b / _ \{E, j\}$
 $\int k m \rightarrow s t f b / E _ \#$
 $(V[-long])N \rightarrow \emptyset / _ \#$
 $\emptyset \rightarrow h / \# _ V$
 $e: \rightarrow ei / j _$
 $o(:) \rightarrow e(:) / Cj _ \text{ (sporadic)}$
 $n \rightarrow \emptyset / _ j$
 $j \rightarrow \emptyset / C _$
 $h \rightarrow \emptyset / _ \#$

7.3.2 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

$h? \rightarrow ?h$
 $(\{C, \#\}V[-long])? \rightarrow (\{C, \#\}V:[+falling \text{ tone}])\emptyset / _ C$
 $j \rightarrow \emptyset / \{f, \theta\}$
 $i \rightarrow u / o(:) _$
 $\int \theta m \rightarrow \theta t w / _ o(:)$
 $\int \theta m k \rightarrow \theta t b t f / _ e(:)$
 $\int \{\theta, t\} m k \rightarrow s t s t^j b^j / _ \{i(:), j, \#\}$
 $(V[-long])N \rightarrow \emptyset / _ \#$
 $\emptyset \rightarrow ? / \# _ V$
 $n \rightarrow \emptyset / _ j$

7.4 Proto-Algonquian to Blackfoot

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

$\{\theta, t f, j, r\} \rightarrow t / \text{ unless adjacent to another consonant}$
 $\emptyset \rightarrow x / _ s ! _ C \{C, \#\}$
 $j \rightarrow s / ! C _$
 $h \rightarrow \emptyset / ! _ C$
 $\{j, t f\} \rightarrow s / \# _$
 $\{? \theta, ? r\} \rightarrow \{?, j, \emptyset\}$
 $nr \rightarrow s$
 $h \rightarrow x / _ \{p, k\}$
 $hkw \rightarrow ?k$

$n\theta \text{ hs} \rightarrow s:t \text{ s:}$
 $m \rightarrow ? / _p$
 $nk\omega \rightarrow ?:$
 $\{n,s\} \rightarrow x / _t$
 $ntf \rightarrow ?t$
 $ns \text{ sk} \rightarrow \{x,s\} \{x,s:\}$
 $\theta p \text{ t}f p \text{ }f p \rightarrow \{x,s:\} ?p \text{ s:p}$
 $f \rightarrow x / _k$
 $x \rightarrow s: / \{i,\#e,ja,ke\}_-$
 $x \rightarrow s: / e(:).s$
 $\emptyset \rightarrow s / \{i(:),\#e\}_t$
 $t \rightarrow ts / _ \{i,e(:),a\}$
 $\emptyset \rightarrow s / k.i(:)$
 $s:: \rightarrow s:$
 $e \rightarrow i / \{\#,k\}_-$
 $\{a,e,i\} \rightarrow o / _k^w$
 $\emptyset \rightarrow j / \{o:w,i;j\}.i\#$
 $w \rightarrow j / \{r,k\}.i\#$
 $\emptyset \rightarrow i / r_w$
 $w \rightarrow \emptyset / C_$
 $\{ji:,ja,ahi\} \{owa:,awa,awe\} \text{ awi } \{i:wa,erwa,aji,a:je,ani\} \rightarrow i \text{ o: } o(ji) \text{ i: } / C_C$
 $hi \rightarrow \emptyset / a:_$
 $\emptyset \rightarrow i / \#_jC$
 $\emptyset \rightarrow i / C_jV\#$
 $a \rightarrow o / _w$
 $eLwi \rightarrow i:$
 $i(:)wi \rightarrow i: / \text{medially}$
 $i(:)wi \rightarrow i / _ \#$
 $j \rightarrow s$
 $w \rightarrow j / _i$
 $\{i:,ij,j\} \rightarrow j / C_B$
 $iji \rightarrow i:$
 $w \rightarrow \emptyset / \{a,o\}.iC$
 $on \rightarrow u / _iC$
 $tem \{k,p\}en \rightarrow m: n:$
 $ket \rightarrow t: (\rightarrow s:?)$
 $ke(h) \rightarrow t: ?$
 $\{k^{(w)}es,ke\theta\} \rightarrow s:$
 $e \rightarrow \emptyset / O_ \text{ in } \#U \text{ (not universal)}$
 $\{me,ne\} \rightarrow \emptyset / \#_O \text{ “(followed by truncation of following x)”}$
 $\{we,wi:\} \rightarrow o / \#_$

$\text{tsi} \rightarrow \emptyset / \$_OO$ “(before a prefix; the first obstruent of the follow[ing] cluster then becomes
 ?)
 $\text{a:} \rightarrow \text{aa} / W_!$ when $_ \{C\{C,:\},\#\}$
 $\text{a:} \rightarrow \text{a} / \text{else}$
 $\text{o:} \rightarrow \text{o}$
 $\text{a} \rightarrow \text{i} / !$ at word boundaries
 $\text{e} \rightarrow \text{a} / _ \#$
 $\{\text{e:},\text{i:}\} \rightarrow \text{i}$

7.5 Proto-Algonquian to Cheyenne

jburke, from “Bloomfield and Leman”

$\text{o a} \rightarrow \text{e o}$
 $\text{e i} \rightarrow \text{a e}$
 $\text{p t k} \rightarrow \{\text{hp},\emptyset\} \text{ ht } \{\text{hk},\emptyset\}$
 $\{(t)l,\emptyset\} \rightarrow \text{t}$
 $\text{s} \rightarrow \text{h}$
 $\text{ʃ tʃ} \rightarrow \{\text{ʃ},\text{x}\} \text{ s}$
 $\text{w j} \rightarrow \{\text{v},\text{o}\} \{\text{t},\text{e}\}$
 $\{\text{kC},\text{Ck}\} \rightarrow \text{?}$
 $\text{C}[_ \text{nasal}] \rightarrow \emptyset / \text{near nasals}$
 $\text{m} \rightarrow \emptyset / \text{near nasals}$
 $\text{p} \rightarrow \{\text{t},\emptyset\} / \text{near consonants}$
 $\text{W} \rightarrow \emptyset / \text{near nasals or t}$

7.6 Proto-Algonquian to Northern East Cree

Pogostick Man, from <http://home.kpn.nl/cvkolmes/ojibwe/CorrCr0j.pdf> and Wikipedia contributors (2015), “Cree language”. *Wikipedia, the Free Encyclopedia*. <https://en.wikipedia.org/w/index.php?title=Cree_language&oldid=690521189>

$\text{we} \rightarrow \text{o}$
 $\text{e e:} \rightarrow \text{i a:}$
 $\text{ja} \rightarrow \text{a:} / C_$
 $\text{ʃje:} \rightarrow \text{se:}$
 $\text{lwi} \rightarrow \text{jo}$
 $\text{wi} \rightarrow \text{o} / C_$
 $\{\text{n},\text{q},\text{h}\} \rightarrow \emptyset / _ \text{s}$
 $\text{q} \rightarrow \text{h} / _ \text{tʃ}$

$N \rightarrow h / _S$
 $(t)\text{ʃ}p \rightarrow sp$
 $\{q,\text{ʃ}\} \rightarrow s / _t$
 $\theta \rightarrow s / _k$
 $l \rightarrow h / _k$
 $\{n,q,h\}\text{ʃ} \{n,q,h\}l \rightarrow s \{h,j,hj\}$
 $k \rightarrow t\text{ʃ} / _i$
 $a \rightarrow i /$ in some unaccented syllables (short only)
 $\theta \rightarrow t$
 $l \rightarrow j$

7.7 Proto-Algonquian to Southern East Cree

Pogostick Man, from <http://home.kpn.nl/cvkolmes/ojibwe/CorrCr0j.pdf> and Wikipedia contributors (2015), “Cree language”. *Wikipedia, the Free Encyclopedia*. <https://en.wikipedia.org/w/index.php?title=Cree_language&oldid=690521189>

$we \rightarrow o$
 $e \rightarrow i$ (short only)
 $ja \rightarrow a\text{:} / C_$
 $\text{ʃ}je\text{:} \rightarrow \text{ʃ}e\text{:}$
 $lwi \rightarrow jo$
 $wi \rightarrow o / C_$
 $\{n,q,h\} \rightarrow \emptyset / _s$
 $q \rightarrow h / _t\text{ʃ}$
 $N \rightarrow h / _S$
 $(t)\text{ʃ}p \rightarrow sp$
 $\{q,\text{ʃ}\} \rightarrow s / _t$
 $\theta \rightarrow s / _k$
 $l \rightarrow h / _k$
 $\{n,q,h\}\text{ʃ} \{n,q,h\}l \rightarrow \text{ʃ} l$
 $\text{ʃ} \rightarrow \{\text{ʃ},s\} /$ in inland varieties; remains $/\text{ʃ}/$ in coastal varieties
 $k \rightarrow t\text{ʃ} / _i$
 $t\text{ʃ} \rightarrow ts$
 $\theta \rightarrow t$
 $l \rightarrow j$

7.8 Proto-Algonquian to Plains Cree

Pogostick Man, from <http://home.kpn.nl/cvkolmes/ojibwe/CorrCr0j.pdf> and Wikipedia

contributors (2015), “Cree language”. *Wikipedia, the Free Encyclopedia*. <https://en.wikipedia.org/w/index.php?title=Cree_language&oldid=690521189>

$we \rightarrow o$
 $e \rightarrow i$ (short only in southern dialects, both short and long in northern dialects)
 $ja \rightarrow a: / C_$
 $\int je: \rightarrow se:$
 $lwi \rightarrow jo$
 $wi \rightarrow o / C_$
 $\{n,q,h\} \rightarrow \emptyset / _s$
 $q \rightarrow h / _t\int$
 $N \rightarrow h / _S$
 $(t)\int p \rightarrow sp$
 $\{q,\int\} \rightarrow s / _t$
 $\theta \rightarrow s / _k$
 $l \rightarrow h / _k$
 $\{n,q,h\}\int \{n,q,h\}l \rightarrow s \{h,j,hj\}$
 $\int t\int \rightarrow s \ ts$
 $\theta \rightarrow t$
 $l \rightarrow j$

7.9 Proto-Algonquian to Swampy Cree

Pogostick Man, from <http://home.kpn.nl/cvkolmes/ojibwe/CorrCr0j.pdf> and Wikipedia contributors (2015), “Cree language”. *Wikipedia, the Free Encyclopedia*. <https://en.wikipedia.org/w/index.php?title=Cree_language&oldid=690521189>

$we \rightarrow o$
 $e \rightarrow i$ (short only)
 $ja \rightarrow a: / C_$
 $\int je: \rightarrow \int e:$
 $lwi \rightarrow jo$
 $wi \rightarrow o / C_$
 $\{n,q,h\} \rightarrow \emptyset / _s$
 $q \rightarrow h / _t\int$
 $N \rightarrow h / _S$
 $(t)\int p \rightarrow sp$
 $\{q,\int\} \rightarrow s / _t$
 $\theta \rightarrow s / _k$
 $l \rightarrow h / _k$
 $\{n,q,h\}\int \{n,q,h\}l \rightarrow \int l$

$\int \rightarrow s$ / in West Swampy Cree (remains $/\int/$ in East Swampy Cree)
 $t\int \rightarrow ts$
 $\theta \rightarrow t$
 $l \rightarrow n$

7.10 Proto-Algonquian to Woods Cree

Pogostick Man, from <http://home.kpn.nl/cvkolmes/ojibwe/CorrCr0j.pdf> and Wikipedia contributors (2015), “Cree language”. *Wikipedia, the Free Encyclopedia*. <https://en.wikipedia.org/w/index.php?title=Cree_language&oldid=690521189>

$we \rightarrow o$
 $e(:) \rightarrow i(:)$
 $ja \rightarrow a: / C_$
 $lwi \rightarrow jo$
 $wi \rightarrow o / C_$
 $\{n,q,h\} \rightarrow \emptyset / _s$
 $q \rightarrow h / _t\int$
 $N \rightarrow h / _S$
 $(t)\int p \rightarrow sp$
 $\{q,\int\} \rightarrow s / _t$
 $\theta \rightarrow s / _k$
 $l \rightarrow s / _k$
 $\{n,q,h\}\int \{n,q,h\}l \rightarrow s \{h,j,hj\}$
 $\int t\int \rightarrow s ts$
 $\theta \rightarrow t$
 $l \rightarrow \{r,\delta\}$

7.11 Proto-Algonquian to Munsee Delaware

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

$t\int \rightarrow t$ / in nouns
 $t s \rightarrow t\int \int$ / in diminutives
 $\{\theta,l\} \rightarrow r \rightarrow l$
 $\{\theta,\int\} \rightarrow \{r,l\}$
 $w \rightarrow \emptyset / m_C$
 $w \rightarrow \emptyset / \{p,m\}_ \#$
 $w \rightarrow \emptyset / ! \{k,p,m\}_$

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

Synchronic alterations:

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

7.12 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.

$we\ je \rightarrow o\ i / _C$
 $we \rightarrow o / _\#$
 $\theta \rightarrow s / _O$
 $\theta \rightarrow r$
 $V[-long] \rightarrow \emptyset / _\#$ “[does not apply in disyllabic words containing two short vowels]”
 $\emptyset \rightarrow h / V[-long]_\#$
 $H \rightarrow \emptyset / _m$
 $\{s,r\} \rightarrow h / _O$
 $w \rightarrow \emptyset / h_V$
 $a \rightarrow o / \$am_w$
 $V \rightarrow V$: “when V is the second vowel of a word and follows a short-vowel syllable. Does not apply in glottal words”
 $e \rightarrow i / V:\%_! _H$
 $N \rightarrow h / _{\{O,r\}}$
 $e \rightarrow i / _\#(C)_! _H$
 $e \rightarrow i / _{\{k,m\}}$ “when in the second syllable of glottal words”
 $\{w,j\} \rightarrow \emptyset / C_\#$
 $C \rightarrow \emptyset / C_\#$
 $wi(:) \rightarrow o(:) / C_w$
 $\int\ t\int \rightarrow s\ ts$
 $V: \rightarrow V[-long] / CC(G)_C\{V,\#\}$ “[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’]”
 $V \rightarrow V: / _CC$ in even syllables
 $V: \rightarrow V[-long] / _C\{V,\#\}$ in even syllables; “does not apply in the second syllable of a non-glottal word”
 $e(:)\ i \rightarrow \ae(:)\ e$
 $i: o: o? \rightarrow e: u: u?$ “[blocked when **i:** or a C+G sequence follows anywhere in the word, but *does* apply if **$\ae(:)$** intervenes before any following **i:** or C+G]”
 $\{wi:,ji:,we:,je:,w\ae:,j\ae:\} \{wi:,ji:,we:,je:,w\ae:,j\ae:\} \rightarrow i: i / C_$
 $\ae \rightarrow e /$ in odd syllables ! $_{\{w,j,H\}}$
 $r \rightarrow n$
 $wa\ ja \rightarrow u\grave{\ae}\ i\grave{\ae} / C_$

7.13 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

$t\int \rightarrow t /$ in nominal suffixes
 $t \rightarrow t\int /$ in diminutives

$s \rightarrow \int / _i$ (not universal)
 $s \rightarrow \int / _iV$
 $\{\theta, l\} \rightarrow r \rightarrow l / V_V$
 $\{\theta, l\} \rightarrow r \rightarrow n / \#_$ (and possibly in other places as well)
 $\{\theta, l\} \rightarrow r \rightarrow l$
 $mV[-long] \rightarrow \emptyset / \#_ \{^hC, s, \int\}$ (allophonic, “optional”)
 $\{?, h\} \{t, l\} \rightarrow hs$
 $\{\theta, l\} \rightarrow t / n_$
 $\{\theta, \int, t, \int, \zeta, x, ?\} \rightarrow h / _C$
 $C[-nas] \rightarrow h / _k$
 $h \rightarrow ? / _ \{s, \int\}$
 $hs \ h\int \rightarrow s: \int: /$ sporadic, usually $\{\#, V[+front]\}_-$
 $C[-voiced] \rightarrow C[+voiced] / N_$
 $VNs \ VN\int \rightarrow V[+nas]z \ V[+nas]\int /$ not universal?
 $S \rightarrow {}^nS / \#NV_$ (sporadic)
 $s \int \rightarrow {}^ns \ {}^n\int / U[-nas]$ (*highly* sporadic)
 $\{h, ?\} \rightarrow \emptyset / _m$

7.14 Proto-Algonquian to Mi'kmaq

Pogostick Man with acknowledgment to dhok and Alex Fink, the former citing Audrey Marie (1986), *The Fundamentals of Micmac Historical Morphology*, citing Hewson, John (1973), “Proto-Algonkian Reflexes in Micmac”, and Hewson, John (1983), “Some Micmac Etymologies”, and the latter citing Hewson, John (1973), “Proto-Algonkian Reflexes in Micmac”

$t\int \rightarrow \int / ! C_$
 $n\{\theta, l\} \ h\{\theta, \int\} \rightarrow \emptyset \ s$
 $\{?, h, N\} \rightarrow \emptyset / _C$
 $? \{\theta, \int\} \ ?l \rightarrow s \ \emptyset$
 $x \rightarrow \emptyset / _ \{p, k\}$
 $\int \rightarrow s$
 $\theta \rightarrow l$
 $k \rightarrow \chi / _ (w)a(:) ! \#_$
 $k \rightarrow \chi / a(:)_$
 $e:k \rightarrow o\chi / _w$
 $o(:) \ wa: \ e: \ i: \rightarrow u \ o \ e \ i$
 $a: \rightarrow a$
 $(aw)aha \rightarrow a:$
 $\{awa, iwa, iwi\} \rightarrow u:$
 $\{o, a\}wi \rightarrow o:$

ehi → e:
 {aja, iha, iji, ihi, ija} → i:

7.15 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

7.16 Proto-Algonquian to Piscataway

Pogostick Man, from Mackie, Lisa (2006), “Fragments of Piscataway: A Preliminary Description”

NB: This is very incomplete, partially because it seems that the only source we have on Piscataway is a single document in rather poor condition.

*#we- retained
 {θ, ʃ} → ʔ (conjectured based on ⟨z⟩ in the Piscataway source and on the lack of voicing in the original reconstructed sounds)

$k \rightarrow x$
 $e \rightarrow o$ / unclear conditioning
 $? \rightarrow h$ / $_{-}C$

7.17 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”

$we \rightarrow o$
 $\theta r / ! \text{ }_{-}O$
 $r \rightarrow s$ / H_{-}
 $r \rightarrow \emptyset$ / n_{-}
 $N \rightarrow \emptyset$ / $_{-}O$
 $\{h,s,tʃ,\theta\} \rightarrow ?$ / $_{-}O$
 $r \rightarrow ʃ$ / $_{-}O$
 $e \rightarrow i$ / $\#(C)_{-}$ “(but remains e in a few cases?)”
 $i: \rightarrow i$ / $_{-}j$
 $j \rightarrow \emptyset$ / $C_{-}i(:)$
 $je \rightarrow i$ / C_{-}
 $j \rightarrow \emptyset$ / $\{tʃ,ʃ\}_{-}e:$
 $j \rightarrow \emptyset$ / $\{tʃ,ʃ,w\}_{-}a:$
 $w \rightarrow \emptyset$ / $t_{-}i$
 $wa \rightarrow o$ / $\#_{-}$
 $V[-long] \rightarrow \emptyset$ / $_{-}\{ʃp,ʃk\}$
 $V[-long] \rightarrow \emptyset$ / $C_{-}?C$
 $V[-long] \rightarrow \emptyset$ / $_{-}hV$
 $V: \rightarrow V[-long]$ / $_{-}\#$
 $V: \rightarrow V[-long]$ / $_{-}\{?C,ʃp,ʃk,hV\}$
 $? \rightarrow \emptyset$ / $C\{v,l,s\}_{-}C$
 $? \rightarrow \emptyset$ / $_{-}CC$
 $\emptyset \rightarrow ?$ / $C\{v,d\}_{-}\{ʃp,ʃk,hV\}$
 $\emptyset \rightarrow h$ / $\#_{-}V$
 $s \rightarrow \theta$
 $r \rightarrow l$
 $\emptyset \rightarrow i$ / $\#C_{-}jV:$ “(for some speakers)”
 $ʃ \rightarrow s$ “(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 ^j			
Plosive	p p ^h b	t t ^h d				k k ^h g
Fricative		s z				
Affricate				tʃ tʃ ^h dʒ		
Trill		r	r ^j			
Approximant		l	l ^j			

	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.

It is important to note that 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>)

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>, 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.

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

$w \rightarrow \emptyset / _o$
 $w \rightarrow \emptyset / k_a$
 $\phi \rightarrow h / _! _u$
 $\mathfrak{a} \rightarrow \mathfrak{o}$

“Affrication of /ti 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>, 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.

$\{t^h, d\} \{k, g\} \rightarrow r \{h, \emptyset\} / \{C, V\} _ \{C, V\}$
 $p^h t^h k^h \rightarrow p t \{k, h\}$
 $b \rightarrow p / \# _$
 $d \rightarrow t$
 $\{t^h, dʒ\} \rightarrow tʃ$
 $g \rightarrow k / \# _$
 $\{ʃ, z\} \rightarrow s$
 $\{n^j, \eta\} \rightarrow n / \# _$
 $\eta \rightarrow \{\eta, \emptyset\}$
 $r^j \rightarrow r$
 $l^{(j)} \rightarrow n / \# _$
 $l^{(j)} \rightarrow r / \text{else}$
 $j \rightarrow \{j, \emptyset\}$
 $U[+long] \rightarrow U[-long]$
 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>, 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.

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

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

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

$\text{ɭ} \rightarrow \text{l}$

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

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>, 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.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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>, 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.

$a \emptyset \rightarrow \{a, \Lambda\} a / P_Ca$
 $a e i u \ae \emptyset y \rightarrow a \{a, \Lambda, e\} \{u, i\} \{u, o\} \{ia, ja, \varepsilon\} \{ia, ja\} u / _Ca$
 $y \rightarrow i / \{r^{(j)}, l^{(j)}\}_e$
 $e \rightarrow ja / \#_C\{e, i\}$
 $\emptyset \rightarrow \Lambda / P_Ce$
 $i \rightarrow e / \{r^{(j)}, l^{(j)}\}_e$
 $a \{e, i\} o u \ae \emptyset y \rightarrow \{\varepsilon, a\} \varepsilon \{\emptyset, o\} \{y, u\} \{ia, ja, \varepsilon\} \{ia, ja\} \{y, \emptyset\} / _Ci$
 $\ae \rightarrow a / P_Co$
 $\ae \rightarrow \Lambda / P_Cu$
 $a e i \ae \emptyset y \rightarrow \{o, ja, aj\} \{\Lambda, 3\} u \{ia, ja\} \{o, u\} \{u, o\} / _Co$
 $e i \ae \emptyset y \rightarrow \{\varepsilon, a, \Lambda\} \{u, i\} \{e, a\} \{u, o\} u / _Cu$
 $\{p^h, \eta\} \rightarrow \{\emptyset, j\} / \#_$
 $p^h \rightarrow p$
 $t^h \rightarrow d / \#_ (V) \{l, r^{(j)}\}$
 $t^h \rightarrow t$
 $\{t, t_f\} \rightarrow d / \#_$
 $k \rightarrow g / _ (V)r$
 $k^h \rightarrow k$
 $\int \rightarrow t_f / \#_a$
 $\int \rightarrow s$
 $m n^{(j)} \rightarrow b j / \#_$
 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>

$\{3, d_3\} \rightarrow j / \#_$ (marked as to Pre-Proto-Turkic)
 $\{d, n\} \rightarrow j / \#_ (?)$ (marked as to Pre-Proto-Turkic)
 $\{N, l, r, \int, z\} \rightarrow \emptyset / \#_$
 $p \rightarrow \phi \rightarrow h / \#_$
 $d g \rightarrow t k$ (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

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

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

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>

$j \rightarrow \emptyset / _l$ (sporadic?)
 $b \rightarrow m / \text{V}_-\text{V}$ (sporadic?)
 $\{u, \text{u}\}w \{i, y\}w \text{aw} \{æ, e\}w \rightarrow u: y: o: \emptyset:$
 $\gamma \rightarrow \emptyset / \text{V}_-\text{V}$
 $æ \text{Vh} \{ʕ, h\} \rightarrow a: \text{V}: \emptyset$ (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?)
 $e \rightarrow i / _g$
 $e \rightarrow i / k.y$ (maybe they mean k_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>

$\{e, \text{v}\}: \rightarrow je$ (the second one is conjectured based on my admittedly sparse knowledge of Turkish; I can only guess that $\langle \text{e} \rangle$ is some sort of back unrounded vowel)
 $o \text{og} \emptyset \text{og} ig \rightarrow wo \text{u}\emptyset o: \emptyset: i:$
 $a\{\text{ǵ}(\text{u}), b\} \{o\{\text{ǵ}, b\}, a\text{ǵu}\} u\{\text{ǵ}, b\} \rightarrow \text{uqa wo u:}$
 $i\text{ǵ} \rightarrow \text{u:} \rightarrow i:$ (but original 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 Austroasiatic

9.1 Vietic

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

	Bilabial	Alveolar	Palatal	Velar	Glottal
Nasal	ṁ m	ṇ n	ṃ ɲ	ŋ ɳ	
Plosive	p b	$\text{t t}^* \text{ d d}^*$	c ɟ	k g	ʔ
Liquid	ṽ w	ḷ l ṛ r	ḵ j		
	Front		Center	Back	
High	i iə		i iə	u uə	
High-Mid	e		ə əː	o	
Low-Mid	ɛ			ɔ	
Low			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>; 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")

9.1.1 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>; 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 ¹	high rising	high rising
2	low falling	high-mid ²	high-mid ²	high-mid ²

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^h → s
t^h → h (Only seems to have occurred with first-register tones)
{k^h,g^h} → 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^h

Miscellanea:

w → Ø / t^hV_k (conjectured)

9.1.2 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>; 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:

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

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

$\{p, b\} \{t, d\} \{c, ʃ\} \rightarrow \{\beta, w\} \text{ d}^{\text{j}} ʃ$

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

$\{\text{ŋ}, \text{nj}, \text{jŋ}, \text{jŋ}\} \rightarrow \text{n}$ (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)

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

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

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

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

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

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

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

Finals:

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

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

$c \text{ n} \rightarrow \text{t} \text{ n} / \text{! E}_-$ (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:

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

In the original those first vowels were underlined.

9.1.2.1 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>; 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 ¹	high rising ²

1. Tense when $_S\#$; 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:

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

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

Miscellanea:

$w \rightarrow \emptyset \ / \ tV_wk$ (conjectured)

9.1.2.2 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>; 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 ¹	high rising ²

1. Level when $_S\#$; 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:

$c _n t _n \rightarrow t _n k _n$ / 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 $_w\{k, _n\}$

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

$\emptyset(\cdot) \ \varepsilon \rightarrow i \ \varepsilon \emptyset$ / $_K$

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

Miscellanea:

$w \rightarrow \emptyset$ / tV_wk (conjectured)

10 Austronesian

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

	Labial	Alveolar	Palatal	Retroflex	Velar	Glottal
Nasal	m	n	ɲ	ɳ	ŋ	(q,ʔ)
Plosive	p b	t d			k g gʲ	
Fricative		s	ç			h
Affricate		ts	cç ʝj			
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>)

10.1 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>

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

10.1.1 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:
 $_ \ aj \ aw \rightarrow e \ ow / _ \#$
 $C[+ \text{ voice}] \rightarrow C[- \text{ voice}] / _ \#$
 $H\emptyset S \rightarrow (h)\emptyset(N)S / \#_$

10.1.1.1 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-”
 $a \rightarrow \emptyset$

10.1.1.2 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)

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

$h \rightarrow q / _ \#$ (might’ve been a retention?)

$h \rightarrow \emptyset$
 $w \rightarrow \emptyset / i_ \#$
 $ej\ ow \rightarrow e\ o / _ \#$
 $u\ i \rightarrow o\ e / \text{sometimes}$
 $V(h) \rightarrow V(q) / _ \#$ (again, might've been a retention?)
 $S[+ \text{voice}] \rightarrow \emptyset / _ N$
 $S[+ \text{voice}] \rightarrow \emptyset / N_$
 $u \rightarrow i / _ \{s, t, r, n, l\}$ (blocked in Pusu)
 “[C]ontraction of adjacent vowels” (not in Besar)
 $b \rightarrow \emptyset / \text{medial (sporadic)}$

10.1.1.4 Polynesian

10.1.1.5 Proto-Polynesian to Luangiua *thetha*, from Blust, Robert (2013), *The Austronesian Languages*, Revised Edition

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

10.1.2 Proto-Austronesian to Proto-Philippine

Pogostick Man, from Llamzon, Teodoro A. (1975), “Proto-Philippine Phonology”. *Archipel* 9(1):29 – 42; and from other changes and information from this document

$*T \rightarrow t$
 $\{*D, *Z, z\} \rightarrow d / _ \#$
 $D \rightarrow d / _ \#$
 $R \rightarrow g / _ \#$
 $R \rightarrow \{l, g\} / _ \#$
 $\eta \rightarrow n$
 $c \rightarrow s$

10.1.2.1 Proto-Philippine to Bicol *Pogostick Man*, from Llamzon, Teodoro A. (1975), “Proto-Philippine Phonology”. *Archipel* 9(1):29 – 42; and from other changes and information from this document

$\text{ə} \rightarrow \text{a} / \text{V_V}$
 $\text{ə} \rightarrow \text{u} / _ \#$
 $*\text{j} \{*\text{D}, \text{z}\} \rightarrow \text{r d} / \text{V_V}$
 $*\text{j} \rightarrow \text{g} / \# _$
 $\text{h} * \text{j} \rightarrow \emptyset \text{ d} / _ \#$
 $*\text{R} \rightarrow \text{g}$
 $\text{q} \rightarrow \emptyset$
 $\text{iw} \rightarrow \text{uj}$

10.1.2.2 Proto-Philippine to Cebuano *Pogostick Man*, from Llamzon, Teodoro A. (1975), “Proto-Philippine Phonology”. *Archipel* 9(1):29 – 42; and from other changes and information from this document

$\text{ə} \rightarrow \text{u}$
 $*\text{D} \text{ d} \rightarrow \text{l r} / \text{V_V}$
 $*\text{j} \rightarrow \text{d} / \# _$
 $\{*\text{j}, *\text{Z}\} \text{ z} \rightarrow \text{l r} / \text{V_V}$
 $\text{h} * \text{j} \rightarrow \emptyset \text{ d} / _ \#$
 $*\text{R} \rightarrow \text{g}$
 $\text{q} \rightarrow \emptyset$
 $\text{h} \rightarrow \emptyset / _ \#$
 $\text{iw} \rightarrow \text{uj}$

10.1.2.3 Proto-Philippine to Hiligaynon *Pogostick Man*, from Llamzon, Teodoro A. (1975), “Proto-Philippine Phonology”. *Archipel* 9(1):29 – 42; and from other changes and information from this document

$\text{ə} \rightarrow \text{u}$
 $*\text{D} \rightarrow \text{l}$
 $*\text{j} \rightarrow \text{d} / \# _$
 $\{*\text{Z}, *\text{j}\} \text{ z} \rightarrow \text{l r} / \text{V_V}$
 $*\text{j} \rightarrow \text{d} / _ \#$
 $\text{h} \rightarrow \emptyset / _ \#$
 $\text{q} \rightarrow \emptyset$
 $\text{iw} \rightarrow \text{uj}$

10.1.2.4 Proto-Philippine to Ibanag *Pogostick Man*, from Llamzon, Teodoro A. (1975), “Proto-Philippine Phonology”. *Archipel* 9(1):29 – 42; and from other changes and information from this document

$\text{ə} \rightarrow \text{a}$

Something happens to final voiceless stops but it isn't clear in the paper

$*\text{D} \rightarrow \text{r}$

$*\text{j} \rightarrow \text{g}$ / possible exception in word-initial position?

$*\text{Z} \rightarrow \text{r}$

$\text{z} \rightarrow \text{r}$ / V_V

$*\text{R} \rightarrow \text{g}$

$\text{r} \rightarrow \text{d}$ / $\#_ (?)$

$\{\text{s}, \text{c}\} \rightarrow \text{t}$

$\{\text{q}, \text{h}\} \rightarrow \emptyset$

$\text{uj} \rightarrow \text{i}$

$\text{iw} \rightarrow \text{uj}$

10.1.2.5 Proto-Philippine to Ifugao *Pogostick Man*, from Llamzon, Teodoro A. (1975), “Proto-Philippine Phonology”. *Archipel* 9(1):29 – 42; and from other changes and information from this document

$\text{ə} \rightarrow \text{o}$

$\text{j} \rightarrow \text{g}$ / $_ \#$

$\{\text{z}, *\text{Z}, *\text{D}, *\text{j}\} \rightarrow \text{d}$

$*\text{R}$ seems to have had a few different reflexes, mainly one of $/\text{l g j}/$; if $/\text{g j}/$ occurred, $/\text{g}/$ was more probable at word boundaries and $/\text{j}/$ was more probable medially

$\{\text{q}, \text{h}\} \rightarrow \emptyset$

$\{\text{s}, \text{c}\} \rightarrow \text{h}$

$\emptyset \rightarrow \text{j}$ / $_ \text{iw} \#$

$\text{ay} \rightarrow \text{e}$ / $_ \#$

10.1.2.6 Proto-Philippine to Ilocano *Pogostick Man*, from Llamzon, Teodoro A. (1975), “Proto-Philippine Phonology”. *Archipel* 9(1):29 – 42; and from other changes and information from this document

$*\text{D} \rightarrow \text{d}$

$\{\text{z}, *\text{Z}, *\text{j}\} \rightarrow \text{d}$ / V_V

$*\text{j} \rightarrow \text{g}$

$\text{R} \rightarrow \{\text{g}, \text{r}\}$ / $_ \#$

$\text{R} \rightarrow \text{r}$

$\{\text{q}, \text{h}\} \rightarrow \emptyset$

$\text{iw} \rightarrow \text{uj}$

10.1.2.7 Proto-Philippine 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>>

$\{h, \text{ʔ}\} \rightarrow \emptyset$
 $\{z, j\} \rightarrow d$
 $*R \text{ ɲ} \rightarrow l \text{ n}$
 $e \rightarrow u / _Cu$
 $e \rightarrow i / _Ci$
 $e \rightarrow u / uC_$
 $e \rightarrow a / _C[- \text{voice}]\#$
 $d \rightarrow r / V_V$
 Contrastive stress lost

10.1.2.7.1 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>>

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

10.1.2.7.2 Proto-Kalamian to Karamiananen *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>>

$\{t, k\} q \rightarrow \text{ʔ} k / _C$
 $s \rightarrow \text{ʔ} / _C$
 $k \rightarrow \emptyset / _ \{V, \#\}$
 $q \rightarrow k$

$a_i a_i \rightarrow \text{ii}$ (not sure if there's a long vowel or hiatus here)
 $t \rightarrow s / _i$
 $s \rightarrow t / _V ! _E$
 $s \rightarrow t / _ \#$
 $s \rightarrow c \& _$ (the paper doesn't explain what this represents)
 $b \rightarrow \beta / V_V$
 $\beta \rightarrow w / V[+ \text{high}]_a$
 $g \rightarrow h / V_V$
 $\emptyset \rightarrow ? / \#_$
 $\emptyset \rightarrow ? / V_ \#$

10.1.2.7.3 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>>

$\{t, k, q, s\} \rightarrow k / _C$
 $k \rightarrow \emptyset / _ \{V, \#\}$
 $q \rightarrow k$
 $a_i a_i \rightarrow \text{ii}$ (not sure if there's a long vowel or hiatus here)
 $b g \rightarrow \beta V / V_V$
 $\emptyset \rightarrow ? / \#_$
 $\emptyset \rightarrow ? / V_ \#$

10.1.2.8 Proto-Philippine to Kankanay *Pogostick Man*, from Llamzon, Teodoro A. (1975), "Proto-Philippine Phonology". *Archipel* 9(1):29 – 42; and from other changes and information from this document

$\{*D, *Z\} \rightarrow d$
 $\{z, *j\} \rightarrow d / V_V$
 $*j \rightarrow g / _ \#$
 $*R$ seems to have had a few different reflexes, mainly one of /l g j/; if /g j/ occurred, /g/ was more probable at word boundaries and /j/ was more probable medially
 $c \rightarrow s$
 $\{h, q\} \rightarrow \emptyset$
 Something seems to have changed to əw finally but the paper may have an error here
 $iw \rightarrow uj$

10.1.2.9 Proto-Philippine to Tagalog *Pogostick Man*, from Llamzon, Teodoro A.

(1975), “Proto-Philippine Phonology”. *Archipel* 9(1):29 – 42; and from other changes and information from this document

$\text{ə} \rightarrow \text{i}$
 $\text{u} \rightarrow \text{o} / _ \#$
 $\{*\text{D}, *\text{j}\} \{ \text{d}, \text{z} \} \rightarrow \text{l r} / \text{V_V}$
 $*\text{j} \rightarrow \text{d} / \# _$
 $\text{h } *\text{j} \rightarrow \emptyset \text{ d} / _ \#$
 $*\text{R} \rightarrow \text{g}$
 $\text{q} \rightarrow \emptyset$ (not sure what happens word-finally to it)
 $\text{uj iw} \rightarrow \text{oj uj} / _ \#$

10.1.2.10 Proto-Philippine to Waray *Pogostick Man*, from Llamzon, Teodoro A. (1975), “Proto-Philippine Phonology”. *Archipel* 9(1):29 – 42; and from other changes and information from this document

$\text{h} \rightarrow \emptyset / _ \#$
 $\text{ə} \rightarrow \text{u}$
 $*\text{T} \rightarrow \text{t}$
 $\{*\text{D}, *\text{Z}\} \rightarrow \text{r} / \text{V_V}$
 $\{*\text{D}, *\text{Z}, \text{z}\} \rightarrow \text{d}$
 $\text{j} \rightarrow \text{r} / \text{V_V}$
 $*\text{j} \rightarrow \text{d}$
 $*\text{R} \rightarrow \text{g}$
 $\text{r} \rightarrow \text{l} / _ \#$
 $*\text{c} \rightarrow \text{s}$
 $\text{q} \rightarrow \emptyset$
 $\text{iw} \rightarrow \text{uj}$

10.2 Proto-Austronesian to Proto-Batak

TinyMusic, from Adelaar, K.A. (1981), “Reconstruction of Proto-Batak Phonology”. In Blust, Robert (ed.), *Historical Linguistics in Indonesia* I:1 – 20.

TinyMusic notes that this particular set of sound changes is with respect to the reconstruction of Proto-Austronesian by Dyen (1965), and that he had some trouble with $*\text{j}$.

$\text{w} \rightarrow \emptyset / \text{i_} \#$
 $\{ \text{a}, \text{e} \} \rightarrow \text{o} / _ \text{w} \#$
 $\text{a} \rightarrow \text{e} / _ \text{j} \#$

$V_0V_0 \rightarrow V_0$
 $b\ dz \rightarrow p\ ts$
 $d \rightarrow \emptyset / _ \#$
 $j \rightarrow ?$
 $l \rightarrow d / _ \{C, \#\}$
 $r \rightarrow g$
 $O \rightarrow O[-voiced] / _ \{C, \#\}$
 $\emptyset \rightarrow j / i_a$
 $\emptyset \rightarrow w / u_a$
 $\emptyset \rightarrow w / a_u$
 $\emptyset \rightarrow w / \#_V$
 $j\ w \rightarrow dz\ g^w$
 $g^w \rightarrow g / _ V[+round]$

10.2.3 Proto-Malayo-Polynesian to Proto-Malayic

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

$j \rightarrow t / _ \#$
 $j \rightarrow d$
 $z \rightarrow j$
 $w \rightarrow \emptyset / \#_$
 $R \rightarrow r$
 $h \rightarrow ? / _ \#$ (sometimes)
 $h \rightarrow \emptyset / \text{else}$
 $\{iw, uj\} \rightarrow i / _ \#$
A:
— $aj\ aw \rightarrow i\ u / _ \#$
B:
— $aj\ aw \rightarrow aj\ aw / _ \#$
 $C_1C_2 \rightarrow C_2$
 $C[+ A\ POA]C[+ B\ POA] \rightarrow C[+ B\ POA]C[+ B\ POA]$
 $C[+ voice] \rightarrow C[- voice] / _ \#$
 $H \rightarrow \{\emptyset, h\} / _ \emptyset NS / \#_$

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

$V \rightarrow \emptyset / _ (C \dots) UU \#$

$\text{ə} \rightarrow \text{a} / _(\text{C}\dots)\#$
 $\text{n} \rightarrow \text{ɲ} / \text{“in the environment of } i \text{ (sporadic)”}$
 $\text{h} \rightarrow \emptyset / \text{!} _ \# \text{ (sporadic)}$

10.2.4 Proto-Malayo-Polynesian to Proto-Malayo-Javanic

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

$\text{j} \rightarrow \text{l}$
 $\text{q h} \rightarrow \text{h } \emptyset$
 A:
 $\text{— aw aj} \rightarrow \text{əw əj} / _ \#$
 B:
 $\text{— aw aj} \rightarrow \text{aw aj} / _ \#$

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

$\{\text{l}, \text{d}\} \text{z} \rightarrow \text{r d}$
 $\text{b} \rightarrow \text{w} / \text{! adjacent to another consonant}$
 $\text{ə} \rightarrow \text{u} / _ \text{h} \#$
 $\text{R} \rightarrow \emptyset$
 $\text{h} \rightarrow \emptyset / \# _$
 $\text{h} \rightarrow \{\text{o}, \text{h}, \text{w}\} / \text{V_V}$
 $\text{iw uj} \rightarrow \text{ju i} / _ \#$
 A:
 $\text{— əw əj} \rightarrow \text{i u} / _ \#$
 B:
 $\text{— aw aj} \rightarrow \text{e ó} / _ \#$
 $\text{C}_1 \text{C}_2 \rightarrow \text{C}_2$
 Nasal + stop clusters “become homorganic”
 $\text{HəS} \rightarrow (\text{h})\text{əNS}$

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

$\text{l} \rightarrow \text{l}^? / _ \#$
 $\text{l} \rightarrow \text{l}$
 $\text{z} \rightarrow \text{j}^{\text{h}}$

w j fortite when non-final

b → {w, Ø} / #_

R → ? / -#

R → r

h → ? / V₀V₀

h → Ø

“Aspiration of initial and intervocalic voiced stops and *z”

{p, t, k} b d g → ? p t k / -#

ij uw → uj {uj, ój} / -#

V → V: / ə(C... ?)_

C[+ voice] → C[- voice] / -#

HəS → (h)əNS / #_

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

{l, j} z → r j

w → {Ø, c} / #_

R → {Ø, r, j}

iw uj → {ju, i} oj / -#

A:

— əw əj → o e / -#

B:

— aw aj → o aj / -#

10.2.5 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

Ø → w / u_V

Ø → j / i_V

ə → Ø / #_

Ø → ə / C_C “(for certain consonant combinations, which the paper doesn’t specify)”

h → Ø

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

p → w

wa → o / #_ when unstressed

V → ə / unstressed

$\{aw, əw\} \rightarrow o / _ \#$
 $wə \rightarrow u / \# _$
 $j \ l \rightarrow r \ j$
 $ə \rightarrow \emptyset / _ j$
 $j \rightarrow \emptyset / C _ i$
 $ə \rightarrow \emptyset / _ \#$
 $ə \rightarrow \emptyset$ “(sporadic)”
 $t \rightarrow \delta / !$ adjacent to S
 $s \rightarrow t$
 $r \rightarrow r / _ C[+dental]$
 $r \rightarrow s$
 $d \rightarrow r$
 $ɖ \rightarrow ɽ$ “(only one example)”
 $ɲ \rightarrow n$ (except possibly to n when $\# _$)
 $n \ dz \rightarrow l \ r$
 $rl \rightarrow l:$
 $ʃ \rightarrow k / _ C \#$
 $ʃ \rightarrow s$
 $ŋ \rightarrow \emptyset / C _ \#$
 $t \rightarrow \{s, \delta\} /$ “unpredictably, to eliminate sV(C)t and tV(C)s sequences”
 $\emptyset \rightarrow ŋ / \# _ V$
 $q \rightarrow \chi (\rightarrow \text{ʕ})$

10.2.6 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), “Ōma Lóngh Historical Phonology”. *Oceanic Linguistics* 46(1):1 – 53

$q \rightarrow ?$
 $\{ʔ, h\} \rightarrow \emptyset / \# _$
 $\{ʔ, h\} \rightarrow \emptyset / V_1[+high] _ V_2$
 $h \rightarrow \emptyset / _ \#$
 $h \rightarrow ʔ / V_0 _ V_0$
 $h \rightarrow ʔ / a _ \{i, u\}$
 $ə \rightarrow \emptyset /$ adjacent to a vowel
 $a \rightarrow ə / _ UU(U \dots) \#$
 $ə \rightarrow \emptyset / _ V$
 $ə \rightarrow \emptyset$ 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)

$p: t: c: k: \rightarrow p \ t \ c \ k$

$c \rightarrow s$

10.2.6.1 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)”

$\text{ai} \ \text{au} \rightarrow \text{ai} \ \text{au} / _ \#$

$\text{ə} \rightarrow \text{a} / _ \text{ʔ} \#$

$\text{ai} \ \text{au} \rightarrow \text{ɛ:} \ \text{ɔ:} / _ \dots \#$

$i \ \text{u} \rightarrow \text{əi} \ \text{əu} / _ \#$

$\emptyset \rightarrow \text{h} / \text{a} _ \#$

$s \rightarrow \emptyset / V_V$ (sporadic)

$V_0 V_0 \rightarrow V_0$

$\text{ə} \rightarrow \emptyset /$ adjacent to a vowel

$V[+\text{stress}] \rightarrow V: / _ C \# ! \ V = \text{ə} \text{ and/or } C = \text{h}$ “(applies to diphthongal nuclei as well as [s] monophthongs)”

$r \rightarrow \{l, r\} / ! _ \#$ (the latter is more common)

$l \rightarrow \emptyset / ! _ \#$ (irregular)

$u \rightarrow \text{əw} / _ V$ “(also cases of $(C)u \rightarrow w / _ _ V$)”

$i \rightarrow \text{əj} / _ V$ “(also cases of $(C)i \rightarrow j / _ _ V$)”

$w \ j \rightarrow v \ ʃ$

$\text{iu} \rightarrow \text{ui}$

$s \rightarrow \emptyset / _ \#$

$i \ \text{u} \rightarrow \text{ɛ} \ \text{ɔ} / _ C \# ! _ P$ (sporadic)

$r \rightarrow \text{ʔ} / _ \#$ “(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)”

$i \ \text{u} \rightarrow \text{əi} \ \text{əu} / _ (\text{ʔ}) \#$

$\text{əi} \ \text{əu} \rightarrow \text{ai} \ \text{au} / ! \ O[+\text{voiced}]$ earlier in the word

$b^{\text{fi}} \{d^{\text{fi}}, dz^{\text{fi}}\} g^{\text{fi}} \rightarrow f s k$
 $f \rightarrow s$
 $v g j \rightarrow f k c / V_V$
 $v j \rightarrow f c / \#_$
 $\{i, \varepsilon\} \{u, \text{ɔ}\} \rightarrow i\text{ə} u\text{ə} / _ \{k, \eta\} \#$ “(and also sporadically before final *t and *n and some other consonants)”
 $k \eta \rightarrow ? \emptyset / V\text{ə}_ \#$
 $\text{ə} \rightarrow \{\text{ə}, a\} / _C \#$ “(free variants)”
 $NS[-\text{voice}] \rightarrow S:$
 “Numerous different possible reflexes of NS[+voice] clusters”
 $(C)V \rightarrow \emptyset / \#_C \dots$ “(irregular)”
 $n \rightarrow l / \#_$
 $\text{ə} \rightarrow \emptyset / \#_$
 $\{l, r\} \rightarrow n / _ \#$
 $dz \rightarrow d / \#_$ (though sometimes $\rightarrow \{s, j\}$)
 $\{s, c\} \rightarrow t / _V \{s, c\} V$
 $b d \rightarrow p t / _ \#$

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

$d \rightarrow l / \#_$ (sporadic)
 $r \rightarrow h / V_V(C) \#$
 $r \rightarrow h / _ \#$
 $j \rightarrow \emptyset$
 $s \rightarrow h / _ \#$
 $i u \rightarrow e o / _ h \#$
 $h \rightarrow \emptyset / _ \#$
 $S \rightarrow S[-\text{voice}] / _ \#$
 $l \rightarrow n / _ \#$
 $s \rightarrow t / _ V s V C$
 $CV \rightarrow \emptyset / _ NCVC$ “(in reduplications)”
 Word-initial nasals assimilate to the POA of a following consonant

10.2.6.2.1 Proto-Kenyah to Òma Lóng *Whimemsz*, from Blust, Robert (2007), “Òma Lóng 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)”
 $u \rightarrow \text{u} / _ (C) \# ! _ ? \#$
 $a \rightarrow o / _ \#$ “(not in all forms)”
 $? \rightarrow \emptyset / _ \#$ “(but $a? \rightarrow \text{ə}?$ in some forms)”
 $k \rightarrow ? / _ \#$
 $a \rightarrow \varepsilon / \{t, n\} _ \#$
 $\{p, t\} n \rightarrow c _ n / \{i, \varepsilon\} _ \#$
 $m \rightarrow n / i _ \#$
 $\hat{a}i \hat{a}u \rightarrow \varepsilon \text{ɔ}$
 $\{\hat{u}i, i\hat{u}\} \rightarrow e$
 $i u \rightarrow e o / _ CV[+close-mid](C) \#$ “(iə is treated as close mid for this change)”
 $i u \rightarrow \varepsilon \text{ɔ} / _ CV[+open-mid](C) \#$
 $i u \rightarrow e o / _ C\text{u} \#$
 $\eta \rightarrow \text{ŋ} / _ \#$
 $\{p, t\} \{m, n\} \rightarrow k \eta / \text{u} _ \#$
 $i u \rightarrow \text{ə}j \text{ə}w / _ V(C) \#$
 $j w \rightarrow z v$
 $p \rightarrow f / \# _$
 $\text{ə} \rightarrow \emptyset / \# _$
 $p k \rightarrow f \gamma / V _ V ! _ \text{ə} _ V$
 $d \rightarrow r / V _ V$ “(irregular)”
 $dz \rightarrow \text{ʃ} / V _ V$
 $b d dz g \rightarrow p t c k / N _$
 $N \rightarrow \emptyset / _ S$ “(sporadic)”
 $h \rightarrow \emptyset / V _ V$

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

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

- {p,t,k} s → ? h / -#
- {l,r} → Ø / -# (retained across morpheme boundaries)

10.3 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>

mb → p
 {nts,ns,nz,ng^j} {ts,z,g^j} → g^j s
 {ŋk,ŋg} g → g k
 d → r
 e {uj,iw} → o i
 aw → o / -#

10.3.1 Proto-Oceanic to Hawai’ian

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

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

{h,ʔ} → Ø
 {s,f} → h
 k t → ? k
 ŋ r v → n l w

10.3.2 Proto-Oceanic to Hiw

thetha, from François, Alexander (2005), “Unraveling the history of the vowels of seventeen north Vanuatu languages”, and François, Alexander (2010), “Phonotactics and the prestopped velar lateral of Hiw”

p p^w {c,*j} k q → β β^w s ʔ Ø
 β b m → β^w b^w m^w / typically near *u
 dr *r → d r
 C → Ø / -#
 ɲ → n
 b d g → p t k

$\beta^w b^w m^w \rightarrow w k^w \eta^w$
 $l \rightarrow j$
 $s \rightarrow h \rightarrow \emptyset$ (sporadic)
 $r \rightarrow g_L$
 $"V[+ \text{high(er)}] \rightarrow \emptyset / _CV$
 $"V \rightarrow \text{ə} / _CV$
 $"\text{ə}$ sometimes assimilates to a following vowel
 $a \rightarrow e / _CV[+ \text{mid}]$ (sporadic)
 $a \rightarrow e / _Ci$ (sporadic)
 $a(C)V[+ \text{high}] a(C)V[+ \text{mid}] aCa \rightarrow \text{ɔ}(C) a(C) \{\text{ɔ}, a\}(C)\text{ə}$
 $e(C)\{V[- \text{low}]\} e(C)a \rightarrow e(C) e(C)\text{ə}$
 $i(C)V[+ \text{high}] i(C)V[+ \text{mid}] i(C)a \rightarrow i(C) i(C)\text{ə} \{e, i\}(C)\text{ə}$
 $o(C)V[+ \text{high}] o(C)V[+ \text{mid}] o(C)a \rightarrow \text{ə}(C) o(C) \text{ɔ}(C)\text{ə}$
 $u(C)V[+ \text{high}] u(C)e u(C)o u(C)a \rightarrow \{u, i\}(C) u(C)\text{ə} e(C)\text{ə} \{u, \text{ə}\}(C)\text{ə}$
 $u \rightarrow \text{u} / ! Cw_$
 $\{e, i\} \rightarrow \text{ɪ}$ (sporadic)
 $V_0 V_0 \rightarrow V_0$
 “[W]hen pretonic u was lost, its labialness was usually absorbed onto the previous consonant”

10.3.3 Proto-Oceanic to Lemerig

thetha, from François, Alexander (2005), “Unraveling the history of the vowels of seventeen north Vanuatu languages”

$p p^w k q \rightarrow \beta w \gamma \emptyset$
 $VV \rightarrow V$
 $ndr *R \rightarrow d r$
 $\{c, *j\} n \rightarrow s n$
 $t \rightarrow ?$ “often”
 $b b^w d g \rightarrow p kp^w t k$
 $m^w \rightarrow \eta m^w$

thetha says “intervening consonants sometimes optional in the [following] sound changes”:

- $iCV[- \text{high}] \rightarrow aC$
- $eCV[+ \text{mid}] \rightarrow \text{ɛ}C$
- $eCV[+ \text{low}] \rightarrow aC$
- $aCV[+ \text{high}] \rightarrow \{\text{ɛ}, \text{ə}\}C$
- $aCa \rightarrow \{\text{ə}, a\}C$
- $oCV[+ \text{high}] \rightarrow \text{ø}C$
- $oCo \rightarrow \text{œ}C$ (sporadic)
- $oCV[- \text{high}] \rightarrow \text{ɔ}C$

$\text{— uCV}[-\text{high}] \rightarrow \text{oC}$
 $\text{o e} \rightarrow \text{ʊ ɪ}$
 $\text{ia} \rightarrow \text{ɪ}$ “(only sometimes?)”
 $\text{V} \rightarrow \emptyset / \#_C''\text{V}$
 $\text{V} \rightarrow \emptyset / \text{CVC_C}''\text{V}$
 $\text{CV}_1\text{C}''\text{V}_2 \rightarrow \text{CV}_2\text{C}''\text{V}_2$

10.3.4 Proto-Oceanic to Mwotlap

thetha, from François, Alexander (2005), “Unraveling the history of the vowels of seventeen north Vanuatu languages”

$\text{q} \rightarrow \emptyset$
 $\text{V}_0\text{V}_0 \rightarrow \text{V}_0$
 $\text{ndr} \rightarrow \text{d}$
 $\text{R} \rightarrow \text{r}$
 $\text{d} \rightarrow \text{r}$ (sporadic)
 $\text{p p}^w \text{ b}^w \text{ k g} \rightarrow \beta \text{ w kp}^w \text{ ɣ k}$
 $\text{m}^w \text{ ɲ} \rightarrow \eta \text{ m}^w \text{ n}$
 $\{\text{c}, *\text{j}\} \rightarrow \text{s}$
 $\text{s} \rightarrow \text{h}$ “(often)”
 $\text{r} \rightarrow \text{j}$
 $\text{o e i} \rightarrow \text{ɔ ɛ ɪ} / \text{C_V}[-\text{high}]$
 $\text{V}[-\text{high}] \rightarrow \emptyset / \{\text{ɔ, ɛ, ɪ}\}\text{C_}$
 $\text{oCV}[+\text{high}] / \text{ɪC}$ (sporadic)
 $\text{uCi} \rightarrow \text{iC}$ (sporadic)
 $\text{u a} \rightarrow \text{ʊ ɛ} / _ \text{CV}[+\text{high}]$
 $\text{V}[+\text{high}] / \{\text{ʊ, ɛ}\}\text{C_}$
 $\text{o e} \rightarrow \text{ʊ ɪ}$
 $\text{aCV}[+\text{high}] \rightarrow \text{ɪ} /$ when stressed unless primarily stressed
 $(\text{C})\text{V}_1\text{C}''\text{V}_2 \rightarrow (\text{C})\text{V}_2\text{V}_2$
 $\text{V}_1 \rightarrow \emptyset / _''\text{V}_2$
 $\text{V} \rightarrow \emptyset / (\text{C})\text{V_VC}''\text{V}$
 $\text{b } \beta \text{ d} \rightarrow \text{m p n} / _ \{\text{C}, \#\}$
 $\text{kp}^w \rightarrow \text{k} / _ \text{C}$ (sporadic)
 $\text{u } * \text{o}$ “sometimes offload their labialization onto the previous labial consonant” when they change to something else

10.3.5 Proto-Oceanic to Proto-New Caledonia

thetha, from Ozanne-Rivierre, Françoise (1992), “The Proto-Oceanic Consonantal System and the Languages of New Caledonia”. *Oceanic Linguistics* 31(2):191 – 207; and Ozanne-Rivierre, Françoise (1995), “Structural Changes in the Languages of Northern New Caledonia”. *Oceanic Linguistics* 34(1):44 – 72

$c \rightarrow s$
 $\{l, ɲ\} \rightarrow n$
 $*R \rightarrow \emptyset$
 $r \rightarrow ʈ$
 $V \rightarrow \emptyset / _C''V$
 $NS \rightarrow {}^nS$
 $CC \rightarrow C:$ (fortis)

10.3.5.1 Proto-New Caledonia to Caaàc *thetha*, from Ozanne-Rivierre, Françoise (1992), “The Proto-Oceanic Consonantal System and the Languages of New Caledonia”. *Oceanic Linguistics* 31(2):191 – 207; and Ozanne-Rivierre, Françoise (1995), “Structural Changes in the Languages of Northern New Caledonia”. *Oceanic Linguistics* 34(1):44 – 72

$p: pw: t: ʈ: q: k: \rightarrow p^h pw^h c^h t^h h j^h$
 $q \{k, t\} \{s, ʈ\} \rightarrow k c t$
 $k \rightarrow \emptyset / _ \{o, a\}$
 $N \rightarrow \emptyset / _ \#$
 $V \rightarrow \emptyset / \#(C)V(C)(C)_ \#$
 $j^h \rightarrow h / _ i$
 $\{p, pw, k\} \rightarrow \emptyset / V_V$
 $t c \rightarrow l j / V_V$
 $VnV \rightarrow \tilde{V}I\tilde{V}$
 ${}^nS \rightarrow N / _ \#$
 $u \rightarrow i$ (typical)
 $u i \rightarrow o e$ (not always)

10.3.5.2 Proto-New Caledonia to Jawé *thetha*, from Ozanne-Rivierre, Françoise (1992), “The Proto-Oceanic Consonantal System and the Languages of New Caledonia”. *Oceanic Linguistics* 31(2):191 – 207; and Ozanne-Rivierre, Françoise (1995), “Structural Changes in the Languages of Northern New Caledonia”. *Oceanic Linguistics* 34(1):44 – 72

$q k \{t, s\} \rightarrow k c ʈ$

$p: pw: t: k: c: \rightarrow p^h h^w t^h t^h h j^h$
 $t \rightarrow l / V_V$
 $C: \rightarrow C^h$
 $t t^h t t^h \rightarrow t t^h c s$
 $j^h \rightarrow h / _i$

10.3.5.3 Proto-New Caledonia to Nemi-Pije-Fwai *thetha*, from Ozanne-Rivierre, Françoise (1992), “The Proto-Oceanic Consonantal System and the Languages of New Caledonia”. *Oceanic Linguistics* 31(2):191 – 207; and Ozanne-Rivierre, Françoise (1995), “Structural Changes in the Languages of Northern New Caledonia”. *Oceanic Linguistics* 34(1):44 – 72

$q k \{t, s\} \rightarrow k c t$
 $p: pw: t: k: c: \rightarrow f h^w t^h t^h h j^h$
 $t \rightarrow l / V_V$
 $C: \rightarrow C^h$
 $t t^h \rightarrow c h / _E$
 $t t^h \rightarrow t t^h$
 $j^h \rightarrow h / _i$
 $bw mw \rightarrow g \eta$
 $n \eta \rightarrow \eta j / _E$
 $ONV \rightarrow S^h \tilde{V} / \text{Pije and Fwai}$
 $f \rightarrow \Phi / \text{Pije and Fwai}$

10.3.5.4 Proto-New Caledonia to Proto-Northern *thetha*, from Ozanne-Rivierre, Françoise (1992), “The Proto-Oceanic Consonantal System and the Languages of New Caledonia”. *Oceanic Linguistics* 31(2):191 – 207; and Ozanne-Rivierre, Françoise (1995), “Structural Changes in the Languages of Northern New Caledonia”. *Oceanic Linguistics* 34(1):44 – 72

$q q: k k: s s: \rightarrow k k: c c: t t:$
 $C: \rightarrow C^h$
 Velars were in the process of palatalizing
 $C \rightarrow \emptyset / _ \$ (\text{possessive suffix}) \#$
 $\emptyset \rightarrow j / \# _ a$

10.3.5.4.1 Proto-Northern to Nixumwak-Nêlêmwa *thetha*, from Ozanne-Rivierre, Françoise (1992), “The Proto-Oceanic Consonantal System and the Languages of New Caledonia”. *Oceanic Linguistics* 31(2):191 – 207; and Ozanne-Rivierre, Françoise (1995),

“Structural Changes in the Languages of Northern New Caledonia”. *Oceanic Linguistics* 34(1):44 – 72

$V \rightarrow \emptyset / _ \#$, often
 $k \rightarrow c / V_V$
 $k \rightarrow c / _ \#$
 $t \rightarrow k$
 $t_{\text{̃}} \rightarrow t$
 $k \rightarrow \emptyset / _ \{o, a\}$
 $c^h \rightarrow \{f, j^h\}$
 $k^h \rightarrow h / _ a$
 $pw \ p \ t \ t_{\text{̃}} \ k \ c \rightarrow (v)w \ v \ r \ l \ j / V_V$
 $pw \rightarrow w$
 $t \rightarrow t$
 $VnV \rightarrow \tilde{V}l\tilde{V}$
 $^nS \rightarrow N / _ \#$
 $SN \rightarrow N[- \text{voice}]$
 $pw^h \ p^h \ t^h \ k^h \rightarrow fw \ f \ r^h \ x / \text{in Nelemwa}$
 $uCu \rightarrow iCi$
 $V[+ \text{mid}] \rightarrow a / \text{near nasals?}$
 $u \ i \rightarrow o \ e / \text{“in monosyllabic forms almost always”}$
 $^nV \rightarrow V: (\text{usually})$
 $/i \ \partial / \text{gained}$
 $\eta \rightarrow n$

10.3.5.5 Proto-New Caledonia to Nyelâyu *thetha*, from Ozanne-Rivierre, Françoise (1992), “The Proto-Oceanic Consonantal System and the Languages of New Caledonia”. *Oceanic Linguistics* 31(2):191 – 207; and Ozanne-Rivierre, Françoise (1995), “Structural Changes in the Languages of Northern New Caledonia”. *Oceanic Linguistics* 34(1):44 – 72

$V \rightarrow \emptyset / \#(C)V(C)(C)_ \#$
 $C \rightarrow \emptyset / _ \#$ “sometimes”
 $k \rightarrow c$
 $k \ t \ s \rightarrow j \ c \ t_{\text{̃}}$
 $p \ pw \ t_{\text{̃}} \ t_{\text{̃}} \ c \rightarrow v \ (v)w \ r \ l \ j / V_V$
 $t_{\text{̃}} \ t_{\text{̃}} \rightarrow r \ l / _ \#$
 $pw \rightarrow w$ (sporadic)
 $\{t_{\text{̃}}, t_{\text{̃}}\} \rightarrow t$
 $nq \rightarrow \eta k$
 $p: \ pw: \ t: \ q: \ c: \rightarrow p^h \ pw^h \ t^h \ h \ c^h$

$q \rightarrow \emptyset$
 $j^h j \rightarrow h \emptyset / _i$
 $w \rightarrow y$ (sporadic, conditioning unknown)
 $^n S \rightarrow N / _ \#$
 $SN \rightarrow N[_ \text{voice}]$
 $V_n V \rightarrow \tilde{V} I \tilde{V}$
 $V \rightarrow \tilde{V} / _ N$
 $^n S \rightarrow N / _ \tilde{V}$
 $u \rightarrow i$ “often”
 $u \ i \rightarrow o \ e$ (not always)
 $\eta \rightarrow n$

10.3.5.6 Proto-New Caledonia to Pwaamei *thetha*, from Ozanne-Rivierre, Françoise (1992), “The Proto-Oceanic Consonantal System and the Languages of New Caledonia”. *Oceanic Linguistics* 31(2):191 – 207; and Ozanne-Rivierre, Françoise (1995), “Structural Changes in the Languages of Northern New Caledonia”. *Oceanic Linguistics* 34(1):44 – 72

$V \rightarrow \emptyset / _ \#$ (sporadic?)
 $q \ k \ t \ s \rightarrow k \ j \ c \ t$
 $p: \text{pw}: t: \text{t} \ k: c: \rightarrow f \ h^w \ t^h \ l^h \ h \ s$
 $\text{t} \rightarrow l / V_V$
 $k \ c \rightarrow \emptyset \{j, \emptyset\} / V_V$
 $C: \rightarrow C^h$
 $j^h \ j \rightarrow s \ z$
 $s \rightarrow h / _ i$
 $bw \ mw \rightarrow g \ \eta$

10.3.5.7 Proto-New Caledonia to Pwapwâ *thetha*, from Ozanne-Rivierre, Françoise (1992), “The Proto-Oceanic Consonantal System and the Languages of New Caledonia”. *Oceanic Linguistics* 31(2):191 – 207; and Ozanne-Rivierre, Françoise (1995), “Structural Changes in the Languages of Northern New Caledonia”. *Oceanic Linguistics* 34(1):44 – 72

$$\begin{array}{l} V \rightarrow \emptyset / _ \# \text{ (sporadic?) } \\ q \ k \ \{t, s\} \rightarrow k \ c \ \bar{t} \\ p: \text{pw}: \bar{t}: t: k: c: \rightarrow p^h \ x^w \ \bar{t}^h \ t^h \ x \ s \\ \bar{t}^{(h)} \ t^{(h)} \rightarrow c^h \ t^h \\ C: \rightarrow C^h \\ p \ \text{pw} \ t \ \{k, c\} \rightarrow \{v, \emptyset\} \ w \ l \ \emptyset / \ V_V \end{array}$$

j → z
 bw mw → gw ŋw (→ g ŋ / -V[+ rounded])

10.3.5.8 Proto-New Caledonia to Proto-Yunaga *thetha*, from Ozanne-Rivierre, Françoise (1992), “The Proto-Oceanic Consonantal System and the Languages of New Caledonia”. *Oceanic Linguistics* 31(2):191 – 207; and Ozanne-Rivierre, Françoise (1995), “Structural Changes in the Languages of Northern New Caledonia”. *Oceanic Linguistics* 34(1):44 – 72

q k s → k c t̥
 p: pw: t̥: t̥: c: k: → p^h pw^h t̥^h t^h t̥^h j^h h
 C: → C^h
 k → Ø / -{o,a}
 t^(h) → k^(h)
 j^h → h / -i
 p pw t̥ t̥ k c → v w ʔ l Ø j / V_V
 V → Ø / -#
 SN → N[- voice]
ⁿS → N / -#
 u i → o e / in monosyllables
 au ai → ɔ ε
 o → ɔ “sometimes”
 a → {ε,e} “in some words”
 ŋ → n

10.3.5.8.1 Proto-Yunaga to Yunaga 1 *thetha*, from Ozanne-Rivierre, Françoise (1992), “The Proto-Oceanic Consonantal System and the Languages of New Caledonia”. *Oceanic Linguistics* 31(2):191 – 207; and Ozanne-Rivierre, Françoise (1995), “Structural Changes in the Languages of Northern New Caledonia”. *Oceanic Linguistics* 34(1):44 – 72

V → Ṽ / -N#
 C → Ø / -#
 j^h → θ
 j → {ʔ,z} ?

10.3.5.8.2 Proto-Yunaga to Yunaga 2 *thetha*, from Ozanne-Rivierre, Françoise (1992), “The Proto-Oceanic Consonantal System and the Languages of New Caledonia”. *Oceanic Linguistics* 31(2):191 – 207; and Ozanne-Rivierre, Françoise (1995), “Structural Changes in the Languages of Northern New Caledonia”. *Oceanic Linguistics* 34(1):44 – 72

$\{\underset{\sim}{t}, t\} \rightarrow t$
 $\underset{\sim}{\delta} \rightarrow l$

10.3.6 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

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

10.3.6.1 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

$\{t, k\} \rightarrow \emptyset / V_V$
 $k \rightarrow \{k, \emptyset\} / \#_$
 $q \rightarrow \{k, \emptyset\}$
 $*R \rightarrow l$

10.3.6.2 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

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

10.3.6.3 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

$m^w \rightarrow m$
 $t \rightarrow \{t, l\} / \#_$
 $t \rightarrow l / _ \{u, i\}$

$t\ k \rightarrow l\ \emptyset / V_V$
 $r \rightarrow l / _ \{u, \#\}$
 $\eta \rightarrow n / _ i$
 $q\ *R \rightarrow \emptyset\ \{l, \emptyset\}$

10.3.7 Proto-Oceanic to Shark Bay

thetha, from Guy, Jacques (1978), “Proto-North New Hebridean Reconstructions”

$C \rightarrow \emptyset / _ \#$
 $q \rightarrow \emptyset$
 $*R \rightarrow \{\emptyset, r\}$
 $\eta\ c\ *j \rightarrow n\ s\ z$
 $p\ p^w\ k \rightarrow v\ v^w\ \gamma$
 $b\ b^w\ g \rightarrow p\ p^w\ k$
 $V[+ \text{high}] \rightarrow \emptyset / _ \# ! \{p, z, d(r)\} _$
 $v\ t\ l\ r \rightarrow p\ dr\ n\ w / _ \#$
 $t \rightarrow ts / _ V[+ \text{high}]$
 $^n a \rightarrow i / _ CV[- \text{high}]$
 $^n a \rightarrow e / _ CV[+ \text{high}]$
 $p\ \eta \rightarrow f\ \emptyset / _ V_V$
 $\gamma\ s\ d \rightarrow \emptyset\ \{j\ dr\} / _ \#$
 $\gamma\ s\ d \rightarrow \emptyset\ \{j\ dr\} / \text{“before a post-tonic vowel”}$
 $V \rightarrow e / C_ \# ! C = j$
 $V \rightarrow \emptyset / \{^n V, j\} _$
 $p\ v\ m \rightarrow t\ \theta\ n / _ \{a, e, i\}$
 $z \rightarrow s$
 $\emptyset \rightarrow h / \# _ V$ (“it isn’t clear if this happens unconditionally”)
 An /o ɔ/ distinction is gained somehow

10.3.8 Proto-Oceanic to Tolomako

thetha, from Lynch, John (2005), “The Apicolabial Shift in Nese”. *Oceanic Linguistics* 44(2):389 – 403; and <http://language.psy.auckland.ac.nz/austronesian/>

$C \rightarrow \emptyset / _ \#$
 $q \rightarrow \emptyset$
 $*R \rightarrow \{\emptyset, r\}$ (the former seems more common)
 $\eta\ c\ *j \rightarrow n\ s\ z$
 $m\ b \rightarrow \underline{n}\ \underline{t} \rightarrow n\ t / _ \{a, e, i\}$

$p^{(w)} k \rightarrow v^{(w)} \gamma$
 $m^w b^{(w)} v^w \rightarrow m p b$
 $d g \rightarrow r k$
 $\{z, dr\} \rightarrow ts$
 $u \rightarrow i$ (“sporadic”)
 $a \rightarrow e$ (rare?)

10.3.9 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

$p q \rightarrow v \emptyset$ (in general, seems like there was something going on with conditioning in the case of $*p$?)
 $w \rightarrow \emptyset$ (? Tanibili [w] may just be phonetically determined)
 $C \rightarrow \emptyset / _ \#$ (except for $*k$?)

10.3.9.1 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 \emptyset
 $p \rightarrow w / _ B$
 $p^w m^w \rightarrow w m$
 $dr s l \rightarrow \{d, j\} \{ \emptyset, s \} \{n, \emptyset\}$
 $c j n \rightarrow \emptyset \{j, n\}$
 $t r l \rightarrow \{j, s\} \{j, \emptyset\} j / _ u$
 $t \rightarrow s / _ i$
 $k \rightarrow \{k, \emptyset\} / _ \#$
 $k \rightarrow \{ \emptyset, s \} / _ \#$
 $r \rightarrow \{l, n, \emptyset\}$
 $R \rightarrow \{l, \emptyset\}$

10.3.9.2 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 \emptyset reflexes
 $p^w \rightarrow v^w$
 $t k \rightarrow r \emptyset / _ \#$ (though $*t$ seems to have occasionally survived?)

$t \rightarrow \{r, t\} / _B$
 $t \rightarrow \{r, t\} / V_V$
 $r \rightarrow \{l, \emptyset\} / _u$
 $r \text{ }^*R \rightarrow l \emptyset$
 $l \rightarrow \emptyset$ (occasionally?)
 $c \text{ }_p \rightarrow \emptyset \text{ }_n$
 $\eta \rightarrow n / _i$

10.3.9.3 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 \emptyset and w as reflexes although the latter may just be an epenthetic glide between vowels of unlike rounding

$\{s, \text{ }^*R\} \rightarrow \emptyset$
 $p \text{ }_t \{r, l\} \rightarrow \emptyset \text{ }_s \text{ }_j / _u$
 $p^w \text{ }_b \rightarrow p \text{ }_b$
 $t \rightarrow \{t, r, k^w\} / \#_$ (I’m not kidding. That’s what’s listed as the reflexes.)
 $k \rightarrow \{k, \emptyset\} / \#_$
 $t \text{ }_k \rightarrow \{t, r, k^w, \emptyset\} \emptyset / V_V$
 $k \rightarrow \{\emptyset, j\} / _ \#$
 $dr \rightarrow \text{ }_j / _i$
 $d \text{ }_c \text{ }_p \rightarrow \text{ }_j \{s, \emptyset\} \text{ }_n$
 $\{r, l\} \rightarrow l$ (occasionally $\rightarrow \emptyset$?)

10.3.10 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

$p \rightarrow \emptyset / _u$
 $p \text{ }_q \rightarrow \{v, p\} \emptyset$
 $r \rightarrow \emptyset / \text{ }_d _$
 $k \rightarrow \emptyset / V_V$
 $\{s, \text{ }^*R\} \rightarrow r / _ \#$

10.3.10.1 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

$p \ t \rightarrow \emptyset \ \{s,k\} / _u$
 $p \rightarrow \emptyset / _ \#$
 $k \rightarrow \emptyset / \# _$
 $r \rightarrow l / ! _ \#$
 $p^w \ bw \ m^w \rightarrow p \ b \ m$
 $c \ *R \rightarrow \emptyset \ \{l,\emptyset\}$
 $\eta \rightarrow \{\eta,g\} \ (\eta \text{ remains when } _i)$

10.3.10.2 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

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

10.3.10.3 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

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

10.3.11 Proto-Oceanic to Proto-Southern Vanuatu

thetha, from Lynch, John (2001), *The Linguistic History of Southern Vanuatu*

$m \ b \rightarrow m^w \ b^w / _u$
 $p \rightarrow b^{(w)} \ (\text{sporadic})$
 $p \rightarrow v^w / _u \ (\text{a change thetha reconstructs in order to account for phenomena in later})$

posts about this group of languages)

$p \rightarrow v$

$k \text{ *}R \rightarrow \gamma r$ “(frequently)”

$\text{*}R \rightarrow \emptyset$

$dr \rightarrow \{d,r\}$

$\text{ɲ} \rightarrow j$

$n \rightarrow \eta / qV[-\text{stress}]_-$

$n \rightarrow \eta / \text{_-}V[-\text{stress}]q$

$c \rightarrow s$

$t \rightarrow c / \text{_-}E$

$q (\rightarrow kw ?) \rightarrow v$ (rare)

$a \rightarrow e / \text{_}(C)i$

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

10.3.11.1 Proto-Southern Vanuatu to Anejom *thetha*, from Lynch, John (2001),
The Linguistic History of Southern Vanuatu

$C \rightarrow \emptyset / \text{_-}\# ! C = t$

$t \rightarrow s / \text{_-}\#$

$v^{(w)} \rightarrow h$

$k \rightarrow \emptyset / V\text{_-}V$ (sporadic?)

$b^{(w)} g \rightarrow p^{(w)} k$

$s \rightarrow h /$ “rarely”

$s \rightarrow \theta / ! \text{_-}i$, occasionally

$d \{c,*j\} \rightarrow tʃ s$

$\{n,\eta\} \rightarrow \text{ɲ} / \text{_-}E$

$w \rightarrow v$

$l \rightarrow tʃ / \text{_-}\{o,E\}$

$q \rightarrow \emptyset$

$V \rightarrow \emptyset / \text{_-}\#$ (with very few exceptions)

$\{r,h\} \rightarrow \emptyset / \text{_-}\#$

“a lot of word medial vowels get elided, sometimes even when they should be stressed”

$\{i,o\} \rightarrow e$

$u \rightarrow o$

$i \rightarrow o / \{u,w\}\text{_-}$

$u \rightarrow e / \{\theta,\gamma\}\text{_-}$

$u \rightarrow e / \text{_-}\theta$

$ai \rightarrow i / \text{_-}C$

$ei \rightarrow i$

$ua \rightarrow ou$

$au \rightarrow \{u,o\}$ “sometimes”

$e \rightarrow i / \acute{K}_-$ “[tendency]”
 $e \rightarrow i / _ \acute{K}$ “[tendency]”
 $a \rightarrow o / P_-$ “[tendency]”
 $a \rightarrow o / _ P$ “[tendency]”

10.3.11.2 Proto-Southern Vanuatu to Proto-Erromango *thetha*, from Lynch, John (2001), *The Linguistic History of Southern Vanuatu*

$m^w p^w b^w v^w \rightarrow m p b v$
 $v \rightarrow p / \#_-$
 $v \rightarrow f / C[+ \text{sibilant}] \%$
 $v \rightarrow f / \% C[+ \text{sibilant}]$
 $r \rightarrow *L$ (some sort of lateral?) / occasionally
 $s \{c, *j\} \rightarrow h s$
 $o \rightarrow a$
 $u i \rightarrow o e$ (sporadic)
 $a \rightarrow i / _ CV[+ \text{high}]$
 “many word medial vowels lost”

10.3.11.2.1 Proto-Erromango to Sye *thetha*, from Lynch, John (2001), *The Linguistic History of Southern Vanuatu*

$*L \rightarrow r$
 $b d g \rightarrow p t k / \{\#, C\}_-$
 $b d g \rightarrow m n \eta / _ \#$
 $b d g \rightarrow mp nt \eta k$
 $f \rightarrow p / \#_-$
 $f \rightarrow v / V_V$
 $k \rightarrow \gamma$
 $\gamma \rightarrow k / _ i$
 $s \rightarrow h$ “often”
 $s \rightarrow \emptyset / _ C$ (occasionally blocked)
 $i \rightarrow e / O[+ \text{labial}]_-$
 $i \rightarrow e / _ O[+ \text{labial}]$
 $e \rightarrow o / K_-$
 $e \rightarrow o / _ K$
 $a \rightarrow o / \{w, m, \eta\}_-$
 $a \rightarrow e / _ \#$
 $\text{ə} \rightarrow \{o, e\}$

10.3.11.2.2 Proto-Erromango to Ura *thetha*, from Lynch, John (2001), *The Linguistic History of Southern Vanuatu*

$h \rightarrow \emptyset$
 $*L \rightarrow l$
 $nr \rightarrow d$
 $b \ d \ g \rightarrow m \ n \ \eta \ / \ _C$
 $b \ d \ g \rightarrow p \ t \ k \ / \ _\#$
 $p \rightarrow b \ / \ V_V$
 $u \rightarrow e \ / \ \gamma_ \#$ (? this change is a bit unclear)
 $\gamma \rightarrow \emptyset \ / \ _\#$
 $k \rightarrow \emptyset$ (perhaps doesn't always happen but happens often)
 $\{s, t\} \rightarrow h \ / \ _\{n, l, r\}$
 $t \rightarrow r \ / \ !$ at word boundaries
 $\emptyset \rightarrow i$

10.3.11.3 Proto-Southern Vanuatu to Proto-Tanna *thetha*, from Lynch, John (2001), *The Linguistic History of Southern Vanuatu*

$\{v^w, w\} \rightarrow k^w$
 $s \ c \ *J \rightarrow \{h, z\} \ \{s, z\} \ z$
 $g \ q \rightarrow k \ \emptyset$
 $l \rightarrow r$
 $o \ e \rightarrow \{u, \emptyset\} \ i$
 $a \rightarrow o \ / \ _\{P, Cu\}$
 $a \rightarrow o \ / \ P_$
 $a \rightarrow e \ / \ _Ci$
 $a \rightarrow \emptyset \ / \ _Ca$
 “vowels tend to lower near h”

10.3.11.3.1 Proto-Tanna to Kwamera *thetha*, from Lynch, John (2001), *The Linguistic History of Southern Vanuatu*

$t \rightarrow r$
 $b^{(w)} \ d \rightarrow p^{(w)} \ t$
 $\gamma \rightarrow \emptyset$
 $s \rightarrow h$ “irregularly”
 $\{p^{(w)}, v\} Vh \rightarrow fV$
 $/f^w/$ gained
 $u \rightarrow \{e, i\} \ / \ _Cu$

$\text{ə} \rightarrow \text{a} / \text{ in U\#}$
 $\text{ə} \rightarrow \text{e} / \text{ else}$

10.3.11.3.2 Proto-Tanna to Lenakel *thetha*, from Lynch, John (2001), *The Linguistic History of Southern Vanuatu*

$\text{r} \rightarrow \{\text{l}, \text{i}\}$
 $\text{t} \rightarrow \text{r}$
 $\text{b}^{(\text{w})} \text{d} \rightarrow \text{p}^{(\text{w})} \text{t}$
 $\text{k}^{(\text{w})} \rightarrow \{\text{w}, \text{u}\}$
 $\text{ɣ} \rightarrow \emptyset / \text{E}_-$
 $\text{ɣ} \rightarrow \emptyset / \text{E}$
 $\text{ɣ} \rightarrow \text{k}$
 $\text{r} \rightarrow \text{l} / \text{Vl}$
 $\text{c} \text{*j} \rightarrow \text{s} \{\text{z}, \text{s}\}$
 $\text{z} \rightarrow \text{t}$
 $\text{s} \rightarrow \text{h}$ “irregularly”
 $\{\text{p}^{(\text{w})}, \text{v}\} \text{Vh} \rightarrow \text{fV}$

10.3.11.3.3 Proto-Tanna to North Tanna *thetha*, from Lynch, John (2001), *The Linguistic History of Southern Vanuatu*

$\text{k}^{(\text{w})} \rightarrow \text{p} / \text{-\#}$
 $\text{k}^{(\text{w})} \rightarrow \emptyset / \text{-u}$
 $\text{k}^{(\text{w})} \rightarrow \emptyset / \text{-a}$ (rare)
 $\text{k}^{(\text{w})} \rightarrow \{\text{w}, \text{u}\}$
 $\text{v} \rightarrow \emptyset / \text{-i}$
 $\text{v} \rightarrow \{\text{w}, \text{u}\}$ (“sporadically”)
 $\text{ɣ} \rightarrow \emptyset / \text{\#}_-$
 $\text{ɣ} \rightarrow \emptyset / \text{E}$
 $\text{ɣ} \rightarrow \text{ŋ}$
 $\text{r} \rightarrow \text{l} / \text{-}\{\text{o}, \text{E}\}$
 $\text{r} \rightarrow \text{i}$
 $\text{d} \rightarrow \text{t}$ (often)
 $\text{d} \rightarrow \text{k} / \text{-ŋ}$
 $\text{z} \rightarrow \text{r}$
 $\{\text{s}, \text{c}\} \rightarrow \{\text{h}, \text{s}\}$

10.3.11.3.4 Proto-Tanna to Southwest Tanna *thetha*, from Lynch, John (2001), *The Linguistic History of Southern Vanuatu*

$t \rightarrow r$
 $b^{(w)} d \rightarrow p^{(w)} t$
 $y \rightarrow \emptyset / \#_-$
 $y \rightarrow k$
 $r \rightarrow l$
 $\{c, *j\} \rightarrow s$
 $s \rightarrow h$ “irregularly”
 $\{p^{(w)}, v\} Vh \rightarrow fV$
 $u \rightarrow \{e, i\} / _Cu$
 $\text{ə} \rightarrow a / \text{in } U\#$

10.3.11.3.5 Proto-Tanna to Whitesands *thetha*, from Lynch, John (2001), *The Linguistic History of Southern Vanuatu*

$r \rightarrow \{l, i\}$
 $d \rightarrow r / _ \eta$ (occasionally elsewhere as well)
 $b^{(w)} d \rightarrow p^{(w)} t$
 $k^w \rightarrow \emptyset / u_-$
 $k^w \rightarrow \emptyset / _u$
 $k^w / \{w, u\}$
 $y \rightarrow \emptyset / \{\#, E\}_-$
 $y \rightarrow \emptyset / _E$
 $y \rightarrow \eta$
 $c \ *j \rightarrow s \ \{z, s\}$
 $s \rightarrow h$ “often”
 $z \rightarrow r$

10.3.12 Proto-Oceanic to Vera’a

thetha, from François, Alexander (2005), “Unraveling the history of the vowels of seventeen north Vanuatu languages”

$p \ p^w \ k \ q \rightarrow \beta \ w \ y \ \emptyset$
 $VV \rightarrow V$
 $ndr \ *R \rightarrow d \ r$
 $\{c, *j\} \ n \rightarrow s \ n$
 $t \rightarrow \text{ʔ}$ “often”
 $\beta \rightarrow f / \#_-$ (usually)
 $\beta \rightarrow f / \text{else}$ (rarely)
 $b^w \ g \rightarrow kp^w \ k$

$m^w \rightarrow \eta m^w$
 $i(C)V[+ \text{high}] \rightarrow i(C)$
 $i(C)V[- \text{high}] \rightarrow i(C)_I$
 $e(C)V[- \text{low}] \rightarrow e(C)$
 $e(C)V[+ \text{low}] \rightarrow \varepsilon C \varepsilon$
 $a(C)i \ a(C)u \rightarrow \{a, \varepsilon\}(C) \ \{\mathfrak{a}, a, \varepsilon\}(C)$
 $a(C)\{o, e\} \rightarrow a(C)$
 $oCa \rightarrow \mathfrak{a}C\mathfrak{a}$
 $uCV[+ \text{high}] \rightarrow iC$ “sometimes”
 $uCV[- \text{high}] \rightarrow uC\mathfrak{u}$
 $oa \ \{ae, ea\} \rightarrow u\mathfrak{o} \ i\varepsilon$
 $o \ e \rightarrow \mathfrak{u} \ i$
 $V \rightarrow \emptyset / \#_C''V$
 $V \rightarrow \emptyset / CVC_C''V$
 $CV_1C''V_2 \rightarrow CV_2C''V_2$
 $b \ d \rightarrow m \ n / _ \{C, \#\}$

10.4 Micronesian

10.4.1 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.

$K \rightarrow K^w / _ \{C[+round], V[+round]\}$
 $V[+high] \rightarrow \mathfrak{a} / _C[-high]$
 $V \rightarrow \emptyset / _ \#$
 $V[+mid] \rightarrow \mathfrak{a} / _C[+high]$ when stressed
 $V \rightarrow \emptyset / ''VC_$
 $V \rightarrow \emptyset /$ “in CV reduplications”
 $a \rightarrow \mathfrak{a} / _wo$
 $f \rightarrow \emptyset / \#_ \{C[-low], V[-low]\}$
 $f \rightarrow u\mathfrak{f} / \#_aCo$
 $f \rightarrow j /$ else
 $\emptyset \rightarrow u\mathfrak{f} / \#_aC[-low]$
 $\emptyset \rightarrow j / \#_ \{aC[+low], V[-back], C[-back]\}$
 $\emptyset \rightarrow w / \#_ \{C[+round], V[+round]\}$

$\{i,u\} \{e,o\} \rightarrow i \text{ } \emptyset$
 $p \{t,ts\} c \rightarrow p^j t^j r^j$
 $\{ç,s\} x \rightarrow t^w \emptyset$
 $m \text{ } n \rightarrow m^j n^j$

“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^wau), nor does he go into more detail than to say that l and n generally develop into l^j and n^j before Proto-Micronesian front vowels, and l, r, and n turn into l^w, r^w, and n^w before a and l^w, r^w, and n^w before Proto-Micronesian round vowels, but the author does not elaborate.”

10.5 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 → 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)
 $S \rightarrow \emptyset / _ \#$
 $u \text{ } a \text{ } \emptyset \rightarrow \{u,o\} \{a,e\} e$
 $j \text{ } g \text{ } *N \text{ } *R \rightarrow \{j,j\} \{j,g\} \{l,j\} \{l,r\}$
 $z \rightarrow c$ (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)
 $e \rightarrow \emptyset / _ N$ when unstressed ! \acute{K}_- (?; included here based on a comment earlier in the paper, but not listed on the correspondence list)
 $\{m,n\} n \rightarrow \{n,\emptyset\} \{ŋ,\emptyset\} / _ \#$ (first change marked “in progress?”)
 $aj \rightarrow e$

10.5.1 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 (?)

$n \rightarrow \text{ŋ} / _ \#$ (?)

$k^{(w)} \rightarrow h^{(w)}$

$\emptyset \rightarrow a / h \# _$ (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 e/ reduce when unstressed (change seems to be ongoing?)

10.5.2 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 (?)

$n \rightarrow \text{ŋ} / _ \#$ (?)

$d \rightarrow r / V _ \{V, \#\}$

$\{w, r\} \rightarrow \emptyset / \{a, e\} _ \#$

$\emptyset \rightarrow e / C _ \#$

$p \rightarrow b$

$aw \rightarrow o$

$e \rightarrow \{e, \text{ə}, o\} / _V$

$N \rightarrow n / _ \{d, l\}$

$gd \ gl \rightarrow d: \ l:$

10.6 Proto-Austronesian to Proto-Paiwan

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

$t_1 \ d_1 \ d_3 \ Z \rightarrow t \ d \ d_l \ ʃ$

$l \ *L \rightarrow \text{ɭ} \ \text{ɮ}$

$b \ d_2 \rightarrow \{v, b\} \ z$

$S_1 \ s \ c \rightarrow s \ t \ ts$

$V: \rightarrow V[-\text{long}]$

10.6.1 Proto-Paiwan to Northern Paiwan

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

$c \text{ } j \text{ } q \text{ } l \rightarrow t \text{ } d \text{ } ? \text{ } l$

Something about final stress and preceding /ə/

10.6.2 Proto-Paiwan to Central Paiwan

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

$w \rightarrow v \text{ } / \text{ } -\#$

Something about final stress and preceding /ə/

10.6.3 Proto-Paiwan to Southern Paiwan

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

$k \text{ } r \rightarrow ? \text{ } \gamma$

Something about final stress and preceding /ə/

10.7 Proto-Austronesian to Proto-Rukai

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

$\{t_1, c\} \{d_1, z\} d_3 \rightarrow t \text{ } d \text{ } d$

$R \text{ } l \text{ } L \rightarrow \{r, ?\} \text{ } l \text{ } l$

$S_1 \text{ } s \text{ } d_2 \text{ } *C \rightarrow s \text{ } \theta \text{ } \partial \text{ } ts$ (not sure what *C stands for here)

Something about echo-vowel epenthesis and stress that isn't really clear from skimming it

10.7.1 Proto-Rukai to Budai Rukai

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

$\{v, \text{ʔ}\} \text{ } \text{ɔ} \rightarrow \text{ } \emptyset \text{ } j$

Long vowels acquire a high-low contour, but it looks like this is more prosodic than anything

10.8 Proto-Austronesian to Proto-Tsouic

Pogostick Man, from Wikipedia contributors (2016), “Tsouic languages”. *Wikipedia, the Free Encyclopedia*. <https://en.wikipedia.org/w/index.php?title=Tsouic_languages&oldid=602917078>

$\{*C, d\} \text{ } j \text{ } *R \rightarrow c \text{ } z \text{ } r$

11 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’ ts’ː dz	st stː	r
Lateral			ɬ ɬː	tɬ tɬː tɬ’ tɬ’ː (dɬ)		l
Postalveolar			ʃ ʃː	tʃ tʃː tʃ’ tʃ’ː dʒ		
Velar			(x) (xː)	k (kː) k’ (k’ː) g		
Uvular				q qː (q’) q’ː (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>, 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.

(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)

11.1 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”

11.1.1 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>, 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

$p \rightarrow h$

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

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

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

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

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

11.1.2 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>, 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

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

$st: \rightarrow s:$

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

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

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

11.1.3 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>, 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} q' (not sure if that last ⟨gh⟩ should be y)
s s: ʃ: x x: → {s,ʃ} x ʃ {x,h} x
m → {m,n}

11.2 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>, 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}

11.3 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>, 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

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

$\{tʃ(:),dʒ\} \rightarrow tʃ'$

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

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

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

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

$r \rightarrow n \ / \ _C$

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

11.4 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>, 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”)

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

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

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

$g \rightarrow k:$

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

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

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

11.5 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>, 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.

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

11.5.1 Proto-Lezgitic 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>, 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

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

11.5.2 Proto-Lezgitic 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>, 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

$d \rightarrow r \text{ } / \text{ } _ \#$
 $d \rightarrow \{d, t:\}$
 $\{ts, st\} \text{ } ts: \text{ } ts': \text{ } st: \text{ } dz \rightarrow s \{s, f\} \text{ } ts' \text{ } s: \text{ } ts$
 $tf(:) \text{ } d\acute{z} \rightarrow f \text{ } tf$
 $t\acute{t} \text{ } t\acute{t}: \text{ } t\acute{t}' \text{ } t\acute{t}': \text{ } d\acute{z} \rightarrow \acute{t} \acute{t}(:) \text{ } k' \text{ } t\acute{t}' \text{ } t\acute{t}:$

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

11.5.3 Proto-Lezgian to Lezghian

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

11.5.4 Proto-Lezgian 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>, 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
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$b \ d \rightarrow \{b,w\} \{d,z\}$
 $\{ts,st\} \ ts: \ dz \rightarrow \{s,ts\} \{d,t\} \ z$
 $t\acute{f} \ t\acute{f}: \ t\acute{f}: \rightarrow \{f:,tf\} \ f \ tf$
 $t\acute{t}: \ t\acute{t} \ t\acute{t}: \ d\acute{z} \rightarrow x^j \ q' \ q(:) \{w,x^j,j\}$
 $k: \rightarrow x$
 $q: \rightarrow q(:)$
 $s: \acute{t}(:) \ x: \rightarrow \{h,x^j\} \{s:,h\} \ x$
 $m \rightarrow \{m,b\}$

11.5.5 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>, 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

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

11.5.6 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>, 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

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

11.6 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>, 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 / #_

11.7 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>, 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}

11.7.1 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>, 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

11.7.2 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>, 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 ʒ: ɬ ɬ: x → s ʒ l ɬ y
 r → {r,l,Ø}

12 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 pʰ b	f		mˢ
Palatalized Labial	pʲ pʲː pʲʰ bʲ			
Labialized Labial	pʷ bʷ			
Palatalized Labialized Labial	pʷʲ pʷʲʰ bʷʲ			
Pharyngealized Labial	pˢ pˢː pˢʰ bˢ			
Plain Coronal	t tː tʰ d	s z	ts tsː tsʰ dz	r n
Palatalized Coronal	tʲ	sʲ zʲ	tsʲ tsʲː tsʲʰ dzʲ	rʲ
Labialized Coronal	tʷ tʷː tʷʰ dʷ	tsʷ tsʷː dzʷ		
Palatalized Labialized Coronal	tʲʷ tʲʷʰ	tsʲʷ tsʲʷː dzʲʷ		
Plain Lateral		ɬ ɬː	tɬ tɬː tɬʰ dɬ	l
Palatalized Lateral		ɬʲ (~ɬʲː) ɬʲ	tɬʲ tɬʲː dɬʲ	lʲ
Labialized Lateral		ɬʷ ɬʷː	tɬʷ tɬʷː tɬʷʰ dɬʷ	
Palatalized Labialized Lateral		ɬʲʷ (~ɬʲʷː) ɬʲʷ	tɬʲʷ tɬʲʷː tɬʲʷʰ dɬʲʷ	
Plain Postalveolar		ʃ (~ʃː) ʒ	tʃ tʃː dʒ	
Labialized Postalveolar		ʃʷ ʃʷː ʒʷ	tʃʷ tʃʷː tʃʷʰ dʒʷ	
Plain Palatal		ɕ ɕː ʑ	tɕ tɕː tɕʰ dʑ	j
Labialized Palatal		ɕʷ ɕʷː ʑʷ	tɕʷ tɕʷː tɕʷʰ	
Plain Velar	k kː kʰ g	x ɣ		
Palatalized Velar	kʲ gʲ	xʲ ɣʲ		
Labialized Velar	kʷ kʷː kʷʰ gʷ	xʷ		
Palatalized Labialized Velar	kʲʷ gʲʷ	xʲʷ ɣʲʷ (?)		
Plain Uvular	q qː qʰ ɢ	χ ʁ		
Palatalized Uvular	qʲ qʲː qʲʰ ɢʲ	χʲ ʁʲ		
Labialized Uvular	qʷ qʷː qʷʰ ɢʷ	χʷ ʁʷ		
Labialized Palatalized Uvular	qʲʷ qʲʷː qʲʷʰ ɢʲʷ	χʲʷ ʁʲʷ		
Pharyngealized Uvular	qˢ qˢː qˢʰ	χˢ ʁˢ		
Pharyngealized Palatalized Uvular	qˢʲ qˢʲː qˢʲʰ	χˢʲ ʁˢʲ		
Pharyngealized Labialized Uvular	qˢʷ qˢʷː qˢʷʰ	χˢʷ ʁˢʷ		
Pharyngeal Labialized Palatal Uvular	qˢʲʷ qˢʲʷː qˢʲʷʰ	χˢʲʷ ʁˢʲʷ		

(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>, presumably citing Starostin, Sergei A. and Sergei L. Nikolayev (1994), *A North Caucasian Etymological Dictionary*)

12.1 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>, presumably citing Starostin, Sergei A. and Sergei L. Nikolayev (1994), *A North Caucasian Etymological Dictionary*

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

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

12.1.1 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 / Γ / sometimes?)
 $\Gamma^w \rightarrow \eta$
 $t^w(\cdot) d^w \rightarrow \{t^w(\cdot), p(\cdot)\} \{d^w, b\}$

12.1.2 Proto-Abazgi to Tapanta Abaza

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

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

12.1.3 Proto-Abazgi to Ahchypsy Abkhaz

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

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

12.1.4 Proto-Abazgi to Bzyp Abkhaz

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

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

12.1.5 Proto-Abazgi to Abzhywa Proper

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

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

12.1.6 Proto-Abazgi to Tsabal Abzhywa

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

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

12.1.7 Proto-Abazgi to Khaltys Sadz

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

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

12.1.8 Proto-Abazgi to Tswydzhy Sadz

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

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

12.2 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>, presumably citing Starostin, Sergei A. and Sergei L. Nikolayev (1994), *A North Caucasian Etymological Dictionary*

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

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

12.2.1 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>; and Wikipedia contributors (2014), “Adyghe language”. *Wikipedia, the Free Encyclopedia*. <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 → tɕ
ts^w → ts^{jw}
tʃ tɕ → ʃ ɕ
ʔ^(w)~q^(w) → ʔ^(w)
dʒ → ʝ
dz^j dz^w → dz ʒ^w
ts^j → ɕ'~ʃ'
s^w ɕ → ɕ^w~ʃ^w ɕ~ʃ
x^w χ^j → f~ɸ? h
ʒ → l
z^w → ʒ^w~ʒ^w

12.2.1.1 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>; and Wikipedia contributors (2014), "Adyghe language". *Wikipedia, the Free Encyclopedia*. <http://en.wikipedia.org/w/index.php?title=Adyghe_language&oldid=593857358>

ts^j(:) → tɕ
ts^w → tʃ^w
p: t: ts: ts^w ʃ: tʃ: tɕ: k^j: k^w: q:~qχ q^w:~qχ^w → p t ts tʃ^w ʃ ɕ tɕ tʃ k^w q: q^w
tʃ' tɕ' → ʔaj~ʔ ɕ'
tʃ^w'~ʃ^w' → ɕ^w'~ʃ^w'
k^j' → tʃ'
ɕ: ʃ: → ɕ ʃ
s' ʃ'~ɕ' → ts' ʃ'

12.2.1.2 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>;

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

ts^j ts^j → tɕ tɕ:
k^j(:) k^j g^j → tʃ(:) tʃ' dz
ts^w → ts^{jw}:
q:~χ q^w:~qχ^w → q: q^w:
ts^{w'}~ʃ^{w'} → ɕ^{w'}~ʃ^{w'}
tɬ' → ɬ'
s' ʃ'~ɕ' → ts' ʃ'

12.2.1.3 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>; and Wikipedia contributors (2014), “Adyghe language”. *Wikipedia, the Free Encyclopedia*. http://en.wikipedia.org/w/index.php?title=Adyghe_language&oldid=593857358>

ts^j(:) ts^w tʃ tɕ → tɕ tʃ^w ʃ ɕ
p: t: ts: ts^w: ʃ: ts: tɕ: k^j: k^w: q:~qχ q^w:~qχ^w → p t ts tʃ^w ʃ tʃ tɕ k^j k^w χ~q χ^w~q^w
p^(w)' t^(w)' ts' ts^{w'}~ʃ^{w'} → p^ɕ t^ɕ ts^ɕ ɕ^w
tɬ' → ɬ^ɕ
ɕ: ʃ: → ɕ ʃ
s' ʃ'~ɕ' → s^ɕ ɕ

12.2.1.4 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>; and Wikipedia contributors (2014), “Adyghe language”. *Wikipedia, the Free Encyclopedia*. http://en.wikipedia.org/w/index.php?title=Adyghe_language&oldid=593857358>

ts^j(:) ts^w → tɕ ts^{jw}
k^j(:) k^j k^w: g^j → tʃ tʃ' k^w dz
q q^w → q: q^w: / ! #-
p: t: ts: ts^w: ʃ: tʃ: tɕ: → p t ts ts^{wj} ʃ tʃ tɕ
q:~qχ q^w:~qχ^w → q: q^w:
ts^j ts^{w'}~ʃ^{w'} → ɕ'~ʃ' ɕ^{w'}~ʃ^{w'}
tɬ' → ɬ'
ɕ: ʃ: → ɕ ʃ
ʏ → ʏ~g
s' ʃ'~ɕ' → ts' ʃ'

12.2.2 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>

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

— Consonant correspondences:

ts^j(:) ts^w {tʃ,tɕ} → ɕ f ʃ

k^j → tʃ

ʔ~q' → ʔ^w

p: t: ts: ts^w: ʃ: {tʃ:,tɕ:} k^w: q:~qχ q^w:~qχ^w → b d dz v ɕ ʒ dʒ g^w q'~qχ q^w'~qχ^w

dʒ dz^j dz^w dz g^j → ʒ ʒ {v,w} ʒ dʒ

ts^j' tʃ^w'~ʃ^w' tʃ' tɕ' tɬ' k^j' → ɕ' f' ɕ' {ɕ',cɕ'} ɬ' tʃ'

s^w z^w {ʃ:,s} {ʒ:,zɕ} ʒ χ^j → f v ɕ ʒ ~ʒ χ

ɕ: ʃ: → ɕ ʒ

s' (?) ʃ'~ɕ' → ts' ɕ'

12.3 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>, presumably citing Starostin, Sergei A. and Sergei L. Nikolayev (1994), *A North Caucasian Etymological Dictionary*

p^j(:) b^j → t(:) d

p^j' → t^w'

{p^w,b^w} → f

p^j: → t^w~d^w

p^{wj} b^{wj} → t^w d^w

p^{wj}' p^ɕ p^ɕ: p^ɕ' b^ɕ → t^w' v^ɕ b^ɕ p^ɕ' b^ɕ

t^(w): t^{wj}' → t^(w) t^w'

{r,l} ʃ^j → 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)}: ts^w: 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}): \mathfrak{z} &\rightarrow s\,z \\
\mathfrak{e}: t\mathfrak{e}: &\rightarrow \mathfrak{e}\,t\mathfrak{e} \\
\mathfrak{f}^w(:)\,\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(:)\,t\mathfrak{e}^{w'}, &\rightarrow t\mathfrak{e}\,t\mathfrak{e}' \\
\mathfrak{e}^w\,\mathfrak{e}^w: \mathfrak{z}^w &\rightarrow \mathfrak{f}^w\,s^w\,\mathfrak{z}^w \\
t\mathfrak{f}\,t\mathfrak{f}: t\mathfrak{f}', d\mathfrak{h} &\rightarrow \mathfrak{e}\,(s^j)\,ts^j, \mathfrak{h} \\
\mathfrak{f}(:) &\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:) &\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(:)\,t\mathfrak{f}^w, d\mathfrak{h}^w &\rightarrow ts^w\,ts^{(w)}, w \\
\mathfrak{f}^w\,\mathfrak{f}^w: &\rightarrow s^w\,s^{(w)} \\
t\mathfrak{f}^{wj}\,t\mathfrak{f}^{wj}: t\mathfrak{f}^{wj}, d\mathfrak{h}^{wj} &\rightarrow f\,dz\,ts', d\mathfrak{z} \\
\mathfrak{f}^{wj}(\sim \mathfrak{f}^w:)\,\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: x^w &\rightarrow g^w\,x \\
k^{jw}: x^{jw}\,\mathfrak{y}^{jw}(?) &\rightarrow g^j\,k^j, x^j\,\mathcal{B}^j \\
\mathfrak{y} &\rightarrow \mathcal{B} \\
q^j(:)\,G^j\,\chi^j &\rightarrow q^j(\cdot)\,\mathcal{B}^j\,x^j \\
q^w: G^w &\rightarrow q^w\,\mathcal{B}^w \\
q^{jw}\,q^{jw}: 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}$$

13 Chumashan

Klar (1977) reconstructs the following phonemic inventory for Proto-Chumashan:

	Bilabial	Dental	Palatoalveolar	Velar	Uvular	Glottal
Nasal	m ^ʔ m	n ^ʔ n				
Stop	p p'	t t'		k k'	q q'	ʔ
Affricate		ts ts'	tʃ tʃ'			
Fricative		s (s')	ʃ (ʃ')			h
Approximant	w ^ʔ w	l ^ʔ l	j ^ʔ j			

	Front	Central	Back
High	i	ɨ	u
Mid	e		o
Low		a	

Ablaut and vowel harmony appear to have been productive in the proto-language; it is possible that consonant harmony affecting sibilants was also productive. *i may have been a loan phoneme.

(*CatDoom*, from Klar, Kathryn (1977), *Topics in Historical Chumash Grammar*. <<http://linguistics.berkeley.edu/~survey/documents/dissertations/klar-1977.pdf>>)

13.1 Proto-Chumash to Barbareño

CatDoom, from Klar, Kathryn (1977), *Topics in Historical Chumash Grammar*. <<http://linguistics.berkeley.edu/~survey/documents/dissertations/klar-1977.pdf>>

R[- glottalized]V^ʔR → ^ʔRVR[- glottalized] / _\$
R[- glottalized]VO' → ^ʔRVO[- ejective] / _\$

13.2 Proto-Chumash to Cruzeño

CatDoom, from Klar, Kathryn (1977), *Topics in Historical Chumash Grammar*. <<http://linguistics.berkeley.edu/~survey/documents/dissertations/klar-1977.pdf>>

k → tʃ “(‘in certain cases’)

13.3 Proto-Chumash to Inseño

CatDoom, from Klar, Kathryn (1977), *Topics in Historical Chumash Grammar*. <<http://linguistics.berkeley.edu/~survey/documents/dissertations/klar-1977.pdf>>

linguistics.berkeley.edu/~survey/documents/dissertations/klar-1977.pdf>

$t' q' \rightarrow t q$
 $ʔN ʔw \rightarrow N w$

13.4 Proto-Chumash to Obispeño

CatDoom, from Klar, Kathryn (1977), *Topics in Historical Chumash Grammar*. <<http://linguistics.berkeley.edu/~survey/documents/dissertations/klar-1977.pdf>>

$S' \rightarrow ʔ$
 $q k \rightarrow \{q, k\} \{k(\text{ʃ}), tʃ\}$ (allophonic)
 $\{ʔm, ʔn\} \rightarrow \{\emptyset, ʔ\}$ (the former is more likely)
 $ʔw \rightarrow w$ (may have remained glottalized)
 $ʔj \rightarrow \emptyset$

13.5 Proto-Chumash to Purisimeño

CatDoom, from Klar, Kathryn (1977), *Topics in Historical Chumash Grammar*. <<http://linguistics.berkeley.edu/~survey/documents/dissertations/klar-1977.pdf>>

$ʔj \rightarrow \emptyset$
 $q' \rightarrow q$

13.6 Proto-Chumash to Ventureño

CatDoom, from Klar, Kathryn (1977), *Topics in Historical Chumash Grammar*. <<http://linguistics.berkeley.edu/~survey/documents/dissertations/klar-1977.pdf>>

$ʔ \rightarrow \emptyset / -\#$
 $p' k' q' \rightarrow p k q$
 $ʔm ʔn ʔl ʔj \rightarrow m n l j$

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 ^j)		ŋ	
Plosive	p	t t ^j		k	q
Fricative/Affricate	v	ð c s ^j		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^j 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^j may have been either fricatives (*s *s^j) or affricates (*ts *ts^j), 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>)

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 $/l_{\circ}/$)
 $m n \eta \rightarrow v t \gamma / \text{--}C[-\text{nasal}]$
 $l_{\circ} \rightarrow t / \text{--}C$
 $v \rightarrow p / \text{--}s$

$v \text{ ʁ} \rightarrow p \text{ q} / S_$
 $v \text{ ʁ} \text{ ʁ} \rightarrow p \text{ k q} / _C$ (unless $C =$ one of $/l \text{ d}_3 \text{ m n ɳ}/$)
 $\{p, v\} t \{k, ʁ\} \rightarrow m \text{ n ɳ} / _N$
 $v \rightarrow \emptyset / u_i$
 $d_3 \rightarrow \text{ʁ} / i_u$
 $\text{əd}_3 \rightarrow i / _ \{a, u\}$ (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)
 $m \text{ n ɳ} t \{\{ʁ, \text{ʁ}\} \rightarrow \{k, q\}\} \rightarrow p \text{ t k n ɳ} / _\#$
 $m \text{ n ɳ} \rightarrow v \text{ t ʁ} / _C[-\text{nasal}]$
 $l \rightarrow \text{ʁ} / _C$
 $v \text{ ʁ} \rightarrow p \text{ q} / S_$
 $v \text{ ʁ} \text{ ʁ} \rightarrow p \text{ k q} / _C$ (except where $C = /l \text{ d}_3 \text{ m n ɳ}/$)
 $\{p, v\} t \{k, ʁ\} \rightarrow m \text{ n ɳ} / _N$
 $S_1S_2 \rightarrow F_1F_2$
 Some metathesis in consonant clusters, the conditions of which are not elaborated upon; the given example cited within the text is $l\text{ʁ} \rightarrow \text{ʁ}l$
 $v \rightarrow \emptyset / u_a$
 $iv \rightarrow uj / _u$
 $d_3 \rightarrow t_f / i_ \{u, i\}$
 $\text{əd}_3 \rightarrow i / _ \{a, u\}$ (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 C_2 is either $/\text{l}/$ or $/\text{l}_\text{◌}/$

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

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

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

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

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

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

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

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

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 C_2 is either $/\text{l}/$ or $/\text{l}_\text{◌}/$

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

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

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

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

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

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

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

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

$v \rightarrow \emptyset / V_u$
 $d_3 \rightarrow \text{ɸ} / i_u$
 $\text{əd}_3 \rightarrow i / _ \{a, u\}$ (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 C₂ 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 / _dʒ{a,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 $\{S, s, l\}$
 $y \text{ ʁ} \rightarrow k \text{ q} / \#$
 $\emptyset \rightarrow a /$
 $\emptyset \rightarrow \emptyset / \#_-$
 $i \rightarrow \emptyset / \#C[+dental]_C[+dental]V$
 $a \rightarrow \emptyset / C[+velar]_C[+velar]$
 $F[+voice] \rightarrow F[-voice]$ / adjacent to $\{S, ts\}$
 $F[+voice] \rightarrow S / l_-$
 $\emptyset \rightarrow n / \#iN$ (This one is sort of a guess, given a singular example in the text that isn't really commented upon)
 $t \rightarrow s / \{k, q\}_-$
 $u \rightarrow a / a_-$
 $\emptyset \rightarrow i / \{u, a\}_-$
 $v \rightarrow \emptyset / u[+short]_V[+short]$
 $v \rightarrow \emptyset / V[+short]_u[+short]$
 $u \rightarrow \emptyset / \#_vV$
 $iv \rightarrow j / \#_u$
 $s \rightarrow d_3 / \{i, u\}_V$
 $d_3 \rightarrow \emptyset / i_i$
 $\emptyset \rightarrow \emptyset / \#d_3\{a, u\}$ 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 $\{S, s, l\}$
 $y \text{ ʁ} \rightarrow k \text{ q} / \#$
 $\emptyset \rightarrow a / \#$
 $\emptyset \rightarrow \emptyset / \#_-$
 $i \rightarrow \emptyset / \#C[+dental]_C[+dental]V$
 $a \rightarrow \emptyset / C[+velar]_C[+velar]$

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

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 ^h	t d d ^h	k̑ g̑ g̑ ^h	k g g ^h	k ^w g ^w g ^w ^h	
Fricative		s				h ₁ h ₂ h ₃
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>; 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>)

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>

$d d^{fi} \rightarrow \delta / V_V$
 $d d^{fi} \rightarrow \delta / r_$
 $\acute{k} \rightarrow s / _ \{u, u, i, i\}$
 $\acute{k} \rightarrow k / _ R$
 $\acute{k} \rightarrow \{ts, tf\}$ (“[a]rchaic relic”)
 $\acute{k} \rightarrow \theta$
 $k^w \rightarrow s / _ ”E?$
 $k^w \rightarrow c / _ B?$
 $k^w \rightarrow k / \text{else?}$
 $\acute{g}^{(fi)} \rightarrow d / \%_C[+sibilant]$
 $g^w^{(fi)} \rightarrow \{g, z\}$
 $b^{fi} d^{fi} \acute{g}^{(fi)} \rightarrow b d dh$
 $s \rightarrow \text{ʃ} / \#_$
 $s \rightarrow \text{ʃ} / V\{\acute{i}, u, r, k\}_V$
 $sd \rightarrow \theta / \text{medial}$
 $s\acute{k} \rightarrow h / \text{medial}$
 $sp \rightarrow f / \text{medial}$
 $st \rightarrow \text{ʃt} / \text{medial}$
 $s \rightarrow \theta / \text{sometimes, involving “[d]issimilation with following vowel”}$
 $s \rightarrow h / V_V$
 $\acute{i} \rightarrow \text{ʃ} / \{a, e, i\}_$
 $\acute{i} \rightarrow j / _ B$
 $\acute{i} \rightarrow \emptyset / E_$
 $\acute{i} \rightarrow h / V_$
 $\acute{u} \rightarrow v$
 $\acute{V}n \rightarrow V[+nasal] / _ C?$
 $n \rightarrow \text{ɲ} (\text{sometimes?})$
 $l r \rightarrow l(:) r(:)$
 $\{m, n\} l r \rightarrow e u j \{ri, ir\}$
 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
 $\emptyset \rightarrow \emptyset / _ \#$
 $c \text{ ʃ} \rightarrow tʃ dʒ (\text{for most speakers})$

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&oldid=582390175>

$d d^{\text{fi}} \rightarrow \delta / V_V$
 $d d^{\text{fi}} \rightarrow \delta / r_$
 $\acute{k} \rightarrow s / _ \{ \underset{\sim}{u}, u, \underset{\sim}{i}, i \}$
 $\acute{k} \rightarrow k / _ R$
 $\acute{k} \rightarrow \{ts, tʃ\}$ (“[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*)

eh₂ → æ / “tautosyllabic”
ei eu → ε: u:
D^h → D
H → R / VR_V
h₁ → Ø
h₃ → Ø / “medially”
T h₂ → D h₃ / _#
T h₂ → D h₃ / V[-stress]_V[-stress]
T h₂ → D h₃ / ”V:
T h₂ → D h₃ / ”W
t → z / j “(allophonic)”
r → Ø / #_ (unclear)
j → Ø / #_e (not widely attested)
{h₁,h₃}s,s{h₁,h₃} → 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]
h₂ h₃ → hh h
Ḳ → 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*)

$D\ T \rightarrow T\ T[+lenis] / \#_-$
 $T\ D \rightarrow T[+fortis]\ T[+lenis]$
 $h_2\ h_3 \rightarrow hh\ h$
 $ḳ \rightarrow z$
 $k^w \rightarrow w$
 $\{ḳ, k\} \rightarrow j / _e(:)$
 $\{ḳ, k\} \rightarrow \emptyset / _i(:)$
 $k \rightarrow \emptyset / V_V$
 $k \rightarrow \emptyset / _N$
 $g \rightarrow d_3$ (sporadic)
 $e \rightarrow i / j_-$
 $e \rightarrow a$
 $V \rightarrow V: / \text{in } "U[+open]$
 $V \rightarrow V: / \text{in } \#"U$
 $o(:) \rightarrow a(:)$
 $\{d, l\} \rightarrow r$ “in Hieroglyphic Luwian, occasionally”
 $j \rightarrow \emptyset / z_-$
 $hh\ h \rightarrow h\ \emptyset / "V:u$
 $hh\ h \rightarrow h\ \emptyset / u_ "V:$
 $h \rightarrow \emptyset / _w$! at word boundaries
 $hh \rightarrow \emptyset / _ \{w, m, n, r, l\}$ “medially, and sporadically”
 $D\ R \rightarrow D: R: / "e_ \text{in } U[+open]$
 $\{\varepsilon, e\}: \text{æ}: \rightarrow i: a:$

17.2.3 Common Anatolian to Lycian

Alces, from <http://www.unc.edu/~melchert/anathistphon.pdf> (*link is dead*)

$D \rightarrow T / \#_-$
 $D \rightarrow F[+voice]$
 $N\{F[+voice], T\} \rightarrow nD$
 $d \rightarrow k / _w$
 $k^w \rightarrow t / _E$
 $k^w \rightarrow k / _E$, in Milyan
 $\{g̣, g\} \rightarrow j / _e(:)$
 $\{g̣, g\} \rightarrow \emptyset / _i(:)$
 $g \rightarrow \emptyset / V_V$

$j \rightarrow \emptyset / ts_$
 $s \rightarrow z / _ \{R,j,w\}$ “(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)
 $e \rightarrow i / j_$
 $\{e,e\} : o \text{ } \text{ } \rightarrow i : e \text{ } a :$
 $V : \rightarrow V[-\text{long}]$
 $e \rightarrow a / _ U[+u,a]$
 $a \rightarrow e / _ U[+e,i]$
 “[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*)

$d \rightarrow t_f / _ \{i,u\}$
 $d \rightarrow t / \{ \#, N \} _$
 $p \text{ } d \text{ } D \rightarrow f \text{ } \text{ } T$
 $T \rightarrow D / _ N_$
 $k' \rightarrow K$
 $K^w \rightarrow K / _ V[+\text{round}]$
 $f \rightarrow s$
 $s \rightarrow f / _ \{i,e\}$
 $s \rightarrow f / i_$
 $\{h_2, h_3\} \rightarrow \emptyset$
 $\{m,n\} \rightarrow v / _ \#$ “(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)”

$o(:) \text{ } e: \text{ } \text{æ}: \rightarrow a(:) \text{ } i: \text{ } a:$

$V: \rightarrow V[-\text{long}]$

“[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*)

$D \text{ } T \rightarrow T \text{ } T[+\text{lenis}] / \# _$

$T \text{ } D \rightarrow T[+\text{fortis}] \text{ } T[+\text{lenis}]$

$h_2 \text{ } h_3 \rightarrow hh \text{ } h$

$\acute{K} \rightarrow K$

$V \rightarrow V: / \text{ } ^\circ U[+\text{open}]$

$e \rightarrow i / \text{ pretonic}$

$e \rightarrow a / \text{ posttonic in } U[+\text{open}]$

$o(:) \rightarrow a(:)$

$a \text{ } e \rightarrow a: \text{ } e: / \text{ in } ^\circ U[+\text{closed}]$

$\text{æ}: \rightarrow e:$

$g^w \rightarrow h^w / \text{ medially}$

$hhy \rightarrow \text{“something like } / \text{ } \text{ } \text{ } / \text{”}$

$h \rightarrow \emptyset / \text{ } ^\circ V: \text{ } u$

$h \rightarrow \emptyset / u \text{ } ^\circ V:$

$w \rightarrow j / \text{ “in } *d\acute{i}wots > \text{ } Tiyaz \text{ ‘sun-god’; conditioning unknown”}$

$\text{ε}: \rightarrow i:$

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>

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.

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

$\{e, o\}j \text{ } \text{ε}w \rightarrow \text{ε}j \text{ } ow$

$\{e, o\} \rightarrow a \text{ (rare)}$

$a\text{:} \rightarrow a$
 $e \rightarrow \varepsilon$
 $\varepsilon o \rightarrow i u / _N$
 $ej ia \rightarrow e \varepsilon a$
 $\{i,u\} \rightarrow \text{ə} / \text{ in some unstressed syllables}$
 $e oj \varepsilon a \rightarrow i u \varepsilon / \text{ when unstressed}$
 $p t \rightarrow h t^h / \#_- (?)$
 $t \rightarrow t^h / \{aw,ow\}_-$
 $k^w \rightarrow t_j^h / _ \{e,i\}$
 $t k^{(w)} \rightarrow d g / \{N,L\}_-$
 $p k' k^{(w)} \rightarrow \{w,v\} s k^h$
 $g \rightarrow ts (?)$
 $b d g^{(w)} \rightarrow p t k$
 $b^{\text{fi}} d^{\text{fi}} g^{\text{fi}} g^{\text{wfi}} \rightarrow p t j k / \#_-$
 $b^{\text{fi}} d^{\text{fi}} g^{\text{fi}} g^{\text{fi}} g^{\text{wfi}} \rightarrow \{w,v\} d z g \text{ ʒ}$
 $j \rightarrow w / _o$
 $j \rightarrow ?$
 $\{sk,ks\} kj \rightarrow ts^h t_j^h (?)$
 $\{sr,rs\} \rightarrow r\text{:}$
 $r \rightarrow r\text{:} / _N$
 $l \rightarrow \text{ɫ} / \{C,IV\}_-$
 $l \rightarrow \text{ɫ} / V_V$
 $Ns sN \rightarrow s N$
 $N \rightarrow w / S_S$
 $VN \rightarrow V[+nasal] \rightarrow V \rightarrow (?) / _ \#, \text{ in polysyllables}$
 $N \rightarrow n / _ \#, \text{ in monosyllables}$
 $\text{N̥} \rightarrow n / _ \#$
 $m \text{ ɱ } n \text{ ɲ } \text{ɭ} \rightarrow am an ar a\text{ɫ}$
 $V \rightarrow (?) / _ (C)\#$

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>

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)
 $a: \rightarrow a$
 $e \rightarrow \varepsilon$
 $\varepsilon o \rightarrow i u / _N$
 $\varepsilon j ia \rightarrow e \varepsilon a$
 $\{i,u\} \rightarrow \text{ə} /$ in some unstressed syllables
 $e oj \varepsilon a \rightarrow i u \varepsilon /$ when unstressed
 $p t \rightarrow h t^h / \#_ (?)$
 $t \rightarrow t^h / \{aw,ow\}_$
 $k^w \rightarrow t_j^h / _ \{e,i\}$
 $t k^{(w)} \rightarrow d g / \{N,L\}_$
 $p k k^{(w)} \rightarrow \{w,v\} s k^h$
 $g \rightarrow ts (?)$
 $b d g^{(w)} \rightarrow p t k$
 $g^{wf} \rightarrow g^f / \#_$
 $b^f d^f g^f g^{wf} \rightarrow \{w,v\} d z g \text{ ʒ}$
 $j \rightarrow w / _o$
 $j \rightarrow ?$
 $\{sk,ks\} kj \rightarrow ts^h t_j^h (?)$
 $\{sr,rs\} \rightarrow r:$
 $r \rightarrow r: / _N$
 $l \rightarrow \text{ɫ} / \{C,IV\}_$
 $l \rightarrow \text{ɫ} / V_V$
 $Ns sN \rightarrow s N$
 $N \rightarrow w / S_S$
 $VN \rightarrow V[+nasal] \rightarrow V \rightarrow (?) / _ \#,$ in polysyllables
 $N \rightarrow n / _ \#,$ in monosyllables
 $N \rightarrow n / _ \#$
 $m \text{ ɲ } n \text{ ɾ } l \rightarrow am \text{ an } ar \text{ aɫ}$
 $V \rightarrow (?) / _ (C) \#$

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>

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
 $t \rightarrow t^h / \{aw,ow\} _ ! \# _$
 $k^w \rightarrow t^h / _ \{e,i\}$
 $t k^{(w)} \rightarrow d g / \{N,L\} _$
 $p k k^{(w)} \rightarrow \{w,v\} s k^h$
 $g \rightarrow ts (?)$
 $b d g^{(w)} \rightarrow p t k$
 $g^{wf} \rightarrow d \text{ʒ} / \# _ \{e,i\}$
 $b^f g^f g^{(w)f} \rightarrow b j k / \# _$
 $b^f d^f g^f g^{wf} \rightarrow \{w,v\} d z g \text{ʒ}$
 $j \rightarrow w / _o$
 $j \rightarrow ?$
 $\{sk,ks\} kj \rightarrow ts^h t^h (?)$
 $\{sr,rs\} \rightarrow r$
 $r \rightarrow r \rightarrow _N$
 $l \rightarrow \text{ɫ} / \{C,IV\} _$
 $l \rightarrow \text{ɫ} / V _ V$
 $Ns sN \rightarrow s N$
 $N \rightarrow w / S _ S$
 $VN \rightarrow V[+nasal] \rightarrow V \rightarrow (?) / _ \#$, 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>

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
 $p t \rightarrow h t^h$ / $\# _$ (?)
 $t \rightarrow t^h$ / $\{aw,ow\} _$
 $k^w \rightarrow t^h$ / $_ \{e,i\}$
 $t k^{(w)} \rightarrow d g$ / $\{N,L\} _$
 $p k^{(w)} \rightarrow \{w,v\} s k^h$
 $g \rightarrow ts$ (?)
 $b d g^{(w)} \rightarrow p t k$
 $b^h d^h g^h g^{(w)h} \rightarrow p t j k$ / $\# _$
 $b^h d^h g^h g^{wh} \rightarrow \{w,v\} d z g \text{ ʒ}$
 $j \rightarrow w$ / $_o$
 $j \rightarrow ?$
 $\{sk,ks\} kj \rightarrow ts^h t^h$ (?)
 $\{sr,rs\} \rightarrow r$
 $r \rightarrow r$ / $_N$
 $l \rightarrow \text{ɫ}$ / $\{C,IV\} _$
 $l \rightarrow \text{ɫ}$ / $V _ V$
 $Ns sN \rightarrow s N$
 $N \rightarrow w$ / $S _ S$
 $VN \rightarrow V[+nasal] \rightarrow V \rightarrow (?)$ / $_ \#$, 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>

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}ɾ: {u,o}ɾ: → i u
 {e,o}j εw → εj ow
 {e,o} → a (rare)
 aɾ: → a
 e → ε
 ε o → i u / _N
 ej ia → e εa
 {i,u} → ə / in some unstressed syllables
 e oj εa → i u ε / when unstressed
 p t → h t^h / #_ (?)
 t → t^h / {aw,ow}_
 k^w → tʃ^h / _{e,i}
 t k^(w) → d g / {N,L}_
 p k k^(w) → {w,v} s k^h
 ɡ → ts (?)
 b d g^(w) → p t k
 b^{fi} d^{fi} ɡ^{fi} g^{fi} g^{wfi} → {w,v} d z g ʒ / ! _#
 j → w / _o
 j → ?
 {sk,ks} kj → ts^h tʃ^h (?)
 {sr,rs} → rɾ:
 r → rɾ: / _N
 l → ɭ / {C,IV}_
 l → ɭ / V_V
 Ns sN → s N
 N → w / S_S
 VN → V[+nasal] → V → (?) / _#, in polysyllables
 N → n / _#, in monosyllables
 N̄ → n / _#
 m̄ n̄ r̄ l̄ → am an ar aɭ
 V → (?) / _(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>

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)
 $a \rightarrow \varepsilon$
 $\varepsilon \rightarrow e$
 $\varepsilon o \rightarrow i u / _N$
 $ej ia \rightarrow e \varepsilon a$
 $\{i,u\} \rightarrow \partial$ / in some unstressed syllables
 $e oj \varepsilon a \rightarrow i u \varepsilon$ / when unstressed
 $p t \rightarrow h t^h / \#_- (?)$
 $t \rightarrow t^h / \{aw,ow\}_-$
 $k^w \rightarrow t^h / _ \{e,i\}$
 $t k^{(w)} \rightarrow d g / \{N,L\}_-$
 $p k k^{(w)} \rightarrow \{w,v\} s k^h$
 $\acute{g} \rightarrow ts (?)$
 $b d g^{(w)} \rightarrow p t k$
 $g^{wf} \rightarrow d \text{z} / \#_- \{e,i\}$
 $b^f \acute{g}^f g^{wf} \rightarrow b j g / \#_-$
 $b^f d^f \acute{g}^f g^f g^{(w)f} \rightarrow p t j k / \#_-$
 $b^f d^f \acute{g}^f g^f g^{wf} \rightarrow \{w,v\} d z g \text{z}$
 $j \rightarrow w / _o$
 $j \rightarrow ?$
 $\{sk,ks\} kj \rightarrow ts^h t^h (?)$
 $\{sr,rs\} \rightarrow r$
 $r \rightarrow r$ / $_N$
 $l \rightarrow \text{ɫ} / \{C,IV\}_-$
 $l \rightarrow \text{ɫ} / V_V$
 $Ns sN \rightarrow s N$
 $N \rightarrow w / S_S$
 $VN \rightarrow V[+nasal] \rightarrow V \rightarrow (?) / _ \#,$ in polysyllables
 $N \rightarrow n / _ \#,$ in monosyllables
 $\text{N} \rightarrow n / _ \#$
 $m n r \text{ɫ} \rightarrow am an ar a\text{ɫ}$
 $V \rightarrow (?) / _ (C) \#$

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>

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
 $p\ t \rightarrow h\ t^h / \#_ (?)$
 $t \rightarrow t^h / \{aw,ow\}_-$
 $k^w \rightarrow t^h / _ \{e,i\}$
 $t\ k^{(w)} \rightarrow d\ g / \{N,L\}_-$
 $p\ k\ k^{(w)} \rightarrow \{w,v\}\ s\ k^h$
 $g \rightarrow ts (?)$
 $b\ d\ g^{(w)} \rightarrow p\ t\ k$
 $g^{wf} \rightarrow d\ ʒ / \#_ \{e,i\}$
 $b^f\ g^f\ g^{wf} \rightarrow b\ j\ g / \#_$
 $b^f\ d^f\ g^f\ g^{wf} \rightarrow \{w,v\}\ d\ z\ g\ ʒ$
 $j \rightarrow w / _o$
 $j \rightarrow ?$
 $\{sk,ks\}\ kj \rightarrow ts^h\ t^h (?)$
 $\{sr,rs\} \rightarrow r :$
 $r \rightarrow r : / _N$
 $l \rightarrow \text{ɬ} / \{C,IV\}_-$
 $l \rightarrow \text{ɬ} / V_V$
 $Ns\ sN \rightarrow s\ N$
 $N \rightarrow w / S_S$
 $VN \rightarrow V[+nasal] \rightarrow V \rightarrow (?) / _ \#,$ in polysyllables
 $N \rightarrow n / _ \#,$ in monosyllables
 $\text{N} \rightarrow n / _ \#$
 $m\ n\ r\ l \rightarrow am\ an\ ar\ a\text{ɬ}$

$V \rightarrow (?) / _ (C) \#$

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>; and Alex Fink citing https://en.wikipedia.org/wiki/Avestan_phonology

NB: Tropylium wishes to note that his sound changes are subject to change.

$b^{\text{fi}} d^{\text{fi}} g^{\text{fi}} \rightarrow b d z$

$k g \rightarrow s z$

$k^{(w)} g^{(w)(\text{fi})} \rightarrow tʃ dʒ / _ E$

$k k^w g^{(w)(\text{fi})} \rightarrow x k g / \text{else}$

$rt \rightarrow \check{s}$ (Alex Fink says that the realization of /š/ “is unclear”)

$s \rightarrow \{s, h\}$

$\underset{\sim}{u} \rightarrow v$

$\underset{\sim}{l} \rightarrow r$

$\{\underset{\sim}{n}, \underset{\sim}{m}\} \rightarrow a$

$\{\underset{\sim}{l}, \underset{\sim}{r}\} \rightarrow \text{ər}(\text{ə}(\text{r}))$

$e e: \rightarrow a a:$

$o o: \rightarrow \{a, a:\} a:$

$h(j) \rightarrow \eta h / a_a$

$hw \rightarrow \eta^w h / a_a$

$h \rightarrow \eta / a_ra$

$h_x \rightarrow \emptyset$

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

$r \downarrow \rightarrow \{ri,ra\} \{li,la\} / _ \{S,R\}$ (which vowel crops up is unpredictable)

$r \downarrow \rightarrow \{ra,ar\} \{la,al\} / _ \{s,CC,V,\#\}$ (the results are unpredictable)

$m \downarrow n \rightarrow am \ an / _ \{s,(\{m,j,w\}V)\}$

m n → 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 → b / #_V ! _u(:)

g^w → b / #_N

g^w → b / C_V

g^w → g

p t k k^w b d g m n l r s → f θ x x^w v ð ɣ 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 → x / V_t

m → n / V_#; “[i]t is thought that the vowel needs to be unstressed, but this is not certain”

V: → 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 Ø → b d g g^w mb nd ɲg n / n#_”V

o: → u: / _{(C...)}#

oi: → u: / _#

o: → a: / else

V: → V[-long] / _H (includes diphthongs)

“The following three rules only apply if the vowel is unstressed”:

— e → i / _{(C...)}#

— o → a / _{(C...),u}#

— {ai,oi} → 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 → e o / _C(...C){a(:),e(:),o(:)}

— e o → i u / _C(...C){H,j}

C → C^j / _{F,j}

C → C^w / _{B,w}

K^w → 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 → Ø / {i,o,u}-{p,t,k,s}

— {a,e}n → e: / _{p t k s}

$w \rightarrow f / \#_-$
 $w \rightarrow \emptyset / \{\#, C\}C_-$
 $w \rightarrow \emptyset / \{\theta, x\}_-$
 $w \rightarrow \emptyset / V_- \{V, \#\}$
 $w \rightarrow v / \text{else}$

“The following changes. . . are, quoth the book, ‘somewhat approximative’”:

$\{p, t\} \rightarrow \emptyset / \#s_r$
 $\{p, t\} \rightarrow \emptyset / \#s_-$ “(although it says that occasionally $st > t / \#_-$)
 $s \rightarrow \emptyset / [\text{anything}]\{l, r\}_O$
 $hn\ hm \rightarrow n: m: / [\text{anything}]_-$ (“[t]his change is a bit speculative”)
“[A] sequence of two plosives becomes a geminate of the second one”
 $st\ zd \rightarrow s: d: / [\text{anything}]_-$
 $\{l, h\}l\ \{l, h\}r\ l\{p, s, n\}\ r\{p, s, \}\ ln \rightarrow l: r: l: r: (l:?) / [\text{anything}]_-$
 $C: \rightarrow C[-\text{long}]$
 $V \rightarrow \emptyset / C_- \#$ when unstressed ! $C = j$
 $C(\dots C) \rightarrow \emptyset / \# ! / l\ r/$ and clusters containing them; “[t]his remained a phonologically conditioned rule in OIr”
 $\{au, eu, ou\} \rightarrow o:$
 $ei \rightarrow e:$
 $o: \rightarrow ua / _-[\text{anything}]$, when stressed
 $e: \rightarrow ia / _\{\#, C^j\}$ when stressed; “ai and oi remain, but are written as <ae ai oi oi> seemingly randomly”
 $j \rightarrow \emptyset$

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”:

$V: \rightarrow V[-\text{long}]$
 $a \rightarrow e / _\#$
 $\{e, o\} \rightarrow a / _-[\text{anything}]$
 $V \rightarrow V: / _\#$, when stressed; “[t]his remained as a phonologically conditioned rule in OIr”
 $VOR \rightarrow V:R$; “this is a tad unclear, because in some instances it didn’t seem to apply”
 $V \rightarrow \emptyset / \#UU(-)U(U(-)U) /$ 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 \rightarrow OIr cumachte, not *cumchte”

17.5.2 Proto-Celtic to Middle Welsh

Dewrad & Pogostick Man, the latter citing Willis (David), “Old and Middle Welsh”

$k^w \rightarrow p$
 $V: \rightarrow V / _ \#$
 $ei \rightarrow e:$
 $st \rightarrow s:$ (with some exceptions)
 $ai \rightarrow \varepsilon$
 $s \rightarrow \emptyset / V_V$
 $V \rightarrow \emptyset / _ (C) \#$, also in proclitics
 $s \rightarrow \emptyset / x_$
 $\{au, eu, ou\} \rightarrow \emptyset$
 $u: \{oi, \textcircled{a}\} \rightarrow y: u:$
 $j \rightarrow \textcircled{d} / V_$
 $i u \rightarrow e o / _ Ca$
 $y: \rightarrow i$
 $p t k \{b, m\} d g \rightarrow b d g v \textcircled{d} \gamma / _ V$
 $a: \rightarrow \textcircled{a}$
 $a o \rightarrow ei \{i, ei\} / _ (C \dots) j (C \dots) \#$
 $a \rightarrow \{i, ei\} / _ (C \dots) j (C \dots) \#$
 $V \rightarrow i / _ (C \dots) j (C \dots) \#$
 $\{a, o\} \rightarrow e / _ (C \dots) i (:)$
 $\{a, e, o\} \rightarrow ei / _ (C \dots) j$
 $V \rightarrow \emptyset / _ \#$
 $mb nd \eta g \rightarrow m: n: \eta:$
 $e \rightarrow i / _ N$
 $\$ \rightarrow h / V_ (what \$ is is unclear)$
 $V \rightarrow \emptyset / _ [+intertonic]$
 $p: t: k: \rightarrow f \theta x$
 $p t k \rightarrow f \theta x / \{r, l\} _$
 $\gamma \rightarrow i / _ C$
 $xt \rightarrow i\theta$
 $\gamma \rightarrow i / C_V$
 $\varepsilon: \rightarrow ui$
 $\textcircled{a} \rightarrow au / \text{when stressed}$
 $l \rightarrow \textcircled{t} / _ t$
 $w \rightarrow gw / \# _$
 $mp nt \eta k \rightarrow m \textcircled{r} n \textcircled{r}$
 $\textcircled{a} \rightarrow \emptyset / \# _ sC$
 $l r \rightarrow \textcircled{t} r \textcircled{r} / \# _$
 $\gamma \rightarrow \emptyset / _ \#$

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>

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^{fi} d^{fi} ǵ^{fi} g^{fi} g^{wfi} → b d ǵ g g^w
k^{fi} ǵ → ts dz
{k^w,kw} {g^w,gw} → tʃ dʒ (→ s~z z ?) / _E
{k^w,kw} {g^w,gw} → k g / else

17.7 Proto-Indo-European to Common Germanic

Siride

b^{fi} d^{fi} ǵ^{fi} → 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=635946920>

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 / ɔ: j

ɔ: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”

γ → g / #-

$y \rightarrow g / C_V$

“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>; Wikipedia contributors (2014), “Old Frisian”. *Wikipedia, the Free Encyclopedia*. <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>

$a \rightarrow \tilde{a} / _ N$ (short only)

$VN \rightarrow \tilde{V} : / _ F$

$a \rightarrow \text{æ} : /$ short only, includes diphthongs ! $*B$ or $*\tilde{a}$ in next syllable

$k \ g \rightarrow t \ j \ j(?)$

$\text{æ} : \rightarrow a :$ “under to [*sic*] the influence of neighboring consonants”, but the article doesn’t elaborate

$\text{æ} : \rightarrow e :$

$\text{æ} u \rightarrow a u$ ($\text{æ} \rightarrow a / _ B$ in general?)

$a : \rightarrow \text{æ} : / ! _ N$ or if nasalized

$i \ o \rightarrow e \ a /$ 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>

ã: → õ:
 V[+nas] → V[-nas]
 {i,u} → Ø / -# ! V[-long]C_#
 k ȝ 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>

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:ȝ,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

$V_i \rightarrow V[-\text{long}] / \text{ in } \#U \text{ before a } U \text{ with } /i:/$
 $m \rightarrow n \rightarrow \emptyset / _ \# \text{ when unstressed}$
 $hn \{wl,hl\} hr \rightarrow w \ l \ r$
 $y \rightarrow g / _ \#$
 $y \rightarrow w / C_V$

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>

$V_i \rightarrow V[-\text{long}] / _C\{i,C\} ! _st\{\#,V\}$ 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

$ea \ e:a \ eo \ e:o \rightarrow a \ \varepsilon: \ e \ e:$
 $\ae j \rightarrow a j \rightarrow e j$
 $\{\ae j, e(:)j\} \rightarrow e j$
 $a y \rightarrow a w$
 $\{eah, ea\varsigma, eax, eaj, eay\} \rightarrow a w$
 $e:aw \ i:w \rightarrow ew \ ju$
 $\{a:w, a:y, o:w\} \rightarrow \text{ɔ:w}$
 $oy \rightarrow \text{ɔ:w} / _V$
 $\{a:ht, o(:)ht\} \rightarrow ow$
 $a: y(:) \rightarrow \text{ɔ:} \ i(:)$
 $a \ e \ o \rightarrow a: \ \varepsilon: \ o: / \text{ in } U[+\text{open}] ! \text{ in } \#U \text{ with the following } U \text{ containing } /i:/ \text{ or ending in one of } /m \ n \ r \ l/$
 $V_i \rightarrow V[-\text{long}] / \text{ in } \#U \text{ before a } U \text{ with } /i:/$
 $m \rightarrow n \rightarrow \emptyset / _ \# \text{ when unstressed}$
 $hn \{wl,hl\} hr \rightarrow w \ l \ r$
 $y \rightarrow g / _ \#$
 $y \rightarrow w / C_V$
 $\{e, a, o\} \rightarrow \text{ə} \rightarrow \emptyset / _ \#$

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>

$u \rightarrow \text{ʌ} ! P_ \text{ and } _l$

mb ŋg → m ŋ / _#
 tj sj dj zj → tʃ ʃ dʒ ʒ / ! _u: (perhaps only before stressed u:?)
 a ɑ {ɛ,ɪ,ʌ} → ɑ: ɔ: ɜ: / _ɪ{C,#}
 au → ɑ: / _P
 au → ɑ: / _N (sometimes)
 au → ɔ: / else
 “[A] large number of cases that were ɑ: have become ɔ: subsequently for non-phonetic reasons, like laundry”
 a → ɑ: / “in a few words, like ‘father’”
 a → æ / else
 əi əu → ai æu / “in some parts of South-Eastern England”
 əi əu → ai au / “in most of Britain”
 e: o: → ei ou / ! _ɪ

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; and my Phonetic Description class>

æ → æ: (e.g., NYC) or ɑ: (e.g., Boston) / _{F[-voiced],N[-voiced]} (“words which change vary between dialects”)
 ɒ → ɔ: → ɔ: / _F[-voiced]
 æ: ɑ: ɔ: → æə-eə ɑ ə
 ʌ → w (regional)
 l → ɫ / “in some conditions”
 ɪ → i / _# when unstressed
 {t,d} → r / V_V[-stress]
 i u e → i ʊ ɛ / _ɪ
 o ɔ → ɔ ɒ / _ɪ (most dialects have at least one if not both)
 æ → ɛ / _ɪ
 j → Ø / {θ,s,z,l,n,t,d}_ when in onset position
 ɒ → ɔ / _K “(partial)”
 æ → ɛə / _{n,m} “and others depending on dialect”
 eə → e:
 iə → ɪ (ongoing)
 w → Ø / C_ɪ for some C (toward(s), quart(er), sword)
 t → Ø / f_ɪ
 Stuff regarding syllabification (e.g., of /ɪ/) 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>; and my Phonetic Description class

ɜ:ɪ ɑ:ɪ ɔ:ɪ e:ɪ o:ɪ i:ɪ u:ɪ → ɜ: ɑ: ɔ: ɛə əə ɪə ʊə / 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: → ʊə → u: / _ɫ ! in Queensland and New South Wales
 u: → ʊɐ → 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 → ɾ / V_V[-stress]
 ɔə → ɔ:
 ɛə ʊə → ɛ: ʊ: (ongoing)
 ʊə → ɔ: / ! {j,dʒ}_
 ʊə → 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 FireSpeakerWiki contributors (2013), “English sound changes”. *FireSpeakerWiki*. <http://wiki.firespeaker.org/English_sound_changes>

ɜ:ɪ ɑ:ɪ ɔ:ɪ e:ɪ o:ɪ i:ɪ u:ɪ → ɜ: ɑ: ɔ: ɛə əə ɪə ʊə / syllable-finally
 ɑ → ɒ

æ → æ: → ɑ: / _{F[-voiced],N[-voiced]}

ɒ → ɒ: → ɔ: / _F[-voiced]

ʌ → w l → ɫ / “in coda”

ou → əʊ

“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>

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: 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

ʁ → g / #_

ʁ → 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>; 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>

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_

{f,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 ɛ(o)u → e: oe əi i: {a:,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,ɔ} 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 Scots *Marcas Brian MacStiofáin Ó Mhaitiú Ó Domhnaill*, from personal research

NB: This is an alternate listing of sound changes from Old English to Scots presented by a native speaker, which leads into a listing of sound changes to the Falkirk dialect.

æ: → ε:
 ɑ → a / ! _{l,r} (sporadic)
 o: → ju / {n,x}_
 o: → iu / _K
 o: → ø
 ø: → e: “(not a thorough change)”
 ø → ɪ
 æ:(ɑ) e:(o) → ε i:
 ε → ɜi → i / _{m,n}
 ai → a:
 e → ε / _nt
 {y,i} → ɪ
 ɪ → ɜ / _{K,r}
 e(o) → ε
 u → ʊ → ø → ʌ
 u: → u
 o → ʌ / P_r
 æ → ɑ / _{x,l}
 æ(ɑ) → e
 ɔ{g,j} → ʌu
 ɑ: → e / ! _{ŋ,n}
 ʌ → ɪ (sporadic)
 a → ɪ / “unstressed and/or final”
 N → Ø / _C ! _%C
 xw → ʌ
 S[+ voice] → S[- voice] / _#
 d~ð → d / V_u
 d~ð → ð / V_V
 t → Ø / p_
 dʒ → tʃ / _#
 {f,v} → Ø / {l,r,V}_ (sometimes blocked)
 ð → Ø / {l,r,V}_C
 θ → h / _ɪ
 θ → f / {V,r}_# (sometimes blocked)
 θ → Ø
 V → V: / _{r,F[+ voice],V,#}
 m → n / _f
 e → ε / “unstressed”

$\emptyset \rightarrow \text{ǣ} / _ \{n,r\}$
 $k \rightarrow \emptyset / n.t \text{ (sporadic)}$
 $m \rightarrow \emptyset / _ n$
 $l \rightarrow \emptyset / u_$
 $l \rightarrow u / \{ɔ, a\}_$
 $\{ɔu, au\} \rightarrow a$
 $t \rightarrow d / r_$
 $\{w,k\} \rightarrow \emptyset / _ \{n,r\}$
 $m \rightarrow n / _ f$
 $s \rightarrow \text{ʃ} / _ \{t,r\}$
 $t \rightarrow \text{t} / _ r$
 $t \rightarrow \text{ʔ} / V_V$
 $t \rightarrow \text{ʔ} / _ \#$

17.7.2.1.11 Scots to Falkirk Scots *Marcas Brian MacStiofáin Ó Mhaitiú Ó Domhnaill*, from personal research

$pVn \ tVn \ kVn \rightarrow \text{ʔm} \ \text{ʔn} \ \text{ʔŋ} / _ \#$
 $V \rightarrow \tilde{V} : / _ nC \text{ “(works across word boundaries)”}$
 $n \rightarrow \emptyset / V_C \text{ (in words of more than one syllable)}$
 $k \rightarrow \text{ç} / V_ \# ! _ C \text{ “(sometimes)”}; \text{ “(except when phonemic)”}$
 $g \rightarrow \text{j} / V_ \# ! _ C \text{ “(most times)”}$
 $p \ b \rightarrow \phi \ \beta / \{ \#, V \}_ ! _ C$
 $V \rightarrow \tilde{V} / N_$
 $n \rightarrow \emptyset / V_V \# \text{ “in some disyllabic words”}$
 $l \rightarrow \text{ɫ}$
 $\text{ɫ} \rightarrow u / \{a, e\}_ , \text{ typically } ! _ V$

17.7.2.1.12 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=456896605>

$V: \rightarrow V[-\text{long}] / _ C\{:, C\} ! _ \text{st}\{\#, V\}$ 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

$ea \ e:a \ eo \ e:o \rightarrow a \ \varepsilon: \ e \ e:$
 $\text{æj} \rightarrow a_j \rightarrow e_j$

$\{\text{æ:j}, \text{e(:)j}\} \rightarrow \text{ej}$
 $\text{aɣ} \rightarrow \text{aw}$
 $\{\text{eah}, \text{eaç}, \text{eax}, \text{eaj}, \text{eay}\} \rightarrow \text{aw}$
 $\text{e:aw i:w} \rightarrow \text{ew ju}$
 $\{\text{a:w}, \text{a:y}, \text{o:w}\} \rightarrow \text{ɔ:w}$
 $\text{oɣ} \rightarrow \text{ɔ:w} / _V$
 $\{\text{a:ht}, \text{o(:)ht}\} \rightarrow \text{ow}$
 $\text{a:} \rightarrow \text{ɔ:}$
 $\text{a e o} \rightarrow \text{a: ɛ: o:} / \text{ in U[+open] ! in \#U with the following U containing /i:/ or ending in one of /m n r l/}$
 $\text{y(:)} \rightarrow \text{i(:)}$
 $\text{V:} \rightarrow \text{V[-long]} / \text{ in \#U before a U with /i:/}$
 $\text{m} \rightarrow \text{n} \rightarrow \emptyset / _ \# \text{ when unstressed}$
 $\text{hn \{wl, hl\} hr} \rightarrow \text{w l r}$
 $\text{f θ s ɣ} \rightarrow \text{v ð z g} / _ \# _$
 $\text{ɣ} \rightarrow \text{w} / \text{ C_V}$
 $\{\text{e}, \text{a}, \text{o}\} \rightarrow \text{ə} / _ \#$
 $\text{e} \rightarrow \emptyset / \text{ if another /e/ one syllable previous}$

17.7.2.1.13 Middle English to Yola *Pogostick Man and Marcas Brian MacStiofáin Ó Mhaitiú Ó Domhnaill*, the former from Wikipedia contributors (2016), “Forth and Bargy dialect”. *Wikipedia, the Free Encyclopedia*. <https://en.wikipedia.org/w/index.php?title=Forth_and_Bargy_dialect&oldid=703468711>; and the latter from personal research

$\text{C} \rightarrow \emptyset / \text{ C_}\%$
 $\text{t d} \rightarrow \text{θ ð} \text{ (conditioning unclear)}$
 $\emptyset \rightarrow \text{ɛ} / \text{ u: d}$
 $\text{F} \rightarrow \text{F[+ voice]} / _ \# _ ! \text{ F} = \text{ɹ}$
 $\text{ɹ} \rightarrow \text{f} \text{ (at least one instance of } \rightarrow \text{w, before a high front vowel)}$
 $\text{U} \rightarrow \text{U[+ stress]} / _ \# \text{U_ (often)}$

17.7.2.1.14 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>

$\text{k g} \rightarrow \text{tʃ j} / _ \text{E}$
 $\text{g} \rightarrow \text{j} / \text{ E_}$
 $\text{aj aw ew} \rightarrow \{\text{e:, a:}\} \text{ a: ja}$
 $\text{h} \rightarrow \emptyset / \text{ V_V}$

17.7.2.1.15 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

$p\ t\ k \rightarrow b\ d\ g \rightarrow v\ r\ \gamma / V: \{-V, \#\}$

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>; and Wikipedia contributors (2014), “Germanic umlaut”. *Wikipedia, the Free Encyclopedia*. <https://en.wikipedia.org/w/index.php?title=Germanic_umlaut&oldid=602634218>

$e: o: \rightarrow ie\ uo$

$ai\ au \rightarrow e: o:$

$h \rightarrow \emptyset / \#_C$

$jan \rightarrow en / CC_ \#$

$j \rightarrow \emptyset / CC_$

$h \rightarrow \emptyset / V_V$

$xs \rightarrow s:$

Final obstruents devoice

$a \rightarrow v? (\rightarrow o) / _A$

Some vowel reduction seems to have occurred in unstressed syllables

$ai\ u \rightarrow ei\ \gamma / _ (C \dots) \{i(:), j\}$ (short only; in the case of $[\gamma]$ at least this was not yet phonemic)

$a \rightarrow \varepsilon / _ (C \dots) \{i(:), j\}$ (conjectured based on data from the “Germanic umlaut” article)

$u: \rightarrow \text{uw} / _V$ (probably, in most areas)

$u: \rightarrow \text{uw} / _V$ (probably, in areas that did not undergo the above change, such as Limburg)

$u: \rightarrow \text{u:}$ (probably, in areas with $u: \rightarrow \text{uw} / _V$)

$ei\ ou \rightarrow e: o:$ (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>; and Wikipedia contributors (2014), “Hieronymus Bosch”. *Wikipedia, the Free Encyclopedia*. <https://en.wikipedia.org/w/index.php?title=Hieronymus_Bosch&oldid=601403790>

$u: \rightarrow y:$

$iu \rightarrow ju / \#_$ (in some northern dialects)

$iu \rightarrow \{y:, io\}$ (outcome varies depending upon dialect; the former seems more typical)

$iw \rightarrow yw$ (dialectal)

{ie,ia,io} uo → iə uə

Umlaut phonemicizes, but only for umlauts of non-diphthongal short vowels (except in extreme eastern dialects); [ɣ] becomes a phoneme

f θ s → v ð z / syllable-initially (h → fi?)

V → ə / if short and unstressed

f → {x,ç} / ʈ (the former seems to have occurred in northern dialects, the latter in southern ones)

θ ð → t d

{u,uw} u → ɔw o (except in the southeast)

{ol,al} {ar,er} or → ɔu ar or / ʌC[+dental]

V[-long +stress] → V: / in open syllables (ɤ → {œ:,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>; 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>

NB: This is likely highly incomplete, but the source materials did not have much to say.

l → u / o_{t,d}#

The change of /f/ to a velar fricative is often reverted by analogy

i: y: → ei øy

u: → ʌu (? conjectured based on the above diphthongization and on developments in Polder Dutch vowels)

Hard-vs.-soft-G phenomena:

— x ɣ → {x,ç} {ɣ,x,ç} / in northern dialects

— x ɣ → ç 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>

ei œy au → ai ay au
 e: ø: o: → ei œy ou

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>

ei œy ou → ε: 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>; and Anonymous (2009). *Mittelhochdeutsche Kurzgrammatik*. <https://www.uni-frankfurt.de/47053276/Kurzgrammatik-HA_09_2009.pdf>

s → ʃ / #_{l,m,n,w,p,t}
 s → ʃ / r_
 t → {ts,k} / _w
 x → k / _s
 {h,j} → Ø / V_V
 w j → b g / {l,r}_ (occasionally otherwise)
 w → Ø / {ou,øy,y:}_
 w → v
 a: → o: / _{N,C[+ dental],P,h} (sporadic?)
 a: → o: / {N,C[+ dental],P,h}_ (sporadic?)
 e(:) i → ø(:) y / _C[+ affricate]
 e(:) i → ø(:) y / _{P,l,f} (sporadic?)
 e(:) i → ø(:) y / {P,l,f}_ (sporadic?)
 y(:) yə ø(:) øy → i(:) iə e(:) ei (intermittent)
 u: y: i: → ou øy ei, except in certain unstressed endings and monosyllables, _C{C,V,#} (“especially before /xt/”), and Low German borrowings
 uə yə iə → u: y: i:
 ou øy ei → au oy ai
 u y → o ø / _N (with some occasional exceptions)
 a:w → au
 V: → V[- long] / _CC (some exceptions; the change was more common around _xt and _rC)

$V: \rightarrow V[-\text{long}] / _ \% C \{r, l, n\} \#$ (some exceptions)
 $V \rightarrow V: / _ \%$, when stressed (except for $/\text{ə}/$)
 $V \rightarrow V: / _ r \{t, d, s, ts\}$ (except $/\text{ə}/$)
 $V \rightarrow V: /$ in some monosyllables ending in alveolar resonants or vowels
 $V \rightarrow V: /$ analogic in some cases
 $\text{ə} \rightarrow \emptyset /$ unstressed, but not in every case
 $\emptyset \rightarrow \text{ə} / M _ r \%$ (I don't know what Mr. Ciupak means by $\langle M \rangle$)

17.7.2.4 High German Consonant Shift and Umlaut *Pogostick Man*, from http://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

$p \ t \ k \rightarrow f \ z \ x \ / \ V _ V$
 $p \ t \ k \rightarrow f \ z \ x \ / \ _ \#$
 $p \ t \ k \rightarrow pf \ ts \ kx \ / \ \# _$
 $p \ t \ k \rightarrow pf \ ts \ kx \ / \ \{L, N\} _$
 $p: \ t: \ k: \rightarrow pf \ ts \ kx$
 $b \ d \ g \rightarrow p \ t \ k$
 $\gamma \rightarrow g$
 $\beta \rightarrow b \ / \ V _ V$
 $\beta \rightarrow b \ / \ _ l$
 $s \rightarrow \int \ / \ \# _ \{p, t\}$
 $sk \rightarrow \int \ / \ \# _$
 $\{\theta, \delta\} \rightarrow d$
 $a \ u \ o \rightarrow e \ y \ \emptyset \ / \ _ (C \dots) \{i(\ddot{\cdot}), j\}$

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; Wikipedia contributors (2014), “Old Saxon”. *Wikipedia, the Free Encyclopedia*. 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

$ai \ au \rightarrow e: \ o:$
 $\beta \rightarrow v$
 $v: \ \gamma: \ h: \rightarrow b: \ g: \ x:$ (perhaps not strictly a sound change, but worth noting)
 $f \ \theta \ s \rightarrow v \ \delta \ z \ /$ syllable-initially
 $v \rightarrow f \ / \ _ C \ ! \ _ d$

$b\ d \rightarrow p\ t\ / _C[-\text{voice}]$
 $k \rightarrow ts\ / _E\ (g \rightarrow dz\ \text{here?})$
 $n \rightarrow \eta\ / _ \{k, g\}$
 $g \rightarrow k\ / _ \eta\text{-}\#$
 $g \rightarrow j\ / _E\ (\text{singleton only})$
 $g \rightarrow \gamma\ / _V\ (\text{singleton only})$
 $g \rightarrow x\ / _ \#$
 $F[-\text{voice}] \rightarrow F[+\text{voice}]\ /\ X[+\text{voiced}]_X[+\text{voiced}]?$
 Umlaut applies; going by the orthography, only $a \rightarrow e\ / _ (C\ldots)\{i(:), j\}$ 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

Pogostick Man, from Theiling, Henrik, <http://www.kunstssprachen.de/s17/rules.sch>

$wi \rightarrow u\ / _ Ci_C$
 $E\beta u\ E\beta o \rightarrow ju:\ jo:$
 $a\beta\{u, o\} \rightarrow au$
 $\beta \rightarrow \emptyset\ / _V_B$
 $\{\ae, e\}:(w(a)) \rightarrow a:$
 $o: \rightarrow a\ / _n\%$
 $z\ x \rightarrow r\ h$
 $i \rightarrow j\ / _V\ !\ \text{in}\ \#U$
 $j \rightarrow i\ / _C_$
 $n \rightarrow \emptyset\ / _V\{:, V\}_hV$
 $Vn \rightarrow V: \ / _hV$
 $(w)u(:)\ i(:) \rightarrow (w)o(:)\ e(:)\ / _ (C)(C)a\ !\ CC = NC\ \text{or}\ \text{one}\ C = \{r, j\}$
 $iu \rightarrow y:$
 $\{\ae, e\}:u: \ \{\ae, e\}:i: \rightarrow eu\ ai$
 $w\{o, u\}:wu: \ j\{e, i\}:ji: \rightarrow u: \ i:$
 $w \rightarrow \emptyset\ / _w$
 $j \rightarrow \emptyset\ / _i$
 $o(u)\ \{\imath, \alpha, au, ai, \ae\}\ \{ja, jE, \ae(i), e(i), y\} \rightarrow u\ a\ i$
 $V: \rightarrow V[-\text{long}]\ / \ !\ \#U, U\#$

17.7.3.1 Proto-Norse to Old Norse *Pogostick Man*, from Theiling, Henrik, <http://www.kunstssprachen.de/s17/rules.sch>

$\theta \rightarrow f\ / _l$

$i \rightarrow \text{ɪ} / _ \text{NS}[- \text{voice}] ! _ \text{NS}(\text{C})\{\text{o}, \text{i}, \text{j}\}$
 $i \rightarrow \text{e:} / _ \text{R}\#$
 $\text{b} \{ \text{w}, \text{v} \} \text{d} \text{ð} \text{g} \rightarrow \text{p} \text{f} \text{t} \text{θ} \text{k} / _ \#$
 $\text{j} \rightarrow \emptyset / _ \#$
 $\text{E:B: E:a:} \rightarrow \text{jo: ja:} / \{ \text{v}, \text{w} \}_-$
 $\text{B:B a:}\{\text{o}, \text{a}, \text{æ}, \text{e}\} \{ \text{æ}, \text{e} \} : \{ \text{æ}, \text{e} \} : \{ \text{æ}, \text{e} \} : \text{i i:E:} \rightarrow \text{o: a: e: e: i:}$
 $\text{e} \rightarrow \text{i} / \#(\text{C})(\text{C})(\text{C})_(\text{C})(\text{C})(\text{C})\{\text{i}, \text{j}\}$
 $\text{e} \rightarrow \text{ja} / ! \{ \{ \text{h}, \text{k}, \text{ŋ} \} \text{n}, \text{w}, \text{v}, \text{l}, \text{r} \}_-, _ \{ \text{u}, \text{o}, \text{i} \}$
 $\text{a(i)} \{ \text{e}, \text{w} \} \{ \text{æ}, \text{i} \} \{ \text{we}, \text{ei} \} (\text{w})_{\text{I}} \rightarrow \text{ey} \emptyset \text{y} \text{ɣ} / \text{w}_- ! \text{hw}_-$
 $\text{a} \rightarrow \emptyset / \text{C}(\text{C})_ \{ \text{R}, \text{s}, \text{t}, \text{θ} \} \#$
 $\text{VN} \rightarrow \tilde{\text{V}} / _ \# ! \text{in} \# \text{U}$
 $\text{u} \{ \text{o}, \text{ɒ} \} \text{a au ju:} \rightarrow \text{y} \emptyset \text{æ} \text{y} \text{y:} / _ (\text{C})(\text{C})(\text{C})\text{j}$
 $\text{a} \rightarrow \emptyset / _ \{ \text{R}, \text{s}, \text{t}, \text{θ} \} \#$
 $\text{o:} \rightarrow \text{u} / _ \#$
 $\text{r} \rightarrow \text{r}_- \text{n}$
 $\text{r} \rightarrow \text{r} / \text{C}_- \text{n}$
 $\text{rn} \rightarrow \text{n:}$
 $\text{w} \rightarrow \emptyset / \text{C}_- \text{o}$
 $\text{a} \rightarrow \emptyset / \text{CC}_- \text{U}\#$
 $\text{a} \rightarrow \text{u} / \% \text{u} / ! \text{in} \# \text{U}$
 $\text{wa: na:} \rightarrow \text{o: no:} / \% \text{u} \text{in} \# \text{U}$
 $\text{a(:)} \text{ae} \rightarrow \text{o(:)} \text{ɒ} \emptyset / \#(\text{C})(\text{C})(\text{C})_(\text{C})(\text{C})(\text{C})\text{u}$
 $\text{a} \rightarrow \emptyset / _ \text{U}\#$
 $\{ (\text{j})\text{u}, \text{we} \} : \{ \text{o}, \text{ɒ} \} : \text{a: au} \rightarrow \text{y:} \emptyset : \text{æ:} \text{æy}$
 $\text{u} \{ \text{o}, \text{ɒ} \} \text{a} \rightarrow \text{y} \emptyset \text{æ} / _ (\text{C})(\text{C})(\text{C})\text{i}$
 $\{ \text{B}, \text{E} \} \rightarrow \emptyset / \text{CC}_- \{ \text{R}, \text{s}, \text{t}, \text{θ} \} \# ! \text{B} = \text{ɒ}$
 $\text{u} \{ \text{o}, \text{ɒ} \} \text{a au ju:} \rightarrow \text{y} \emptyset \text{æ} \text{æy} \text{y:} / _ (\text{C})(\text{C})(\text{C})\text{i}$
 $\text{E} \rightarrow \emptyset / _ \{ \text{R}, \text{s}, \text{t}, \text{θ} \}$
 $\text{u} \rightarrow \text{o} / _ \text{m}\#$
 $\text{u} \rightarrow \emptyset / _ (\{ \text{R}, \text{s}, \text{t}, \text{θ} \}) \#$
 $\{ \text{B}, \text{E} \} \rightarrow \emptyset / \text{CC}_- \text{U}\# ! \text{B} = \text{ɒ}$
 $\text{V} \rightarrow \text{V:} / _ \{ \text{P}, \text{w}, \text{k}, \# \}$
 $\{ \text{a}, \text{æ}, \text{e} \} : \text{hi:} \rightarrow \text{æ:}$
 $\text{ɒ:h} \{ \text{u}, \text{a} \} \text{a:h} \{ \text{u}, \text{a} \} \rightarrow \text{ɒ: a:}$
 $\{ \text{B}, \text{E} \} \rightarrow \emptyset / _ \text{U}\# ! \text{B} = \text{ɒ}$
 $\text{u} \rightarrow \text{o} / _ \text{m}\#$
 $\text{V:} \rightarrow \text{V}[- \text{long}] / ! \text{in} \# \text{U}$
 $\{ \text{u}, \text{we}, \text{wi} \} \{ \text{o}, \text{ɒ} \} \text{a au ju:} \rightarrow \text{y} \emptyset \text{æ} \text{æy} \text{y:} / _ (\text{C})(\text{C})(\text{C})\text{i}$
 $\text{wa we wi} \rightarrow \text{ɒ:} \emptyset : \text{y:} / \# \text{P}_-$
 $\text{w} \rightarrow \emptyset / \# \text{P}_- \text{V:}$
 $\text{e} \rightarrow \text{jɒ} / _ (\text{C})(\text{C})(\text{C})\text{u} ! \{ \{ \text{h}, \text{k}, \text{ŋ} \} \text{n}, \text{w}, \text{v}, \text{l}, \text{r} \}_-$

$e \rightarrow ja / _ (C)(C)(C)u ! \{ \{h,k,\eta\}n,w,v,l,r \}_-$
 $au \{ai,ey,ei\} \ae \{y,i\} \emptyset y V: \rightarrow o e \ae \emptyset V / \#(C)(C)(C)_CC$
 $V[-long] \rightarrow \emptyset / \#U_UU$
 $u \{o,\text{ɒ}\} a au ju: \rightarrow y \emptyset \ae \ae y y: / _ (C)(C)(C)j$
 $u \{o,\text{ɒ}\} a au ju: \rightarrow y \emptyset \ae \ae y y: / \#(C)(C)_R$
 $b \rightarrow \emptyset / m_s$
 $d \rightarrow \emptyset / \{l,m\}_ \{b,g,k,l,m,n,s\}$
 $\delta \rightarrow \emptyset / n_ ! g_$
 $\delta \rightarrow \emptyset / r_ \{m,l,g,n\}$
 $\{f,\beta,p\} \rightarrow \emptyset / r_n$
 $\{f,\beta,p\} \rightarrow \emptyset / l_ \{d,g,n,\delta,t\}$
 $\{g,\gamma\} \rightarrow \emptyset / l_ \{\delta,t\}$
 $\{g,\gamma\} \rightarrow \emptyset / r_ \{d,n,t\}$
 $k \rightarrow \emptyset / l_s$
 $k \rightarrow \emptyset / r_ \{m,s,t\}$
 $k \rightarrow \emptyset / s_l,t$
 $l \rightarrow \emptyset / \eta_s$
 $l \rightarrow \emptyset / r_ \{m,s\}$
 $l \rightarrow \emptyset / s_t$
 $n \rightarrow \emptyset / f_ \{d,s,t\}$
 $n \rightarrow \emptyset / l_b$
 $n \rightarrow \emptyset / m_ \{s,b\}$
 $n \rightarrow \emptyset / \eta_ \{s,w\}$
 $n \rightarrow \emptyset / r_ \{s,t,w\}$
 $n \rightarrow \emptyset / t_s$
 $r \rightarrow \emptyset / \{\delta,f\}_ \{g,\gamma\}$
 $r \rightarrow \emptyset / k_ \{n,s\}$
 $r \rightarrow \emptyset / m_m$
 $r \rightarrow \emptyset / t_ \{k,s\}$
 $t \rightarrow \emptyset / \{g,\gamma\}_s$
 $t \rightarrow \emptyset / p_ \{g,\gamma,n\}$
 $t \rightarrow \emptyset / r_k$
 $t \rightarrow \emptyset / s_ \{k,l,n,s\}$
 $\{s,z\} \rightarrow \emptyset / \{r,R\}_N$
 $\{v,w\} \rightarrow \emptyset / \#_V[+round]$
 $r:\{r,R\} sr \rightarrow r: s:$
 $l(:)_R n(:)_R \rightarrow l: n: / "V:_ (or all V_ ?)$
 $\{l(:),n\}\{r,R\} \rightarrow \emptyset / V\{:,V\}_-$
 $n: l: r: s: \rightarrow n l r s / C_$
 $\{t,\theta,d,\delta\} \rightarrow \emptyset / n_l$
 $\{t,\theta,d,\delta\} \rightarrow \emptyset / l_n$

$l: n: \rightarrow l n / C_{-}\#$
 $ai wi (w)V \rightarrow e: we: (w)V: / _h\#$
 $v \rightarrow o: / n_h$
 $\{\ae,e\}i ai au w\{i,i\} wy wV iu V: \rightarrow e: a: o: we: wo: wV: e: o: V$
 $ey \rightarrow \{jo,\ae\}: / _R$
 $i \rightarrow e: / _\#$
 $\check{d}l(:) \check{d}n(:) \rightarrow l: n:$
 $y i \rightarrow \emptyset e$
 $V\{\theta,\delta\} \rightarrow V: / \#(C)(C)(C)_{-}\{l,r\}$
 $ai \rightarrow a: / _r$
 $ai \rightarrow a: / _h\{C,V\}$
 $\ae \rightarrow e$
 $l\theta n\theta \rightarrow l: n:$
 $\tilde{V} \rightarrow V: / \text{in } \#U \text{ (maybe only } \tilde{i}?)$
 $\tilde{V} \rightarrow V[-\text{nas}]$
 $\beta \check{\delta} \gamma \rightarrow f \theta k / _\{p,t,k,s\}$
 $\beta \check{\delta} \gamma \rightarrow b d g / \#_{-}$
 $\beta \check{\delta} \gamma \rightarrow b d g / \{m,n,\eta,l\}_{-}$
 $\beta \gamma \rightarrow b g / r_{-}$
 $\gamma \rightarrow g / _\{r,R,\theta,\delta\}$
 $\beta \gamma \rightarrow f h / _\%$
 $\gamma \rightarrow g / _\{E,j\}$
 $\beta \check{\delta} \gamma \rightarrow v \theta h$
 $(V:) \theta t \rightarrow (V) t:$
 $E:\{u,o\}: E:a: \rightarrow jo: ja: / \{v,w\}_{-}$
 $\theta \rightarrow t / \{p,t,k\}_{-}$
 $\theta: \check{o}: \rightarrow t: d:$
 $\theta f \rightarrow \check{\delta} v / \{V,C[+ \text{voiced}]\}_{-}\{V,C[+ \text{voiced}]\}$
 $h \rightarrow \emptyset / C_{-}t$
 $ht \rightarrow t:$
 $hw \rightarrow \emptyset / ! \#_{-}$
 $F[- \text{voice}] \rightarrow \emptyset / \{s,f,x,h,t\}_{-}\{p,t,k\}$
 $n: \rightarrow \check{\delta} / _\{r,R\}$
 $wo: w\emptyset: j\ae: V: \rightarrow wo w\emptyset je V[- \text{long}] / _\%$
 $NS[- \text{voice}] \rightarrow S[- \text{voice}]:$
 $\{t(:),g:\}k \rightarrow k:$
 $ts \rightarrow s: / V_{-}V$
 $uN yN iN VN \rightarrow o \emptyset: e: V: / _\{s,f\}$
 $S: \rightarrow S[- \text{long}] / U[- \text{stress}]_{-}$
 $l\theta n\theta \rightarrow l: n:$
 $p \rightarrow f / _\{t,k\}$

$t \rightarrow \theta / _ \{p,k\}$
 $k \rightarrow x / _ \{p,t\}$
 $m \rightarrow f / _ \{n,\eta\}$
 $n \rightarrow \theta / _ \{m,\eta\}$
 $\eta \rightarrow x / _ \{m,n\}$
 $s \rightarrow ts / \{l,n\} _$
 $\emptyset \rightarrow t / s_r$
 $\gamma \rightarrow g: / _ j$
 $r \rightarrow r$
 $w \rightarrow v / \# _$
 $S: \rightarrow S[- \text{long}] / _ \{r\}:$
 $g \rightarrow \emptyset / \# _n$
 $r \rightarrow \emptyset / \{p,t,k\} _ Vr$
 $r: l: \rightarrow r l / \{p,t,k,f,s\} _$
 $o \{æ,e\} \rightarrow u i / ! \text{ in } \#U$
 $o \rightarrow u / V _$
 $a \rightarrow e / _ i$
 $i\ddot{u} \rightarrow y:$
 $\emptyset \emptyset: \rightarrow e æ:$
 $e(:)\{B,i(:)\} \rightarrow e(:)u / \{v,w\} _$
 $e:\{B:,i(:)\} \rightarrow jo: / _ C[+ \text{alveolar}] \#$
 $e:\{B:,i(:)\} \rightarrow ju:$
 $\emptyset \rightarrow j / \{y,e\}(:) _ a$
 $N(:) k k(:) N(:)g g(:) \gamma \rightarrow \eta c(:) c(:) \eta \eta(:) j(:) j / _ \{i,j\}$
 $j \rightarrow \emptyset / K _$
 $a \rightarrow e / _ \{i,j,\acute{K}\}$
 $N(:) k k(:) N(:)g g(:) \gamma \rightarrow \eta c(:) c(:) \eta \eta(:) j(:) j / _ \{i,j\}$
 $f \theta \rightarrow v \delta / \# _$
 $f \rightarrow v / _ \{p,t,k\}$
 $j \rightarrow \emptyset / \{c,\eta\} _$
 $j \rightarrow \emptyset / _ e:$
 $au \rightarrow \upsilon / j _$
 $e: \rightarrow e / \acute{K} _$
 $e: j \rightarrow e \emptyset / Cw _$
 $k \rightarrow h / \# _ \{v,n\}$

17.7.3.1.1 Old Norse to Early Icelandic *Pogostick Man*, from Theiling, Henrik,
<http://www.kunstssprachen.de/s17/rules.sch>

$k \rightarrow \varsigma / _ \#$
 $n \rightarrow \eta / _ \{k,g\}$

$t \rightarrow \delta / V_ \#$ “in some verbal endings”
 $\emptyset \rightarrow u / C_r \#$
 $wa: \rightarrow wo$
 $\text{ɒ ɒ:} \rightarrow \emptyset \text{ a:}$
 $\emptyset: \rightarrow \text{æ}$
 $u \text{ o a } \emptyset \text{ y e i} \rightarrow u: \text{ o: a: } \emptyset i \text{ y: ei i:} / _ \{ \text{ɲc, ɲʃ, ɲk, ɲg} \}$
 $g \text{ ʃ} \rightarrow \text{ʝ j} / V_V$
 $g \rightarrow \text{ʝ} / V_ \#$
 $h j \rightarrow \text{ç}$
 $u \text{ o a } \emptyset: \text{ e: y i} \rightarrow \text{y i oi ai } \emptyset i \text{ ei y: i:} / _ j$
 $a: \rightarrow \text{ai} / _ j$
 $e \rightarrow \text{ei} / _ \{ \text{ʝ, j} \}$
 $O \rightarrow \emptyset / \{ F[- \text{ same POA}], r, l \}_O$
 $S \rightarrow \emptyset / N[+ \text{ same POA}]_S$
 $\{ l(:), r l \} \rightarrow \text{ɬ} / v_ \#$
 $N \rightarrow N[- \text{ voice}] / O_ \#$
 $\{ l(:), r l \} C \rightarrow \text{ɬ} C[- \text{ voice}] / _ \{ S[- \text{ voice}], s \}$
 $r \rightarrow \text{r̥} / S[- \text{ voice}] / _ \#$
 $\{ l(:), r l \} C \rightarrow \text{ɬ} C[- \text{ voice}] / S_ ! S: _$
 $\{ l(:), r l \} r: \rightarrow d \text{ɬ} \text{r̥} / _ \#$
 $S[- \text{ voice}]: S[+ \text{ voice}]: \rightarrow {}^h S S[- \text{ voice}]:$
 $S[- \text{ voice}] \rightarrow {}^h S / _ \{ l, \text{ɬ}, m, n \}$
 $S[- \text{ voice}] \rightarrow S^h / \# v_V$
 $S[+ \text{ voice}] \rightarrow S[- \text{ voice}]$
 $p \text{ t k} \rightarrow f \text{ θ x} / _ \{ S, F[- \text{ voice}] \}$
 $b \text{ d } \{ g, \text{ʝ} \} \rightarrow p \text{ t k} / _ S$
 $F \rightarrow S[- \text{ voice}] / _ \{ l, N \}$
 $u \text{ o: a: } y i \{ y, i \} \{ y, i \}: \text{æ: e: ey} \rightarrow y \text{ ou au ai y i i je ei}$
 $w \rightarrow v$
 $V \rightarrow V: / _ (C) \#, \text{ in monosyllables}$
 $V \rightarrow V: / ! _ \text{CCV}, \text{ in polysyllables}$
 $\{ \text{nn̥, nn̥} \} \rightarrow \text{tn̥} / V_$
 $n: \rightarrow \text{tn̥} / V_ \#$
 $n: \rightarrow \text{tn} / V_$
 $\text{nn̥, nn̥} \rightarrow \text{n̥}$
 $n: \rightarrow n$
 $\{ \text{rn̥, rn̥, rn̥} \} \rightarrow \text{tn̥}$
 $\text{rn} \rightarrow \text{tn̥} / _ \#$
 $r \rightarrow t / _ n$
 $\{ r, r̥, l \} \text{ɬ} \rightarrow \text{tɬ}$
 $\{ \text{ɬl, ɬ:} \} \rightarrow \text{tɬ}$

$\text{rl} \rightarrow \text{t}\text{ł}$
 $\{\text{l}, \text{rl}\} \rightarrow \text{t}\text{ł} / \text{-}\#$
 $\{\text{l}, \text{rl}\} \rightarrow \text{tl}$
 $\text{h} \rightarrow \text{k} / \# \text{-}\{\text{v}, \text{w}\}$
 $\text{hl} \rightarrow \text{ł} / \# \text{-}$
 $\text{hr hn} \rightarrow \text{r} \text{ n} / \# \text{-}$
 $\text{v} \rightarrow \emptyset / \{\text{u}, \text{o}, \text{a}\} \text{-}$
 $\text{n} \rightarrow \text{m} / \text{p} \text{-}\#$
 $\text{C:} \rightarrow \text{C}[\text{- long}]$

17.7.3.1.2 Old Norse to Orkney Norn *Pogostick Man and Marcas Brian Mac-Stiofáin Ó Mhaitiú Ó Domhnaill*, from http://nornlanguage.x10.mx/index.php?ork_phon, citing Marwick, Hugh, “Orkney Norn”

NB: For the most part, these changes are not in chronological order and are often tendencies more than strict sound-change laws.

$\text{ny} \rightarrow \text{in}$
 $\text{f} \rightarrow \text{m} / \text{-n}$
 $\text{n} \rightarrow \emptyset / \text{m} \text{-}$
 $\text{p}(\text{:}) \text{t}(\text{:}) \text{k}(\text{:}) \rightarrow \text{b}(\text{:}) \text{d}(\text{:}) \text{g}(\text{:}) / \{\text{V}, \text{R}\} \text{-}\{\text{V}, \text{R}\}$
 $\{\text{t}, \text{d}\} \text{j} \rightarrow \text{t}\text{ʃ}$
 $\text{d} \rightarrow \emptyset / \text{n} \text{-}\#$ (sometimes)
 $\text{b d g} \rightarrow \text{p t k} / \# \text{-}$
 $\text{k} \rightarrow \text{s} / \text{-n}$
 $\text{g} \rightarrow \text{k} / \text{-}\#$ (sporadic)
 $\text{gn gl} \rightarrow \text{nj lj}$
 $\text{k g} \rightarrow \text{c ɟ} / \text{-}\{\text{E}, \text{j}\}$
 $\text{f} \rightarrow \emptyset / \text{-}\{\text{l}, \text{b}, \text{v}, \text{n}, \#\}$
 $\text{f} \rightarrow \emptyset / \text{V:} \text{-V}$
 $\text{fd} \rightarrow \text{d:}$
 $\text{h} \rightarrow \emptyset / \text{-}\{\text{l}, \text{n}, \text{r}\}$
 $\text{hw hj} \rightarrow \{\text{w}, \text{ʌ}\} \text{ʃ}$
 $\text{h} \rightarrow \text{x} / \text{-i}$
 $\text{θ} \rightarrow \text{h} / \# \text{-B}$
 $\text{θ} \rightarrow \text{ð} / \text{V} \text{-V}$
 $\text{θ} \rightarrow \text{t}$
 $\text{ð} \rightarrow \text{θ} / \text{-}\#$
 $\text{ð} \rightarrow \emptyset / \{\text{a}, \text{E}\} \text{-}$
 $\text{ð} \rightarrow \text{d} / \text{! V} \text{-V}$
 $\text{sk} \rightarrow \{\text{sk}, \text{ʃ}, \text{ks}\}$

$s \rightarrow \emptyset / \{t,k,r\}_l$
 $s \rightarrow \int / _V r ?$
 $y \rightarrow \emptyset$
 $l \rightarrow \emptyset / V_V$
 $l \rightarrow \emptyset / _ \{m,s,k\}$
 $l \rightarrow \emptyset / _ \# ?$
 $lm \rightarrow ml$ (sporadic)
 $l: \rightarrow \Lambda$
 $v \rightarrow w$
 $u a e e: \rightarrow \Lambda a i \varepsilon / _ C:$
 $u \rightarrow \emptyset / _ l(:)$
 $u \rightarrow \Lambda / _ C\{:,CC\}$
 $u: \rightarrow \emptyset: / _ CC$
 $o a \rightarrow \emptyset \varepsilon / _ (C)(C)i$
 $o \rightarrow \emptyset / _ Cr$
 $o: \rightarrow \emptyset: / _ (C)(C)\#$
 $o: \rightarrow u(:)$
 $jo: \rightarrow \{u,o,\emptyset\}$ (looks like being in the ultima or the penult may have had something to do with it, but it isn't clear to me)
 $\bar{v} \rightarrow \bar{v} / _ C(:)C$
 $\bar{v} \rightarrow \Lambda / _ r(:)$
 $\bar{v} \rightarrow \{\varepsilon,e\} / _ C:V$ (V can be a syllabic consonant)
 $\bar{v} \rightarrow i / _ rC$
 $au \rightarrow (\bar{v})u$
 $a a: \rightarrow \varepsilon \emptyset: / _ r$
 $a \rightarrow \bar{v} / _ \{l,nd\}C$
 $ja \rightarrow i$
 $\ae \rightarrow e: / _ \{\delta,r\}$
 $\ae \rightarrow \varepsilon:$
 $\ae \rightarrow \varepsilon: / _ CC$
 $\ae \rightarrow \emptyset / _ l$
 $\ae \rightarrow i: / _ N$
 $\ae \rightarrow e:$
 $y: \rightarrow \emptyset / _ j$
 $y: \rightarrow i$
 $y \rightarrow \{i,i\}$
 $e i: \rightarrow \varepsilon i(:)$
 $ey \rightarrow e: / _ F$
 $ey \rightarrow \varepsilon / _ r$
 $ey \rightarrow ai$
 $ei \rightarrow e: / _ C(:,V)\#$ (V can be a syllabic consonant)

$e \rightarrow a / _i$
 $i \rightarrow \text{ɪ} / _CC$
 $V[-\text{long}] \rightarrow \emptyset / _ \#$

17.7.3.1.3 Old Norse to Shetland Norn *Pogostick Man and Marcus Brian Mac-Stiofáin Ó Mhaitiú Ó Domhnaill*, from http://nornlanguage.x10.mx/index.php?shet_phon, citing Jakobsen, Jakob, *An Etymological Dictionary of the Norn Language*

NB: For the most part, these changes are not in chronological order and are often tendencies more than strict sound-change laws. Further, I'm assuming that ⟨ä⟩ is /æ/ and that ⟨ø⟩ and ⟨ö⟩ are /ɒ/, and since I'm not sure what the conditions are for (apparent) reflexes with long vowels, I'm ignoring the vowel length in the Shetland Norn reflexes.

$p \ t \ k \rightarrow b \ d \ g / V_V$ (the second V at least can be a syllabic consonant)
 $b \ d \rightarrow p \ t / N_$
 $b \rightarrow v / \#_$ (sporadic?)
 $lm \rightarrow ml$
 $\emptyset \rightarrow b / m_l$
 $nd \ ld \ (\rightarrow n: \ l: \ ?) \rightarrow n\lambda$
 $dj \rightarrow dʒ$
 $g(:) \rightarrow dʒ / _iV$
 $k \ g \rightarrow c \ ʝ / _E$
 $tr \rightarrow rd$
 $p: \ t: \ k: \rightarrow b \ d \ \{g, \gamma\} / V_V$
 $t: \rightarrow \{t^j, d^j\}$
 $tj \rightarrow tʃ / _ \#$
 $tj \rightarrow ʃ$
 $gl \rightarrow lg$
 $f \rightarrow v / \#_$ (sporadic?)
 $f \rightarrow m / _n$
 $f \rightarrow p / _t$
 $v \rightarrow w / \#_$
 $n \rightarrow \emptyset / _m\#$
 $vl \rightarrow lv$
 $\theta \rightarrow \{t, d\}$
 $\delta \rightarrow \emptyset / _ \#$
 $\delta \rightarrow d$
 $s \rightarrow \emptyset / k_l$
 $\emptyset \rightarrow h / \#_V$
 $h \rightarrow \emptyset / _ \{V, w, j\}$ (sporadic)
 $h \rightarrow \emptyset / _l$

$h \rightarrow \{\emptyset, h, k\} / _r$
 $h \rightarrow \{\emptyset, h, k, s\} / _n$
 $hv \rightarrow \{h, k, s\}w$
 $hj \rightarrow j$
 $n l \rightarrow n \wedge / _C$
 $n: \rightarrow n(d)$
 $rn \{l, rl\} \rightarrow n \wedge$
 $ms \rightarrow \eta(k)s$
 r alternates with l
 $\{u, o\}(:) a a: \{v, \ae, y\} e i(:) \rightarrow \{o, \varepsilon\}(i) \ae(i) \{o, v\}(i) \{o, \varepsilon\}(i) \{\ae, e\} / _ \{K, C^j\}$
 $u \rightarrow \{o, v\} / _CC$
 $u: \rightarrow \{u, o, v, \emptyset\}$ (conditioning unclear; it seems the presence of a velar consonant may have helped to retain the quality of /u/)
 $o: \rightarrow u$
 $v \rightarrow \varepsilon / _C:$
 $v \rightarrow \emptyset / _O[+ \text{dental/alveolar}]$
 $\{v, ey\} j \{u, o, a\}: y: \rightarrow o \emptyset u / \acute{K}_-$
 $j \{u, o, a\}: \rightarrow \emptyset$
 $a \rightarrow \emptyset / C[+ \text{dental/alveolar}]_u$
 $a \rightarrow \{o, \varepsilon\} / _ \{K, r\} (! K = w ?)$
 $a: \rightarrow wo$ (dialectal)
 $a: \rightarrow \varepsilon(u) / _ \{l, r\}$
 $au \rightarrow \{o, \varepsilon, v\} / j_-$
 $au \rightarrow j \{o, \varepsilon\}$
 $y \rightarrow \emptyset / _r(:)$
 $y: \rightarrow \emptyset / _O[+ \text{dental/alveolar}]$
 $\ae \rightarrow e / ! _ \{K, C^j\}$
 $e \rightarrow \{o, v\} / _w$
 $e: \rightarrow \{v, \emptyset\} / w_-$
 $e e: \rightarrow \{\ae, \varepsilon, e\} \{(j)\varepsilon, je\}$
 $ey \rightarrow \emptyset$
 Final short vowels drop

17.7.4 Common Germanic to Vandalic

Jacob Kilpatrick & Pogostick Man, from Wikipedia contributors (2015), “Vandalic language”. *Wikipedia, the Free Encyclopedia*. <https://en.wikipedia.org/w/index.php?title=Vandalic_language&oldid=686359598>

NB: This is likely incomplete.

$h \rightarrow \emptyset / \#_-$
 $e: \rightarrow i / \text{unstressed}$
 $e \rightarrow i / ! \{w,r,h\}_-$
 $o: \rightarrow u$
 $w: \rightarrow g$
 $w \rightarrow \{gw,v\} / \#_-$
 $tj \rightarrow tsj$
 $\theta \delta \rightarrow t d$ (not a complete change; apparently due to Latin)
 $z \rightarrow \emptyset$ (seems to have been complete by the Sixth Century)

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>

$\{H_{x,m,n}\} \rightarrow a$
 $b^{fi} d^{fi} g^{fi} \rightarrow p^h t^h k^h$
 $s \rightarrow h / \#_-$
 $s \rightarrow h / V_V$
 $t \rightarrow ts / _i$
 $j \rightarrow h$
 $k^w k^{hw} g^w \rightarrow t t^h d / _E$
 $k^w k^{hw} g^w \rightarrow p p^h b / _ \{a,o,C\}$
 $k^w k^{hw} g^w \rightarrow k k^h g / _u$
 $k^w k^{hw} g^w \rightarrow k k^h g / u_$
 $ts \rightarrow s$
 $h \rightarrow \emptyset$
 $V_{ns} \rightarrow V:s$
 $n \rightarrow \emptyset / _s$

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>

$\{H_{x,m,n}\} \rightarrow a$
 $b^h d^h g^h \rightarrow p^h t^h k^h$
 $s \rightarrow h / \#_$
 $s \rightarrow h / V_V$
 $t \rightarrow ts / _i$
 $j \rightarrow h$
 $k^w k^{hw} g^w \rightarrow t^h d / _E$
 $k^w k^{hw} g^w \rightarrow p^h b / _{a,o,C}$
 $k^w k^{hw} g^w \rightarrow k^h g / _u$
 $k^w k^{hw} g^w \rightarrow k^h g / u_$

$ts \rightarrow s$

$h \rightarrow \emptyset$

$a: \rightarrow \text{æ}:$

$Vns \rightarrow V:s$

$n \rightarrow \emptyset / _s$

$tj \rightarrow t / \#_$

$tj \rightarrow t: / \text{medial}$

$w \rightarrow \emptyset$

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)

$\text{ej ow} \rightarrow \text{e: o:}$

$\text{e:} \rightarrow \text{i:} / _C$

$j \rightarrow \emptyset / V:_$

$\text{e:} \rightarrow \text{i:} / _V$

$\text{ɛ:} \rightarrow \text{e:}$

$\text{aj} \rightarrow \text{ɛ:}$

$h \rightarrow \emptyset$

$\text{oj} \rightarrow \text{øj} \rightarrow \text{yj} (\rightarrow \text{y: sometimes})$

$\text{e o} \rightarrow \text{ɛ ɔ}$

$p^h t^h k^h \rightarrow \text{f } \theta \text{ x}$

Pitch-accent lost

$b d g \rightarrow \text{v } \delta \gamma / V_V$

$dz \rightarrow z$
 $V: \rightarrow V[-\text{long}]$
 $C: \rightarrow C[-\text{long}]$
 $au \varepsilon u eu \rightarrow av \varepsilon v ev$
 $\varsigma \rightarrow \emptyset$ / in the suffixes *-ios* and *-ion*
 $n \rightarrow \emptyset$ / $_{-}\#$
 $e \rightarrow i$
 $p \ t \ k \rightarrow b \ d \ g$ / N_{-}
 $y \rightarrow i$
 $g \ x \rightarrow j \ \varsigma$ / $_{-}\{\varepsilon, i\}$
 $p \ k \rightarrow f \ x$ / $_{-}t$
 $\text{"}\{i, e\}V \rightarrow j\text{"}V$

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>

$\{H_{x,m,n}\} \rightarrow a$
 $b^h \ d^h \ g^h \rightarrow p^h \ t^h \ k^h$
 $s \rightarrow h$ / $\#_{-}$
 $s \rightarrow h$ / $V_{-}V$
 $t \rightarrow ts$ / $_{-}i$
 $j \rightarrow h$
 $k^w \ k^{hw} \ g^w \rightarrow t \ t^h \ d$ / $_{-}E$
 $k^w \ k^{hw} \ g^w \rightarrow p \ p^h \ b$ / $_{-}\{a, o, C\}$
 $k^w \ k^{hw} \ g^w \rightarrow k \ k^h \ g$ / $_{-}u$
 $k^w \ k^{hw} \ g^w \rightarrow k \ k^h \ g$ / u_{-}
 $ts \rightarrow s$
 $h \rightarrow \emptyset$
 $V_{ns} \rightarrow V:s$
 $n \rightarrow \emptyset$ / $_{-}s$
 $\{e:, ej\} \ \varepsilon: \ a(:)j \ \{oj, \varpi j\} \rightarrow i: \ e: \ \varepsilon: \ \{y, \emptyset\}$
 $o: \rightarrow u:$

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>

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>

$\{H_{x,m,n}\} \rightarrow a$
 $b^h d^h g^h \rightarrow p^h t^h k^h$
 $s \rightarrow h / \#_$
 $s \rightarrow h / V_V$
 $t \rightarrow ts / _i$
 $j \rightarrow h$
 $k^w k^{hw} g^w \rightarrow t t^h d / _E$

$k^w k^{hw} g^w \rightarrow p p^h b / _ \{a, o, C\}$
 $k^w k^{hw} g^w \rightarrow k k^h g / _ u$
 $k^w k^{hw} g^w \rightarrow k k^h g / u _$
 $ts \rightarrow s$
 $h \rightarrow \emptyset$
 $V_{ns} \rightarrow V:s$
 $n \rightarrow \emptyset / _ s$

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>

$\{H_{x,m,n}\} \rightarrow a$
 $b^h d^h g^h \rightarrow p^h t^h k^h$
 $s \rightarrow h / \# _$
 $s \rightarrow h / V _ V$
 $t \rightarrow ts / _ i$
 $j \rightarrow h$
 $k^w k^{hw} g^w \rightarrow t t^h d / _ E$
 $k^w k^{hw} g^w \rightarrow p p^h b / _ \{a, o, C\}$
 $k^w k^{hw} g^w \rightarrow k k^h g / _ u$
 $k^w k^{hw} g^w \rightarrow k k^h g / u _$
 $ts \rightarrow s$
 $h \rightarrow \emptyset$
 $V_{ns} \rightarrow V(:)s$ (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>

$\{H_{x,m,n}\} \rightarrow a$
 $b^{\text{fi}} d^{\text{fi}} g^{\text{fi}} \rightarrow p^{\text{h}} t^{\text{h}} k^{\text{h}}$
 $s \rightarrow h / \#_$
 $s \rightarrow h / V_V$
 $t \rightarrow ts / _i$
 $j \rightarrow h$
 $k^{\text{w}} k^{\text{hw}} g^{\text{w}} \rightarrow t t^{\text{h}} d / _E$
 $k^{\text{w}} k^{\text{hw}} g^{\text{w}} \rightarrow p p^{\text{h}} b / _{\{a,o,C\}}$
 $k^{\text{w}} k^{\text{hw}} g^{\text{w}} \rightarrow k k^{\text{h}} g / _u$
 $k^{\text{w}} k^{\text{hw}} g^{\text{w}} \rightarrow k k^{\text{h}} g / u_$
 $ts \rightarrow s$
 $h \rightarrow \emptyset$
 $V_{\text{ns}} \rightarrow V:s$
 $n \rightarrow \emptyset / _s$
 $h \rightarrow \emptyset$

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>

$\{H_{x,m,n}\} \rightarrow a$
 $b^{\text{fi}} d^{\text{fi}} g^{\text{fi}} \rightarrow p^{\text{h}} t^{\text{h}} k^{\text{h}}$
 $s \rightarrow h / \#_$
 $s \rightarrow h / V_V$
 $t \rightarrow ts / _i$
 $j \rightarrow h$
 $k^{\text{w}} k^{\text{hw}} g^{\text{w}} \rightarrow t t^{\text{h}} d / _E$
 $k^{\text{w}} k^{\text{hw}} g^{\text{w}} \rightarrow p p^{\text{h}} b / _{\{a,o,C\}}$
 $k^{\text{w}} k^{\text{hw}} g^{\text{w}} \rightarrow k k^{\text{h}} g / _u$
 $k^{\text{w}} k^{\text{hw}} g^{\text{w}} \rightarrow k k^{\text{h}} g / u_$
 $ts \rightarrow s$
 $h \rightarrow \emptyset$
 $\alpha: \rightarrow \text{æ}:$
 $V_{\text{ns}} \rightarrow V:s$

$n \rightarrow \emptyset / _s$
 $tʃ \rightarrow s / \#_$
 $tʃ \rightarrow s: / \text{medial}$
 $VCw \rightarrow V:C$
 $w \rightarrow \emptyset$
 $h \rightarrow \emptyset$ (in Eastern Ionic)
 Vowel contraction (on which the author does not elaborate much)
 $\text{æ} \rightarrow \text{ɛ}$
 $\text{ej ow} \rightarrow \text{e} \text{ } \text{o}$: 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
 $u(:)(j) \rightarrow y(:)(j)$
 $\text{o} \rightarrow \text{u}$: (?)
 $j \rightarrow \emptyset / V_$
 $\text{e} \rightarrow \text{i} \text{ } / _V$
 $\text{ɛ} \rightarrow \text{e}$
 $\text{aj} \rightarrow \text{ɛ}$
 $h \rightarrow \emptyset$
 $\text{oj} \rightarrow \emptyset j \rightarrow yj$ ($\rightarrow y$: sometimes)
 $\text{e o} \rightarrow \text{ɛ } \text{ɔ}$

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>

$\{H_{x,m,n}\} \rightarrow a$
 $b^{\text{fi}} d^{\text{fi}} g^{\text{fi}} \rightarrow p^{\text{h}} t^{\text{h}} k^{\text{h}}$
 $s \rightarrow h / \#_$
 $s \rightarrow h / V_V$
 $t \rightarrow ts / _i$
 $j \rightarrow h$
 $k^{\text{w}} k^{\text{hw}} g^{\text{w}} \rightarrow t t^{\text{h}} d / _E$
 $k^{\text{w}} k^{\text{hw}} g^{\text{w}} \rightarrow p p^{\text{h}} b / _ \{a, o, C\}$
 $k^{\text{w}} k^{\text{hw}} g^{\text{w}} \rightarrow k k^{\text{h}} g / _u$
 $k^{\text{w}} k^{\text{hw}} g^{\text{w}} \rightarrow k k^{\text{h}} g / u_$
 $ts \rightarrow s$
 $h \rightarrow \emptyset$

$V_{ns} \rightarrow V:s$
 $n \rightarrow \emptyset / _s$
 $p^h t^h k^h \rightarrow f \theta x$

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>

$\{H_{x,m,n}\} \rightarrow a$
 $b^{\text{fi}} d^{\text{fi}} g^{\text{fi}} \rightarrow p^h t^h k^h$
 $s \rightarrow h / \#_$
 $s \rightarrow h / V_V$
 $t \rightarrow ts / _i$
 $j \rightarrow h$
 $k^w k^{hw} g^w \rightarrow t t^h d / _E$
 $k^w k^{hw} g^w \rightarrow p p^h b / _{\{a,o,C\}}$
 $k^w k^{hw} g^w \rightarrow k k^h g / _u$
 $k^w k^{hw} g^w \rightarrow k k^h g / u_$
 $ts \rightarrow s$
 $h \rightarrow \emptyset$

17.9 Proto-Indo-European to Hittite

Goatface

$\acute{k} \acute{g} \acute{g}^{\text{fi}} \rightarrow k g g^{\text{fi}}$
 $b^{\text{fi}} d^{\text{fi}} g^{\text{fi}} \rightarrow p t k$
 $k^w g^w g^{w\text{fi}} \rightarrow ku gu ku$
 $t \rightarrow ts / _{\{i,e\}}$
 $m \rightarrow \emptyset / _ \#$
 $e(:) \rightarrow a(:) / _h_2$
 $e(:) \rightarrow a(:) / h_2_$
 $e(:) \rightarrow o(:) / _h_3$
 $e(:) \rightarrow o(:) / h_3_$
 $h_3 \rightarrow \emptyset / _o$ “(according to Kortlandt)”

$h_2 \rightarrow x$ (or some sort of dorsal or laryngeal fricative?)

$o(:) \rightarrow a(:)$

$\{u:,eu,au\} \rightarrow u$

$m \ n \ r \ l \rightarrow am \ an \ ar \ al$

$w \rightarrow m / u_-$

“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-Iranian

Trophylium, from Kobayashi, Masato (2004), *Historical Phonology of Old Indo-Aryan Consonants*

$e \rightarrow a / _ \{h_2, h_3\}$

$e \rightarrow a / \{h_2, h_3\}_-$

$p \rightarrow b / _ h_3$

$H \rightarrow \emptyset /$ “syllabic”

$\emptyset \rightarrow \emptyset / \#_-$

$\{h_1, h_3\} \rightarrow *H$

$H \rightarrow \emptyset / S_-$

$K^w \rightarrow K$

$s \rightarrow \int / \{u, i, l, r, K, \acute{K}\}$

$\acute{K} \rightarrow T\check{S}$

$B^{\acute{f}}_1 P_2 \rightarrow B_1 B^{\acute{f}}_2 /$ “includes $s \int > z^{\acute{f}} \check{z}^{\acute{f}}$ ”

$B^{\acute{f}} B^{\acute{f}} \rightarrow BB^{\acute{f}}$

$pt\int \rightarrow p\int$

$tt\int dd\check{z}^{\acute{f}} \rightarrow t.\int d.\check{z}^{\acute{f}}$

$t \rightarrow \emptyset / _ \int t$

$d \rightarrow \emptyset / _ \check{z} d^{\acute{f}}$

$t\check{f}\check{f} \rightarrow \int:$

$k \ g \ g^{\acute{f}} \rightarrow c \ \check{f} \ \check{f}^{\acute{f}} / _ e, i, j$

$o \rightarrow a: / _ CV$, “does not affect $o_2 < eh_3$ ”

$\{e, o, o_2, N\} \rightarrow a$

17.10.1 Proto-Indo-Iranian to Proto-Indo-Aryan

Trophylium, from Kobayashi, Masato (2004), *Historical Phonology of Old Indo-Aryan Con-*

sonants

$\text{ə} \rightarrow \text{i}$
 $\text{Sh}_2 \rightarrow \text{S}[+ \text{ aspirated}]$
 $\text{h}_2 \rightarrow * \text{H}$
 $\text{VH} \rightarrow \text{V:} / _ \{ \text{C}, \# \}$
 $\text{RH} \rightarrow \{ \text{u}, \text{i} \} \text{R} / _ \text{V} \text{ (sporadic)}$
 $\text{RH} \rightarrow \{ \text{u}, \text{i} \} \text{:R} / _ \text{C}$
 $\int \text{ʒ} \rightarrow \text{ʒ} \text{ z}_\text{c}$
 $\text{n} \rightarrow \text{n}_\text{c} / \text{R}(\text{V})_$
 $\text{t d}^{(\text{h})} \text{n} \rightarrow \text{t d}^{(\text{h})} \text{n}_\text{c} / \text{C}_- ! _ \text{r}$
 $\text{s t d}^{(\text{h})} \text{n} \rightarrow \text{ʃ t d}^{(\text{h})} \text{n}_\text{c} / _ \text{C}$
 $\text{ls lt ld}^{(\text{h})} \text{ln} \rightarrow \text{ʃ t d}^{(\text{h})} \text{n}_\text{c} / \text{“disputed”}$
 $\text{s} \rightarrow \text{ʃ} / _ \text{V} \{ \text{ʃ}, \text{t}, \text{d}^{(\text{h})} \}$
 $\emptyset \rightarrow \text{a} / \# _ \text{z}$
 $\text{uz}_\text{c} \text{az}_\text{c} \text{iz}_\text{c} \rightarrow \text{u:} \text{ə:} \text{i:}$
 $\text{ə:} \rightarrow \text{o:} / \text{w}_-$
 $\text{ə:} \rightarrow \text{e:}$
 $\text{tʃ dʒ}^{(\text{h})} \rightarrow \text{tʃ dʒ}^{(\text{h})} \rightarrow \text{ʃ j}^{(\text{h})}$
 $\text{tst dzd}^{(\text{h})} \rightarrow \text{t: d}^{(\text{h})}$
 $\text{k} \rightarrow \emptyset / \# _ \text{t}$
 $\text{p} \rightarrow \emptyset / \# _ \text{st}$
 $\text{j}^{(\text{h})} \rightarrow \text{fi}$
 $\text{d}^{(\text{h})} \rightarrow \text{fi} / \text{(unclear environment)}$
 $\text{b}^{(\text{h})} \rightarrow \text{fi} \text{ (very rare)}$
 $\text{Vm} \rightarrow \tilde{\text{V}} / _ (\#) \{ \text{s}, \text{ʃ} \}$
 $\text{n} \rightarrow \text{n} / \text{j}_-$

17.10.1.1 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.

$\text{C}(\text{C}) \rightarrow \emptyset / \text{C}_- \#$
 $\text{VN VC}[-\text{nas}] \rightarrow \text{V}[+\text{nas}] \text{V:} / _ \#$
 $\text{a}\{ \text{i}, \text{j} \}(\text{a}) \text{a}\{ \text{u}, \text{w} \}(\text{a}) \rightarrow \text{e o}$
 $\text{j w} \rightarrow \text{dʒ b} / \text{V}_- \text{V}$
 $\text{C} \rightarrow \text{C}[+\text{voiced}] / \text{V}_- \text{V}$
 $\{ \text{b}^{(\text{h})}, \text{d}^{(\text{h})}, \text{g}^{(\text{h})} \} \{ \text{j}, \text{v} \} \rightarrow \text{h} \emptyset / \text{V}_- \text{V}$
 $\text{Vm} \rightarrow \text{Vv} \rightarrow \text{V}[+\text{nas}] \text{v} / _ \text{V}$
 $\text{e o} \rightarrow \text{i u} / _ \#$
 $\text{V:} \rightarrow \text{V}[-\text{long}] / _ \#$

$ah \rightarrow o$
 $\text{ɽ} \rightarrow i$
 $\text{ʂ} \rightarrow x / k_-$
 $\{\text{ʂ}, \text{ʃ}\} \rightarrow s$
 $v \rightarrow \emptyset / \{t, d\}_-$
 $C_1 C_2 \rightarrow C_2 C_2 / V_V$
 $C_n \rightarrow CC / V_V ! C = d\text{ʒ}$
 $d\text{ʒ}n \rightarrow n\text{ː} / V_V$

17.10.1.2 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.

$C(C) \rightarrow \emptyset / C_ \#$
 $VN VC[-nas] \rightarrow V[+nas] V\text{ː} / _ \#$
 $a\{i, j\}(a) a\{u, w\}(a) \rightarrow e o$
 $j w \rightarrow d\text{ʒ} b / V_V$
 $C \rightarrow C[+voiced] / V_V$
 $\{b^h, d^h, g^h\} \{j, v\} \rightarrow h \emptyset / V_V$
 $b \{d, d\text{ʒ}, g\} \rightarrow v j / V_V$
 $Vm \rightarrow Vv \rightarrow V[+nas]v / _V$
 $e o \rightarrow i u / _ \#$
 $V\text{ː} \rightarrow V[-long] / _ \#$
 $ah \rightarrow e$
 $\text{ɽ} \rightarrow i$
 $k\text{ʂ} \rightarrow hk$
 $\text{ʂ} s \rightarrow s \text{ʃ}$
 $r \rightarrow l$
 $v \rightarrow \emptyset / \{t, d\}_-$
 $C_1 C_2 \rightarrow C_2 C_2 / V_V$
 $C_n \rightarrow CC / V_V ! C = d\text{ʒ}$
 $d\text{ʒ}n \rightarrow n\text{ː} / V_V$

17.10.1.3 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.

$C(C) \rightarrow \emptyset / C_ \#$
 $VN VC[-nas] \rightarrow V[+nas] V\text{ː} / _ \#$
 $a\{i, j\}(a) a\{u, w\}(a) \rightarrow e o$

$j \ w \rightarrow d\zeta \ b \ / \ V_V$
 $C \rightarrow C[+voiced] \ / \ V_V$
 $\{b^h, d^h, g^h\} \ \{j, v\} \rightarrow h \ \emptyset \ / \ V_V$
 $V_m \rightarrow V_v \rightarrow V[+nas]v \ / \ _V$
 $e \ o \rightarrow i \ u \ / \ _ \#$
 $V: \rightarrow V[-long] \ / \ _ \#$
 $ah \rightarrow o$
 $\mathfrak{r} \rightarrow i$
 $k\mathfrak{s} \rightarrow t\mathfrak{j}:$
 $\{\mathfrak{s}, \mathfrak{c}\} \rightarrow s$
 $sC \rightarrow Ch$
 $v \rightarrow \emptyset \ / \ \{t, d\}_-$
 $C_1C_2 \rightarrow C_2C_2 \ / \ V_V$
 $C_n \rightarrow CC \ / \ V_V \ ! \ C = d\zeta$
 $d\zeta n \rightarrow \mathfrak{n}: \ / \ V_V$

17.10.1.4 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.

$C(C) \rightarrow \emptyset \ / \ C_ \#$
 $VN \ VC[-nas] \rightarrow V[+nas] \ V: \ / \ _ \#$
 $a\{i, j\}(a) \ a\{u, w\}(a) \rightarrow e \ o$
 $j \ w \rightarrow d\zeta \ b \ / \ V_V$
 $C \rightarrow C[+voiced] \ / \ V_V$
 $\{b^h, d^h, g^h\} \ \{j, v\} \rightarrow h \ \emptyset \ / \ V_V$
 $V_m \rightarrow V_v \rightarrow V[+nas]v \ / \ _V$
 $e \ o \rightarrow i \ u \ / \ _ \#$
 $V: \rightarrow V[-long] \ / \ _ \#$
 $ah \rightarrow o$
 $\mathfrak{r} \rightarrow i$
 $k\mathfrak{s} \rightarrow t\mathfrak{j}:$
 $\{\mathfrak{s}, \mathfrak{c}\} \rightarrow s$
 $tv \ dv \rightarrow p \ b$
 $C_1C_2 \rightarrow C_2C_2 \ / \ V_V$
 $C_n \rightarrow CC \ / \ V_V \ ! \ C = d\zeta$
 $d\zeta n \rightarrow \mathfrak{n}: \ / \ V_V$

17.10.1.5 Proto-Indo-Aryan to Vedic Sanskrit *Tropylium*, from Kobayashi, Masato (2004), *Historical Phonology of Old Indo-Aryan Consonants*

$\{s, \text{ṣ}\} \rightarrow h / _ \# C[- \text{voice}]$
 $\{s, \text{ṣ}\} \rightarrow r / _ \# C[+ \text{voice}]$
 $l \rightarrow r$
 $d^{(fi)} \rightarrow l^{(fi)}$
 $sc \text{ ṣṣ} \rightarrow \text{ṣṣ}$
 $s: \text{ṣṣ} \text{ ṣṣ} \rightarrow t.s \text{ t.ṣ} \text{ t.ṣ}$
 $t.s \text{ t.ṣ} \rightarrow k\text{ṣ} \text{ c}^h:$
 $c^h: \rightarrow c^h / C_$
 $bz^{fi} \rightarrow ps$
 $\{p\text{ṣ}, c\text{ṣ}, jz^{fi}, gz^{fi}\} \rightarrow k\text{ṣ}$

17.10.1.5.1 Vedic Sanskrit to Classical Sanskrit *Tropylium*, from Kobayashi, Masato (2004), *Historical Phonology of Old Indo-Aryan Consonants*

$l^{(fi)} \rightarrow d^{(fi)}$
 $H \rightarrow \emptyset$
 $au \text{ a}u \text{ ai} \text{ a}i \rightarrow au \text{ o}i \text{ ai} \text{ e}i / ! _ V$
 $w \rightarrow v$

17.11 Proto-Indo-European to Proto-Slavic

Hwhatting

NB: “Not in chronological order”

$b^{fi} \text{ d}^{fi} \{g^{fi}, \acute{g}^{fi}\} g^{wfi} \rightarrow b \text{ d} \text{ g} \text{ g}^w$
 $K^w \acute{k} \acute{g} \rightarrow K \text{ s} \text{ z}$
 $s \rightarrow x / \{i, u, r, k\}_-$
 $k \text{ g} \text{ x} \rightarrow t\text{f} \text{ ʒ} \text{ ʃ} / _ \{e(:)(i), i(:)\}$
 $\{a, o, \text{ə}\} \rightarrow e / j_-$
 $\{a, o, \text{ə}\} \rightarrow o$
 $i \text{ u} \rightarrow \text{ь} \text{ ъ}$
 $j \text{ i}i \text{ u}i \rightarrow i \text{ i}$
 $u \rightarrow \text{ь} / j_-$
 $e(:)i \rightarrow i$
 $\{ai, oi\} \rightarrow i / j_-$
 $\{ai, oi\} \rightarrow \text{æ}:$
 $\{ai, oi\} \rightarrow \{\text{æ}i, a\}$ (the former seems to be more common)
 $\{a(:)u, o(:)u\} e(:)u \rightarrow u \text{ ju}$
 $e \rightarrow \text{ь} / _ jV$
 $e \rightarrow o / _ wV$

$w \rightarrow v$
 $l \ r \rightarrow \{ \mathfrak{b}l, \mathfrak{b}l \} \{ \mathfrak{b}r, \mathfrak{b}r \}$
 $\{ m, n \} \rightarrow \{ \tilde{e}, \tilde{o} \} / _C\$$
 $m \ n \rightarrow \{ \mathfrak{b}m, \mathfrak{b}m \} \{ \mathfrak{b}n, \mathfrak{b}n \}$
 $\mathfrak{a}e: \rightarrow a /$ “After palatal fricatives and affricates”
 $\{ e(:), i(:) \} \{ a(:), o(:), u(:) \} \rightarrow \tilde{e} \tilde{o} / _N\$$
 $oi \ o \rightarrow i \ \mathfrak{b} /$ “Sometimes in final syllables”
 $\{ O, N \} \rightarrow \emptyset / _ \$$
 $k \ g \ x \rightarrow ts \ dz \ s / _ \{ \mathfrak{a}e:, i \}$
 $k \ g \ x \rightarrow ts \ dz \ s /$ “After some syllables with front vowels”
 $sj \ zj \rightarrow \int \ 3$
 $kj \ gj \ xj \rightarrow t\int \ 3 \int$

17.11.1 Proto-Slavic to Polish

Xigdz Faust, in <http://pittmirg.ovh.org/inne/psc.pdf><http://pittmirg.ovh.org/inne/psc.pdf>, mainly citing Klemensewicz *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.

$sk \ x \rightarrow \mathfrak{c}t\mathfrak{c} \ \mathfrak{c} / _E$
 $x \rightarrow \mathfrak{c} / E_$
 $\mathfrak{e}l \rightarrow l\mathfrak{o} / T_T$ “in certain cases (mostly after a PSl. palato-alveolar)”
 $\mathfrak{o}l \ \mathfrak{o}r \ \mathfrak{e}l \ \mathfrak{e}r \rightarrow l\mathfrak{o} \ r\mathfrak{o} \ l\mathfrak{e} \ r\mathfrak{e} / T_T$
 $\mathfrak{o}r \ \mathfrak{o}l \rightarrow ra \ la / \#_T$ “in syllables with long vowels”
 $\mathfrak{o}r \ \mathfrak{o}l \rightarrow r\mathfrak{o} \ l\mathfrak{o} / \#_T$
 $C \rightarrow C^j / _E ! / j \ \mathfrak{c} \ \mathfrak{z}$
 $j \rightarrow \mathfrak{i}^j / \{ p, b, m, v \}_-$ (sporadic)
 $\mathfrak{e} \ \tilde{\mathfrak{e}} \ \mathfrak{e} : \rightarrow \mathfrak{o} \ \tilde{\mathfrak{o}} \ a / _C[-\text{palatalized} + \text{dental}]$ (also sporadically before plain non-dentals)
 $\mathfrak{e} : \rightarrow \mathfrak{e}$
 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”
 $\mathfrak{b} \rightarrow a: / _r$
 $\mathfrak{b}l \rightarrow \mathfrak{o}(:)\mathfrak{t} / P_$

$\text{ɤl} \rightarrow \text{ɛɫ} / \text{K}_-$
 $\text{ɤl} \rightarrow \text{ɫu} / \text{else}$
 $\text{ɤl} \rightarrow \text{ɫu} / \text{C}[+\text{dental}]_-$
 $\text{ɤl} \rightarrow \text{ɛɫ} / \text{P.C}[+\text{dental} -\text{palatalized}]$
 $\text{ɤl} \rightarrow \text{il} / \text{P}_-$
 $\text{ɤl} \rightarrow \text{ɔ}(\text{:})\text{ɫ}$
 $\text{ɤ} \rightarrow \text{a:} / \text{r.C}[+\text{dental} -\text{palatalized}]$
 $\text{ɤr} \rightarrow \text{i}(\text{:})\text{z}_\text{r} \rightarrow \{\text{ɛ}(\text{:})\text{r}, \text{ɛ}(\text{:})\text{z}_\text{r}\} \rightarrow \{\text{ɛr}, \text{ɛz}_\text{r}\}$
 $\{\tilde{\text{ɛ}}, \tilde{\text{ɔ}}\} \rightarrow \tilde{\text{a}}$
 $\text{a } \text{ɛ } \text{i } \text{ɔ } \text{u } \text{i } \tilde{\text{a}} \rightarrow \text{a: } \text{ɛ: } \text{i: } \text{ɔ: } \text{u: } \text{i: } \tilde{\text{a:}} / \text{ }_-\{\text{C/U}\}[+\text{voiced}][\text{lost yer}]$ (i.e., a voiced consonant or a cluster with one)
 $\text{ajɛ} \rightarrow \text{ɛ:}$ in adjectives, a: in verbs
 $\{\text{aja}, \text{ɔja}\} \{\text{ɔjɛ}, \text{ijɛ}\} \text{ijɛ} \rightarrow \text{a: } \text{ɛ: } \text{i:}$
 $\{\text{ɛ}(\text{:})\text{jɛ}, \text{ɤjɛ}, \text{ɔjɛ}, \text{ujɛ}, \text{ijɛ}\} \rightarrow \text{ɛ:}$
 $\{\text{ɔj}\tilde{\text{ɔ}}, \tilde{\text{ɔj}}\tilde{\text{ɔ}}, \text{ɤj}\tilde{\text{ɔ}}\} \rightarrow \tilde{\text{ɔ:}}$
 $\text{ɤjɤ } \text{ɤjɤ} \rightarrow \text{i } \text{i}$
 $\text{jɤ} \rightarrow \text{i} / \text{utterance-initially}$ (cf. English utterance-initial glottal stops before vowels)
 $\text{ɤ } \text{ɤ} \rightarrow \text{i } \text{i} / \text{ }_-\text{j}$
 $\text{ji} \rightarrow \text{i} / \text{ }_\#$
 $\{\text{aja}, \text{ɛja}, \text{ɤja}, \text{ɔja}\} \rightarrow \text{ipaa:}$
 $\text{iji } \text{iji} \rightarrow \text{i } \text{i}$
 $\text{ɔvi} \rightarrow \emptyset$
 $\text{O}[+\text{voice}] \rightarrow \text{O}[-\text{voice}] / \text{ }_\#$ (unless followed by some type of voiced consonant, be it any type of consonant or just an obstruent—this differs by location)
 $\text{ɔ} \rightarrow \text{ɔ:} / \text{ }_-\{\text{r}, \text{l}\}$ (sporadic, perhaps analogical)
 $\emptyset \rightarrow \text{h} / \text{ }_\text{ɤ}$
 Mobile stress \rightarrow initial stress \rightarrow penultimate stress (in most areas)
 $\text{V} \rightarrow \emptyset / \text{unstressed}$ (sporadic)
 $\text{i} \rightarrow \emptyset / \text{ }_\#$ “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”
 $\text{tsi } \text{z}_\text{i} \rightarrow \text{tɕ } \text{z}_\text{i} / \text{V}_-$
 $\text{i } \text{u} \rightarrow \text{u } \text{i} / \{\text{l}^{\text{j}}, \text{j}\}_-$ (sporadic)
 $\text{t}^{\text{j}} \text{d}^{\text{j}} \text{s}^{\text{j}} \text{z}^{\text{j}} \text{n}^{\text{j}} \text{r}^{\text{j}} \text{l}^{\text{j}} \rightarrow \text{tɕ } \text{d}_3 \text{ɕ } \text{ʒ } \text{n } \text{ɫ } \text{l}$ (this last probably not before $/\text{i}/$)
 $\text{i: } \text{u: } \text{i:} \rightarrow \text{i } \text{u } \text{i}$
 $\tilde{\text{a}} \rightarrow \tilde{\text{ɛ}} / \text{short only}$
 $\tilde{\text{a:}} \rightarrow \tilde{\text{a}} \rightarrow \tilde{\text{ɔ}}$
 $\text{a: } \text{ɔ: } \text{ɛ:} \rightarrow \text{ɒ } \text{o } \text{e}$
 $\text{V:} \rightarrow \text{V}$ in certain frequently-used words
 Sporadic (de)nasalization of vowels; “there were certain environments which favoured nasality changes: in the vicinity of nasal consonants. . .and before sibilants”

$\{i, i\} \rightarrow \varepsilon / _C[+\text{rhotic}]$
 $k\ g \rightarrow k^j\ g^j / _ \varepsilon$ where the vowel is from a yer or a borrowing
 $k i\ g i \rightarrow k^j i\ g^j i$
 $\int i\ ʒ i\ tʃ i\ dʒ i\ ɕ i\ z i \rightarrow \text{ʃ} i\ z i\ \text{tʃ} i\ dʒ i\ \text{ts} i\ ʒ i$
 $\int\ ʒ\ tʃ\ dʒ\ ɕ\ z \rightarrow \text{ʃ}\ z\ \text{tʃ}\ dʒ\ \text{ts}\ ʒ$
 $r_ \rightarrow \text{ʃ} / _C[-\text{voiced}]$
 $r_ \rightarrow \text{ʃ} / _C[+\text{voiced}]$
 $r' \rightarrow z / \text{else}$
 $\varepsilon \rightarrow \text{ɔ} / _ \text{ɫ}$ (if the vowel was from a yer)
 $\{\varepsilon, a\} \rightarrow \text{ɔ}$ (sporadic)
 $V \rightarrow \varepsilon$ (sporadic, analogical)
 $\text{ɫ} \rightarrow w$
 $\text{ɒ}\ e \rightarrow a\ \varepsilon$
 $o \rightarrow \text{ɔ} / _N$
 $o \rightarrow u / \text{else}$
 $u \rightarrow \text{ɔ}$ (rare, sporadic)
 $p^j\ m^j\ f^j \rightarrow p\ m\ f / _ \#$
 $\{i, i\} \rightarrow \emptyset / _j V$ when unstressed
 $\tilde{\varepsilon} \rightarrow \varepsilon / _ \{\#, l, \text{ɫ}\}$
 $\tilde{o} \rightarrow \text{ɔ} / _ \{l, \text{ɫ}\}$
 $\tilde{o} \rightarrow \text{ɔ} / _ \#$ (in some regions or dialects)
 $\tilde{\varepsilon}\ \tilde{o} \rightarrow \tilde{\varepsilon}N\ \tilde{o}N / _ \{S, A\}$
 $\tilde{\varepsilon}\ \tilde{o} \rightarrow \varepsilon\tilde{u}\ \text{ɔ}\tilde{u} / _ F[-\text{palatal}]$
 $\tilde{o} \rightarrow \text{ɔ}\tilde{u} / _ \#$ (in standard registers/pronunciations)
 $\tilde{\varepsilon}\ \tilde{o} \rightarrow \varepsilon\tilde{j}\ \text{ɔ}\tilde{j} / _ F[+\text{palatal}]$
 $\text{ɲ} \rightarrow \tilde{j} / _ F$
 $n \rightarrow \text{ɲ} / _ S[+\text{velar}]$ (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
 $t \rightarrow r / \text{tV}_-$
 $n \rightarrow m / \{b, p\}\{l, r, z\}V_-$
 $j \rightarrow \emptyset / _ \varepsilon$ “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
 $OR \rightarrow RO / V_C$
 $RO \rightarrow OR / C_V$
 $vC \rightarrow Cv / _V$
 $Cv \rightarrow vC / _C$
 $t\epsilon ts \ z_r \rightarrow jts \ j_r$
 $\epsilon t\epsilon \rightarrow js / _ \{ts, s\}$
 $zz \rightarrow z\zeta z$
 $\zeta z \rightarrow d\zeta dz / _v$
 $\emptyset \rightarrow d / r_z$
 Regressive voicing/devoicing of obstruents in consonantal clusters
 $v \ r \rightarrow f \ r / C[-voiced]_$
 $v \ r \rightarrow f \ r / _ \{C[-voiced], \#\}$
 $\overset{\circ}{r} \ r \rightarrow s \ z$
 $Lv \rightarrow L[-voiced]f / O[-voiced]_$ “for many speakers”
 $v \rightarrow \emptyset / x_o$
 $\{xv, pv\} \rightarrow f$
 $plv \rightarrow pf$
 $p \rightarrow \emptyset / \#_p$
 $tss \rightarrow ts$
 $\{z, s, s\} \rightarrow \emptyset / _sC$
 $x \rightarrow \emptyset / _r$ “in the word ‘robak’”
 $r \rightarrow r / \{\epsilon, \zeta\}_$
 $zr \rightarrow zr$
 $\epsilon_r \ z_r \rightarrow s_r \ z_r /$ “‘szron’ and ‘żreć’”, respectively
 $t \rightarrow \emptyset / s_ \{\zeta, w\}$
 $t_s \rightarrow t / _r$
 $\epsilon \rightarrow \emptyset / tr_t\epsilon$
 $g \rightarrow \emptyset / _d$
 $w \rightarrow \emptyset / \{r, b\}_$
 $d \rightarrow \emptyset / \zeta_n$
 $d \rightarrow \emptyset / r_ts$
 $d \rightarrow \emptyset / _n$ “in arch. ‘jeno’”
 $\emptyset \rightarrow t / s_r$ “in ‘stręczyć’”
 $st \ s_t \rightarrow z \ z / _b$
 $\{b, p\} \rightarrow \emptyset / _n$ “in verbs in -nąć”
 $v \rightarrow \emptyset / _stv$
 $t \rightarrow \emptyset / t_s_v$ in “czworo”
 $s \rightarrow \emptyset / _ \zeta za$ in “słza”
 $trk \rightarrow kr /$ in the name of the river “Skrwa”

$zd^j st^j \rightarrow \{z, \epsilon\} \{s, \epsilon\} / _n$
 $d^j \rightarrow \emptyset / r_n$
 $st^j \rightarrow \epsilon / _l$
 $sl^j \rightarrow \emptyset / _s$
 $pv \rightarrow f$
 $t\check{s} \rightarrow \check{s} / _p$
 $st^jkl \rightarrow \epsilon t\check{c}kl \rightarrow \{\epsilon, s\}k\check{l} \rightarrow \check{s}k\check{l}$
 $dz ts \rightarrow d\check{z} t\check{s}$
 $C[+sibilant]P \rightarrow C[+alveolopalatal] / _C[+coronal]$
 $C[+sibilant]P \rightarrow C[+dental]$
 $w \rightarrow \emptyset / C_\#$
 $w \rightarrow \emptyset / C_C$ (sporadic)
 “Oscillations between dental and alveo[lo]palatals” / $_C$
 $n \rightarrow s \rightarrow \epsilon / k\tilde{e}$ where the vowel was from Proto-Slavic
 $n \rightarrow s / k_Vn$
 $d \rightarrow g / _n$
 $t\check{s} \rightarrow t / _r$
 $\epsilon \rightarrow \emptyset / t_ \epsilon t\epsilon$
 “Insertion of epenthetic vowels” in some situations, typically one of / ϵ u/, the latter written as either ⟨u⟩ or ⟨ó⟩
 Epenthetic d g appears in some circumstances
 $P^j \rightarrow P / _C$
 $r^j \rightarrow r / _ \{s, t\check{s}, l, w, n, \check{n}\}$
 $t^j d^j \rightarrow t d / _ \{l, n, \check{n}, r, z, \check{z}\}$
 $\epsilon z \rightarrow s z / _C$ (sometimes)

17.11.2 Proto-Slavic to Old Russian

Hwhatting

NB: “Not in chronological order”

$\{t, d\} \rightarrow \emptyset / V_IV$
 $or\ ol\ er\ el \rightarrow oro\ olo\ ere\ ele / _ \$$
 $mj\ pj\ bj \rightarrow m\check{l}^j\ p\check{l}^j\ b\check{l}^j$
 $tj\ dj \rightarrow t\check{f}, \check{z}$
 $kt\ gd \rightarrow _E$
 $\tilde{e}\ \tilde{o} \rightarrow ja\ u$
 $je \rightarrow o / _\#$
 $je \rightarrow o / V_$ (sporadic)
 $j \rightarrow \emptyset / _\#u$

$j \rightarrow \emptyset / V_u$ (sporadic)
 $j\text{b} \rightarrow i$
 $\emptyset \rightarrow j / \#_a$

17.12 Proto-Indo-European to Proto-Italic

Pogostick Man, from http://gillesquentel.org/docs/PIE_to_Italic_C.pdf and http://gillesquentel.org/docs/PIE_to_Italic_V.pdf

NB: This is likely incomplete.

$p \rightarrow \{p, k^w\}$
 $k^{\text{g}} \rightarrow k \text{ g}$
 $g^h g^{wh} \rightarrow g^h x^w$
 $b^h d^h g^h \rightarrow p^h t^h d^h \rightarrow \phi \theta x$
 $s \rightarrow z / \text{medial}$ (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 and http://gillesquentel.org/docs/PIE_to_Italic_V.pdf

NB: This is likely incomplete.

$x \rightarrow h$
 $g^w \rightarrow w$
 $g^h \rightarrow f / \#_$
 $g^h \rightarrow \{d, h, g\}$
 $\{\phi, \theta\} \rightarrow f / \#_$
 $\phi \theta \rightarrow b \{d, b\} / V_V$
 $z \rightarrow r$
 $x^w \rightarrow f$
 $x^w \rightarrow \{w, g^w\}$
 $l \text{ } \text{r} \rightarrow ol \{or, er\} / _ \#$
 $m \text{ } n \rightarrow em \text{ } en$
 $e \rightarrow \{e, i\}$

17.12.1.1 Proto-Indo-European to Latin *Mecislau*, from Ramat, Anna Giacrole and Paolo Ramat, *The Indo-European Languages*, and other sources

$e\ o \rightarrow i\ u / _ \eta$
 $e \rightarrow o / _ \text{ɹ}$
 $o \rightarrow u / _ \{\text{mb}, \text{mk}, \text{ɹ}\}$
 $o \rightarrow e / _ \text{w-}\{\text{r}, \text{s}, \text{t}\}$
 $o: \rightarrow u: / _ \text{r}$
 $\text{aj} \rightarrow \text{ai} \rightarrow \text{e:}$ (in rustic dialects)
 $\text{aj} \rightarrow \text{ai} \rightarrow \text{ae}$
 $\text{oj} \rightarrow \text{oi} \rightarrow \text{oe} \rightarrow \text{u:}$
 $\text{aw} \rightarrow \text{o:}$ (in rustic dialects)
 $\text{aw} \rightarrow \text{au}$
 $\{\text{ew}, \text{ow}\} \rightarrow \text{ou} \rightarrow \text{u:}$
 $V \rightarrow i / \%(\text{C})(\text{C})_ \% \text{ when unstressed}$
 $V \rightarrow o / \%(\text{C})(\text{C})\text{V}_ \% \text{ when unstressed}$
 $V \rightarrow e / \%(\text{C})(\text{C})_ \% \text{r when unstressed (with some exceptions)}$
 $V \rightarrow \{i, u\} / \%(\text{C})(\text{C})_ \% \text{P when unstressed}$
 $\text{a}\ \text{o} \rightarrow \text{e}\ \text{u} / \%(\text{C})(\text{C})_ \text{C}(\text{C})\% \text{ when unstressed}$
 $\text{a} \rightarrow \text{e} \rightarrow i / \%(\text{C})(\text{C})_ \eta \text{ when unstressed}$
 $\text{a} \rightarrow \text{e} \rightarrow u / \%(\text{C})(\text{C})_ \text{ɹ} \text{ when unstressed}$
 $\text{e} \rightarrow u / \%(\text{C})(\text{C})_ \text{ɹ} \text{ when unstressed}$
 $\text{ai} \rightarrow \text{ei} \rightarrow \text{i:} / \%(\text{C})(\text{C})_ \text{ when unstressed}$
 $\text{ei}\ \text{oi}\ \text{ou} \rightarrow \text{i:}\ \text{e:}\ \text{u:} / \%(\text{C})(\text{C})_ \text{ when unstressed}$
 $\{i, o\} \rightarrow e / _ \#$
 $\{i, e\} \rightarrow \emptyset / _ \# \text{ (sometimes)}$
 $\text{a} \rightarrow \text{e} / _ \text{C}(\text{C})\#$
 $\text{e} \rightarrow i / _ \{\text{s}, \text{t}\}\#$
 $\text{o} \rightarrow u / _ \text{C}(\text{C})\# ! \{\text{u}, \text{w}\}_$
 $\{\text{ai}, \text{ei}, \text{oi}\} \rightarrow \text{ei} \rightarrow \text{i:} / _ (\text{C})(\text{C})\#$
 $\text{V:} \rightarrow \text{V}[-\text{long}] / _ \{\text{m}, (\text{n}), \text{t}, \text{l}, \text{r}\}\#$
 $\text{V:} \rightarrow \text{V}[-\text{long}] / _ \#$
 $\text{j} \rightarrow i / _ \text{C}_$
 $\text{w} \rightarrow u / _ \text{t}_$
 $\text{e} \rightarrow o / _ \text{w}$
 $\text{e} \rightarrow o / _ \text{w}_$
 $\text{w} \rightarrow \emptyset / _ \text{s}_\text{o}$
 $\text{m}\ \text{n} \rightarrow \text{em}\ \text{en}$
 $\text{n:} \rightarrow \text{n}$
 $\text{l}\ \text{l:}\ \text{r}\ \text{r:} \rightarrow \text{ol}\ \text{l}\ \text{or}\ \text{r}$
 $\text{b}^{\text{fi}} \rightarrow \text{h} / _ \# \text{ (in rustic dialects)}$
 $\{\text{b}^{\text{fi}}, \text{d}^{\text{fi}}, \text{g}^{\text{wfi}}\} \rightarrow \text{f} / _ \#$
 $\text{h} \rightarrow \emptyset / _ \text{b}_$
 $\text{t} \rightarrow \text{k} / _ \text{l}$

$t \rightarrow \emptyset / C_ \#$
 $t \rightarrow d / V_$
 $dw \rightarrow b$
 $d \rightarrow \emptyset / V\colon_ \#$
 $d \rightarrow \emptyset / C_$
 $d \rightarrow l$ “in many dialects”
 $d^{fi} \rightarrow b / rV_$
 $d^{fi} \rightarrow b / _Vr$
 $d^{fi} \rightarrow b / _l$
 $d^{fi} \rightarrow b / u\colon_$
 $d^{fi} \rightarrow d$
 $k' \acute{g} \rightarrow k \ g$
 $g^{fi} \rightarrow g / \eta_$
 $g \rightarrow \emptyset / _h$
 $k^w \rightarrow \emptyset / C_C$
 $k^w \rightarrow k / _ \{o,i,C\}$
 $g^{w(fi)} \rightarrow gu / \eta_$
 $w \rightarrow \emptyset / gV_ \{l,r\}$
 $g^w \rightarrow v$
 $g^{wfi} \rightarrow f / _r$
 $g^{wfi} \rightarrow v / V_V$
 $s \rightarrow z \rightarrow r / V_V$
 $s \rightarrow \theta \rightarrow f / \# _r$
 $s \rightarrow \theta \rightarrow b / _r$
 $s \rightarrow z / _C[+voiced]$
 $V \rightarrow V\colon / _zC[+voiced]$
 $z \rightarrow \emptyset / _C[+voiced]$
 $p \dots k^w \rightarrow k^w \dots k^w$
 $V_1 \dots V_2 \rightarrow V_2 \dots V_2$ (rare)
 $V \rightarrow V\colon / _S[+voiced]\{S[-voiced],F[-voiced]\}$; “(i, e, and o sometimes bypass this)”
 $S[+voiced] \rightarrow S[-voiced] / _ \{S[-voiced],F[-voiced]\}$
 $S[-voiced] \rightarrow S[+voiced] / _N$
 $s \rightarrow z / _ \{N,l,r\}$
 $V \rightarrow V\colon / _z \{l,r\}$
 $z \rightarrow \emptyset / _ \{l,r\}$
 $S \rightarrow f / _f$
 $\{t,d\} \rightarrow s / _s$
 $\{p,b\} \{t,d\} \rightarrow m \ n / _ \{m,n\}$
 $\{k,g\} \rightarrow \eta / _n$
 $m\colon \rightarrow n / \{W,V\}_$
 $\{d,n,r\} \rightarrow l / _l$

$n \rightarrow r / _r$
 $s \rightarrow z \rightarrow l / l_$
 $s \rightarrow z \rightarrow r / r_$
 $n \rightarrow l / l_$
 $V \rightarrow V: / _ \{t,d\}t$
 $\{t,d\}t \rightarrow tst \rightarrow s:$
 $\emptyset \rightarrow t / s:r$
 $\emptyset \rightarrow p / m_ \{s,t,l\}$
 $s: \rightarrow s / _ \#$
 $s: \rightarrow s / \{W,V\} _$
 $l \rightarrow r \rightarrow _Vl$
 $l \rightarrow r / IV_$ “(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)”
 $V \rightarrow \{V:, V[+nas]\} / _n\{f,s\}$
 $n \rightarrow \emptyset / V[+nas] _$
 $C_1C_2C_3C_4 \rightarrow (C_3)C_4$
 $C_1C_2C_3 \rightarrow C_1C_3$

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
 $\{e,ai\} \rightarrow \varepsilon$
 $\{i,e:,oi\} \rightarrow e$
 $i: \rightarrow i$
 $o \rightarrow \circ$
 $\{u,o:\} \rightarrow o$
 $u: \rightarrow u$
 $a: \rightarrow a$
 $m \rightarrow n / _ \#$ “(in certain common monosyllabic words, as well as some common compounds of them)”
 $m \rightarrow \emptyset / _ \#$
 $h \rightarrow \emptyset$
 $w \rightarrow \beta$
 $\varepsilon \circ \rightarrow e o /$ when unstressed
 $j \rightarrow j / \# _V$
 $j \rightarrow j: / V _V$

“In contrast, Romanian exhibits $u, u: \rightarrow u$ (and ultimately also $\text{ɔ}, \text{o}: \rightarrow \text{o}$); 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 *Mecislau*

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
 $i: \rightarrow i / _ \% \text{"}V$
 $\{i,e:\} e \rightarrow \{e,\varepsilon\} \{e,e\} /$ stressed
 $\{i,e:,e\} \rightarrow e / _ \% \text{"}V$
 $i \rightarrow j / \text{"}V_ \#$
 $u: \rightarrow u /$ stressed
 $u: \rightarrow u / _ \% \text{"}V$
 $au \rightarrow a / _ \% \text{"}u$
 $\{u,o:\} o \rightarrow o \text{ ɔ} /$ stressed
 $\{u,o(:)\} \rightarrow u / _ \% \text{"}V$ in East Catalan
 $\{u,o(:)\} \rightarrow o / _ \% \text{"}V$ else
 $u \rightarrow w / \text{"}\varepsilon_ \#$
 $a: \rightarrow a$
 $oe \rightarrow \{e,\varepsilon\}$
 $ae au \rightarrow e \text{ ɔ} /$ stressed
 $ae au \rightarrow e o / _ \% \text{"}V$
 $o \rightarrow u / _ a$
 $o \rightarrow u / _ \% \text{"}V$ (irregular)
 $VV \rightarrow V:$ (“For outcomes of word-final vowels, see down below”)
 $ndj \rightarrow \text{ɲ}$
 $dj \rightarrow d\text{ʒ} \rightarrow \text{ʒ}$

$\emptyset \rightarrow e / \# _s C$
 $l \rightarrow \emptyset / \{o, u\} _ CV$
 $l \rightarrow w / V _ CV$ (“although l was usually restored later”)
 $mn \rightarrow n \colon \rightarrow \eta$
 $p \ b \ t \ d \ k \ g \rightarrow \beta \ \{\beta, w\} \ \emptyset \ \{j, w\} \ \gamma \ \{j, \emptyset, g\} / V _ rV$
 $\eta \rightarrow \eta / _ \{i, e\}$
 $p \ b \rightarrow b \ w / V _ IV$ (the latter is irregular)
 $\{kl, gl\} \rightarrow \lambda / V _ V$ (the latter is irregular)
 $sk \rightarrow \int / V _ \{i, e\}$
 $p \ k \rightarrow \emptyset \ j / V _ tV$
 $k \rightarrow \emptyset / V _ n _ tV$
 $ks \rightarrow \int / V _ V$
 $k \rightarrow j / _ s \#$
 $gn \ tj \rightarrow \eta \ \emptyset / V _ V$
 $stj \rightarrow \int$
 $tj \rightarrow s / C _$
 $sj \ ssj \ jn \rightarrow js \ jf \ \eta / V _ V$
 $mnj \rightarrow \{mni, \eta\} / V _ V$
 $lj \ rj \ kj \ gj \rightarrow \lambda \ jr \ ts \ \mathfrak{z} / V _ V$
 $\{bj, vj\} \rightarrow w \mathfrak{z} / _ \% \text{”} V$
 $b \rightarrow v / \check{V} \% _ j$
 $ja \rightarrow je / \# _$ (irregular)
 $V \rightarrow \emptyset / _ \% \text{”} V$ (rare)
 $\emptyset \rightarrow \{e, o\} / CL _ \#$
 $\emptyset \rightarrow \{e, o\} / r _ \#$
 $a \rightarrow e /$ “in the penult”
 $V \rightarrow \emptyset / \text{”} V \% _ (C) (C) V (C) \#$ (“irregular; e is kept before n”)
 $b \rightarrow v / V _ V$
 $p \ t \rightarrow b \ d / V _ V$
 $f \rightarrow v / V _ V$ (irregular)
 $s \rightarrow z / \text{”} V \% V _ V$
 $s \rightarrow \emptyset / V _ V \% \text{”} V$
 $k \ g \rightarrow \emptyset \ \{\emptyset, \mathfrak{z}\} / V _ \{i, e\}$ ($g \rightarrow \mathfrak{z}$ is learned)
 $g \rightarrow \emptyset / V _ V \% \text{”} V$
 $k \ j \rightarrow g \ \mathfrak{z} / V _ V$
 “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]”
 — $d \rightarrow z \rightarrow \emptyset / V _ V$
 — $d \rightarrow w / _ V \#$

$i: \rightarrow \emptyset / _ \#$
 $\{i, e(:), ae\} \rightarrow \emptyset / _ (C) \#$
 $\{u(:), o(:)\} \rightarrow \emptyset / _ \#$
 $V \rightarrow \emptyset /$ “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” ! $V = a$
 $w \rightarrow \emptyset / u_ \#$
 $j \text{ gj ts z n} \rightarrow tʃ \text{ i w s } \emptyset / _ \#$
 $t \rightarrow \emptyset / V_sV$
 $\{b, v\} \rightarrow w / V_ \#$
 $d \rightarrow t / _ \#$
 $l \rightarrow \Lambda / \#_$
 $k \rightarrow ts \rightarrow s / \#_ \{i, e\}$
 $g \rightarrow ʒ / \#_ \{i, e\}$
 $j \rightarrow dʒ \rightarrow ʒ / \#_$
 $k^w g^w \rightarrow k g / \#_ \{i, e\}$
 $k^w \rightarrow k / C_V$
 $k^w \rightarrow g / V_ \{i, e\}$
 $k^w \rightarrow k / \#_a\%V$
 $k^w \rightarrow gw / V_a$
 $k^w \rightarrow kw / \#_”a$
 $g^w \rightarrow gw / \#_a$
 $g^w \rightarrow g / C_ \{i, e\}$
 $g^w \rightarrow gw / C_a$
 $b \rightarrow m \rightarrow \emptyset / Vm_V$
 $n \rightarrow r \rightarrow br / m_$
 $k \rightarrow w / V_rV$
 $\{b, v\} \rightarrow w / V_tV$
 $g \rightarrow \emptyset / V_dV$
 $l: n: \rightarrow \Lambda \text{ ʝ}$
 $\Lambda \rightarrow l / ”i_$
 $C \rightarrow \emptyset / C_1-C_2 ! C_2 = L$
 $\{a, o\} \rightarrow \emptyset / \#_ \text{ (rare)}$
 $ɔ \rightarrow o / _N\$C$
 $e \rightarrow \varepsilon / _v$
 $o \rightarrow u / _ \{n, nk, \eta\}$ when stressed
 $e \rightarrow i / _ \{nk, \eta\}$ when stressed (irregular)
 $aj \rightarrow ej \rightarrow ee \rightarrow e$ (irregular)
 $aj \rightarrow ej / _ ʃ$ when stressed (irregular)
 $ej \text{ ɔj} \rightarrow j\text{ej uei} / i \{u, ui\}$ / stressed
 $\varepsilon \rightarrow e / ! _ \{r:, l, rC[-labial], nr\}$ or $_ ? w\#$

e → ε (in Eastern Catalan)

17.12.1.1.3 Latin to French *pharazon*

NB: The vowels here marked ⟨ô⟩ and ⟨ò⟩ seem to have had some sort of open-close distinction similar to /o ɔ/.

Vulgar Latin:

- h → Ø
- V₀V₀ → V₀:
- n → Ø / _{f,v,s}
- r → s / _s
- {m,n} → Ø / _# in polysyllables
- m → n / _#
- u → Ø / CC_V
- w → gu / “from Germanic loanwords”
- V → ”V / ”VSr_
- V → ”V / _C*” {i,e}V
- {i,e} → j / _V

Stressed vowels:

- a: → a
- (a)e → è
- {e:,i,oe} → é
- i: o: → i ó
- o → ò
- u → ó / !i:
- u: → u

Initial vowels (first vowel of a word):

- a: → a
- {e(:),i,ae,oe} → e
- i: → i
- {o(:),u} → o

Final vowels:

- a: → a
- {e(:),i,ae,oe} → e
- i: o: → i o
- u(:) → o / except _V (?)

k g → tj dj / _E

è → ie / in U[+open]

$\text{è} \rightarrow \text{ie} / _C\#$
 $\text{è} \rightarrow \varepsilon / \text{in } U[+\text{closed}]$
 $\text{ò} \rightarrow \text{uo} \rightarrow \text{ue} / \text{in } U[+\text{open}] ! _N$
 $\text{ò} \rightarrow \text{ɔ} / \text{in } U[+\text{closed}]$
 $\text{dj} \rightarrow \text{dʒ} / \text{r}_$
 $\text{d} \rightarrow \emptyset / _j$
 $\text{j} \rightarrow \emptyset / \text{V}_ \text{”E}$
 $\text{j tj} \rightarrow \text{dʒ ts} / \#_$
 $\text{j} \rightarrow \text{dʒ} / \text{V}_ \text{V (rare)}$
 $\emptyset \rightarrow \text{s} / \text{t}_j$
 $\text{t} \rightarrow \text{s} / \text{s}_j$
 $\{\text{gn,nj}\} \rightarrow \text{n}$
 $\text{nk} \rightarrow \text{n} / _t$
 $\text{V} \rightarrow \emptyset / \text{in the unstressed penult}$
 $\text{V} \rightarrow \emptyset / \text{intertonic} ! \text{V} = \text{a}$
 $\text{a} \rightarrow \text{ə} / \text{intertonic}$
 $\emptyset \rightarrow \text{b} / \text{m}_ \{\text{r,l}\}$
 $\emptyset \rightarrow \text{d} / \{\text{n,l,n,z,r}\}$
 $\emptyset \rightarrow \text{t} / \text{s}_r$
 $\text{k g} \rightarrow \text{t d} / \{\text{n,r}\}_r$
 $\text{n} \rightarrow \text{r} / \{\text{g,p}\}_$
 “[T]wo obstruents in contact with different voicing assimilate to the voicing of the second”
 $\text{C} \rightarrow \emptyset / \text{C}_1\text{-C}_2 ! \text{C}_2 = \{\text{r,l}\}$
 $\text{t} \rightarrow \text{s} / _ \{\text{n,m}\}$
 $\{\text{kl,gl,lj}\} \rightarrow \text{ʃ}$
 $\{\text{p,b}\} \{\text{t,d}\} \rightarrow \text{v ɔ} / \text{V}_ \{\text{V,r}\}$
 $\text{v} \rightarrow \emptyset / \text{V}_ \text{B}$
 $\text{p} \rightarrow \text{b} / _l$
 $\text{ɔ} \rightarrow \emptyset / _r$
 $(\text{t})\text{s} \rightarrow (\text{d})\text{z} / \text{V}_ \text{V}$
 $\text{k} \rightarrow \text{js} / \text{V}_ \text{sV}$
 $\text{k} \rightarrow \text{j} / _ \text{s}\#$
 $\{\text{k,g}\} \rightarrow \emptyset / \text{V}_ \text{B}$
 $\{\text{k,g}\} \rightarrow \emptyset / \text{B}_ \text{a}$
 $\{\text{k,g}\} \rightarrow \text{j} / _ \{\text{a,C}\}$
 $\text{k}^w \rightarrow \{\text{v,u}\} / \text{V}_ \text{E}$
 $\text{k}^w \rightarrow \text{j}\{\text{v,u}\} / \text{V}_ \text{a}$
 “[N]ote that the [following] clusters are the only case where a consonant does not receive intervocalic treatment before /j/”:
 — $(\text{k})\text{kj} \rightarrow \text{ts}$
 — $\text{g} \rightarrow \emptyset / _j$

$\text{— pj} \rightarrow \text{tʃ}$
 $\text{— \{b,v\}j} \rightarrow \text{dʒ}$
 $\text{— m\{n,j\}} \rightarrow \text{ndʒ}$
 $\text{V}^{\text{e}} \rightarrow \text{V}^{\text{i}}$
 $\text{V}_0 \text{V}_0 \rightarrow \text{V}_0$
 $\emptyset \rightarrow \text{e} / \# \text{ } _\text{sC}$
 $\text{k g} \rightarrow \text{tʃ dʒ} / \text{ } _\text{a}$
 $\text{t} \rightarrow \emptyset / \{\text{ʃ,s}\}$
 $\text{d} \rightarrow \emptyset / \text{ } _\{\text{z,ʒ}\}$
 $\text{ɛ ɔ} \rightarrow \text{iɛ uɛ} / \text{ } _\{\text{Cj,jC}\}$
 $\emptyset \rightarrow \text{j} / \{\text{ʃ,ʒ,sj,zj}\}^{\text{a,é}} \text{ } _\text{in U[+open]}$
 $\text{s: j zj rj} \rightarrow \text{j s: j z jr}$
 $\text{j} \rightarrow \emptyset / \text{s } _\text{(s: ?)}$
 $\text{ɛ} \rightarrow \text{ɛa} / \text{ } _\{\text{C, \#}\}$
 $\text{l} \rightarrow \text{u} / \text{ } _\{\text{C, \#}\}$
 $\text{l} \rightarrow \emptyset / \{\text{i,u}\} \text{ } _\text{—}$
 $\{\text{le, lo}\} \rightarrow \text{u} / \{\text{e,o}\} \text{ } _\text{—\#}$ “[this is actually an analogical development, but it applies as regularly as a sound law]”
 $(\text{ɛ})\text{au} \rightarrow \text{ɔ}$
 $\text{é} \rightarrow \text{ɛi} / \text{in U[+open]}$
 $\text{é} \rightarrow \text{ɛ} / \text{in U[+closed]}$
 $\text{ó} \rightarrow \text{ou} \rightarrow \text{ɛu} / \text{in U[+open]}$
 $\text{ó} \rightarrow \text{ɔ} / \text{ } _\text{N}$
 $\text{ó} \rightarrow \text{ou} / \text{in U[+closed]}$
 $\text{e} \rightarrow \text{ə} / \# (\text{C } \dots) \text{ } _\text{—}(\% \dots)^{\text{a}} \text{ } _\text{in U[+open]}$
 $\text{e} \rightarrow \text{ɛ} / \# (\text{C } \dots) \text{ } _\text{—}(\% \dots)^{\text{a}} \text{ } _\text{in U[+closed] or } _\text{V (?)}$
 $\text{o} \rightarrow \{\text{ou, ɔ}\}$ “(the outcome fluctuates, but ɔ is often the result of analogy rather than strict sound change; always ou before another vowel)”
 $\text{a} \rightarrow \text{ə} / \# \{\text{tʃ, dʒ}\} \text{ } _\text{—}(\% \dots)^{\text{a}} \text{ } _\text{in U[+open]}$
 $\text{a} \rightarrow \text{ɛ} / \text{in U[+open]}$ “(but a following ʌ creates a [closed] syllable)”
 $\text{k}^{\text{w}} \text{g}^{\text{w}} \rightarrow \text{k g}$
 $\text{C}_0 \text{C}_0 \rightarrow \text{C}_0$
 $\text{t} \rightarrow \emptyset / \text{V } _\text{—\#}$
 $\text{ɛ} \rightarrow \text{i} / \text{ } _\text{C}(\text{C } \dots) \text{i} \text{ } _\text{—\#}$
 $\text{V} \rightarrow \emptyset / \text{ } _\text{—\#}$ “(except in monosyllables or after another vowel)” ! $\text{V} = \text{a}$
 $\text{a} \rightarrow \text{ə}$
 $\text{V} \rightarrow \text{ə} / \text{ } _\{\text{CC, tʃ, dʒ}\} \text{ } _\text{! } _\{\text{nt, ng, mp, rt, rd}\}$
 $\text{s} \rightarrow \emptyset / \text{ } _\text{C}$
 $\{\text{p, b}\} \rightarrow \emptyset / \text{ } _\{\text{t, d}\}$
 $\text{v} \rightarrow \emptyset / \text{ } _\text{C}$
 $\text{v} \rightarrow \emptyset / \text{C } _\text{—}$

$\delta \rightarrow \emptyset$
 $ue \rightarrow \varepsilon u$
 $ai \rightarrow e / _ \#$
 $ai \ i \varepsilon i \rightarrow \varepsilon i$
 $ou \ \varepsilon u \ u \ ue i \rightarrow u \ \text{œ} \ y \ yi$
 $\{ei, oi\} \rightarrow oi / C[-nas]$
 $o \rightarrow u / _ "V$
 $V[-high] \rightarrow \text{ə} \rightarrow \emptyset / _ V$ “(except that a is kept before o)”
 $n \rightarrow in / _ \{C, \#\}$
 $V\{n, m\} / V[+nas] / _ \{C, \#\}$
 $\tilde{e} \rightarrow \tilde{a}$
 $\{a\tilde{i}, e\tilde{i}\} \rightarrow \tilde{e}$
 $\tilde{y} \rightarrow \tilde{œ}$
 $O[+voiced] \rightarrow O[-voiced] / _ \#$
 $\{t, s\} \rightarrow \emptyset / _ \#$
 $k \rightarrow \emptyset / V[+nas] _ \#$
 $\{n, m\} \rightarrow \emptyset / C _ \#$
 $j \rightarrow \emptyset / \{f, \beta\} _ V[-nas]$
 $\text{Λ} \ r \rightarrow j \ \text{ʁ}$
 $oi \rightarrow w\varepsilon \rightarrow wa$
 $o\tilde{i} \rightarrow w\tilde{e}$
 “([pharazon has] omitted the loss of ə 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.”

$r \rightarrow \emptyset / a_ju\#$
 $tVk \rightarrow d\beta / \text{unstressed}$
 $au \rightarrow u / \# _$ (sporadically, e.g. *audire* → *udire*)
 $au \rightarrow o$
 $k \ g \rightarrow t\beta \ d\beta / _ E$
 $kVl \rightarrow k\iota j / \text{unstressed}$
 $kt \rightarrow t\iota$
 $\varepsilon \rightarrow j\varepsilon / \text{unstressed} ! _ \{d\beta, \text{Λ}, n\}$
 $g \rightarrow \emptyset / a_V$
 $j \rightarrow d\beta / \# _$
 $j \rightarrow d\beta / V_V$
 $\{dj, gj\} \ lj \ \{nj, gn\} \rightarrow d\beta \ \text{Λ} \ n$

$\text{ɔ} \rightarrow \text{uo} / \text{stressed ! j}_- \text{ or } -\{\text{dʒ}, \text{L}\}$
 $\text{b} \rightarrow \text{v} / \text{V}_-$
 $\text{l} \rightarrow \text{j} / \# \text{C}_-$
 $\text{C} \rightarrow \text{C}^{\text{h}} / \text{V}_- \text{jV}$
 $\text{sj} \rightarrow \text{dʒ}$
 $\{\text{t}, \text{d}, \text{k}, \text{m}, \text{n}, \text{s}\} \rightarrow \emptyset / -\#$
 $\text{r} \rightarrow \emptyset / -\#$ (in polysyllables only)
 $\text{ta:te} \rightarrow \text{ˈta} / -\#$
 $\text{t k} \rightarrow \text{d g} / \text{V}_- \text{r}$
 $\{\text{skj}, \text{stj}, \text{s: j}\} \rightarrow \text{ʃ}$
 $\text{tj ks w} \rightarrow \text{ts s: gw}$

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 ⟨∅⟩ 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.

$\text{h} \rightarrow \emptyset$
 $\text{rs} \rightarrow \text{s:}$
 $\text{n} \rightarrow \emptyset / \text{ _s}$
 $\text{V}_0 \text{V}_0 \rightarrow \text{V}_0^{\text{h}}$
 $\text{V} \rightarrow \emptyset / \text{ˈV}\% \text{L}(\text{C})(\text{C})\text{V}(\text{C})\#$ (irregular)
 $\text{V} \rightarrow \emptyset / \text{ _L}(\text{C})(\text{C})\text{V}(\text{C})\#$ (irregular)
 $\text{V} \rightarrow \emptyset / \text{ˈV}\% \text{s}_- \text{t}(\text{C})\text{V}(\text{C})\#$ (irregular)
 $\text{u} \rightarrow \text{w} / \text{ _V}$ (between first and stressed syllables)
 $\text{w} \rightarrow \text{u} / \text{ _ˈV}$
 $\text{w} \rightarrow \emptyset / \text{ _V}$
 $\text{au} \rightarrow \text{a} / \text{ _}\% \text{ˈu}$
 $\text{au} \rightarrow \text{o}$
 $\text{e} \rightarrow \text{i:} / \text{ˈ _}\% \text{i:}\#$
 $\text{i:} \{ \text{i}, \text{e:} \} \text{e} \rightarrow \text{i e } \epsilon / \text{stressed}$
 $\text{i:} \{ \text{i}, \text{e}(\text{:}) \} \rightarrow \text{i e} / \text{ _}\% \text{ˈV}$
 $\text{i:} \rightarrow \emptyset / \{ \text{k}, \text{s} \} \text{ _}\#$
 $\{ \text{i}(\text{:}), \text{e}(\text{:}), \text{ae} \} \rightarrow \text{e} / \text{ _}\#$
 $\text{u:} \rightarrow \text{u}$
 $\text{ui:} \rightarrow \text{ui} / \text{ _}\#$

$\{u, o:\}$ $o \rightarrow o \circ$ / stressed
 $\{u, o(:)\}$ $\rightarrow o$ / $_{\%}''V$
 $\{u(:), o(:)\}$ $\rightarrow o \rightarrow u$ / $_{\#}$
 $a: oe \rightarrow a e$
 $ae \rightarrow \varepsilon$ / stressed
 $\varepsilon \circ \rightarrow e o$ / $_{\#}''u$
 $\{olt, okt\} \rightarrow ujt \rightarrow ut$
 $a\ddot{t} \rightarrow o$
 $\ddot{t} \rightarrow w$ / 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)
 $N \rightarrow \emptyset$ / $V[+nas]_{\#}V$
 $\{\tilde{a}, \tilde{ae}, \tilde{oe}\} \rightarrow \tilde{ao}$ / $_{\#}$
 $V[+nas] \rightarrow V[-nas]$ / unstressed
 $V[+nas] \rightarrow V[-nas]$ / 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)
 $e \rightarrow \emptyset$ / $\{l, n, r, s, k\}_{\#}$
 $e \rightarrow \emptyset$ / $''\{i, e\}_{\#}$
 $e \rightarrow i$ / $_{\#}(C)(C)V(C)_{\#}$
 $\{e, i\} \rightarrow \emptyset$ / $\{l, m, r\}_{\#}$ when between $\#U$ and $U[+stress]$
 $\{e, i\} \rightarrow \emptyset$ / k_t when between $\#U$ and $U[+stress]$
 $o \rightarrow \emptyset$ / $_{\#}\{r, l\}$ when between $\#U$ 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)
 $g \rightarrow g^j \rightarrow d^j \rightarrow d_3 \rightarrow \mathfrak{z}$ / $\#_{\#}\{i, e\}$
 $j \rightarrow d_3 \rightarrow \mathfrak{z}$ / $\#_{\#}$
 $pl \rightarrow \{f, pr\}$ / $\#_{\#}$
 $l \rightarrow r$ / $b_{\#}$
 $fl \rightarrow \{f, fr\}$ / $\#_{\#}$

$\{fl, skl\} \rightarrow f$
 $ngi \rightarrow n$
 $s \rightarrow f / V_C[-voiced]V$
 $s \rightarrow ʒ / V_C[+voiced]V$
 $kl \rightarrow k\Lambda \rightarrow tʃ \rightarrow f / \#_$
 $\{kl, gl\} \rightarrow \Lambda$
 $g \rightarrow \emptyset / \#_l$
 $k^w \rightarrow kw / \#_”a$
 $k^w g^w \rightarrow k g / \#_ \{i, e, o\}$
 $k^w \rightarrow g / V_ \{i, e\}$
 $k^w \rightarrow k / VC_ \{a, i, e\}$
 $k^w \rightarrow gw / V_a g^w \rightarrow gw / \#_$
 $g^w \rightarrow gw / C_a$
 $b \rightarrow v / V_ \{V, r\}$
 $d \rightarrow \emptyset / V_V$
 $g \rightarrow \{\emptyset, ʒ\} / V_ \{i, e\}$ ($g \rightarrow ʒ$ is learned)
 $g \rightarrow j / V_r$
 $pl bl p t \rightarrow br \{br, l\} b d / V_V$ ($bl \rightarrow l$ is learned)
 $p t k \rightarrow b d g / V_r$
 $p \rightarrow \emptyset / V_ \{t, s\}V$
 $k \rightarrow j / V_tV$
 $k \rightarrow \emptyset / Vn_tV$
 $ks gn tj \rightarrow f n \{z, s\} / V_V$ ($tj \rightarrow s$ is learned)
 $tj \rightarrow s / C_V$
 $dj \rightarrow dʒ \rightarrow ʒ / V_V$
 $dj \rightarrow dz \rightarrow ts \rightarrow s / r_V$
 $ndj \rightarrow nts \rightarrow ns \rightarrow n / V_V$
 $sj \rightarrow jʒ / V_V$
 $j \rightarrow \emptyset / i_ʒV$
 $s:j (m)nj lj rj \rightarrow jʃ n\Lambda jr / V_V$
 $kj \rightarrow ts \rightarrow s / V_V$
 $gj \rightarrow \{ʒ, j\} / V_V$ ($gj \rightarrow j$ is learned)
 $pj \{bj, vj\} \rightarrow jb jv / V_V$
 $mj \rightarrow jm$ (irregular)
 $C_0C_0 \rightarrow C_0 / ! C = r$
 $C \rightarrow \emptyset / C_1C_2 ! C_2 = L$
 $k \rightarrow j / .s\#$
 $f \rightarrow v / V_V$ (irregular)
 $s l \rightarrow z \emptyset / V_V$
 $a \rightarrow \emptyset / ”\mathfrak{z}_ \#$
 $sk k \rightarrow jʃ z / V_ \{i, e\}$

$k \rightarrow g / V_1-V_2 \text{ ! } V_2 = \text{ɔ}$
 $j \rightarrow \{\emptyset, \text{ʒ}\} / V-V \text{ (} j \rightarrow \text{ʒ is learned)}$
 $b \rightarrow v / VL-V$
 $m \rightarrow \emptyset / _n$
 $\{e, i\} \rightarrow \emptyset / \{L, N\}-(C)(C)V(C)\#$
 $o \rightarrow \emptyset / _-(C)(C)V(C)\#$
 $e \rightarrow j / \{a, o, u\}_-$
 $a \rightarrow e / _j \text{ when stressed}$
 $o \rightarrow u / _n \text{ when stressed}$
 $V_0V_0 \rightarrow V_0 \text{ (irregular)}$
 $d \rightarrow \emptyset / V-V \text{ (in Portugal)}$

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.

$VN \rightarrow V:$ / $_S$ (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)
- $\text{ɔ} \rightarrow y / _ \{u, P, k, g, i\}$ (in northwestern dialects)
- $\text{ɔ} \rightarrow \text{ye} / _ \{u, P, k, g, i\}$ (in western dialects, Limousin, and Auvergne)
- $\text{ɔ} \rightarrow \text{yo} / _ \{u, P, k, g, i\}$ (in Languedoc)
- $\text{ɔ} \rightarrow \{\text{ye}, \text{yo}, \text{ɔ}\} / _ \{u, P, k, g, i\}$ (in southern dialects)
- $a \rightarrow \text{a} / _N$ (Rouergue, Limousin, Auvergne, Dauphiné)
- $a \rightarrow \text{a} / _\#$ in monosyllables and oxytones (Rouergue, Limousin, Auvergne, Dauphiné)

- $a \rightarrow \text{ã}$ (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 /ã/, which seems to have been distinct from /ɔ/, but beyond this section it doesn't really seem to matter very much)
- $\text{ã } \varepsilon \text{ } \text{ɔ} \rightarrow a \text{ } e \text{ } o / _N$ (in Limousin and neighboring regions, the last two particularly in Limousin, Languedoc, and Gascon, though when $_n$ this change may have been blocked)
- $\varepsilon \text{ } \text{ɔ} \rightarrow j\varepsilon \text{ } w\text{ɔ}$ (intermittent, “least common in the southwest”)
- $e \rightarrow i / _V$ (and possibly $V_?$)
- $e \rightarrow i / _(C\dots)i\{C(C\dots)V,\#\}$
- $\varepsilon \rightarrow j\varepsilon / _{-}\{u,i,\text{ɛ},r^i,\text{ʃ},\text{ʒ},j,\text{tʃ},d\text{ʒ}\}$ (except in some northern and western dialects, or if this $u \leftarrow l$ or if this $i \leftarrow \text{ð}$)
- $ju \rightarrow jeu$
- $o \rightarrow y / _{-}\{\text{tʃ},d\text{ʒ},it,id\}$ (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)
- $\text{ɔ} \rightarrow \{\text{ɔ},we\}$ (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 $\{\text{tʃ},d\text{ʒ},j\}_-$, especially if CC_- , or when $\{(k)s,sz,sj\}_-$
- V is retained when $P_C[+\text{dental}]$

- CVK → CVj (intermittent if C was a resonant)
- V → Ø / lv_r (dialect-dependent)
- e → i / _ (C...)i(C...)#

FINAL VOWELS

- (Again, /a/ seems to be a persistent exception to these)
- V → Ø / R_(C...)
- Grandgent remarks that /i/ was probably the last vowel to drop out
- a → o in most dialects except Gascon and Languedoc; final -as remained in “Limousin and some others”
- /i/ and /u/ remain when ”V_ (then u is subject to the changes listed above—u → y, &c.)
- e u → 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-Garrone)
- Epenthesis of /e/ in 2SG “of some verbs”
- V → “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)
 - 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 → e “in many late words”

- K → Ø / _l (not always, but this was a general change)
- v → b / r_ (sporadic)
- h → Ø
- d → Ø / V_V (seems to have happened in the north and northeast at some point)
- b d g → β ð ɣ / V_V
- βj → j (in forms of *habeo* and *debeo*)
- k g → tʃ dʒ / _E
- tʃ → ts (sometimes)
- g → Ø / V_(VC...)”V
- j → Ø / V_”E
- N → Ø / _#, in polysyllables
- kʷ gʷ → k g / _B
- rs → s:
- s: → s / V:_
- p t k s → b d g z / V_V (this b → v?)
- Ø → 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
 $(s)k g \rightarrow (s)t_f d_3 / \#_a$ (in the north and northeast)
 $t_f \rightarrow ts \rightarrow s / \#_$
 $j \rightarrow d_3 / \#_$ (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)
 $\emptyset \rightarrow k / \#s_l$
 $i \rightarrow e / \#_sC$
 $b \{d,dz,d_3\} z _3 g \rightarrow p \{t,ts,t_f\} s _ k / _ (s)\#$
 $t_f s \rightarrow \{ts,t_f\}$ (varies)
 $j \rightarrow i / _ (s)\#$
 $\check{d} \rightarrow \emptyset / _ \#$
 $\check{d} \rightarrow t / _ s\#$
 $\beta \rightarrow u / V_ (s)\#$
 $\beta \rightarrow \{\emptyset,f\} / C_ (s)\#$ (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)
 $n \rightarrow \emptyset / r_ (s)\#?$
 $k: \rightarrow t_f / _ a$ (in the east and northeast)
 $l: \rightarrow l$ (in the south)
 $r:r$ 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 → mpn → n: (dialectal)
 C: → C
 g → k / B_ (your guess is probably better than mine)
 g → {k,j} / V_ (if /j/ resulted, it dropped after /i/; forms with k are “most persistent in the west” and more common overall)
 l → w / V_s
 ms ns → mps nts (sporadic?)
 {p,b} → Ø / R_s# (unless blocked by analogy)
 ts → s / _# (Provence, Limousin, some Languedoc and Gascon)
 β → Ø / when pretonic and immediately adjacent to a back vowel
 β → b / V_V (in western and some central dialects)
 β → v (otherwise)
 tʃ → i / _C
 tʃ → i / C_
 tʃ → jdz → jz / V_V (in the south and northwest)
 tʃ → dz → z / V_V (otherwise)
 ð → i / C_
 ð → i / _C ! _s#
 ð → z (except in some northern and eastern dialects where → Ø)
 g → j / _a (in the north and east; further → dʒ in the north)
 g → g / _{o,u/y}
 g → j → dʒ / “[b]etween the last two vowels of a proparoxytone”, though it dropped early in some dialects
 dʒ → j
 l → u / _s# (in many dialects)
 s → r / _n (in a few dialects)
 j → dʒ / _”E (in the west)
 j → Ø / _”E (else)
 j → i / _C
 j → dʒ / V_V (did not occur in the northeast and some northern dialects)
 β → u / _l
 {t,d}l {k,g}l → l: ɰ
 Ø → b / m_l
 p j → b i / _l
 p k tʃ b g β j → b g i {b,u,u→y→i} Ø {u,u→y→i} i / _r
 {t,d} → ð → i / _r
 ð → Ø / au_
 Ø → d / z_r
 Ø → b / m_r
 Ø → t / s_r
 βw tw → w: dw → g^w g^w → 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)
 $ktj \ klj \rightarrow is \ \grave{\alpha}$
 $\{tf(:),k^w\}j \rightarrow ts$
 $dVg \ (n)dVg \rightarrow d\mathfrak{z}(?) \ nd\mathfrak{z}$
 $l\{tj,tfj\} \ ld\mathfrak{z} \rightarrow lts \ ldz \rightarrow uts \ udz \rightarrow us \ uz$
 $l\{j,Vd\mathfrak{z}\} \ lnj \rightarrow \grave{\alpha} \ n$
 $lvj \rightarrow lbj \rightarrow ubj$
 $j \rightarrow \emptyset / n_\#$ (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)
 $mj \rightarrow \{mj,n\}$
 $\{ntfj,ndj\} \rightarrow nts \rightarrow ns$
 $\{ndj,nd\mathfrak{z}j\} \ nd\mathfrak{z} \rightarrow n \ \{n,nd\mathfrak{z}\}$
 $p \rightarrow b / _rj$
 $ptj \rightarrow ts \rightarrow s$
 $pj \rightarrow ptj \rightarrow tf$ (except in western and some southern dialects)
 $rtfj \rightarrow rts \ (\rightarrow rs ?)$
 $rdj \ rVg \rightarrow rdz \ rd\mathfrak{z}$
 $rd\mathfrak{z} \rightarrow \{rd\mathfrak{z},rdz(\rightarrow rz)\}$
 $rtj \rightarrow rts \rightarrow rs$
 $r:Vg \ r:j \rightarrow rd\mathfrak{z} \ ir$
 $rtVg \rightarrow \{rd\mathfrak{z},rts(\rightarrow rs)\}$
 $rtj \rightarrow rts \rightarrow rs$
 $v \rightarrow \{v,b\} / r_j$
 $rj \rightarrow r^j \rightarrow ir / V_V$
 $rj \rightarrow r^j \rightarrow r / _\#$
 $\{sj,stfj,stj\} \rightarrow f \rightarrow is$ (except in the west or extreme east, where the outcome was some flavor of (i)(t)f)
 $sj \rightarrow \mathfrak{z} \rightarrow (i)(d)\mathfrak{z}$ (in some northeastern, northern, and western dialects)
 $sj \rightarrow \mathfrak{z} \rightarrow \{r,z\}$ (rare)
 $sj \rightarrow \mathfrak{z} \rightarrow iz$ (the usual outcome)
 $tVg \ trj \rightarrow d\mathfrak{z} \ ir$

$tj \rightarrow ts \rightarrow s$
 $tj \rightarrow tʃ \rightarrow dj \rightarrow dʒ (?) \rightarrow dz$ (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)
 $ndt \text{ } ndtʃ \text{ } ntʃ \text{ } nkt \text{ } nf \rightarrow n\{d,t\} \{nts,ndz(\rightarrow nz),ndʒ\} n(t)s \{n,(i)nt,ntʃ\} \{nf,f:(\rightarrow f)\}$
 $nt \text{ } nd \rightarrow \{\emptyset,n\} \emptyset / _ \#$ (in some Languedoc and Gascon areas)
 $nd \rightarrow n / _ \#$ (in western areas and for some speakers of Limousin)
 $d \rightarrow t / n_ \#$
 $rtʃ \text{ } rdtʃ \rightarrow r(t)s \{rdz(\rightarrow rz),rts,rdʒ\}$
 $rdg \rightarrow r\{g,dʒ\} / _ a$
 $t \rightarrow \emptyset / rd_$
 $t \rightarrow \emptyset / r_m$ (sometimes)
 $stʃ \rightarrow s$ (in some northern and northeastern dialects)
 $stʃ \rightarrow (i)(t)ʃ$ (for western and extreme eastern regions)
 $stʃ \rightarrow is$ (otherwise)
 $k \rightarrow \emptyset / s_b$ (sporadic?)
 $\{p,t\} \rightarrow \emptyset / s_m$ (sporadic?)
 $p \rightarrow \emptyset / s_t$
 $stg \rightarrow s\{g,dʒ\}$
 $bk \rightarrow pts / _ a$
 $b \rightarrow \{\emptyset,u\} / _ rg$
 $b \rightarrow \emptyset / _ s\{t,k\}$
 $b \rightarrow \{\emptyset,b\} / _ t$
 $b \rightarrow \emptyset / _ ts$
 $\beta \rightarrow u / _ k$
 $\beta tʃ \rightarrow u\{ts,dz\} \rightarrow u\{s,z\}$
 $\beta t \text{ } \beta d \rightarrow pt \text{ } bd$ (in the west)
 $\beta t \text{ } \beta d \rightarrow ut \text{ } ud$ (else)
 $ktʃ \rightarrow (i)tʃ$ (in western and extreme eastern dialects)
 $ktʃ \rightarrow its \rightarrow is$ (else)
 $tʃ \text{ } k \rightarrow \{i,s\} \{\emptyset,k\} / _ m$
 $kt \text{ } gd \rightarrow it \text{ } id$ (in the north, northeast, and southwest)
 $\{tʃ,k\}t \text{ } gd \rightarrow tʃ \text{ } dʒ$ (else)
 $dtʃ \rightarrow ts$ (in Auvergne and some western areas)
 $dtʃ \rightarrow dʒ$ (for some southeastern and southwestern speakers)
 $dtʃ \rightarrow dz \rightarrow z$ (else)
 $g \rightarrow \emptyset / _ m$
 $gn\{d,t\} \rightarrow \eta n\{d,t\} \rightarrow n\{d,t\} \rightarrow \{(i)nd,\eta d,ndʒ\}$ or $t(f)$

gn → ŋn → ɲ

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>

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 → 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[+ voiced] → Ø / V_V (only for obstruents?)

C[- voiced] → C[+ 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

$h \rightarrow \emptyset$
 $V_0 V_0 \rightarrow V_0 \text{ :}$
 $n \rightarrow \emptyset / _ \{f, v, s\}$
 $r \rightarrow s / _ s$
 $\{m, n, s\} \rightarrow \emptyset / _ \#$ in polysyllables
 $m s \rightarrow n i / _ \#$
 $u \rightarrow \emptyset / CC_V$
 $V \rightarrow \text{ " } V / \text{ " } V S r _$
 $V \rightarrow \text{ " } V / _ (C \dots) \text{ " } \{i, e\} V$

“Stressed vowels (note the difference from the French development)”:

— $a \text{ :} \rightarrow a$
 — $(a)e \rightarrow \varepsilon$
 — $e \text{ :}, i, oe \rightarrow e$
 — $i \text{ :} \ o(\text{ :}) \ u(\text{ :}) \rightarrow i \ o \ u$

Word-initial vowels:

— $a \text{ :} \rightarrow a$
 — $\{e(\text{ :}), i, ae, oe\} \rightarrow e$
 — $i \text{ :} \rightarrow i$
 — $\{o(\text{ :}), u\} \rightarrow o$

Word-final vowels:

— $a \text{ :} \rightarrow a$
 — $\{e(\text{ :}), i, ae, oe\} \rightarrow e / _ \#$
 — $i \text{ :} \rightarrow i$
 — $\{o(\text{ :}), u \text{ :}\} \rightarrow o$
 — $u \rightarrow o / \text{ ! } V _$

$s \rightarrow i / \#(C \dots) V _ \#$
 $k \rightarrow \emptyset / _ s \#$
 $\{s, t\} \rightarrow \emptyset / _ \#$
 $k^w \ g^w \rightarrow p \ b / V _ a$
 $g \rightarrow m / _ n$
 $w \rightarrow \emptyset / \{k, g\} _$
 $k \ g \rightarrow t \text{ f } d \text{ ʒ } / _ E$
 $\varepsilon \rightarrow ie$
 $t \ d \ s \rightarrow t \text{ s } d \text{ z } \text{ f } / _ i$
 $o \ e \rightarrow u \ i / _ N$
 $a \rightarrow i _ N \text{ ! } _ \{n \text{ :}, mn\}$

$i \rightarrow \emptyset / OL_e$
 $e \rightarrow a / i_ (C\ldots) \{a,e\} \#$
 $i \rightarrow \emptyset / \{ts,dz,S\}_V$
 $li \rightarrow lj / _V$
 $l \rightarrow lj / _i$
 $l: \rightarrow \emptyset / _i$
 $"el:a \rightarrow e" a / _ \#$
 $\{b,v\} \rightarrow \emptyset / V_ \{V,t\}$
 $l \rightarrow r / V_V$
 $m \rightarrow u / a_nV$
 $b \rightarrow u / V_ \{l,r\}$
 $p \rightarrow \emptyset / _s$
 $c \rightarrow p / _ \{s,t\}$
 $\{sc,st\} \rightarrow ft / _F$
 $s \rightarrow f / _kl$
 $c \rightarrow \emptyset / n_t$
 $kj\ gj \rightarrow tf \{j,\emptyset\}$ ($gj \rightarrow \emptyset$ is rare)
 $Pj \rightarrow q$
 $\{sj,stj,s:j\} \rightarrow f$
 $j \rightarrow s / t_$
 $j \rightarrow z / rd_$
 $dj \rightarrow ʒ / _ "B$
 $dj \rightarrow z / V_V$
 $\{n,l\} \rightarrow \emptyset / _j$
 $ja \rightarrow e / r_ \#$
 $j \rightarrow \emptyset / r_$
 $d \rightarrow \emptyset / _z$
 $l \rightarrow j / \{k,g\}_$
 $a \rightarrow e / C[+palatal]_ \#$
 $a\ o \rightarrow \text{ə}\ u / "U\ldots _ \#$
 $e \rightarrow \text{ə} / "U\ldots P_ (C\ldots) V \# ! V = i$
 $u \rightarrow \emptyset / o_e$
 $e \rightarrow \text{ə} / ou_ \#$
 $u \rightarrow \emptyset / ! \{OL,"V\}_ \#$
 $a \rightarrow a / \#(C\ldots) V\ldots C[+palatal]_ \ldots "U$
 $a\ o \rightarrow \text{ə}\ u / \#(C\ldots) V\ldots _ \ldots "U$
 $e \rightarrow i / \#(C\ldots) V\ldots n\ldots "U$
 $e \rightarrow \text{ə} / \#(C\ldots) V\ldots \{t,d,n\}_ \ldots "U$
 $e \rightarrow \text{ə} / P" _ (C\ldots) B$
 $e \rightarrow \emptyset / P_a$
 $e \rightarrow \text{ə} / \#\{r,P\}_ \ldots "U$

$o \rightarrow u / \#C \dots \dots U$
 $a \rightarrow \text{ə} \#C(C \dots) \dots U$
 $\{t, d\} \rightarrow \emptyset / n \#$
 $Ci \rightarrow C^j / _ \# ! R \dots R _ \#$

17.12.1.1.9 Latin to Sardinian *qwed117*, “mainly” from http://www.sardegna.cultura.it/documenti/7_25_20060427093224.pdf

$V: \rightarrow V[-\text{long}]$
 $e \rightarrow i / C_V$
 $i \rightarrow j / V_V$
 $i \rightarrow j / _V$
 $\{b, v, w\} \rightarrow \emptyset / V_V$
 $au \ ai \rightarrow o \ e$
 $h \rightarrow \emptyset / \{\#, C\}_-$
 $m \rightarrow \emptyset / _ \#$
 $\emptyset \rightarrow i / _s$ (“[m]ainly Logudorese”)
 $nd \ \{l, ld\} \rightarrow nd \ d: / V_V$
 $t \rightarrow k / s_l$ (sporadic)
 $l \rightarrow \emptyset / rk_$ (sporadic)
 $r \rightarrow l / _C$ (sporadic)
 $l \rightarrow r / C_$ (sporadic)
 $\{i, j\} \rightarrow d\text{ʒ} / Vr_V$ (“dialectal”)
 $v \rightarrow b / \#_$
 $S[-\text{voice}] \rightarrow S[+\text{voice}] / V_V$
 $kw \ gw \rightarrow p: b: / \#_$ (“[o]nly Logudorese”)
 $w \rightarrow \emptyset / \#k_V$
 $k \rightarrow ts / _i$
 $\{p, k\}s \rightarrow s:$
 $o \rightarrow u / _k$ (possibly restricted in occurrence)
 $k \rightarrow \emptyset / _t ?$
 $l\{i, j\} \rightarrow l: \rightarrow \{ts, dz, ldz, d\text{ʒ}, l:\}$ (“varies”)
 $e \rightarrow \emptyset / u _ \#$
 $t \rightarrow d / V_rV$
 $sk \rightarrow s:$
 $\{i, j\} \rightarrow g / \#_e$
 $d \rightarrow \emptyset / V_ \{i, j\}$
 $n\{i, j\} \ t\{i, j\} \rightarrow nd\text{ʒ} \ ts / _V$
 $d \rightarrow r / V_V$ (“[s]ome Campidanese”)
 $b \ d \ g \rightarrow \beta \ \delta \ \gamma /$ “except in Nuorese”
 $gn \rightarrow n:$

$r \rightarrow ur:$ / $\#_e$ / Logudorese
 $r \rightarrow ar:$ / $\#_{-(j)}B$ / Logudorese

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_V
 $\{tj,kj\} \{tj,kj,ptj,ktj,skj\} \rightarrow ts\ t:s$
 $k\ g \rightarrow tʃ\ dʒ \rightarrow ts\ dz$ / $_{-}\{j,i,e,\varepsilon\}$
 $\{t,k\} \rightarrow \emptyset$ / $_{-}\#$
 $V \rightarrow \emptyset$ / $C_{-}\{r,l\}$ 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)
 $mb\ mn \rightarrow m:\ n:$
 $\{jl,lj\} \{jn,nj\} \{jg,gj\} \rightarrow \lambda\ j\ j:$
 $bj \rightarrow j:$ (sporadic)

Raising of $e\ \{\varepsilon,a\} \circ o \rightarrow i\ e\ o\ u$; near j , in particular environments:

$— e \rightarrow i$ / $_{-}Cj\ !\ C = p$
 $— \varepsilon \circ u \rightarrow e\ o\ u$ / $_{-}(C)j$
 $— a \rightarrow e$ / $_{-}j$

$oj \rightarrow we$ (sporadic)
 $\varepsilon \circ \rightarrow je\ we$
 $”je.o\ ”je.a \rightarrow \{”i.o,”jo\} ”i.a$
 $jt\ js \rightarrow tʃ\ ʃ$
 $f \rightarrow h$ / $!_{-}\{ue,L\}$
 $rj\ pj \rightarrow jr\ jp$ / V_{-}
 $\lambda \rightarrow ʒ$
 $j \rightarrow \{\emptyset, ʒ\}$ (the latter is rare)
 $j: \rightarrow \emptyset$ / E_{-}
 $d \rightarrow \{\emptyset, \delta\}$ / V_V
 $g \rightarrow \{\emptyset, \gamma\}$ / V_V
 $p\ t\ k\ s\ ts \rightarrow b\ d\ g\ z\ dz$ / V_V
 $p: \ t: \ k: \ s: \ t:s \ j: \rightarrow p\ t\ k\ s\ ts\ j$
 $n: \ l: \ rr \rightarrow n\ \lambda\ r$
 $kl\ pl \rightarrow \lambda\ \{\lambda, tʃ\}$

$fl \rightarrow \lambda$ (sporadic)
 $V \rightarrow \emptyset$ / unstressed ! $V = a$
 $sj \rightarrow js$ / $V_$
 $i u \rightarrow e o$ / $_ (C) \#$
 $Vr \rightarrow rV$ / $C_ \#$
 $e \rightarrow \emptyset$ / $V\{d,s,n,l,r\}_ \#$
 $d g \rightarrow \delta \gamma$ / V_V
 $/j/$ “gains a fortified $[d\zeta]$ 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)
 $ts dz \rightarrow \text{ɰ} \text{ɰ}$
 $\text{ɰ} z \text{ɰ} \rightarrow \text{ɰ} s \text{ɰ}$
 $\text{ɰ} \rightarrow \{x, \chi\}$

“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 [s̥ - s] distinction (though kept in another way today, as [θ - s] in many parts of Spain).”

$h \rightarrow \emptyset$ “(just a reminder: from the $f \rightarrow h$ change above)”

$x \rightarrow h$

$/dr/ [\delta r] \rightarrow r / V_V$

$\lambda \rightarrow /j/$ (“merged with”)

$\lambda \rightarrow j$

$/j/ [j_d\zeta] \rightarrow [\zeta_d\zeta]$

$\zeta \rightarrow f$

$\{s̥, s\} \rightarrow /s/ [s̥]$ “(merged as)”

$\{s̥, s\} \rightarrow h / _ \$$

$\{s̥, s\} \rightarrow h$ “(in all environments)”

$s̥ \rightarrow \theta$

$\{s̥, s\} \rightarrow \theta [\theta]$ “(merged as)”

$h \rightarrow \emptyset / _ d$

$h \rightarrow \emptyset / _ t^h$

$h \rightarrow \emptyset / _ \$$

$n \rightarrow \eta / _ \#$

$b\ g \rightarrow \beta\ \gamma / \{l, r\}_$

$d \rightarrow \delta / r_$

$tr \rightarrow \{t_r, t_f, t_s\}$

$r \rightarrow \{z, \chi\}$

$l \rightarrow r / _ \$$

$r \rightarrow l / _ \$$

$s \rightarrow r / _ \theta$

$k\theta \rightarrow \theta:$

17.12.2 Proto-Italic to Proto-Sibellian

Pogostick Man, from http://gillesquentel.org/docs/PIE_to_Italic_C.pdf and http://gillesquentel.org/docs/PIE_to_Italic_V.pdf

NB: This is likely incomplete.

$t \rightarrow f$

$k' \acute{g} k^w g^w \rightarrow k\ g\ p\ b$

$\{g^h, x\} \{\phi, \theta, g^{wh}\} \rightarrow h\ f$

$r \rightarrow er / _ \#$
 $eu \rightarrow ou$

17.12.2.1 Proto-Sibellian to Oscan *Pogostick Man*, from http://gillesquentel.org/docs/PIE_to_Italic_C.pdf and 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 and http://gillesquentel.org/docs/PIE_to_Italic_V.pdf

NB: This is likely incomplete.

$d \rightarrow rs / V_V$

17.13 Proto-Indo-European to Proto-Tocharian

Nortaneous, from <http://www.utexas.edu/cola/centers/lrc/eieol/tokol-TC-X.html> and <https://azargoshnasp.net/history/Tocharian/positionoftocharian.pdf>

$\acute{K} \rightarrow K$
 $Ch \rightarrow C / _ (V)Ch$
 $d \rightarrow \emptyset / _ N$
 $dz \rightarrow \emptyset / B_$
 $dz \rightarrow ts$
 $K^w \rightarrow K / _ \{C, o, a\} ! C = \text{syllabic}$
 $K^w \rightarrow \text{ɕ} / _ e(:)$
 $K^wy \rightarrow \text{ɕ}$
 $p \{ts, k^{(w)}\} m n l r y \rightarrow pj s^j \text{ɕ} mj n lj rj wj / _ \{E(:), y\}$
 $\{t, d^{\text{h}}\} \rightarrow t^j / _ E(:)$
 $\{t, d^{\text{h}}\} \rightarrow ts / _ y$
 $D^{\text{h}} \rightarrow T$
 $\eta \rightarrow \emptyset \rightarrow \emptyset / C_ \#$
 $R H \rightarrow uR i / C_ \{C, \#\} \text{ when syllabic}$
 $R H\eta \rightarrow \varepsilon R in / \#_ C$
 $H \rightarrow \varepsilon / _ R, \text{ when } R = \text{syllabic}$
 $H \rightarrow \emptyset / V_V$

$h_2e \rightarrow \text{ə} / _ \#$
 $h_2e \text{ a} \rightarrow \text{a i}$
 $\{eh_2, aH\} \text{ a:} \rightarrow \text{a: } \text{ɔ}$
 $h_3e \text{ o} \rightarrow \text{o } \varepsilon$
 $\{eh_3, oH\} \rightarrow \text{o:}$
 $\text{o:}(\text{s,y}) \text{ o:m} \rightarrow \text{u } \{\text{u, } \tilde{\text{o}}\}$
 Something about $*\tilde{\text{o}}$ and umlaut
 $\tilde{\text{o}} \text{ o:} \rightarrow \text{o a}$
 $\text{u} \rightarrow \text{wə} / \# _$
 $\text{u} \rightarrow \{\text{ə, u}\}$
 $uh_1 \text{ u}\{h_2, h_3\} \rightarrow \text{u:} \rightarrow \text{wə wi}$
 $\text{i} \rightarrow \text{ə} / \{\text{P, K}^{(w)}, \text{s}\} _$
 $\text{Ci} \rightarrow \text{C}^j_{\text{ə}}$
 $\text{s} \rightarrow \text{s}^j / _ \text{t}^j$
 $ih_1 \text{ i}\{h_2, h_3\} \rightarrow \text{jə ji}$
 $(h_1)e \text{ (h}_1\text{e:} \rightarrow \text{jə jɛ:} / \# _$
 $\text{Ce Ce:} \rightarrow \text{C}^j_{\text{ə}} \text{ C}^j_{\varepsilon}$
 $\text{eH} \rightarrow \text{e:}$
 $\text{ow aw ew} \rightarrow \varepsilon \text{u au əw}$
 $\text{oy ay ey} \rightarrow \varepsilon \text{i ai əj}$
 $\varepsilon \rightarrow \text{o} / _ \B
 $\varepsilon \rightarrow \text{ə} / _ \i
 $\text{"i "ə i}[-\text{stress}] \text{ ə}[-\text{stress}] \rightarrow \text{i a a ə}$

17.13.1 Proto-Tocharian to Tocharian A

Nortaneous, from <http://www.utexas.edu/cola/centers/lrc/eieol/tokol-TC-X.html>
 and <https://azargoshnasp.net/history/Tocharian/positionoftocharian.pdf>

$\text{s} \rightarrow \text{ʃ} / _ \text{t}$
 $\text{k} \rightarrow \text{p} / _ \{\text{s, ʃ}\}$
 $\text{C}^j_{\text{j}} \rightarrow \text{C}^j_{\text{:}}$
 $\text{n} \rightarrow \text{j} / \text{V_sV ! E_}$
 $\text{V} \rightarrow \text{j} / \text{V_n}^j \text{t}^j \text{ ! V = E}$
 $\text{j} \rightarrow \emptyset / \text{w_}$
 $\{\text{a, ɛ}\} \text{i əj} \rightarrow \text{e i}$
 $\{\text{a, ɛ}\} \text{u əw} \rightarrow \text{o u}$
 $\{\text{ɔ, ɛ}\} \rightarrow \text{a}$
 $\text{V} \rightarrow [+ \text{round}] / \text{K}^{(w)} _$
 $\{\text{k}^{(w)}, \text{kw}\} \rightarrow \text{k}$
 $\text{ə} \rightarrow \emptyset / _ \%$

$V \rightarrow \emptyset / _ \#$

“[E]penthesis [of /ə/] to break up ‘difficult’ consonant clusters (mostly in the coda?)”

17.13.2 Proto-Tocharian to Tocharian B

Nortaneous, from <http://www.utexas.edu/cola/centers/lrc/eieol/tokol-TC-X.html>
and <https://azargoshnasp.net/history/Tocharian/positionoftocharian.pdf>

$\{a, \varepsilon\}u \text{ ə}w \rightarrow au \text{ u}$

$\{a, \varepsilon\}i \text{ ə}j \rightarrow ai \text{ i}$

$\text{ɔ } \varepsilon \rightarrow o \text{ e}$

$w \rightarrow \emptyset / _ j$

K^w “usually but not always retained”

$C[+ \text{coronal}]w \rightarrow C:$

$mn \rightarrow nm / V_V$

$s \rightarrow \emptyset / _ n \#$

$\emptyset \rightarrow t / \{N, L\} _ S$

$\text{ə} \rightarrow \emptyset / _ \%, \text{ when unstressed}$

“[E]penthesis [of /ə/] to break up ‘difficult’ consonant clusters (mostly in the coda?)”

18 Je-Tupí-Carib

18.1 Cariban

18.1.1 Pre-Bakairi to Eastern Bakairi

Pogostick Man, from Meira, Sérgio (2005), “Reconstructing Pre-Bakairi Segmental Phonology”. *Anthropological Linguistics* 47(3):261 – 291

$VNV \rightarrow \tilde{V}\tilde{V} / !_ (C)\#$

$\text{ʔ} \rightarrow \emptyset / _C[+ \text{fricative} - \text{voiced}]$

$r \rightarrow \emptyset / V_V$, when neither vowel is stressed

18.1.2 Pre-Bakairi to Western Bakairi

Pogostick Man, from Meira, Sérgio (2005), “Reconstructing Pre-Bakairi Segmental Phonology”. *Anthropological Linguistics* 47(3):261 – 291

$V[- \text{stress}]NV \rightarrow \tilde{V}\tilde{V}$

$z \rightarrow h / V_a$

$z \rightarrow \emptyset / V_V$

$C[+ \text{fricative} - \text{voiced}] \rightarrow \emptyset / \text{ʔ}_$

$i \rightarrow \text{ə} / P_$

$i \rightarrow i$

$\text{ɜ} \rightarrow \emptyset$

$r \rightarrow \emptyset / V_V$, where at least one of the vowels is nasalized

18.2 Ofaié-Jê

18.2.1 Proto-Ofaié-Jê to Proto-Jê

Pogostick Man, from Gudschinsky, Sarah C. (1971), “Ofai-Xavante, a J Language”

$V_m \rightarrow \tilde{V} / _ \#$

$VS \rightarrow r / C_V$

$c \rightarrow \{c, z\}$

$\eta^w \{k^w, h^w\} \rightarrow m \text{ } p$

$\text{ə} \rightarrow \emptyset / C_CV$ (not sure if this happened all the time or not)

18.2.2 Proto-Ofaié-Jê to Ofaié-Xavante

Pogostick Man, from Gudschinsky, Sarah C. (1971), “Ofai-Xavante, a J Language”

$m \rightarrow w / _ \#$
 $m \rightarrow \{w, p\}$
 $pV \rightarrow j\tilde{V}$
 $k^{(w)} \rightarrow ? / _ \#$
 $k^w \rightarrow k$
 $\eta \rightarrow n / V_V$
 $\eta \rightarrow \tilde{j} / \#_$ (not sure if this nasalizes the following vowel or not)
 $\eta^w h^w \rightarrow \tilde{j} h$

18.3 Tuparí

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 ^w	ʔ
Nasal	m	n		ŋ	ŋ ^w	
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 ĕ		
Low		a ã	

*u *ũ may have actually been *o *õ, respectively. Additionally, the following ablaut pairs have been reconstructed:

$a \sim *e$
 $e \sim *a$
 $\tilde{i} \sim *ẽ$

(From Moore, Denny and Ana Vilacy Galucio (1994), “Reconstruction of Proto-Tupari Consonants and Vowels”. *Report 8: Survey of California and Other Indian Lan-*

guages: 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)

18.3.1 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.*

$t \rightarrow r / _ " V$
 $t \rightarrow l / _ V$
 $t \rightarrow \emptyset / \text{else}$
 $k \rightarrow \emptyset / _ \#$
 $k^w \rightarrow \emptyset$
 $b \rightarrow \beta / V _ V$
 $g^w \rightarrow \beta / _ V [-nas]$
 $ts (n) dz \rightarrow t nd$
 $\beta \rightarrow \emptyset / _ i$
 $h \rightarrow \emptyset / V _ C$
 $? \rightarrow \emptyset$
 $r \rightarrow l / V [+nas] _ V [+nas]$
 $\delta n \eta^w \rightarrow c \beta / \# _ V [-nas]$
 $\delta \rightarrow \{\emptyset, c\} / \text{else}$
 $j \eta^w m n \rightarrow \eta m \{m, p\} \{\emptyset, t\} / _ V [+nas]$
 $^n d \eta \rightarrow t \{g, k\} / _ V [-nas]$
 $u \rightarrow o / _ \{p, b\} i$
 $i \rightarrow \emptyset / ! \# _ \{p, \beta\} e$
 $\{a/e\} \{e/a\} \{\tilde{i}, \tilde{e}\} \rightarrow e a \tilde{e}$

18.3.2 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.*

$t \rightarrow r / _ " V$
 $g \rightarrow k$
 $k \rightarrow g / \text{in } U[+\text{stress}]$
 $g^w \rightarrow k / _ o$
 $g^w \eta g \rightarrow k^w k / _ V[-\text{nas}]$
 $g^w \rightarrow k^w / \# _ V[+\text{nas}]$
 $ts (n)dz \rightarrow \{s, ts\} s$
 $\beta \rightarrow \emptyset / i _$
 $h \rightarrow \emptyset / V _ C$
 $? \rightarrow \emptyset$
 $\{^m b, ^n d, \delta\} \rightarrow t / _ V[+\text{nas}]$
 $\delta \rightarrow s / _ i$
 $\delta \rightarrow h / \text{else}$
 $\eta \eta^w \rightarrow k m / _ V[+\text{nas}]$
 $\eta^w \rightarrow k^w / \# _ V[-\text{nas}]$
 $i \rightarrow i / \# _ \{p, \beta e\}$
 $i \rightarrow \emptyset / \text{else}$
 $\{\{a/e\}, \{e/a\}\} \{\tilde{i}, \tilde{e}\} \rightarrow a \tilde{e}$

18.3.3 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 Hoka-Penutian Workshop, July 3, 1993*, 119 - 137.

$t \rightarrow r / _ V$
 $k^w g \rightarrow \emptyset k$
 $g^w \rightarrow \emptyset / _ o$
 $g^w \eta g \rightarrow \beta k / _ V[-\text{nas}]$
 $\{(n)dz, ts\} \rightarrow s / _ i$
 $\{(n)dz, ts\} \rightarrow t / \text{else}$
 $\beta \delta \rightarrow \emptyset \{s, h\} / _ i$
 $\delta \rightarrow h$
 $^m b \eta^w \rightarrow p \beta / \# _ V[-\text{nas}]$
 $n \rightarrow \emptyset / ! \# _ V[-\text{nas}]$
 $\eta \rightarrow k / \# _ V[+\text{nas}]$
 $\eta^w \rightarrow m / V[+\text{nas}] _ V[+\text{nas}]$
 $u \rightarrow o / _ \{p, b\} i$
 $\{a/e\} \rightarrow e$

18.3.4 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.

$p \rightarrow \beta / V_$
 $t \rightarrow r / _''V$
 $p\ t \rightarrow \emptyset\ l / _V$
 $k \rightarrow g / \text{in } U[+\text{stress}]$
 $b \rightarrow \emptyset / V_V$
 $g^w \rightarrow g / _o$
 $b^w \rightarrow \beta / \#_V[+\text{nas}]$
 $ts\ (n)dz \rightarrow t\ nd$
 $h \rightarrow \emptyset / V_C$
 $? \rightarrow \emptyset$
 $r\ \eta^w \rightarrow n\ \beta / V[+\text{nas}]_V[+\text{nas}]$
 $\delta \rightarrow (n)d$
 $\eta g \rightarrow k / _! _V[-\text{nas}]$
 $u \rightarrow i / _ \{p,b\}i$
 $\{a/e\}\ \{e/a\}\ \{\tilde{i},\tilde{e}\} \rightarrow a\ e\ \tilde{i}$

18.4 Tupí-Guaraní

18.4.1 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*.

$p \rightarrow k / _w$
 $t \rightarrow t\text{ʃ} / _ \{i,\tilde{i}\}$
 $k\ b\ r \rightarrow \{\eta,\emptyset\}\ \{w,m\}\ \{n,r,t\} / _ \#$
 $b \rightarrow w$
 $ts \rightarrow \{h,\emptyset\}$
 $a \rightarrow \{i,o\} / _ N\#$
 $o \rightarrow a / _! o(C\dots)_ (C\dots)\#$
 $u \rightarrow \emptyset / k_w$
 $a \rightarrow o / _! Cw_$

$\tilde{a} \rightarrow a / Cw_$
 $\tilde{a} \rightarrow \tilde{o}$
 $\{\tilde{e}, \tilde{i}\} \tilde{i} \{u, \tilde{u}, \tilde{o}\} \rightarrow i \ i \ o$

18.4.2 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*.

$p \rightarrow k / _w$
 $t \rightarrow tʃ / _ \{i, \tilde{i}\}$
 $? ts \ \eta \rightarrow \emptyset \ \{ts, tʃ\} \ n$
 $\emptyset \rightarrow i / j_ \#, \text{ in monosyllables}$
 $j \rightarrow i / _ \#, \text{ in polysyllables}$
 $b \rightarrow \emptyset / _ \#$
 $b \rightarrow w / \text{ else}$
 $w \rightarrow \emptyset / k_w$
 $w \rightarrow u / k_$
 $a \rightarrow \emptyset / _ j \#$
 $eN \rightarrow y / _ \#$
 $e \rightarrow i / \{k, j\} _$
 $o \rightarrow u(a) / ! \ o(C \dots) _ (C \dots) \#$
 $\tilde{a} \ \{\tilde{e}, \tilde{i}\} \ \tilde{i} \rightarrow a \ i \ \emptyset$
 $u \rightarrow \tilde{u} \ (\text{? possibly backwards?})$
 $i? \ u? \rightarrow j \ w / C_V$
 $V_0?V_0 \rightarrow V_0:$

18.4.3 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*.

$t \rightarrow ts / _ \{i, \tilde{i}\}$
 $ts \rightarrow \{h, \emptyset\}$
 $b \rightarrow \emptyset / u_ \#$
 $b \rightarrow w / \text{ else}$
 $u \rightarrow \emptyset / k_w$
 $a \rightarrow \emptyset / _ N \#$

$a \rightarrow \text{ə} / \text{if N in U\#}$
 $o \rightarrow u / \text{! o(C...)-(C...)\#}$
 $\tilde{a} \tilde{e} \tilde{i} \tilde{i} \{\tilde{o}, \tilde{u}\} \rightarrow \text{ə e i i o}$

18.4.4 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*.

$m p \rightarrow \eta k / _w$
 $t \rightarrow tʃ / _ \{i, \tilde{i}\}$
 $k \rightarrow \emptyset$
 $ts \rightarrow \{tʃ, \emptyset\}$
 $\{b, r\} \rightarrow \emptyset / _ \#$
 $u \rightarrow \emptyset / k_w$
 $V\{m, n\} \rightarrow V[+nas] / _ \#$
 $V\eta \rightarrow V[+nas]$

18.4.5 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*.

$m p \rightarrow \eta k / _w$
 $t \rightarrow tʃ / _ \{i, \tilde{i}\}$
 $\{b, k\} r \rightarrow \emptyset \{r, \emptyset\} / _ \#$
 $? ts \rightarrow \{?, \emptyset\} \{ts, tʃ\}$
 $\{Vm, V\eta\} Vn \rightarrow V[+nas] \{Vr, V[+nas]\} / _ \#$
 $aN eN iN \tilde{i}N uN \rightarrow \tilde{a} \tilde{e} \tilde{i} \tilde{i} \tilde{u} / _ \#$
 $\tilde{o} \rightarrow o$

18.4.6 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*.

$p \rightarrow h / _ \{o, u, w\}$
 $t \rightarrow tʃ / _ \{i, \tilde{i}\}$
 $ts \rightarrow \{h, j, \emptyset\}$
 $b \ r \rightarrow p \ t / _ \#$
 $b \rightarrow w / \text{else}$
 $\tilde{a} \rightarrow a / Cw_$
 $\tilde{e} \ \tilde{i} \ \tilde{o}$ lost nasalization sometimes, kept it in others
 $u \rightarrow \tilde{o} \text{ (? possibly backwards?)}$

18.4.7 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*.

$k \rightarrow \{\eta, \emptyset\} / _ \#$
 $ts \rightarrow \{h, \emptyset\}$
 $Vn \rightarrow V[+nas]$ (sometimes)
 $\emptyset \rightarrow \eta / \{\#, V\} _ w$
 $b \ r \rightarrow \{b, \emptyset\} \{r, t\} / _ \#$
 $u \rightarrow \emptyset / k _ w$
 $eN \rightarrow \tilde{i} / _ \#$
 $\tilde{e} \ \tilde{i} \ \tilde{u} \rightarrow \{\tilde{e}, e\} \{\tilde{i}, i\} \{\tilde{u}, \tilde{o}\}$

18.4.8 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*.

$p \rightarrow \{h, \emptyset\} / _ \{u, o\}$
 $p \rightarrow \{k, \emptyset\} / _ w$
 $p \rightarrow h / \text{else}$
 $t \rightarrow \{ts, tʃ\} / _ \{i, \tilde{i}\}$
 $k \rightarrow \emptyset / _ \#$
 $? \ ts \rightarrow \emptyset \{s, ʃ\}$
 $u \rightarrow \emptyset / k _ w$
 $V\{m, n\} \rightarrow V[+nas] / _ \#$
 $V\eta \rightarrow V[+nas]$
 $j \rightarrow \{j, i\} / _ \#$

$j \rightarrow \{n, t\} / \text{else}$
 $w \rightarrow \{g, k\} / \{\#, V\}_-$
 $\{b, r\} \rightarrow \emptyset / _ \#$
 $a \rightarrow \{\emptyset, o, e\} / _ j \#$
 $o \ u \rightarrow \{u, o\} \ \{u, o, i\}$
 $aN \ eN \ iN \ iN \ uN \rightarrow \tilde{a} \ \tilde{e} \ \tilde{i} \ \{\tilde{i}, \tilde{i}\} \ \tilde{o} / _ \#$
 $\{\tilde{i}, \tilde{o}\} \ \tilde{u} \rightarrow \{\tilde{o}, \tilde{e}\} \ \tilde{o}$

18.4.9 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*.

$t \rightarrow t\} / _ \{i, \tilde{i}\}$
 $ts \rightarrow \{s, \} \}$
 $i \rightarrow \tilde{i} / \ ? _ \#$ (sporadic)

18.4.9.1 Tupian

18.4.9.1.1 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)

18.4.9.1.2 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

$V \rightarrow \tilde{V} / _ h$
 $h \rightarrow \emptyset / V_-$
 $v \rightarrow w / \#_-$
 $t\} \rightarrow \}$

18.4.9.1.3 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 → u
 Vh → V:
 V → V: / -#

18.4.9.1.4 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 / #-

18.4.9.1.5 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)

18.4.10 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)

$V_{\eta} \rightarrow V[+nas]$
 $j \ b \rightarrow \{j,i\} \ \emptyset \ / \ _{\#}$
 $b \rightarrow w \ / \ else$
 $u \rightarrow \emptyset \ / \ k_w$
 $u \rightarrow o \ / \ ! \ o(C \dots) _ (C \dots) \#$
 $aN \ iN \ uN \rightarrow \{aN,\tilde{a}\} \ \tilde{i} \ \{uN,\tilde{u}\} \ / \ _{\#}$
 $\tilde{i} \ \tilde{e} \ \tilde{o} \rightarrow \emptyset \ \{\tilde{e},e\} \ \{o,\tilde{o},u,\tilde{u}\}$

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>; and Wikipedia contributors (2013), “Proto-Kartvelian language”. *Wikipedia, the Free Encyclopedia*. <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>

q → x
 {ɬ, ʂ} → s
 tʂ {tʂ', tɬ'} → ts ts'
 dʐ → dz
 z̥ → z
 w → 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>

$k\ k' \rightarrow \{k, tʃ\} \{k', tʃ'\}$
 $g \rightarrow \{g, dʒ\}$
 $ʃ\ ʃ\ s \rightarrow l\ \{sg, ʃg\}\ ʃ$
 $tʃ\ tʃ\ tʃ' \ tʃ' \ tʃ' \ tʃ' \rightarrow \{tʃk, ʃg\}\ tʃ\ h\ \{ʃk', tʃ'k'\}\ tʃ'$
 $dz\ dʒ\ dʒ \rightarrow \{dz, z\}\ \{dʒg, sg\}\ \{dʒ, ʒ\}$
 $z_4 \rightarrow ʒ$

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>

$\varepsilon\ a \rightarrow a\ ɔ$
 $q\ q' \rightarrow x\ \{k', q', ʔ\}$
 $ʃ\ ʃ\ s \rightarrow \emptyset\ \{sk, ʃk\}\ ʃ$
 $tʃ\ tʃ\ \{tʃ', tʃ'\}\ tʃ' \rightarrow tʃk\ tʃ\ tʃ' \ \{ts'k', tʃ'k'\}$
 $dʒ\ dʒ \rightarrow \{dʒg, dzg\}\ dʒ$
 $z_4 \rightarrow ʒ$
 $w \rightarrow v$

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.

$\tilde{!}(n) \rightarrow \tilde{\ddagger}$
 $! \ !^2 \ ! \ \tilde{!} \rightarrow k \ \emptyset \ g \ \eta g$
 $!x \rightarrow x$
 $\tilde{!}n \rightarrow \eta g j \sim \tilde{!}$
 $ts \rightarrow \{ts \sim ts^h, ts, s\}$
 $h \rightarrow j$

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.

$\tilde{!}(n) \rightarrow \tilde{\ddagger}$
 $! \ !^2 \ ! \ \tilde{!} \rightarrow k \ \emptyset \ g \ \eta g$
 $!x \ \tilde{!}n \rightarrow x \ \eta g j \sim \tilde{!}$
 $ts \ dz \rightarrow \{\zeta, t\zeta\} \ d\zeta$
 $k^h \rightarrow kx$
 $h \rightarrow j$

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.

$k \rightarrow g$
 $\{|^2, |x'\} \rightarrow |$
 $\tilde{!}(n) \rightarrow \{\tilde{\ddagger}, \ddagger\}$
 $! \ !^2 \ \tilde{!}n \rightarrow !g \ \tilde{!}$
 $\ddagger \ \{\tilde{\ddagger}n, \ddagger^2, \ddagger x'\} \rightarrow \ddagger g \ \ddagger$
 $\{||^2, ||x'\} \rightarrow ||$
 $ts \ dz \ kx' \rightarrow \{ts, s\} \ d \ \emptyset$

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^h, 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^h, 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_
iaɔ → iu
o → ∅ / a(C)-
Vn ɲ → V[+nas] ∅ / _#
t d s → {c, tʃ} ʃ ʃ
!! → ||
ⁿQ^h Q̂_G → Q^h 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

ⁿQ^h {^hq, ^hg} ^hQq → ⁿQ(^h) ⁿ|^h 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 ^h b ɓ	t t ^h d ɗ		k k ^h g ɠ	ʔ
Fricative		s			h
Affricate		ts ts ^h 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^h → p / #-
p^h → ɸ / else
ɗ → t / #-
dz → s / medially
ts^h → 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

$\beta \rightarrow b / \#_-$

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

$d^f \rightarrow t$

$g \rightarrow w$

$tʃ \rightarrow ʃ (?)$

$? \rightarrow \emptyset / \#_-$

22.6 Proto-Arawá to Sorowahá

Pogostick Man, from Dixon, R.M.W. (2004), “Proto-Arawá Phonology”. *Anthropological Linguistics* 46(1):1 – 83

$e \rightarrow i / _ \#$

$e \rightarrow a / \text{else}$

$\{p^{(h)}, \beta\} \rightarrow h$

$d^f \rightarrow d / \#_-$

$\{t^h, d^f\} \rightarrow t$

$k^h \rightarrow k$

$ts^{(h)} \rightarrow s \text{ ? } \rightarrow \emptyset / \#_-$, 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

$e \rightarrow a / \text{medially}$

$e \rightarrow \{a, i\} / \#_-$

$p^h \rightarrow p / \#_-$

$p^h t \rightarrow \phi \text{ ? } / \text{medial}$

$ts^{(h)} \rightarrow s$

23 Macro-Chibchan

23.1 Lenmichian

The following inventory for Proto-Lenmichian is posited by Constenla (2005).

	Bilabial	Alveolar	Velar	Glottal
Stop	b	d t	k	ʔ
Affricate		ts		
Fricative		s		h
Approximant	w	r		
Lateral		l		

	Front	Central	Back
High	i		u
Mid	e		o
Low		a	

(From Wikipedia contributors (2015), “Macro-Chibchan languages”. *Wikipedia, the Free Encyclopedia*. <https://en.wikipedia.org/w/index.php?title=Macro-Chibchan_languages&oldid=672637970>, presumably citing Constenla Umaa, Adolfo (2005), “¿Existe relación genealógica entre las lenguas misumalpas y las chibchenses?”. *Estudios de Lingstica Chibcha* 24:7 – 85)

23.1.1 Proto-Lenmichian to Proto-Chibchan

Pogostick Man, from Wikipedia contributors (2015), “Macro-Chibchan languages”. *Wikipedia, the Free Encyclopedia*. <https://en.wikipedia.org/w/index.php?title=Macro-Chibchan_languages&oldid=672637970>, presumably citing Constenla Umaa, Adolfo (2005), “¿Existe relación genealógica entre las lenguas misumalpas y las chibchenses?”. *Estudios de Lingstica Chibcha* 24:7 – 85

$l \rightarrow r$

$w \rightarrow \emptyset$

23.1.1.1 Chibchan The following phonemic inventory is adapted from Wheeler (1972).

	Labial	Alveolar	Palatal	Velar	Glottal
Nasal	m	n			
Stop	p b	t d		k k ^w g g ^w	
Affricate		ts	tʃ		
Fricative		s		x	h
Glide	w			j	

	Front	Central	Back
High	i		u
Mid	e		o
Low		a	

Information in this section may be missing or incomplete, as I found the source document using Google Books and several pages were not available in the preview.

(From Wheeler, Alva (1972), “Proto-Chibchan”. In Matteson, Esther, ed., *Comparative Studies in Amerindian Languages* 93 – 108)

23.1.1.1.1 Proto-Chibchan to Arhuaco *Pogostick Man*, from Wheeler, Alva (1972), “Proto-Chibchan”. In Matteson, Esther, ed., *Comparative Studies in Amerindian Languages* 93 – 108

$s \rightarrow kh / _ (V)k$
 $s d \rightarrow z r / _ (V)j$
 $ts h \rightarrow s \emptyset$
 $\emptyset \rightarrow u / w_V$
 $j \rightarrow \emptyset / i_V$
 $j \rightarrow \{j, \emptyset\}$
 $e \rightarrow a$
 $i \rightarrow \emptyset / a_$
 $ia \rightarrow \text{ə}$ (“unspecified”)
 $i \rightarrow \emptyset / C''V(C)_$
 $i \rightarrow \emptyset / _ (C)''V$

23.1.1.1.2 Proto-Chibchan to Chibcha *Pogostick Man*, from Wheeler, Alva (1972), “Proto-Chibchan”. In Matteson, Esther, ed., *Comparative Studies in Amerindian Languages* 93 – 108

$b \rightarrow p / _ V k^w$
 $Vs \rightarrow h / n_$
 $V \rightarrow \emptyset / s_j$ (sometimes)
 $s \rightarrow h / V_V$

$ts \rightarrow \{s, z\}$
 $w \rightarrow \{w, \emptyset\}$
 $j \rightarrow \emptyset$
 $n \rightarrow \{n, \emptyset\}$
 $a \rightarrow \emptyset / _i$, when unstressed
 $a \rightarrow i / _Ci$
 $a \rightarrow \emptyset / _u$
 $u \rightarrow o / _Ca$
 $u \rightarrow \emptyset / _a$
 $i \rightarrow u / _ (C)u$
 $i \rightarrow a / _ (C)a$
 $i \rightarrow e / _ (C)e$
 $a \{e, i\} \rightarrow i \emptyset / C''V(C)_$
 $i \rightarrow \emptyset / _ (C)''V$
 $a \rightarrow \emptyset / _ ''V$

23.1.1.1.3 Proto-Chibchan to Kogi *Pogostick Man*, from Wheeler, Alva (1972), “Proto-Chibchan”. In Matteson, Esther, ed., *Comparative Studies in Amerindian Languages* 93 – 108

$s \rightarrow \emptyset / \#_$
 $s \rightarrow \{ʃ, tʃ\} / _i$
 $s \rightarrow h / _Vn$
 $nVs \text{ } dVs \rightarrow n(V(s)) \text{ } ʒ(Vʒ)$
 $s \text{ } h \rightarrow \{s, tʃ\} \{h, \emptyset\}$
 $j \rightarrow i / C(V)_$
 $n \text{ } j \rightarrow \{n, \emptyset\} \{j, \emptyset\}$
 $e \rightarrow a$
 $i \rightarrow \emptyset / a_$ (sometimes)
 $u \rightarrow w / _a$

23.1.1.1.4 Proto-Chibchan to Marocacero *Pogostick Man*, from Wheeler, Alva (1972), “Proto-Chibchan”. In Matteson, Esther, ed., *Comparative Studies in Amerindian Languages* 93 – 108

$s \rightarrow \{ts, ʃ\} / _i$
 $s \rightarrow \{s, ts\}$
 $d(V)j \text{ } s(V)j \rightarrow ʈ^j \text{ } dʒ$
 $d \rightarrow l$
 $a \rightarrow \emptyset / _i$

$e \rightarrow a$
 $i \rightarrow \text{ə} / \text{oC}_-$
 $i \rightarrow \emptyset / \text{C}''\text{V}(\text{C})_-$
 $i \rightarrow \emptyset / _(\text{C})''\text{V}$

23.1.1.1.5 Proto-Chibchan to Motilón *Pogostick Man*, from Wheeler, Alva (1972), “Proto-Chibchan”. In Matteson, Esther, ed., *Comparative Studies in Amerindian Languages* 93 – 108

$g \rightarrow \emptyset$
 $s \rightarrow \{s, x, t\} \sim f\}$
 $s \rightarrow \{f, t\} / _i$
 $s \rightarrow x / _i$
 $h \rightarrow \emptyset$
 $\{w, m\} \rightarrow b$
 $s(\text{V})d \rightarrow d^j$
 $d \rightarrow \emptyset / \text{V}_s$
 $e \rightarrow a$
 $i \rightarrow \emptyset / a_-$ (usually; sometimes the diphthong is retained or $\rightarrow aj$)
 $a \rightarrow i / iC_-$
 $u \rightarrow \emptyset / a_-$
 $u \rightarrow \emptyset / _a$
 $\{ue, aja\} \rightarrow \text{ə}$
 $\{u, i\} \rightarrow \emptyset / \text{C}''\text{V}(\text{C})_-$
 $i \rightarrow \emptyset / _(\text{C})''\text{V}$
 $e \rightarrow u / uC_-$
 $e \rightarrow \emptyset / _uC$

23.1.1.1.6 Proto-Chibchan to Tunebo *Pogostick Man*, from Wheeler, Alva (1972), “Proto-Chibchan”. In Matteson, Esther, ed., *Comparative Studies in Amerindian Languages* 93 – 108

$g \ g^w \rightarrow \emptyset \ b$
 $\{d(\text{V})s, n(\text{V})j\} \ n(\text{V})s \rightarrow r \ \{VsV, r\}$
 $d(\text{V})j \rightarrow r(\text{V})$
 $d \rightarrow r$
 $s \rightarrow h / _(\text{V})C$
 $ts \ t\text{f} \rightarrow t\text{f} \ s$
 $m \ n \ h \ j \rightarrow b \ \{n, r, \emptyset\} \ \{h, \emptyset\} \ \{j, \emptyset\}$
 $e \rightarrow a$

$ai \rightarrow e$ / if the *a is not stressed
 $a \rightarrow \emptyset$ / $_u$
 $i \rightarrow a$ / $_Ca$
 $\{a,i\} \rightarrow \emptyset$ / $C''V(C)_$
 $i \rightarrow \emptyset$ / $_(C)''V$
 $e \rightarrow \emptyset$ / u_C
 $e \rightarrow i$ / “conditioning undetermined”

23.1.2 Proto-Lenmichian to Proto-Lencan

Pogostick Man, from Wikipedia contributors (2015), “Macro-Chibchan languages”. *Wikipedia, the Free Encyclopedia*. <https://en.wikipedia.org/w/index.php?title=Macro-Chibchan_languages&oldid=672637970>, presumably citing Constenla Umaa, Adolfo (2005), “¿Existe relación genealógica entre las lenguas misumalpas y las chibchenses?”. *Estudios de Lingística Chibcha* 24:7 – 85

$b\ d \rightarrow m\ n$ / $_V[+ \text{nasal}]$ (I’m inferring this from the statement that “[t]here are also a series... of nasal vowels”)
 $b\ d \rightarrow p\ l$
 $\{?,h\} \rightarrow \emptyset$
 $\{s,ts\} \rightarrow ts'$
 $o\ a \rightarrow \{u,o\}\ \{a,e\}$

23.1.3 Proto-Lenmichian to Proto-Misumalpan

Pogostick Man, from Wikipedia contributors (2015), “Macro-Chibchan languages”. *Wikipedia, the Free Encyclopedia*. <https://en.wikipedia.org/w/index.php?title=Macro-Chibchan_languages&oldid=672637970>, presumably citing Constenla Umaa, Adolfo (2005), “¿Existe relación genealógica entre las lenguas misumalpas y las chibchenses?”. *Estudios de Lingística Chibcha* 24:7 – 85

$b\ d \rightarrow m\ n$ / $_V[+ \text{nasal}]$ (I’m inferring this from the statement that “[t]here are also a series... of nasal vowels”)
 $b\ d \rightarrow \{b,p\}\ l$
 $\{?,h\} \rightarrow \emptyset$
 $ts \rightarrow s$

24 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	ɽ	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>, presumably citing Alpher, Barry (2004), “Proto-Pama-Nyungan etyma”. In Bower, Claire, and Harold Koch (eds.), *Australian Languages: Classification and the Comparative Method*)

24.1 Paman

NB: These changes are most likely largely incomplete, especially for languages with fewer changes shown.

24.1.1 Proto-Paman to Aritɲitiy

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 / #_ ! ɿ

u[-long]C → Cw / #_

a[-long]C → Ca / #_ (! ɿa?)

u i → w j / a_ when this a is a result of metathesis (?)

V: → V[-long] / in #U

24.1.2 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_
Ø → j / #(C)i:(C)_V ! _i
Ø → w / #(C)u:(C)_V ! _u
Ø → a / #(C)a:(C)_V ! _a
C → Ø / #_
V: → ə / in #U

24.1.3 Proto-Paman to Linɲitiy

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 → Ø / #NV_SV
C → Ø / #_
V: V[-long] → V[-long] Ø / in #U

24.1.4 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 → 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

24.1.5 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

$NVS \rightarrow V^nS / \#_-$

$C \rightarrow \emptyset / \#_-$

$V: \rightarrow V[-\text{long}] / \text{in } \#U$

24.1.6 Proto-Paman to Urađi

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

$(N)S \rightarrow F / \#(C)V_-$

$V: \rightarrow V[-\text{long}] / \text{in } \#U$

24.1.7 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

$a \rightarrow i / \#C[+\text{palatal}]V[-\text{long}]C_-$

$i \rightarrow e / \#(C)aC[-\text{palatal}]_-$

$\#''UU \rightarrow \#U''U$

$NVS \rightarrow V^nS / \#_-$

$C \rightarrow \emptyset / \#_-$

$\emptyset \rightarrow j / \#i:(C)_a$

$\emptyset \rightarrow w / \#u:(C)_a$

$V: \rightarrow V[-\text{long}] / \text{in } \#U$

25 Macro-Panoan

25.1 Tacanan

Ritchie (1968) gives the following phonology for Proto-Tacanan. The alveolopalatal series is inferred from the notation and may be incorrect.

	Bilabial	Alveolar	Alveolopalatal	Palatal	Velar	Glottal
Nasal	m	n				
Stop	p b	t d			k	ʔ
Affricate		ts	tɕ	tʃ		
Fricative		s	ɕ	ʃ		
Approximant	w	r	*ɹ	j		

	Front	Central	Back
High	i		
Mid	e		o
Low		a	

(From Key, Mary Ritchie (1968), *Comparative Tacanan Phonology with Cavineña Phonology and Notes on Pano-Tacanan Relationship*)

25.1.1 Proto-Tacanan to Cavineña

Pogostick Man, from Key, Mary Ritchie (1968), *Comparative Tacanan Phonology with Cavineña Phonology and Notes on Pano-Tacanan Relationship*

$k \rightarrow k^w$
 $\{\text{ɕ}, \text{tɕ}\} \rightarrow h$
 $x \rightarrow k$
 $*\text{ɹ} \rightarrow r$

25.1.2 Proto-Tacanan to Chama

Pogostick Man, from Key, Mary Ritchie (1968), *Comparative Tacanan Phonology with Cavineña Phonology and Notes on Pano-Tacanan Relationship*

$b \text{ d} \rightarrow \text{ɓ} \text{ ɗ}$
 $\text{ɗ} \rightarrow \{\text{ʔ}, \emptyset\} / \text{!} \# _$
 $\text{t k} \rightarrow k \text{ k}^w$
 $\text{tʃ} \rightarrow s / _i$

$t\epsilon \rightarrow \int$
 $s \epsilon \rightarrow \check{\delta} h$
 $n \rightarrow \eta / i_{-}\{o,a\}$ (the former is conjectured)
 $\{r,*\acute{r}\} \rightarrow \{\emptyset,w,j\}$

25.1.3 Proto-Tacanan to Reyesano

Pogostick Man, from Key, Mary Ritchie (1968), *Comparative Tacanan Phonology with Cavineña Phonology and Notes on Pano-Tacanan Relationship*

$k \rightarrow k^w$
 $b \ d \rightarrow {}^mb \ {}^ndz$
 $ts \rightarrow t\int / \#_{-}$
 $t\int \ \epsilon \rightarrow ts \ \int$
 $\epsilon \ x \rightarrow \check{\delta} h$
 $w \rightarrow \beta / _E ?$
 $*\acute{r} \rightarrow \emptyset$
 $j \rightarrow t\int / V_V$

25.1.4 Proto-Tacanan to Tacana

Pogostick Man, from Key, Mary Ritchie (1968), *Comparative Tacanan Phonology with Cavineña Phonology and Notes on Pano-Tacanan Relationship*

$k \rightarrow k^w / _a$
 $k \rightarrow k^w / \#_i$
 $\emptyset \rightarrow j / k_e$
 $t\epsilon \rightarrow dz$
 $t\int \rightarrow ts / _E$
 $\epsilon \rightarrow s$
 $x \rightarrow h / \#_{-}$
 $x \rightarrow \{h,\emptyset\}$
 $w \rightarrow \beta / _E$
 $j \rightarrow t\int / V_V$
 $*\acute{r} \rightarrow \emptyset$

26 Mande

Dwyer (1987/1988) gives the following consonants for Proto-Mande.

	Labial-Velar	Bilabial	Alveolar	Palatal	Velar
Nasal		m	n		ŋ
Stop	kp kp' gb	p b	t t' d		k k' g
Fricative		f	s z		
Approximant		l	j	w	

(From Dwyer, David J. (1987/1988), “Towards Proto Mande Morphology”. *Mandekan: Bulletin semestriel d'études linguistiques* 14/15:139 – 152)

26.1 Proto-Mande to Bobo

Pogostick Man, from Dwyer, David J. (1987/1988), “Towards Proto Mande Morphology”. *Mandekan: Bulletin semestriel d'études linguistiques* 14/15:139 – 152

NB: These changes only deal with consonants.

p → f
 t' {k',g} → t k
 l → d
 z → {s,j}
 w → g
 ŋ → ɲ
 kp gb → k gw

26.2 Proto-Mande to Busa

Pogostick Man, from Dwyer, David J. (1987/1988), “Towards Proto Mande Morphology”. *Mandekan: Bulletin semestriel d'études linguistiques* 14/15:139 – 152

NB: These changes only deal with consonants.

t' k' → t k
 d → l
 ŋ → ɲ
 kp kp' → {kp,k} gb
 j → i

26.3 Proto-Mande to Dan

Pogostick Man, from Dwyer, David J. (1987/1988), “Towards Proto Mande Morphology”.
Mandekan: Bulletin semestriel d’études linguistiques 14/15:139 – 152

NB: These changes only deal with consonants.

$t' k' \rightarrow t k$
 $d \rightarrow l$
 $\eta \rightarrow ɲ$
 $kp' \rightarrow gb$

26.4 Proto-Mande to Guro

Pogostick Man, from Dwyer, David J. (1987/1988), “Towards Proto Mande Morphology”.
Mandekan: Bulletin semestriel d’études linguistiques 14/15:139 – 152

NB: These changes only deal with consonants.

$p f \rightarrow f v$
 $t' k' \rightarrow t k$
 $d \rightarrow l$
 $\eta \rightarrow ɲ$
 $kp \{kp', gb\} \rightarrow p b$

26.5 Proto-Mande to Kono-Vai

Pogostick Man, from Dwyer, David J. (1987/1988), “Towards Proto Mande Morphology”.
Mandekan: Bulletin semestriel d’études linguistiques 14/15:139 – 152

NB: These changes only deal with consonants.

$p \rightarrow f$
 $l \rightarrow d$
 $z \rightarrow s$
 $\{g, w, kp\} kp' gb \rightarrow k kp b$
 $t' k' \rightarrow t k$
 $\eta \rightarrow ɲ$

26.6 Proto-Mande to Southwest Mande

Pogostick Man, from Dwyer, David J. (1987/1988), “Towards Proto Mande Morphology”.

Mandekan: Bulletin semestriel d'études linguistiques 14/15:139 – 152

NB: These changes only deal with consonants.

f → p
{t',d} {k',g} → l k
z → s
w → g
ŋ → ɲ
kp kp' gb → {k,B} kp B (it's unclear what this ⟨B⟩ is)

26.7 Proto-Mande to Mandekan

Pogostick Man, from Dwyer, David J. (1987/1988), “Towards Proto Mande Morphology”.
Mandekan: Bulletin semestriel d'études linguistiques 14/15:139 – 152

NB: These changes only deal with consonants.

p → f
l → d
z → s
{k,g,kp} {kp',gb} → s b
t' k' → t k
ŋ → ɲ
w j → k dʒ

26.8 Proto-Mande to Mano

Pogostick Man, from Dwyer, David J. (1987/1988), “Towards Proto Mande Morphology”.
Mandekan: Bulletin semestriel d'études linguistiques 14/15:139 – 152

NB: These changes only deal with consonants.

f → v
t' k' → t k
d → l
ŋ → ɲ
kp' → gb

26.9 Proto-Mande to Mwa

Pogostick Man, from Dwyer, David J. (1987/1988), “Towards Proto Mande Morphology”.

Mandekan: Bulletin semestriel d'études linguistiques 14/15:139 – 152

NB: These changes only deal with consonants.

f → v
t' k' → t k
d → l
ŋ → ɲ
kp' → gb

26.10 Proto-Mande to San

Pogostick Man, from Dwyer, David J. (1987/1988), “Towards Proto Mande Morphology”.
Mandekan: Bulletin semestriel d'études linguistiques 14/15:139 – 152

NB: These changes only deal with consonants.

t' k' → t k
d → l
ŋ → ɲ
kp kp' → k b

26.11 Proto-Mande to Sembla

Pogostick Man, from Dwyer, David J. (1987/1988), “Towards Proto Mande Morphology”.
Mandekan: Bulletin semestriel d'études linguistiques 14/15:139 – 152

NB: These changes only deal with consonants.

p → f
f → d (yes, really)
t' {k',g,w} → {t,d} k
l → d
z → s
gb → b
j → dʒ
ŋ → ɲ

26.12 Proto-Mande to Soninka

Pogostick Man, from Dwyer, David J. (1987/1988), “Towards Proto Mande Morphology”.
Mandekan: Bulletin semestriel d'études linguistiques 14/15:139 – 152

NB: These changes only deal with consonants.

$p \rightarrow f$
 $t' \{k', g\} \rightarrow \{t, d\} \ k$
 $z \rightarrow j \ ?$
 $\{w, \eta\} \rightarrow j$
 $kp \ gb \rightarrow k \ b$

26.13 Proto-Mande to Susu

Pogostick Man, from Dwyer, David J. (1987/1988), “Towards Proto Mande Morphology”.
Mandekan: Bulletin semestriel d'études linguistiques 14/15:139 – 152

NB: These changes only deal with consonants.

$p \rightarrow f$
 $t' \rightarrow t$
 $l \rightarrow d$
 $z \rightarrow s$
 $w \rightarrow x$
 $\eta \rightarrow j$
 $kp \ gb \rightarrow k \ b$

27 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>)

27.1 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>

q(ʼ) → k(ʼ)
 ŋ → n
 a: e: o: → i i u
 tʃ(ʼ) → t(ʼ)
 r → j
 V: → V[-long]

27.2 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>

ŋ → n
 tʃ(ʼ) → t(ʼ)

$r \rightarrow j$
 $V: \rightarrow V[-\text{long}]$

27.3 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>

$w \rightarrow b$
 $h \rightarrow w / _ \{o, u\}$
 $q(\cdot) \rightarrow k(\cdot)$
 $\eta \rightarrow h$
 $kV[+\text{round}]C[+\text{glide}] \rightarrow k^w$

27.4 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>

$\eta \rightarrow x$
 $t \rightarrow tʃ$
 $CV?VC \rightarrow CV?C$
 $r \rightarrow \{t, j\}$
 $tʃ \rightarrow tʂ$

27.5 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>

$\eta \rightarrow x$
 $h \rightarrow j / _ \#$
 $CV?VC \rightarrow CV?C$
 $\delta w \rightarrow ? j / VCV_ \#$
 $t^j(\cdot) \rightarrow tʃ(\cdot)$
 $V: \rightarrow V[-\text{long}]$

“Kaqchikel retains a centralized lax schwa-like vowel as a reflex of Proto-Mayan [a]”

27.6 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>

$\eta \rightarrow x$
 $CV?VC \rightarrow CV?C$
 $t^j(?) \rightarrow t^f(?)$

27.7 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>

$\eta \rightarrow x$
 $t \rightarrow t^f$
 $CV?VC \rightarrow CV?C$
 $r \rightarrow \{t, j\}$
 $t^f \rightarrow t^s$
 $t^j(?) \rightarrow t(?)$
 $t^j(?) \rightarrow t^s(?)$
 $r \ t \ t^f \ f \rightarrow t \ t^f \ t^s \ s$

27.8 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>

$q(?) \rightarrow k(?)$
 $\eta \rightarrow n$
 $r \rightarrow j$
 $V: \rightarrow V[-\text{long}]$

27.9 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_

language&oldid=571518268>

q(ʼ) → k(ʼ)

ŋ → n

a: e: o: → i i u

27.10 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>

q(ʼ) → k(ʼ)

ŋ → n

a: → i

t → tʃ / -#

tʲ(ʼ) → tʃ(ʼ)

“[V]owel length and [h] and [ʔ]” have converted into a tone distinction

28 Muskogean

The following Proto-Muskogean phonemic inventory is adapted from Wikipedia contributors (2016), citing Booker (2005).

	Labial	Alveolar	Palatal	Velar	Rounded Velar
Nasal	m	n			
Stop	p	t		k	k ^w
Affricate		ts	tʃ		
Fricative		s	ʃ	x	x ^w
Lateral Fricative		ɬ			
Approximant		l	j		w
Unknown		θ			

In addition, Booker (2005) posits two phonemes of unknown value. These phonemes dropped out in all positions in Eastern Muskogean, and only survived in the final syllable in Western Muskogean, where they yielded a glottal stop (/ʔ/) and a glottal fricative (/h/) before developing further in the respective languages. I have termed the progenitor phonemes “weak” (namely C₁[+ weak] and C₂[+ weak]). (I tentatively hypothesize that these were *ʔ *h, respectively, but am not sure.)

I would like to take the unusual step of asking for help. I had to go to the library to find Booker’s paper, and in my notes I failed to write down the languages for which the following sound changes occurred:

l → j / a_i
k → Ø / V_C ! penult
V → V̂: / _Cko, ko lost?

If anyone has a copy of Booker’s paper and can double-check, please contact me via one of the methods listed in the appropriate section.

(From Wikipedia contributors (2016), “Muskogean languages”. *Wikipedia, the Free Encyclopedia*. <https://en.wikipedia.org/w/index.php?title=Muskogean_languages&oldid=704652062>, citing Booker, Karen (2005), “Muskogean Historical Phonology”. In Hardy, Heather Kay, and Janine Scancarelli, eds., *Native Languages of the Southeastern United States* 246 – 298; and Booker, Karen (2005), “Muskogean Historical Phonology”. In Hardy, Heather Kay, and Janine Scancarelli, eds., *Native Languages of the Southeastern United States* 246 – 298)

28.1 Proto-Muskogean to Proto-Eastern Muskogean

Pogostick Man, from Booker, Karen (2005), “Muskogean Historical Phonology”. In Hardy,

Heather Kay, and Janine Scancarelli, eds., *Native Languages of the Southeastern United States* 246 – 298

$\theta \rightarrow \text{ɬ}$
 $x^w \rightarrow f$
 $VC[+ \text{ weak}] \rightarrow \emptyset / _V\#$

28.1.1 Proto-Eastern Muskogean to Alabama

Pogostick Man, from Booker, Karen (2005), “Muskogean Historical Phonology”. In Hardy, Heather Kay, and Janine Scancarelli, eds., *Native Languages of the Southeastern United States* 246 – 298

$\int \rightarrow ts$
 $kV \rightarrow \emptyset / V_ \#$
 $k \rightarrow \emptyset$
 $ts\ x \rightarrow s\ h / _C$

28.1.2 Proto-Eastern Muskogean to Creek

Pogostick Man, from Booker, Karen (2005), “Muskogean Historical Phonology”. In Hardy, Heather Kay, and Janine Scancarelli, eds., *Native Languages of the Southeastern United States* 246 – 298

$V_1kV_2 \rightarrow V_2\text{:} / \#((C)V(C))(C)_ \#$
 $V_1k \rightarrow \emptyset / _ \#$
 $\int \rightarrow ts$
 $k^w \rightarrow k / \#_$
 $k^w \rightarrow b$
 $S \rightarrow S[+ \text{ voice}] / V_V$
 $h \rightarrow x / _ \%$
 $V_0xV_0 \rightarrow V_0\text{:}$
 Initial vowels lost?
 $x \rightarrow w / a_o$
 $x \rightarrow h$
 $m \rightarrow \eta / _k$
 ts and t alternate before k
 $kl \rightarrow k\text{:}$
 $C\text{:} \rightarrow C[- \text{ long}]$

28.1.3 Proto-Eastern Muskogean to Hitchiti

Pogostick Man, from Booker, Karen (2005), “Muskogean Historical Phonology”. In Hardy, Heather Kay, and Janine Scancarelli, eds., *Native Languages of the Southeastern United States* 246 – 298

$\int \rightarrow ts$
 $V \rightarrow \emptyset / Vk_ \#$
 $x \rightarrow j / V_0-V_0$
 $x \rightarrow h$

28.1.4 Proto-Eastern Muskogean to Korasati

Pogostick Man, from Booker, Karen (2005), “Muskogean Historical Phonology”. In Hardy, Heather Kay, and Janine Scancarelli, eds., *Native Languages of the Southeastern United States* 246 – 298

$\int \rightarrow ts$
 $VkV \rightarrow ^\circ V / _ \#$
 $k \rightarrow \emptyset$
 $ts \rightarrow s / _ C$
 $nt \rightarrow t:$
 $x \rightarrow h$

28.1.5 Proto-Eastern Muskogean to Mikasuri

Pogostick Man, from Booker, Karen (2005), “Muskogean Historical Phonology”. In Hardy, Heather Kay, and Janine Scancarelli, eds., *Native Languages of the Southeastern United States* 246 – 298

$V \rightarrow \emptyset / Vk_ \#$
 $x \rightarrow j / V_0-V_0$
 $t\int \rightarrow s / _ C ! _ k$
 $\int x \rightarrow ts h$

28.1.6 Proto-Eastern Muskogean to Seminole

Pogostick Man, from Booker, Karen (2005), “Muskogean Historical Phonology”. In Hardy, Heather Kay, and Janine Scancarelli, eds., *Native Languages of the Southeastern United States* 246 – 298

ʃ x → ts h
 tl → t:

28.2 Proto-Muskogean to Proto-Western Muskogean

Pogostick Man, from Booker, Karen (2005), “Muskogean Historical Phonology”. In Hardy, Heather Kay, and Janine Scancarelli, eds., *Native Languages of the Southeastern United States* 246 – 298

ts tʃ → s ts
 θ → n
 s → ʃ
 x → h
 C₁[+ weak] C₂[+ weak] → ? h / V_V#
 V → Ø / V{k,ʔ,h}_#
 x^w → h / %_{o,i}(C)#
 a → o / x^w_#
 oj aj → i: {a:,i:}
 i → Ø / #(C)V(C)(C)V(C)(C)_# (sporadic in the case of other vowels)
 tl st → l: t:

28.2.1 Proto-Western Muskogean to Chickasaw

Pogostick Man, from Booker, Karen (2005), “Muskogean Historical Phonology”. In Hardy, Heather Kay, and Janine Scancarelli, eds., *Native Languages of the Southeastern United States* 246 – 298

h → Ø / _#
 aw → o
 x^wɬ → ɬ:

28.2.2 Proto-Western Muskogean to Choctaw

Pogostick Man, from Booker, Karen (2005), “Muskogean Historical Phonology”. In Hardy, Heather Kay, and Janine Scancarelli, eds., *Native Languages of the Southeastern United States* 246 – 298

? → Ø / _#
 x^w → h / V_V
 ɬh → ɬ:

$$\begin{array}{l} a \rightarrow o / \neg w \\ p \rightarrow k / \neg C \end{array}$$

29 Na-Dene

Note that the changes from Proto-Na-Dene and Proto-Athabaskan-Eyak deal only with obstruents.

29.1 Proto-Na-Dene to Proto-Athabaskan-Eyak

Pogostick Man, from Wikipedia contributors (2015), “Na-Dene languages”. *Wikipedia, the Free Encyclopedia*. <https://en.wikipedia.org/w/index.php?title=Na-Dene_languages&oldid=666126262>

$k^j k^{j'} g^j x^j \rightarrow ts ts' dz s$
 $\{s, \int\} \rightarrow \emptyset / _x$

29.1.1 Proto-Athabaskan-Eyak to Proto-Athabaskan

Pogostick Man, from Wikipedia contributors (2015), “Na-Dene languages”. *Wikipedia, the Free Encyclopedia*. <https://en.wikipedia.org/w/index.php?title=Na-Dene_languages&oldid=666126262>

$\ddot{l} \rightarrow \{l, l\}$
 $\int \rightarrow \{s, z_u\}$
 $\{s, dz\} \rightarrow \{s, z\}$
 $k k' k^w k^{w'} g g^w \rightarrow k^j k^{j'} t_\$ t_\$^{j'} g^j d_z$
 $x x^w \rightarrow \{x^j, j\} \{s, z_u\}$
 $Q^w \rightarrow Q^w \rightarrow Q ?$
 $\chi^{(w)} \rightarrow \{\chi, \mathbb{B}\}$

29.1.1.1 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 ^h t'		k k ^h k'	q q ^w q ^h q ^{wh} q' q ^w '	ʔ
Fricative		s z	ʃ ʃ ^w ʒ ʒ ^w	x ɣ	χ χ ^w ʁ ʁ ^w	h
Lat. Fric.		ʈ ʈ ^h ʈ'				
Affricate		ts ts ^h ts'	tʃ tʃ ^w tʃ ^h tʃ ^{wh} tʃ' tʃ ^w '			
Lat. Aff.		tʈ tʈ ^h tʈ'				
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^y in 2005:284 but in 2008 opted to use the *\$ transcription.

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. At the recommendation of Jan Strasser, the following conventions will be used to refer to the series; these are based on the abbreviations Whimemsz gave on the original Correspondence Library page, derived from the voiceless members of each series:

1. T, dental stops
2. TŁ, laterals
3. TS, dental affricates and fricatives
4. TŠ, palatals
5. TŠ^w, labialized palatals
6. K, front (palatalized) velars
7. Q, uvulars
8. Q^w, labialized uvulars

Whimemsz was unsure of the abbreviation of the glottal series. In addition, there also exist a series of (inter-?)dentals, abbreviated TH, and one of retroflexes, abbreviated

TŞ. Changes marked with an asterisk, *, apply to the individual phone(me)s.

29.1.1.1.1 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

29.1.1.1.2 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

29.1.1.1.3 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

29.1.1.1.4 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

TS series desibilantizes

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

$\{T\check{S}, T\check{S}^w\} K \rightarrow TS T\check{S}$

The Q series incompletely moves to the K series, the latter being more common

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

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

29.1.1.1.5 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

$TS \{T\check{S}, T\check{S}^w\} K Q \rightarrow TH TS T\check{S} K$

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

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

$a u \rightarrow a o$

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

29.1.1.1.6 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

$\{T\check{S}, T\check{S}^w\} K Q \rightarrow TS T\check{S} K$

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

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

29.1.1.1.7 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

$TS T\check{S} \rightarrow TH TS$

$T\check{S}^w \rightarrow T\check{S} (\rightarrow TS \text{ in Kuskokwim dialect})$

$K \rightarrow \{K, T\check{S}\}$

$w \rightarrow v (\rightarrow w \text{ in Shageluk dialect})$

$\eta \rightarrow \eta$

$R F \rightarrow R[-voiced] F[-voiced] / _ \# \text{ in suffixes}$

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

$C' \rightarrow C / _ \$$

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

29.1.1.1.8 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

$\{\text{T}\check{\text{S}}, \text{T}\check{\text{S}}^w\} \rightarrow \text{T}\check{\text{S}}$ ($\rightarrow \text{TS}$ in Upper Inlet dialect)
 $\text{e a u } \{\text{ə}, \text{ʊ}\} \rightarrow \text{a u i ə}$
 $\{\text{ʃ}^{(w)}, \text{x } \{\text{z}, \text{ʒ}^{(w)}, \text{ɣ}\} \rightarrow \text{s j}$
 $\text{V}^? \rightarrow \text{V}[-\text{glottalized}]$

29.1.1.1.9 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

$\text{C} \rightarrow \text{h} / _ \$$
 $\text{ɑ ə ʊ u} \rightarrow \text{a e o i}$
 $\{\text{T}\check{\text{S}}, \text{T}\check{\text{S}}^w\} \text{K Q} \rightarrow \text{TS T}\check{\text{S}} \text{K}$
 $\text{ts ts}^h \text{ ts' s z} \rightarrow \text{k}^w \text{ k}^{wh} \text{ k}^{w'} \text{ ʌ w}$

29.1.1.1.10 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, $\langle \text{TS} \rangle$ represents a sound that Whimemsz says “is between” the TH and TS series POA-wise.

$\text{TS K} \rightarrow \text{T}\check{\text{S}} \text{ TS} / _ \text{E}$
 $\text{TS K} \rightarrow \text{TH T}\check{\text{S}} / \text{else}$
 $\text{T}\check{\text{S}} \text{ T}\check{\text{S}}^w \text{ Q} \rightarrow \text{TS T}\check{\text{S}} \text{ K}$
 $\text{j w} \rightarrow \text{ʒ v}$
 $\{\text{n}, \text{ɲ}\} \rightarrow \text{ⁿdʒ} / _ \text{E}[-\text{nas}]$
 $\{\text{n}, \text{ɲ}\} \rightarrow \text{ⁿd} / _ \text{V}[-\text{nas}]$
 $\{\text{i}, \text{e}\} \rightarrow \{\text{i}, \text{j a}\}$ (this latter due to the loss of final consonants within the stem)
 $\text{a u } \{\text{ɑ}, \text{ə}\} \text{ ʊ} \rightarrow \{\text{i}, \text{e}\} \text{ ju a o}$
 $\text{V}^? \rightarrow \text{V}[+\text{low tone}]$
 “An ‘extensive reduction’ of stem-final consonants; however, reflexes of final $^*\text{-ɲ}$ and $^*\text{-n}$ after PA $^*\text{a}$ and $^*\text{e}$ are kept distinct”

29.1.1.1.11 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

TS TŠ TŠ^w K Q → TH TS TŞ TŠ K

Occasional palatalization in front of high vowels

n → (ⁿ)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[?] → 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

29.1.1.1.12 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

TS → TH

e → a / in prefixes

i e a u {ɑ,ʊ} → e a ə o ŭ

TS {TŠ,TŠ^w} → TL TS

C' → C / _\$

V[?] → V[+low tone]

w (→ b?) → m

ə → Ø / {R,F} -#

29.1.1.1.13 Proto-Athabaskan to Hupa *Pogostick Man*, from Sapir, Edward (1936), “Reflexes of Proto-Athabaskan in Several Languages (Hupa, Navaho, Chipewyan, Sarcee)”

NB: First, part of the list of correspondences was cut off; second, it is sometimes difficult to read Sapir's handwriting; and third, I'm hoping I made the correct inferences about his notation.

h → {h,Ø}

q R → x w

{q^w,x^w} q^w' g^w ʒ^w → x^(w) q^(w)' g^(w) w

z → s

{ʃ,ʒ} → w

x^j → w

29.1.1.1.14 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

$e\ a\ \alpha\ \upsilon \rightarrow a\ o\ \ddot{o}\ \ddot{u}$
 $TS\ \{T\check{S}, T\check{S}^w\} \rightarrow TL\ TS$
 $C' \rightarrow C\ /_ \$$
 $V^? \rightarrow V[+low\ tone]$
 $w\ (\rightarrow b?) \rightarrow m$
 $\emptyset \rightarrow \emptyset\ / \{R, F\} - \#$

29.1.1.1.15 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

$e\ a\ \alpha\ \upsilon \rightarrow a\ o\ \ddot{o}\ \ddot{u}$
 $TS\ \{T\check{S}, T\check{S}^w\} \rightarrow TL\ TS$
 Stem-final/suffixal consonant clusters lost in Minchumina-Bearpaw Upper Koyukon
 $K \rightarrow T\check{S}$
 $C' \rightarrow C\ /_ \$$
 $V^? \rightarrow V[+low\ tone] \rightarrow V[-tone]$
 $w \rightarrow m\ /_ Vn\ (sporadic)$
 $w \rightarrow b$

29.1.1.1.16 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

$T\check{S}\ T\check{S}^w\ K\ Q \rightarrow TS\ T\check{S}\ T\check{S}\ K$
 $e\ a\ \{\alpha, \upsilon\} \rightarrow a\ o\ \ddot{u}$
 $V^? \rightarrow V[-glottalized]$

29.1.1.1.17 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

$\{T\check{S}, T\check{S}^w\}\ K\ Q \rightarrow TS\ T\check{S}\ K$
 $\acute{a}\ \acute{e}\ \acute{u} \rightarrow \bar{a}\ \bar{e}\ \bar{u}$
 $\{e, \emptyset\}\ \upsilon \rightarrow \alpha\ u$
 $V^? \rightarrow V[+low\ tone]$

29.1.1.1.18 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

TS → TH (→ TS again in some areas)
 {Tš, Tšʷ} K Q → TS Tš Q
 T → Tš / _{i,e,u} ! in Ware Sekani
 ʊ → o
 Vʔ → V[+high tone]

29.1.1.1.19 Proto-Athabaskan to Proto-Southern Athabaskan *Pogostick Man*, from Hoiyer, Harry (1938), “The Southern Athapaskan Languages”. *American Anthropologist* 40:75 – 87

K → TS
 m → {m,b} (→ b seems more common)
 ɣ → h / in prefixes relating to word derivation
 VnC → V[+nas]C / _#, unless C = ?
 t n x → d n h / in prefixes relating to word derivation

29.1.1.1.20 Proto-Southern Athabaskan to Proto-Eastern Southern Athabaskan *Pogostick Man*, from Hoiyer, Harry (1938), “The Southern Athapaskan Languages”. *American Anthropologist* 40:75 – 87

t → k
 {s,z}(ʔ) {ʃ,ʒ}(ʔ) {t,ʈ}(ʔ) → s ʃ t / _#

29.1.1.1.21 Proto-Eastern Southern Athabaskan to Kiowa Apache *Pogostick Man*, from Hoiyer, Harry (1938), “The Southern Athapaskan Languages”. *American Anthropologist* 40:75 – 87

n → d
 d → Ø / _#
 k → tʃ / _E
 {xʲ,j}(ʔ) {x,y}(ʔ) → Ø h(ʔ) / _#
 Vnʔ VnC → V[+nas] V[+nas]C / _#
 x y → h Ø / _#
 {d,j} → j / Ø / _#
 xʲ j → ʃ ʒ

29.1.1.1.22 Proto-Eastern Southern Athabaskan to Jicarilla *Pogostick Man*, from Hoijer, Harry (1938), “The Southern Athapaskan Languages”. *American Anthropologist* 40:75 – 87

$d \rightarrow ? / _ \#$
 $x^j x? j y? \rightarrow h ? \emptyset ? / E _ \#$
 $x^j x? j g? \rightarrow ih i? i i? / _ \#$
 $x^j? j? \rightarrow h ? / _ \#$
 $x y / h \emptyset / _ \#$
 $n \rightarrow {}^n d$
 $x^j \rightarrow s$
 $j \rightarrow y / _ E$
 $Vn? VnC \rightarrow V[+ \text{nas}] V[+ \text{nas}]C / _ \#$

29.1.1.1.23 Proto-Eastern Southern Athabaskan to Lipan *Pogostick Man*, from Hoijer, Harry (1938), “The Southern Athapaskan Languages”. *American Anthropologist* 40:75 – 87

$d \rightarrow \emptyset / _ \#$
 $x^j j \rightarrow \int \emptyset / _ \#$
 $\{x^j, j\}? \rightarrow \emptyset / _ \#$
 $\{x, y\} \rightarrow \emptyset / _ (i) \#$
 $Vn? VnC \rightarrow V[+ \text{nas}] V[+ \text{nas}] / _ \#$
 $n \rightarrow {}^n d$
 $x^j \rightarrow s$
 $j \rightarrow y / _ E$

29.1.1.1.24 Proto-Southern Athabaskan to Proto-Western Southern Athabaskan *Pogostick Man*, from Hoijer, Harry (1938), “The Southern Athapaskan Languages”. *American Anthropologist* 40:75 – 87

$j \rightarrow y / _ E$

29.1.1.1.25 Proto-Western Southern Athabaskan to Chiricahua *Pogostick Man*, from Hoijer, Harry (1938), “The Southern Athapaskan Languages”. *American Anthropologist* 40:75 – 87

$d \rightarrow \emptyset / _ \#$
 $x^j j \rightarrow \int \emptyset / _ \#$
 $\{x^j, j\}? \rightarrow \emptyset / _ \#$
 $\{x, y\} \rightarrow \emptyset / _ (i) \#$

$Vn? \rightarrow V[+ \text{ nas}] / -\#$
 $n \rightarrow {}^nd$
 $\{s,z\}(?) \{f,ʒ\}(?) \{t,ʃ\}(?) \rightarrow s f t / -\#$

29.1.1.1.26 Proto-Western Southern Athabaskan to Mescalero *Pogostick Man*, from Hoiyer, Harry (1938), “The Southern Athapaskan Languages”. *American Anthropologist* 40:75 – 87

$d \rightarrow \emptyset$
 $x^j j \rightarrow f \emptyset / -\#$
 $\{x^j,j\} ? \rightarrow \emptyset / -\#$
 $\{x,y\} \rightarrow \emptyset / -(?)\#$
 $Vn? \rightarrow V[+ \text{ nas}] / -\#$
 $n \rightarrow {}^nd$
 $? \rightarrow \emptyset / \{s,f,t\} -\#$
 $z(?) ʒ(?) ʃ(?) \rightarrow dz dʒ dʃ / -\#$

29.1.1.1.27 Proto-Western Southern Athabaskan to Navajo *Pogostick Man*, from Hoiyer, Harry (1938), “The Southern Athapaskan Languages”. *American Anthropologist* 40:75 – 87

$\{y,h\} \rightarrow j / \text{ in prefixes related to word derivation}$
 $x^j(?) j(?) \rightarrow h ? / -\#$
 $x y \rightarrow h ? / -\#$
 $\{x,y\} ? \rightarrow \{?,g\}$ (Hoiyer notes a reflex “-g-”)
 $x^j \rightarrow s$
 $j \rightarrow y / _E$
 $\{s,z\}(?) \{f,ʒ\}(?) \{t,ʃ\}(?) \rightarrow s f t / -\#$

29.1.1.1.28 Proto-Western Southern Athabaskan to San Carlos *Pogostick Man*, from Hoiyer, Harry (1938), “The Southern Athapaskan Languages”. *American Anthropologist* 40:75 – 87

$x^{(j)} \{j,y\} \rightarrow h \emptyset / -\#$
 $x^j ? j ? \rightarrow h ? / -\#$
 $\{x,y\} ? \rightarrow g$
 $Vn? \rightarrow V[+ \text{ nas}] / -\#$
 $n \rightarrow {}^nd$
 $\{s,z\}(?) \{f,ʒ\}(?) \{t,ʃ\}(?) \rightarrow s f t / -\#$

29.1.1.1.29 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

$C \rightarrow \{h, \text{ʔ}\} / _ \#$
 $a \text{ } \emptyset \text{ } u \rightarrow a \text{ } \varepsilon \text{ } o$
 $\{T\check{S}, T\check{S}^w\} K Q \rightarrow TS T\check{S} K$
 $ts \text{ } ts^h \text{ } ts' \text{ } s \text{ } z \rightarrow k^w \text{ } k^{wh} \text{ } k^w, \text{ } \Delta \text{ } w$

29.1.1.1.30 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

$t\text{ʃ}^h \text{ } t\text{ʃ}^{(w)h} \text{ } k^h \rightarrow \text{ʈ} \text{ } s \text{ } \text{ʃ}$
 $\{T\check{S}, T\check{S}^w\} K \rightarrow TS T\check{S}$ (with exceptions)
 $Q \rightarrow K$
 $\emptyset \rightarrow j / _ e$
 $\text{ʈ} \rightarrow l$
 $ts \text{ } ts^h \text{ } ts' \text{ } \{s, z\} \rightarrow \{k^w, p\} \text{ } f \text{ } w^? \text{ } w$

29.1.1.1.31 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

$C \rightarrow \{h, \text{ʔ}\} / _ \#$
 $a \text{ } \emptyset \text{ } u \rightarrow a \text{ } e \text{ } o$
 $\{T\check{S}, T\check{S}^w\} K Q \rightarrow TS T\check{S} K$
 $ts \text{ } ts^h \text{ } ts' \text{ } s \text{ } z \rightarrow p \text{ } p^h \text{ } p' \text{ } f \text{ } v$

29.1.1.1.32 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

$C \rightarrow \{h, \text{ʔ}\} / _ \#$
 $a \text{ } \emptyset \text{ } u \rightarrow a \text{ } e \text{ } o$
 $\{T\check{S}, T\check{S}^w\} K Q \rightarrow TS T\check{S} K$

29.1.1.1.33 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

$\alpha \text{ ə } \upsilon \rightarrow \text{a } \{i, e\} \text{ u}$
 $C' \rightarrow C / _ \$$
 $Q \rightarrow K$

29.1.1.1.34 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

$V^? \rightarrow V[+\text{high tone}]$
 $TS \{T\check{S}, T\check{S}^w\} \rightarrow TH \ TS$
 $K \rightarrow T\check{S}$ (although $/x^j/$ stays as such in a few dialects)

29.1.1.1.35 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

$\{T\check{S}, T\check{S}^w\} \ TS \rightarrow TS \ TS^j$

29.1.1.1.36 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

$\{T\check{S}^w, K\} \rightarrow T\check{S}$ (although $/x^j/$ stays as such in a few dialects)

29.1.1.1.37 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

$K \rightarrow T\check{S} / _ ! _ \$$
 $TS \ T\check{S} \ T\check{S}^w \ Q \rightarrow TH \ TS \ T\check{S} \ K$
 $S' \rightarrow S / _ \$$
 $V^? \rightarrow V[+\text{high tone}]$
 Acquisition of phonemic length in some unreduced vowels, though exactly how is not explored
 $V_n \rightarrow V[+\text{nas}]$
 $\{n, \text{ɲ}\} \rightarrow {}^n d$
 $F[+\text{voiced}] \rightarrow F[-\text{voiced}] / _ \$$
 $\int \rightarrow h$ / in the “1sg subject prefix”
 $\ddot{\text{t}} \rightarrow h$ / in the grammatical classifier
 $\alpha \text{ ə } \upsilon \rightarrow \{\text{æ}, \text{ǣ}\} \text{ ǣ } \text{ö}$

29.1.1.1.38 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

$K \rightarrow T\check{S} / ! _ \$$

$TS \ T\check{S} \ T\check{S}^w \ Q \rightarrow TH \ TS \ T\check{S} \ K$

$S' \rightarrow S / _ \$$

$V^? \rightarrow V[+low \ tone]$ (“since then partially neutralized in noun and verb stems, but ‘still clear in verbal prefixes’”)

$e \ a \ \{a, u\} \rightarrow \text{æ} \ \text{ɔ} \ \text{ũ}$

29.1.1.1.39 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

$K \rightarrow T\check{S} / ! _ \$$

$TS \ T\check{S} \ T\check{S}^w \ Q \rightarrow TH \ TS \ T\check{S} \ K$

$S' \rightarrow S / _ \$$

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

$V_p \rightarrow V[+nas]$

$\{n, p\} \rightarrow {}^nd$

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

$\int \rightarrow h /$ in the “1sg subject prefix”

$\ddot{\imath} \rightarrow h /$ in the grammatical classifier

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

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

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

29.1.1.1.40 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.

$T\check{S} \rightarrow TS$

Series $T\check{S}^w$ apparently moved its POA to the labiodental or bilabial position

$K \ Q \rightarrow T\check{S} \ K$

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

$\text{ʊ} \rightarrow o$

29.1.1.1.41 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

TS {TŠ, TŠ^w} → TH TS

K → TŠ (although /x^j/ remained as such in a few dialects)

Q → K

{a, ə, u} → {a, o}

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

V[?] → V[+high tone]

Acquisition of nasalized vowels and diphthongs

/o/ somehow develops

29.1.1.1.42 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

TS {TŠ, TŠ^w} → TH TS

K → TŠ (although /x^j/ remained as such in a few dialects)

Q → K

e a → i e

{a, ə, u} → {a, o}

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

V[?] → V[+low tone]

Acquisition of nasalized vowels and diphthongs

/i/ somehow develops

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

29.1.2 Proto-Athabaskan-Eyak to Eyak

Pogostick Man, from Wikipedia contributors (2015), “Na-Dene languages”. *Wikipedia, the Free Encyclopedia*. <https://en.wikipedia.org/w/index.php?title=Na-Dene_languages&oldid=666126262>

k^j k^j' g^j x^j → ts ts' dz {s, f}

K^w → K

q^w q^w' g^w → q q' g

s → Ø / _x

$x \rightarrow \emptyset / \int_-$
 $\$ \rightarrow x^w \rightarrow \{x, s\}$

29.2 Proto-Na-Dene to Tlingit

Pogostick Man, from Wikipedia contributors (2015), “Na-Dene languages”. *Wikipedia, the Free Encyclopedia*. <https://en.wikipedia.org/w/index.php?title=Na-Dene_languages&oldid=666126262>

NB: Where a colon appears, forms to the left are the typical forms and forms to the right are “l-assimilated”.

$s \rightarrow s : \text{ɬ}$
 $ts \rightarrow ts : t\text{ɬ}$
 $ts' \rightarrow \{s', ts'\} : \{\text{ɬ}, t\text{ɬ}'\}$
 $\int \rightarrow \{\int, s\} : \text{ɬ}$
 $t\int \rightarrow \{t\int, ts\} : t\text{ɬ}$
 $t\int' \rightarrow \{s', t\int'\} : t\text{ɬ}'$

Somethings going on with the velars and uvulars; apparently, both the rounded and unrounded consonants have reflexes that may or may not be rounded

$k^j k^{j'} \rightarrow \{k, \int\} k'$
 $x^j \rightarrow x$
 $k^{(w)'} \rightarrow \{x, k\}^{(w)'}$
 $x^{(w)} \rightarrow x$
 $q' q^{w'} \rightarrow \chi^{(w)'} \{\chi', q^{(w)'}\} x \rightarrow \emptyset / \{s, \int\}_-$
 $\$ \rightarrow \chi$

30 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	'ʃ	'k 'g
Fortis stop	p b	t d	c ɟ	k g
Unknown (stop?)		d ₂		

	Front	Central	Back
High	i		u
Mid-high	e		o
Mid-low	ɛ		ɔ
Low		a	

*'p *'c *'ɟ *'g appear confined to C₁ position; *ŋ, to C₂ 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.

(From Hedinger, Robert (1987), *The Manenguba Languages (Bantu A.15, Mbo Cluster) of Cameroon*)

30.1 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 U₂ under the following conditions, as reported by Stewart (2002): If V₂ = V₁ (vowel nasality does not necessarily have to be the same, however), changes affecting the vowels will also affect V₂. If C is an approximant, changes involving a nasalized V₁ will also affect C₂ and V₂.

$\tilde{u} \rightarrow \tilde{I} / \#_-$
 $u \tilde{u} \rightarrow i \tilde{I} / \#R[-labial]_-$
 $\tilde{u} \tilde{I} \rightarrow \tilde{u} \tilde{I} / \#N[-labial]_-$
 $i \tilde{I} V[-round] \rightarrow ui u\tilde{I} V[+round] / C^w_-$
 $\tilde{u} \rightarrow v / \#R[-labial]_-$
 $f C \rightarrow c R / \#_-$
 $g^w \rightarrow w / \#_V[-nas]$
 $g^w \rightarrow \tilde{w} / \#_V[+nas]$
 $V[+nas] \rightarrow V[-nas] / \#S[+voiced]_-$
 $\tilde{I} \rightarrow \tilde{e} / \#(C)V_C$
 $u\tilde{I} \rightarrow j \tilde{I} / \#C_-$
 $i \tilde{I} \rightarrow i \tilde{I} / \#(C)V[-high]C_-$
 $\tilde{u} \rightarrow m / \#(C)V_-$
 $O[+nas -voiced] \rightarrow O[-nas] / \#(C)VC_-$

30.1.1 Pre-Proto-Bantu to Proto-Bantu

Pogostick Man, from Hedinger, Robert (1987), *The Manenguba Languages (Bantu A.15, Mbo Cluster) of Cameroon*

$S[+lenis] N[+lenis] \rightarrow S[-lenis] N[-lenis] / \text{in } C_1 \text{ position}$
 $N[+lenis] N[-lenis] \rightarrow N[-lenis] {}^nS / \text{in } C_2 \text{ position}$
 $d_2 \rightarrow d / \text{in } C_2 \text{ position}$

30.1.1.1 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)
 $p t d c \text{ } \text{ } k g \rightarrow \phi \text{ } \text{ } \{d, l\} t^h \emptyset h \{\emptyset, g\}$
 $\emptyset \rightarrow g / \#n_V \text{ (in verbs)}$
 $l \rightarrow d / n_-$

30.1.1.2 Proto-Bantu to Tswana *Whimemsz*, from Creissels, Dennis (1999), “Re-

$\{p, t, t_f, k\} \{mp, nt, nt_f, nk\} \{(m)b, (n)d, (j)d_3, (n)g\} \{m, n\} \rightarrow s \text{ ts}^h \text{ ts } j / \text{ }_iV$
 $\{t_f, k\} \{nt_f, nk, r\} \{jnd_3, ng\} mp \text{ mb } p \text{ b } \{d, l\} m \text{ n} \rightarrow s \text{ ts}^h \text{ ts } t_f^h(w) \text{ t}_f(w) \text{ f}(w) \text{ d}_3(w) \text{ d}_3 \text{ } \eta w$
 $j / \text{ }_{-}\{i, e\}V$
 $\{p, t, t_f, k\} \{mp, nt, nt_f, nk\} \{(m)b, (n)d, (j)d_3, (n)g\} \{m, n, j\} \rightarrow sw \text{ ts}^h w \text{ tsw } jw / \text{ }_iV$
 $mp \text{ mb } p \text{ b } m \rightarrow t_f^h(w) \text{ t}_f(w) \text{ f}(w) \text{ d}_3(w) \text{ } \eta w / \text{ }_{-}\{u, o\}V$
 “In these cases, the initial vowel of the sequence drops following the consonant change”;
 Whimemsz doesn’t specify if all V_1V_2 sequences drop the V_1
 $\{t_f, k\} \{nt_f, nk\} \{nd_3, ng\} \rightarrow s \text{ ts}^h \text{ ts} / \text{ }_{-}\{i, e\}$
 $nk \text{ k} \rightarrow k^h \text{ h} / \text{ }_u$
 $mp \text{ nt } nt_f \text{ nk } mp \text{ nd } jnd_3 \text{ ng} \rightarrow p^h \text{ t}^h \text{ t}^h q^h \text{ p } t \text{ t}^h \text{ k}$
 $p \text{ t } t_f \text{ k } \{d_3, g\} j \rightarrow h \text{ r } t^h \chi \emptyset \text{ n}$

30.1.1.3.1 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

$$\begin{array}{l} \text{nt}\zeta \text{ t}\zeta \rightarrow (\text{n})\text{t}^{\text{h}} \text{ t} \\ \{\text{ndj}, \text{nz}\} \rightarrow \text{nd} \end{array}$$
$$\begin{array}{l} \text{nt}\zeta \text{ t}\zeta \rightarrow (\text{n})\text{t}^{\text{h}} \text{t} \\ \{\text{ndj}, \text{nz}\} \text{ pz} \rightarrow \text{nd} \text{ n} \text{ } \check{\text{o}} \end{array}$$

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NB: Due to the source, only a few changes, mostly concerning creating dental consonants, are considered here.

ntɕ tɕ → (ɲ)t^h t
 ndj → ɲɖ
 ɲ → {ɲ, ɲ}

30.1.1.3.4 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.

ntɕ tɕ → (ɲ)t^h t
 {ndj, nz} z → ɲɖ ʊ

30.1.1.3.5 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 → ɲɖ ʃ

30.1.1.3.6 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 → ɖ

30.1.2 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

$N[+ \text{lenis}] \rightarrow N[- \text{lenis}]$ / in C_1 position
 $p \ t \ 't \ \{ 'd, d_2 \} \ c \ k \ 'k \rightarrow b \ d \ l \ \{ l, \emptyset \} \ j \ g \ \emptyset$ / in C_2 position
 $'m \ m \ 'n \ n \ \{ 'n, n \} \ \eta \rightarrow m \ \{ ^m b, m \} \ n \ \{ ^n d, n \} \ j \ \{ ^n g, \eta \}$ / in C_2 position
 $\{ u, o \} \ \{ \varepsilon, e, i \} \rightarrow w \ j$ / C_a in noun roots
 $\{ u, o \} \ \{ \varepsilon, e, i \} \rightarrow w \ j$ / $C_-(a)$ in verb roots
 $\{ u, o \} \ \{ \varepsilon, e, i \} \rightarrow w \ j$ / $C_ \$ V$ in noun class prefixes
 $f \rightarrow h$ (perhaps not in all languages?)

30.2 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

$C \rightarrow J[+nas]$ / $\#(C)V[+nas]_-$
 $\text{uŋũ} \rightarrow l \tilde{l}$ / $\#(C)V_-$
 $C \rightarrow J$ / $\#(C)V_-$
 $i(Ci) \rightarrow e(Ci)$ / t_- ; “vowel nasalizations are retained either way on each”
 $j \ f \ j \ c \ g^w \rightarrow c \ j \ f \ t \ g^p$
 $(N)V_1[+mid \ +nas](\tilde{l}) \rightarrow CV[-nas]n$
 $V[+nas](\tilde{u}, \tilde{l}) \rightarrow V[-nas](m, n)$ / $\#J[+voiced]_-$

30.2.1 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

$V[+high \ +ATR](C(V[+high \ -ATR])) \rightarrow \#(C)V[-high \ +ATR](CV[+high \ +ATR])$ / $\#J[+dorsal \ -voiced]_-$
 $\varepsilon \rightarrow ia$ / $\#(C)_-$
 $R[-voiced] \ R[+voiced] \ W \rightarrow Z[-voiced] \ O[-voiced] \ F$ / $\#_-$
 $\text{uŋ} \ \tilde{\text{uŋ}} \ \tilde{w} \rightarrow h \ \tilde{h} \ \tilde{h}^w$ / $\#_-$
 $\tilde{h} \ h^w \rightarrow \text{ɕ} \ \text{ɕ}^w$
 $h \rightarrow n\tilde{i}$ / $\#_-\tilde{a}$
 $h \rightarrow w$ / $\#_-$
 $t \rightarrow c$ / $\#_-V[-nas]$

30.2.1.1 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

$l \tilde{l} \rightarrow j \tilde{j} / \#_-$
 $C[+dorsal] \rightarrow C^w / _V[+round]$
 $V \rightarrow V[-round] / \#C[+dorsal] _C[-labial]$
 $jV[+nas] \rightarrow jV[-nas] / \#_-$
 $f \rightarrow j / \# _V[-nas]$
 $f \rightarrow \tilde{j} / \# _V[+nas]$
 $\{p, \tilde{v}\} \text{ c kp} \rightarrow f \text{ s p} / \#_-$
 $n \rightarrow \eta / \#(C)V_-$
 $N \rightarrow S$ (I'm not sure what's going on here in the paper, but here it is presented anyway for your enjoyment)
 $V \rightarrow \emptyset / \#(C)VC[-coronal]_-$
 $u \text{ l} \rightarrow w \text{ ɿ} / \#(C)V_-$
 $V[+high] \rightarrow V[+nas] / \#(C) _N$
 $i \rightarrow \emptyset / \#C _a$
 $\tilde{i} \rightarrow \emptyset / \# _ã$

30.3 Volta-Congo

30.3.1 Volta-Niger

30.3.1.1 Gbe

30.3.1.1.1 Proto-Gbe to Ajá *Pogostick Man*, from Capo, Hounkpati B.C. (1991), *A Comparative Phonology of Gbe*

$\varepsilon \tilde{\varepsilon} \rightarrow e \tilde{e}$
 $\{o, \text{ɔ}\} \{e, e\} \rightarrow u \text{ i} / _i$
 $V[+nas - high] \rightarrow [+high] / _i$
 $j\{\tilde{a}, \tilde{e}\} \rightarrow \{u, \tilde{u}\} / _E$
 $j \rightarrow \text{ɲ} / _V[+nas]$
 $\text{ɓ} \rightarrow j / _i$
 $\chi \text{ ɓ} \rightarrow s \text{ z} / _ \{i, j\}$
 $\chi^w \text{ h}^w \rightarrow w \text{ p}$

30.3.1.1.2 Proto-Ajá to Hwe *Pogostick Man*, from Capo, Hounkpati B.C. (1991), *A Comparative Phonology of Gbe*

$t \text{ d} \rightarrow t_f \text{ d}_3 / _ \{u, i\}$

30.3.1.1.3 Proto-Gbe to Proto-Fon *Pogostick Man*, from Capo, Hounkpati B.C. (1991), *A Comparative Phonology of Gbe*

$\{ts, t^h\} \{dz, d^h\} \rightarrow s \ z$
 $\{t, k\}j \{d, g\}j \rightarrow tʃ \ dʒ$
 $h^w \rightarrow ɸ^w$
 $oi \ ɔi \ ɔ̃i \ {a, ɛ}i \ {\tilde{e}, \tilde{e}}i \ ei \rightarrow oe \ ɔe \ ɔ̃e \ ɛe \ \tilde{e}\tilde{e} \ ee$
 $\tilde{a}i \rightarrow \tilde{e}\tilde{e}$

30.3.1.1.4 Proto-Gbe to Proto-Gen *Pogostick Man*, from Capo, Hounkpati B.C. (1991), *A Comparative Phonology of Gbe*

$\chi^w \rightarrow p$
 $ts \ dz \rightarrow s \ z$
 $\{t, k\}j \{d, g\}j \rightarrow tʃ \ dʒ$
 $t^h \ d^h \rightarrow t \ d$
 $h^w \rightarrow \{w, ɸ^w\}$
 $w \rightarrow ɲ$
 $\varepsilon \ \tilde{e} \rightarrow e \ \tilde{e}$
 $j \rightarrow ɲ \ / \ -V[+ \text{nas}]$

30.3.1.1.5 Proto-Gbe to Proto-Phla-Pherá *Pogostick Man*, from Capo, Hounkpati B.C. (1991), *A Comparative Phonology of Gbe*

$\{ts, t^h\} \{dz, d^h\} \rightarrow s \ z$
 $h^w \rightarrow ɸ^w$

30.3.1.1.6 Proto-Phla-Pherá to Alada *Pogostick Man*, from Capo, Hounkpati B.C. (1991), *A Comparative Phonology of Gbe*

$t \ d \rightarrow ʃ \ ʒ \ / \ -j$
 $j \rightarrow \emptyset \ / \ \{ʃ, ʒ\}-$
 $k \ g \rightarrow ʃ \ ʒ \ / \ -i$

30.3.1.1.7 Proto-Gbe to Proto-Vhe *Pogostick Man*, from Capo, Hounkpati B.C. (1991), *A Comparative Phonology of Gbe*

$\chi^w \ ɸ^w \rightarrow \phi \ \beta$
 $\{\varepsilon, e\} \ {\tilde{e}, \tilde{e}} \rightarrow \vartheta \ \tilde{\vartheta}$
 $h^w \rightarrow w$
 $w \rightarrow ɣ \ / \ -\{a, E\}$

$w \rightarrow \{w, \eta\}$
 $j \rightarrow \text{ɲ} / _V[+ \text{nas}]$

30.3.1.1.8 Proto-Vhe to Adángbe *Pogostick Man*, from Capo, Hounkpati B.C. (1991), *A Comparative Phonology of Gbe*

$V \rightarrow [+ \text{nas}] / N_$
 $V[+ \text{nas}] \rightarrow V[- \text{nas}] / C_ ! C = N$
 $ts \ dz \rightarrow s \ z$
 $k \ g \rightarrow tʃ \ dʒ / _i$

30.3.1.1.9 Proto-Vhe to Avéno *Pogostick Man*, from Capo, Hounkpati B.C. (1991), *A Comparative Phonology of Gbe*

$\text{ə} \rightarrow e / _ \{i, j\}$
 $t \ d \rightarrow tʃ \ dʒ / _ \{u, i\}$
 $k \ g \ s \rightarrow ts \ dz \ ʃ / _ i$
 $t \ d \rightarrow ts \ dz / _ j$

30.3.1.1.10 Proto-Vhe to Awalan *Pogostick Man*, from Capo, Hounkpati B.C. (1991), *A Comparative Phonology of Gbe*

$a \rightarrow e / _ \{i, j\}$
 $\{o, \text{ɔ}\} \text{ə} \rightarrow u \ i / _ i$
 $t \ d \rightarrow tʃ \ dʒ / _ \{u, i\}$
 $s \ \{k, ts\} \ \{g, dz\} \rightarrow ʃ \ tʃ \ dʒ / _ i$
 $\chi \ \text{ɛ} \rightarrow ʃ \ \{ʒ, j\} / _ \{u, i, j\}$

30.3.1.1.11 Proto-Vhe to Kpándo *Pogostick Man*, from Capo, Hounkpati B.C. (1991), *A Comparative Phonology of Gbe*

$\text{ə} \ \tilde{\text{ə}} \rightarrow \varepsilon \ \tilde{\varepsilon}$
 $\{t, k\} \ \{d, g\} \rightarrow ts \ dz / _ i$
 $t \ d \rightarrow tʃ \ dʒ / _ j$
 $j \rightarrow \emptyset / \{ts, dz\} _$
 $V \rightarrow [+ \text{round}] / w_$

30.3.1.1.12 Proto-Vhe to Pecí *Pogostick Man*, from Capo, Hounkpati B.C. (1991),
A Comparative Phonology of Gbe

$\text{ə } \tilde{\text{ə}} \rightarrow \text{ɛ } \tilde{\text{ɛ}}$
 $\{\text{k, ts}\} \ \{\text{g, dz}\} \rightarrow \text{tʃ } \text{dʒ} / \text{ } _ \text{i}$
 $\text{V} \rightarrow [+ \text{round}] / \text{w}_-$

30.3.1.1.13 Proto-Vhe to Tɔ̀wun *Pogostick Man*, from Capo, Hounkpati B.C. (1991),
A Comparative Phonology of Gbe

$\text{ə} \rightarrow \text{e} / \text{ } _ \{\text{i, j}\}$
 $\text{n} \rightarrow \text{ɲ} / \text{ } _ \tilde{\text{u}}$
 $\text{k g} \rightarrow \text{tʃ } \text{dʒ} / \text{ } _ \text{i}$

30.3.1.1.14 Proto-Vhe to Wací *Pogostick Man*, from Capo, Hounkpati B.C. (1991),
A Comparative Phonology of Gbe

$\text{ə} \rightarrow \text{e} / \text{ } _ \{\text{i, j}\}$
 $\{\text{k, ts}\} \ \{\text{g, dz}\} \rightarrow \text{tʃ } \text{dʒ} / \text{ } _ \text{i}$
 $\text{V} \rightarrow [+ \text{round}] / \text{w}_-$

31 Nyulnyulan

The following phonemic inventory for Proto-Nyulnyulan is adapted from Bower (2004).

	Labial	Alveolar	Retroflex	Palatal	Velar
Nasal	m	n	ɳ	ɲ	ŋ
Stop	b	d	ɖ	ɟ	g
Rhotic		r	ɽ		
Lateral		l	ɭ	ʎ	
Glide	w			j	

	Front	Central	Back
High	i i:		u u:
Low		a a:	

(From Bower, Claire Louise (2004), “Bardi Verb Morphology in Historical Perspective”)

31.1 Proto-Nyulnyulan to Bardi

Pogostick Man, from Bower, Claire Louise (2004), “Bardi Verb Morphology in Historical Perspective”

{w,j} → Ø / #-

{w,j} → Ø / V₀-V₀

awu → o

aji → i: / when unstressed

i{w,j} → Ø / _a, when unstressed

i → u / _ju

u → i / _j

j → Ø / i_

ɟ → j / V_V

ɲ → Ø / _#

ubu aba → u: a: / when stressed

ib → Ø / _i, when unstressed

b → w / a_u

agu → o

i(:)b ik → iw ij / _a

V₀ → Ø / V(C)(C)V₀(C)(C)_# (with some exceptions)

Some vowel deletions, the conditioning of which the author does not elaborate upon

V → V: / when stressed ?

32 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 ^w	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)

32.1 Chatino

Unless otherwise noted specifically, for Chatino correspondences, assume vowels may be either long or short.

32.1.1 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

$\text{ʔ} \rightarrow \emptyset$ (?)
 $\{c, tʃ\} \rightarrow ʃ$
 $s \rightarrow tʃ$ (in certain cases? Not a lot of data available on this one)
 $l \rightarrow \{l^j, n\}$ “under obscure conditions”
 $n \rightarrow n^j$
 $n^j \rightarrow l / \#_i$
 $h \rightarrow d / _a$ (... lolwut)
 $h \rightarrow t / \text{else}$ (... again, lolwut)
 $j \rightarrow n^j$ “under obscure conditions (PC morphophonemics?)”
 $i \rightarrow e / tʃ_$
 $\tilde{i} \rightarrow i$
 $e \rightarrow a / _ \{l, ?n\}$ when unstressed
 $e \rightarrow i / \{k^j, nt\}_$ when stressed
 $e \rightarrow i /$ in a few data sets “where obscure morphological developments (in the ultimate or penultimate syllable) have resulted in regressive assimilation of vowel quality”
 $\tilde{e} \rightarrow a / t^j_$
 $\tilde{e} \rightarrow i / h_$
 $\tilde{e} \rightarrow i /$ in U[+long -stress]
 $\tilde{e} \rightarrow e / \text{else}$
 $a \rightarrow \{i, e\}$ “under special conditions”

32.1.2 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

$t \rightarrow t^j / _ \tilde{o}$ (... again... lolwut)
 $t \rightarrow tʃ / \#_i\text{ç}$
 $t^j \rightarrow tʃ / _i[-\text{long} -\text{stress}]$
 $t^j \rightarrow t / _a$
 $k^j \rightarrow t^j$
 $c \rightarrow tʃ / i_$
 $tʃ \rightarrow c$
 $s \rightarrow ʃ / E_$ (? Not a lot of data available on this one)
 $ʃ \rightarrow s$
 $l\ n \rightarrow l^j\ n^j / e_$ in U[-long -stress]
 $\text{ç} \rightarrow \text{ʔ}$ (? Not sure if I'm reading the phone(me)s right on this one)
 $e \rightarrow a / _ \text{ʔ}$ in U[-stress]
 $et\ el\ en \rightarrow it^j\ el^j\ en^j$
 $e \rightarrow i / _j$

$\varepsilon \rightarrow \tilde{i} / S_ \# \varepsilon \rightarrow i / n_ \#$
 $\varepsilon \rightarrow e / _? \#$, in monosyllables

32.1.3 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”

32.1.4 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.

$k^j \rightarrow tʃ$
 $e \rightarrow i / l_ \text{ when unstressed}$
 $e \rightarrow i / k^j_ \text{ when stressed}$

32.2 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.

$k^w \rightarrow p$
 $n \rightarrow \{n, ɲ\}$ (the latter “under obscure conditions”)
 $j \rightarrow l(V)$
 $Yt Ynt Ys \rightarrow tʃ dʒ ʃ$
 $\{ns, nt\} nk^w nj nw \rightarrow (n)d (m)b r m$
 $nk \rightarrow \{g, ɲ\}$ (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 š occur before nasals, so it is possible that š has a separate source in Proto Otomanguean”)
 $h \rightarrow CV?V / _ \#$ (or possibly in just any final syllable?)

33 Penutian

33.1 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*)

33.1.1 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

33.1.1.1 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 / i l_
o → u / -(C...)i

33.1.1.2 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_

33.1.1.2.1 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}

33.1.1.3 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*

$\text{ɬ} \rightarrow \text{s}$
 $\text{t} \rightarrow \{\text{t}, \text{ts}, \text{tʃ}\} / _ \{\text{j}, \text{r}\}$
 $\text{k}^{\text{w}} \rightarrow \text{k} / \# _$
 $\text{k}^{\text{w}} \rightarrow \{\text{k}, \text{w}\} / \text{else}$
 $\text{l} \rightarrow \text{r} / \text{V} _ \text{V}$
 $\text{a} \rightarrow \text{e} / \text{il} _$
 $\text{o} \rightarrow \text{u} / _ (\text{C} \dots) \text{i}$

33.1.1.4 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*

$\text{t}^{\text{j}} \rightarrow \text{tʃ}$
 $\text{h} \rightarrow \{\text{h}, \text{x}, \text{ʔ}\}$
 $\text{t} \rightarrow \{\text{t}, \text{tʃ}\} / \{\text{a}, \text{o}\} _$
 $\text{t} \rightarrow \{\text{t}, \text{tʃ}\} / \{\text{i}, \text{e}, \text{o}\} \text{\$} _$
 $\text{t} \rightarrow \{\text{t}, \text{tʃ}\} / _ \{\text{j}, \text{r}\}$
 $\text{k}^{\text{w}} \rightarrow \text{k} / \# _$
 $\text{k}^{\text{w}} \rightarrow \{\text{k}, \text{w}\} / \text{else}$
 $\text{l} \rightarrow \text{r} / \text{V} _ \text{V}$
 $\text{a} \rightarrow \text{e} / \text{il} _$
 $\text{i} \rightarrow \text{e} / _ \text{C}(\text{C})\text{oC}$
 $\text{o} \rightarrow \text{u} / _ (\text{C} \dots) \text{i}$

33.2 Wintun

Shepherd (2005) reconstructs the following inventory for Proto-Wintun:

	Bilabial	Alveolar	Palatal	Velar	Uvular	Glottal
Nasal	m	n				
Plosive	p p ^h p' b	t t ^h t' d		k k ^h k' g	q q ^h q'	ʔ
Fricative		s ʃ		x	χ	h
Affricate		tʃ	tʃ ^h 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>>)

33.2.1 Proto-Wintuan to Nomlaki

Pogostick Man, from Shepherd, Alice (2005), “Proto-Wintun”. *UC Publications in Linguistics*. <<http://escholarship.org/uc/item/8dq1f3jj>>

$VrV \rightarrow \{V:,M\}$
 $r \rightarrow j / -\#$
 $tj^h k^h q^h \{x,\chi\} \rightarrow tj k^{(h)} \{k^h, q^h, \chi\} k^h$

33.2.2 Proto-Wintuan to Patwin

Pogostick Man, from Shepherd, Alice (2005), “Proto-Wintun”. *UC Publications in Linguistics*. <<http://escholarship.org/uc/item/8dq1f3jj>>

$tj tj^h tj' \rightarrow t t^h t'$
 $k^{(h)} k' q^{(h)} q' \rightarrow tj^{(h)} tj' k^h k'$
 $x \chi \rightarrow s h$

33.2.3 Proto-Wintuan to South Patwin

Pogostick Man, from Shepherd, Alice (2005), “Proto-Wintun”. *UC Publications in Linguistics*. <<http://escholarship.org/uc/item/8dq1f3jj>>

$r \rightarrow \{r,j\}$
 $tj tj^h tj' \rightarrow t t^h t'$
 $k^{(h)} k' q^{(h)} q' \rightarrow tj^{(h)} tj' k^{(h)} k'$
 $x \rightarrow s$
 $\chi \rightarrow \emptyset (?)$

33.2.4 Proto-Wintuan to Wintu

Pogostick Man, from Shepherd, Alice (2005), “Proto-Wintun”. *UC Publications in Linguistics*. <<http://escholarship.org/uc/item/8dq1f3jj>>

$tj^h \rightarrow tj k^h q^h \rightarrow k \chi$

33.3 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 pʔ	t tʰ tʔ	ʈ ʈʰ ʈʔ		k kʰ kʔ	ʔ
Affricate		(ts) tsʰ tsʔ				
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))

33.3.1 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

33.3.1.1 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 tʔ → ts tsʰ tsʔ / #_ “(in some words, conditioning factors unclear)”

V[+ high] → a / V[+ high]C_(C)#

tʰ → s / #_u

33.3.1.2 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”)

33.3.1.3 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)

$i(:) \text{ } \text{ə}(:) \rightarrow i(:) \text{ } e(:)$

$V? \rightarrow V: / \text{ stressed}$

33.3.2 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)

$s \rightarrow \int$
 $ts \text{ } ts^h \text{ } ts' \rightarrow t\int \text{ } t\int^h \text{ } t\int'$

33.3.2.1 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)”

$l \rightarrow t$

33.3.2.1.1 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)”

33.3.2.1.2 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 ɬ in some positions”

33.3.2.2 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

33.3.2.2.1 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

33.3.2.2.2 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₋

33.3.2.2.3 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”

33.3.2.2.4 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^h t̥' → tʃ tʃ^h tʃ'
tʃ tʃ^h tʃ' → ts ts^h ts'

33.3.2.2.5 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^h t̥' → ts ts^h ts' “(t̥' remains unchanged in careful speech)”

33.3.2.2.6 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 $t_s t_s^h t_s'$)

33.3.3 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)”
 $ts ts^h ts' \rightarrow t\int t\int^h t\int' / _i$
 $i(:) \rightarrow i(:)$
 $\{u,a\} \rightarrow e / _CVC\#, \text{ when stressed (short only)}$
 $i \rightarrow e / _CVC\#, \text{ when stressed (!_H, short only)}$
 $V \rightarrow e / C''VC_$
 $V \rightarrow i / C''iC_$
 $V \rightarrow u / C''uC_$
 $V \rightarrow o / C''oC_$

34 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)

34.1 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

34.2 Proto-Quechumaran to Bolivia

Pogostick Man, from Orr, Carolyn, and Robert E. Longacre (1968), “Proto-Quechumaran”. *Language* 44(3):528 – 555

$qh \rightarrow h / _r$
 $ph \ th \ kh \ qh \rightarrow p^h \ t^h \ k^h \ q^h$
 $\{k, q\} \rightarrow h / _ \{C, \#\}$
 $ts \ \{tsh, tfh\} \rightarrow tf \ tf^h$
 $tf \rightarrow f / _q$
 $tf' \rightarrow tf$
 $t_s \rightarrow s / _K$
 $t_s \rightarrow tf / _V$
 $t_s' \rightarrow tf'$
 $\Phi(_) \ \Phi h \rightarrow p(_) \ p^h$
 $f \rightarrow s$
 $s \rightarrow h / _ \{a, i\}$
 $s \rightarrow \emptyset / _u$
 $\chi \rightarrow q^h / _\#$
 $j \rightarrow \emptyset / _i _ \{a, u\}$
 $j \rightarrow \emptyset / _u _ \Delta$

34.3 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”
 $kh \ qh \rightarrow k^h \ q^h$
 $ts \ tsh \rightarrow tf \ tf^h$
 $tf \rightarrow s / _q$
 $tfh \rightarrow s / _E$
 $\{tfh, tf'\} \rightarrow tf$
 $t_s \rightarrow s / _K$
 $t_s \rightarrow tf / _V$
 $t_s' \rightarrow tf / _n_$
 $t_s' \rightarrow tf'$

$\Phi(') \Phi h \rightarrow p(') p^h$
 $\int \S \rightarrow s h$
 $\chi \rightarrow q^h / \#_-$

34.4 Proto-Quechumaran to Huarás

Pogostick Man, from Orr, Carolyn, and Robert E. Longacre (1968), “Proto-Quechumaran”.
Language 44(3):528 – 555

$p' t' t\int' k' q' \rightarrow p t ts k q$
 $h \rightarrow \emptyset / p_-$
 $t^h \rightarrow t$
 $q \rightarrow \widehat{q\chi}$
 $ts(h) t\int \rightarrow t\int ts$
 $t\int \rightarrow ts / _q$
 $t\int \rightarrow s / _K$
 $t\int \rightarrow t\int / _V$
 $\Phi(' ^h) \rightarrow p$
 $\S \rightarrow \int / _a$
 $\S \rightarrow h / _\{i,u\}$
 $n \rightarrow n$
 $aw aj \{uj,ij\} \rightarrow u: e: i:$

34.5 Proto-Quechumaran to Putamayo

Pogostick Man, from Orr, Carolyn, and Robert E. Longacre (1968), “Proto-Quechumaran”.
Language 44(3):528 – 555

$p' t' k' q' \rightarrow p t k q$
 $p \rightarrow b / m_-$
 $t^{(h)} \rightarrow d / n_-$
 $t^h \rightarrow t$
 $k \rightarrow g / n_-$
 $k \rightarrow g / _\{L,j\}$
 $h \rightarrow \emptyset / ts_-$
 $t\int' \rightarrow t\int$
 $t\int \rightarrow t\int / _V$
 $\Phi(' ^h) \rightarrow p$
 $\S \rightarrow s$
 $h \rightarrow \emptyset / \#_-$

34.6 Proto-Quechumaran to Quito

Pogostick Man, from Orr, Carolyn, and Robert E. Longacre (1968), “Proto-Quechumaran”.
Language 44(3):528 – 555

$q \rightarrow h / \{r,s\}_-$
 $p' k' q' \rightarrow p k q$
 $p \rightarrow b / m_-$
 $t^{(h)} \rightarrow d / n_-$
 $t' \rightarrow t^h / \#_i$
 $t' \rightarrow t$
 $k \rightarrow g / \#_-$
 $k \rightarrow g / n_-$
 $k \rightarrow g / \{L,j\}$
 $k' \rightarrow h / j_-$
 $ts \rightarrow dz / ! \#_-$
 $h \rightarrow \emptyset / ts_-$
 $tʃ \rightarrow ʃ / _q$
 $tʃh \rightarrow ʃ$
 $tʃ' \rightarrow tʃ$
 $tʂ \rightarrow ʃ / _K$
 $tʂ \rightarrow tʃ / _V$
 $\phi \rightarrow p / r_-$
 $\{\phi',\phi h\} \rightarrow \phi$
 $\xi \rightarrow ʃ$
 $\chi \rightarrow h \#_-$

34.7 Proto-Quechumaran to Riobamba

Pogostick Man, from Orr, Carolyn, and Robert E. Longacre (1968), “Proto-Quechumaran”.
Language 44(3):528 – 555

$q \rightarrow k \ qh \rightarrow k^h / _i ! _i \{ʃ,tʃ\}$
 $qh \rightarrow k$
 $p' t' k' q' \rightarrow p t k q$
 $p \rightarrow b / m_-$
 $t^{(h)} \rightarrow d / n_-$
 $t' \rightarrow t^h / \#_i$
 $k \rightarrow h / \#_-$
 $k \rightarrow g / \{L,j\}$
 $kh \rightarrow k^h / \#_{-}\{i,u\}$

$kh \rightarrow k$
 $k \text{ ts} \rightarrow g \text{ dz} / n_$
 $h \rightarrow \emptyset / \text{ts}_$
 $tʃh \rightarrow ʃ$
 $tʃ' \rightarrow tʃ$
 $tʂ \rightarrow s / _K$
 $tʂ \rightarrow tʃ / _V$
 $tʂ' \rightarrow ts$
 $\Phi \rightarrow p^h / _V$
 $\Phi \rightarrow b / _j$
 $s \rightarrow ʃ / _C[+alveolar]$
 $\mathfrak{s} \rightarrow ʃ$
 $\chi \rightarrow k^h \#_$
 $n \rightarrow n / ! \text{ h.i}$
 $\Lambda \rightarrow \mathfrak{z} / _ \{a,u\}$

34.8 Proto-Quechumaran to Santiago

Pogostick Man, from Orr, Carolyn, and Robert E. Longacre (1968), “Proto-Quechumaran”.
Language 44(3):528 – 555

$p' \text{ t}' \text{ tʃ}' \text{ k}' \text{ q}' \rightarrow p \text{ t} \text{ tʃ} \text{ k} \text{ q}$
 $h \rightarrow \emptyset / \{p,t,k\}_$
 $\{k,q\} \rightarrow h / _ \{C,\#\}$
 $k \rightarrow c / j_ (?)$
 $ts(h) \rightarrow tʃ$
 $tʃ \rightarrow ʃ / _q$
 $tʂ \rightarrow ʃ / _K$
 $tʂ \rightarrow tʃ / _V$
 $\Phi(,^h) \rightarrow p$
 $ʃ \rightarrow s / ! \text{ i.i or } _S$
 $\mathfrak{s} \rightarrow \emptyset / _ \{a,i\}$
 $\mathfrak{s} \rightarrow h / _u$
 $h \rightarrow \emptyset / \#_$
 $\Lambda \rightarrow \mathfrak{z} / _ \{a,u\}$
 $w \rightarrow \emptyset / V_V$
 $w \rightarrow m / _ \%N$
 $j \rightarrow \emptyset / i_ \{a,u\}$
 $j \rightarrow \emptyset / u_ \Lambda$

34.9 Proto-Quechumaran to Tena

Pogostick Man, from Orr, Carolyn, and Robert E. Longacre (1968), “Proto-Quechumaran”.
Language 44(3):528 – 555

$q(h) \rightarrow k$
 $p' \ t' \ k' \ q' \rightarrow p \ t \ k \ q$
 $p \rightarrow b / m_-$
 $t^{(h)} \rightarrow d / n_-$
 $t^h \rightarrow t$
 $k \rightarrow g / n_-$
 $k \rightarrow g / _ \{L, j\}$
 $h \rightarrow \emptyset / ts_-$
 $tj \rightarrow j / _ C$
 $tjh \rightarrow j$
 $tj' \rightarrow tj$
 $ts \rightarrow j / _ K$
 $ts \rightarrow tj / _ V$
 $ts' \rightarrow tj$
 $\Phi('^{,h}) \rightarrow p$
 $s \rightarrow j$
 $h \rightarrow \emptyset / \#_-$
 $\chi \rightarrow k / \#_-$
 $n \rightarrow n / _ i$
 $w \rightarrow \emptyset / \# _ i$

35 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 ²	n n ²				
Stop	p p'	t t'		k k ^w k' k ^w '	q q ^w q' q ^w '	ʔ
Fricative		s ɬ		x x ^w	χ χ ^w	h
Affricate		ts ts' tɬ'				
Resonant		r r ² l l ²	j j ²	ɰ ɰ ² w w ²	ʃ ʃ ^w ʃ' ʃ ^w '	
			Front	Central	Back	
		High	i		u	
		Mid		ə		
		Low		a		

For the following changes, the superscript numerals ¹, ², and ³ refer to low, mid, and high tones, respectively. Not all Salishan languages have all three tones; for most, there is no tone ² (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*)

35.1 Central Salish

35.1.1 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

$V^3\text{?} \rightarrow V^3(\text{:})\text{?} / \text{-}\#$
 $\text{?} \rightarrow \emptyset \text{ } V^3\text{-RV}$
 $\text{?} \rightarrow \emptyset \text{ } V^3\text{R-V}$
 $\{\text{a}^3\sim\text{ə}^3\} \rightarrow \{\text{ə}^3,\text{a}^3\}$
 $\{\text{a}^3\sim\text{i}^3\} \rightarrow \text{i}^3$
 $\{\text{a}^1\sim\text{i}^1\} \rightarrow \{\text{a}^1,\text{ə}^1\}$
 $\{\text{i}^3\sim\text{ə}^3\} \rightarrow \text{ə}^3$
 $\{\text{i}^3\sim\text{ə}^1\} \rightarrow \{\text{ə}^1,\text{i}^1,\text{i}^3\}$
 $\{\text{i}^1\sim\text{ə}^1\} \rightarrow \text{i}^1$

35.1.2 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*

$\text{n} \rightarrow \text{l}$
 $\text{?n} \rightarrow \emptyset / \text{m-}$
 $\text{ts}(\text{'}) \text{ tʃ}(\text{'}) \rightarrow \theta(\text{'}) \text{ ts}(\text{'})$
 $\text{ʃ} \rightarrow \text{l}$
 $V^3\text{h} \rightarrow V^3\text{:} / \text{-C}$
 $V^3\text{?} \rightarrow V^3(\text{:}) / \text{-}\#$
 $\text{?} \rightarrow \emptyset / V^1\text{-}\#$
 $V^3\text{?} \rightarrow V^3\text{:} / \text{-O}$
 $\emptyset \rightarrow V_0 / \text{' } V_0^3\text{-}$
 $V^3\text{?R} \rightarrow V^3\text{:R}$
 $\text{?} \rightarrow \emptyset / \text{VR-V}^3$
 $\text{l?n} \rightarrow \text{l:} / V^3\text{-V}$
 $\text{?} \rightarrow \emptyset / V^1\text{-}\#$
 $\text{u}^3 \{\text{u}^1,\text{a}^1\} \text{ a}^3 \text{ i}^1 \rightarrow \text{a}^3 \text{ ə}^1 \text{ ɛ}^3 \{\text{i}^1,\text{ə}^1\}$
 $\{\text{u}^3\sim\text{ə}^3\} \rightarrow \{\text{o}^3,\text{ə}^3,\text{a}^3\}$
 $\{\text{a}^3\sim\text{ə}^3\} \rightarrow \{\text{ɛ}^3,\text{ə}^3\}$
 $\{\text{a}^3\sim\text{i}^3\} \rightarrow \text{ɛ}^3$
 $\{\text{i}^3\sim\text{ə}^3\} \rightarrow \{\text{ə}^3,\text{i}^3\}$
 $\{\text{i}^3\sim\text{ə}^1\} \rightarrow \text{ə}^1$
 $\{\text{i}^1\sim\text{ə}^1\} \rightarrow \text{ə}^1$

35.1.3 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*

$$\begin{aligned}
ts(\cdot) \quad tf(\cdot) &\rightarrow \theta(\cdot) \quad ts(\cdot) \\
s &\rightarrow \int / _x^w \\
x^j &\rightarrow \int \\
V^3h &\rightarrow V^3: / _C \\
V_0^3? (V_0) &\rightarrow \{V_0^3:, V_0^3?V_0\} \\
V^3?R &\rightarrow \{V^3?R, V^3:R?\} / _V \\
a^3 \quad u^3 \quad \{a^1, u^1\} \quad i^1 &\rightarrow \varepsilon^3 \quad a^3 \quad \varnothing^1 \quad \{i^1, \varnothing^1\} \\
\{a^3 \sim \varnothing^3\} &\rightarrow \varnothing^3 \\
\{a^3 \sim i^3\} &\rightarrow a^3 \\
\{a^1 \sim i^1\} &\rightarrow \varnothing^1 \\
\{i^3 \sim \varepsilon^3\} &\rightarrow \{\varnothing^3, i^3\} \\
\{i^3 \sim \varnothing^1\} &\rightarrow \varnothing^1 \\
\{i^1 \sim \varnothing^1\} &\rightarrow \varnothing^1
\end{aligned}$$

35.1.4 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*

$$\begin{aligned}
?n &\rightarrow \emptyset / m_ \\
ts(\cdot) \quad tf(\cdot) &\rightarrow \theta(\cdot) \quad ts(\cdot) \\
p^j &\rightarrow l \\
V^3h &\rightarrow V^3: / _C \\
V^3? &\rightarrow V^3\{:, ?\} / _O \\
V_0^3?V_0 &\rightarrow \{V^3:, V_0^3?V_0\} \\
V^3?R &\rightarrow \{V^3?R, V^3:R?\} / _V \\
u^3 \quad \{u^1, a^1\} \quad a^3 \quad i^1 &\rightarrow a^3 \quad \varnothing^1 \quad \varepsilon^3 \quad \{i^1, \varnothing^1\} \\
\{u^3 \sim \varnothing^3\} &\rightarrow \varnothing^3 \\
\{a^3 \sim \varnothing^3\} &\rightarrow \{\varepsilon^3, \varnothing^3\} \\
\{a^3 \sim i^3\} &\rightarrow \{a^3, \varepsilon^3\} \\
\{a^1 \sim i^1\} &\rightarrow \{\varnothing^1, \varepsilon^1\} \\
\{i^3 \sim \varepsilon^3\} &\rightarrow \{\varnothing^3, i^3\} \\
\{i^3 \sim \varnothing^1\} &\rightarrow \varnothing^1 \\
\{i^1 \sim \varnothing^1\} &\rightarrow \varnothing^1
\end{aligned}$$

35.1.5 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
 $w j \rightarrow k^w tʃ / _V$
 $V_0^3 \eta (V_0) \rightarrow V_0^3 \eta V_0$
 $u^1 \rightarrow \vartheta^1$
 $a^3 \rightarrow u^3 / \{C^w[+uvular], K^w, w\}$
 $a^3 \rightarrow u^3 / _ \{Cu, C^w[+uvular], w\}$
 $a^1 \rightarrow \vartheta^1$
 $\{u^3 \sim \vartheta^3\} \rightarrow \vartheta^3$
 $\{a^3 \sim \vartheta^3\} \rightarrow \vartheta^3$
 $\{a^3 \sim i^3\} \rightarrow \vartheta^3$
 $\{a^1 \sim i^1\} \rightarrow \vartheta^1$
 $\{i^3 \sim \vartheta^3\} \rightarrow \vartheta^3$
 $\{i^3 \sim \vartheta^1\} \rightarrow \vartheta^1$
 $\{i^1 \sim \vartheta^1\} \rightarrow \vartheta^1$

35.1.6 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*

$mʔn \rightarrow d$
 $m n \rightarrow b d$
 $l^j \rightarrow l$
 $s \rightarrow \{ʃ, s\} / _x^w$
 $x^j \rightarrow ʃ$
 $w j \rightarrow g^w dz / _V$
 $V^3 h \rightarrow V^3 \{i, \eta\} / _C$
 $V^3 \eta \rightarrow V^3 (\eta) / _O$
 $R\eta \rightarrow \eta R / V^3 C$

$i^1 \rightarrow \{i^1, \emptyset^1\}$
 $\{u^3 \sim \emptyset^3\} \rightarrow a^3$
 $\{a^3 \sim \emptyset^3\} \rightarrow \{\emptyset^3, a^3\}$
 $\{a^1 \sim i^1\} \rightarrow i^1$
 $\{i^3 \sim \emptyset^3\} \rightarrow \{i^1, \emptyset^1\}$
 $\{i^3 \sim \emptyset^1\} \rightarrow \{i^3, i^1\}$
 $\{i^1 \sim \emptyset^1\} \rightarrow \{\emptyset^1, i^1\}$

35.1.7 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*

$n \rightarrow \emptyset / m?_-$
 $l^j \rightarrow l$
 $s \rightarrow \{s, \int\} / _x^w$
 $s \rightarrow \int / \#_- \{x^j, w\{i, a\}, q^w a\}$
 $x^j \rightarrow \int$
 $\emptyset \rightarrow V_0 / "V_0^3?_-$
 $?R \rightarrow \{?S, R\} / V^3_V$
 $? \rightarrow \emptyset / VR_V^3$
 $? \rightarrow \emptyset / V^3R_ \{C, \#\}$
 $? \rightarrow \emptyset / V^1R_ \#$
 $? \rightarrow \emptyset / V^1_ \#$
 $a^1 u^3 u^1 i^1 \rightarrow \text{æ}^2 o^3 o^1 i^2$
 $\emptyset^1 \rightarrow \text{æ}^2 / a^3 C(C)_$
 $\emptyset^1 \rightarrow \text{æ}^2 / _C(C)a^3$
 $\emptyset^1 \rightarrow \text{æ}^2 / \text{in some other unspecified circumstances}$
 $\{u^3 \sim \emptyset^3\} \rightarrow o^3$
 $\{a^3 \sim \emptyset^3\} \rightarrow \text{æ}^3$
 $\{a^3 \sim i^3\} \rightarrow \text{æ}^3$
 $\{a^1 \sim i^1\} \rightarrow \text{æ}^2$
 $\{i^3 \sim \emptyset^3\} \rightarrow \{i^3, \emptyset^3\}$
 $\{i^3 \sim \emptyset^1\} \rightarrow i^3$
 $\{i^1 \sim \emptyset^1\} \rightarrow \{i^2, \emptyset^1\}$

35.1.8 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*

$p(ʔ) m \rightarrow tʃ(ʔ) \eta / ! _u$
 $mʔ \rightarrow \emptyset / _n$
 $ts \rightarrow s$
 $l^j \rightarrow l$
 $s \rightarrow ʃ / _x^w$
 $tʃ \rightarrow s$
 $tʃʔ \rightarrow tsʔ / \text{medially}$
 $j \rightarrow tʃ / _V$
 $ʔ \rightarrow \emptyset / V^3 l _n V$
 $ʔ \rightarrow \{\emptyset, ʔ\} / V^3 R _ \{C, \#\}$
 $u^3 u^1 \rightarrow o^3 \vartheta^1$
 $a^3 \rightarrow o^3 / \{\{C[+ \text{uvular}], K\}^w, w\} _$
 $a^3 \rightarrow o^3 / _ \{Cu, C[+ \text{uvular}]^w, w\}$
 $a^3 \rightarrow e^3 / \text{else}$
 $a^1 \rightarrow \vartheta^1$
 $\{u^3 \sim \vartheta^3\} \rightarrow \vartheta^1$
 $\{a^3 \sim \vartheta^3\} \rightarrow \vartheta^3$
 $\{a^3 \sim i^3\} \rightarrow \vartheta^3$
 $\{a^1 \sim i^1\} \rightarrow \vartheta^1$
 $\{i^3 \sim e^3\} \rightarrow \vartheta^3$
 $\{i^3 \sim \vartheta^1\} \rightarrow \vartheta^1$
 $\{i^1 \sim \vartheta^1\} \rightarrow \vartheta^1$

35.1.9 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*

$p(ʔ) m \rightarrow tʃ(ʔ) \eta / ! _u$
 $mʔn \rightarrow nʔ$
 $ts tsʔ \rightarrow \{\emptyset, s\} \emptysetʔ$
 $l^j \rightarrow l$
 $s \rightarrow \{ʃ, s\} / _x^w$
 $x^j \rightarrow s$

$tʃ \rightarrow s$
 $tʃ' \rightarrow \theta' / \text{medially}$
 $j \ w \rightarrow tʃ \ k^w / _V$
 $V^3h \rightarrow V^3(\text{z}) / _C$
 $?R \rightarrow R? / V^3_V$
 $u^3 \ u^1 \rightarrow a^3 \ \text{ə}^1$
 $a^3 \rightarrow e^3 / ! \{ \{C[+ \text{uvular}], K\}^w, w\}_- \text{ or when } _ \{Cu, C[+ \text{uvular}]^w, w\}$
 $a^1 \rightarrow \text{ə}^1$
 $\{a^3 \sim \text{ə}^3\} \rightarrow \{\text{ə}^3, e^3\}$
 $\{a^3 \sim i^3\} \rightarrow \text{ə}^3$
 $\{a^1 \sim i^1\} \rightarrow \text{ə}^1$
 $\{i^3 \sim e^3\} \rightarrow \{\text{ə}^3, i^3\}$
 $\{i^3 \sim \text{ə}^1\} \rightarrow \text{ə}^1$
 $\{i^1 \sim \text{ə}^1\} \rightarrow \{\text{ə}^1, i^1\}$

35.1.10 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?)
 $tʃ' \rightarrow ts' / \text{medially}$
 $j \ w \rightarrow tʃ \ k^w / _V$
 $V^3h \rightarrow V^3\text{:} / _C$
 $u^3 \ u^1 \rightarrow a^3 \ \text{ə}^1$
 $a^3 \rightarrow a^3 / \{ \{C[+ \text{uvular}], K\}^w, w\}_-$
 $a^3 \rightarrow a^3 / _ \{Cu, C[+ \text{uvular}]^w, w\}$
 $a^1 \rightarrow \text{ə}^1$
 $\{u^3 \sim \text{ə}^3\} \rightarrow \text{ə}^3$
 $\{a^3 \sim \text{ə}^3\} \rightarrow \text{ə}^3$
 $\{a^3 \sim i^3\} \rightarrow \text{ə}^3$
 $\{a^1 \sim i^1\} \rightarrow \{\text{ə}^1, e^1\}$
 $\{i^3 \sim e^3\} \rightarrow \text{ə}^3$
 $\{i^3 \sim \text{ə}^1\} \rightarrow \text{ə}^1$
 $\{i^1 \sim \text{ə}^1\} \rightarrow \text{ə}^1$

35.1.11 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
 $j \quad w \rightarrow tf \quad k^w / _V$
 $u^3 \quad u^1 \rightarrow a^3 \quad \vartheta^1$
 $a^3 \rightarrow \{a^3, o^3\} / \{\{C[+ \text{uvular}], K\}^w, w\} _$
 $a^3 \rightarrow e^3$
 $a^1 \rightarrow \vartheta^1$
 $\{u^3 \sim \vartheta^3\} \rightarrow \vartheta^3$
 $\{a^3 \sim \vartheta^3\} \rightarrow \vartheta^3$
 $\{a^3 \sim i^3\} \rightarrow \vartheta^3$
 $\{a^1 \sim i^1\} \rightarrow \vartheta^1$
 $\{i^3 \sim e^3\} \rightarrow \vartheta^3$
 $\{i^3 \sim \vartheta^1\} \rightarrow \vartheta^1$
 $\{i^1 \sim \vartheta^1\} \rightarrow \vartheta^1$

35.1.12 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*

$ts \quad ts' \rightarrow s \quad ts'$
 $l^j \rightarrow l$
 $x^j \rightarrow f$
 $? \rightarrow \emptyset / V^3 _O$
 $? \rightarrow \emptyset / V^3 R _ \{V, \#\}$
 $i^1 \rightarrow \vartheta^1$
 $\{a^3 \sim \vartheta^3\} \rightarrow \vartheta^3$
 $\{a^1 \sim i^1\} \rightarrow \{i^1, \vartheta^1\}$
 $\{i^3 \sim e^3\} \rightarrow \{\vartheta^3, i^3\}$

$$\begin{aligned}\{i^3 \sim \emptyset^1\} &\rightarrow i^3 \\ \{i^1 \sim \emptyset^1\} &\rightarrow \{i^1, \emptyset\}\end{aligned}$$

35.1.13 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*

$$\begin{aligned}\text{ʔ} &\rightarrow \emptyset / \text{m_n} \\ \text{p}^j &\rightarrow \text{p} \\ \text{x}^j &\rightarrow \text{ʃ} \\ \text{ʔ} &\rightarrow \emptyset / \text{V_V}^3 \\ \text{ʔ} &\rightarrow \emptyset / \text{V}^1 _ \# \\ i^1 &\rightarrow \{i^1, \emptyset^1\} \\ \{u^3 \sim \emptyset^3\} &\rightarrow u^3 \\ \{a^3 \sim \emptyset^3\} &\rightarrow \emptyset^3 \\ \{a^3 \sim i^3\} &\rightarrow i^3 \\ \{a^1 \sim i^1\} &\rightarrow \{i^1, \emptyset^1\} \\ \{i^3 \sim e^3\} &\rightarrow \{\emptyset^3, i^3\} \\ \{i^3 \sim \emptyset^1\} &\rightarrow i^3 \\ \{i^1 \sim \emptyset^1\} &\rightarrow \{i^1, \emptyset\}\end{aligned}$$

35.1.14 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*

$$\begin{aligned}\text{n} &\rightarrow \emptyset / \text{mʔ_} \\ \text{p}^j &\rightarrow \text{j} \\ \text{x}^j &\rightarrow \text{ʃ} \\ \text{ʔR} &\rightarrow \text{Rʔ} / \text{V}^3 _ \text{V} \\ u^1 &\rightarrow \{u^1, \emptyset^1\} \\ \{u^3 \sim \emptyset^3\} &\rightarrow \emptyset^3 \\ \{a^3 \sim \emptyset^3\} &\rightarrow \{a^3, \emptyset^3\} \\ \{a^3 \sim i^3\} &\rightarrow i^3 \\ \{a^1 \sim i^1\} &\rightarrow i^1 \\ \{i^3 \sim e^3\} &\rightarrow \{\emptyset^3, i^3\}\end{aligned}$$

$$\begin{aligned}\{i^3 \sim \emptyset^1\} &\rightarrow i^3 \\ \{i^1 \sim \emptyset^1\} &\rightarrow \{i^1, \emptyset\}\end{aligned}$$

35.1.15 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*

$$\begin{aligned}m\ n &\rightarrow b\ d \\ l^j &\rightarrow l \\ s &\rightarrow \{f, s\} / _x^w \\ x^j &\rightarrow f \\ ?R &\rightarrow ?\{R, b\} / V^3_V \\ R? &\rightarrow ?R / V^3_# \\ ? &\rightarrow \emptyset / V^1R_# \\ ? &\rightarrow \emptyset / V^3R_C \\ u^3\ u^1 &\rightarrow o^3\ \emptyset^1 \\ \{a^3 \sim \emptyset^3\} &\rightarrow \{\emptyset^3, a^3\} \\ \{a^3 \sim i^3\} &\rightarrow a^3 \\ \{a^1 \sim i^1\} &\rightarrow \{i^1, \emptyset^1\} \\ \{i^3 \sim e^3\} &\rightarrow \{i^3, \emptyset^3\} \\ \{i^3 \sim \emptyset^1\} &\rightarrow \{i^3, i^1\} \\ \{i^1 \sim \emptyset^1\} &\rightarrow i^1\end{aligned}$$

35.2 Interior Salish

35.2.1 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”

$$n^? \rightarrow a^? / _# \text{ (all other Interior Salishan languages have } /e^?/ \text{ in this position)}$$

35.2.2 Proto-Interior Salish to Thompson Nasal-to-Vowel Shifts

Pogostick Man, from Kinkade, Dale M. “Shifts of Nasals to Vowels in Interior Salish”

$$N[- \text{ glottalized}] \rightarrow e / _O[+ \text{ same POA}] \text{ “in primary forms”}$$

$$n \rightarrow e / n_ \text{ (this is admittedly a bit conjectural; the paper is not being very clear here)}$$

35.3 Shuswap to Eastern Shuswap Nasal-to-Vowel Shifts

Pogostick Man, from Kinkade, Dale M. “Shifts of Nasals to Vowels in Interior Salish”

em em^ʔ → u uʔ / w₋ in U[- stressed]
em em^ʔ → a aʔ / in U[- stressed] ! {p(ʔ),m(ʔ)}₋
en en^ʔ → i iʔ / {ts(ʔ),s,j(ʔ)}₋ in U[- stressed]
en en^ʔ → a ʔ / in U[- stressed] ! {t(ʔ),ɬ,{n,l}(ʔ)}₋

35.4 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^ʔ → i iʔ / C₋s
n n^ʔ → i iʔ / ₋{i,j} (sporadic)

36 Sino-Tibetan

36.1 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^h,z}-
l → Ø / s-
{m,ŋ}l- → dʒ-
Cl- → T(z)-
Kw → K^w- / _a-
Kwə- → K^wi-
w → r → Ø / P_-

36.1.1 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.

$\emptyset \rightarrow w / P_V$
 $x\bar{f}i \rightarrow \emptyset / _j(w)\{?,ia,a(ta)\}$
 $C^j \rightarrow C \{A,F\}_-$
 $C^j \rightarrow \bar{C}$
 $\eta \rightarrow \bar{\tau}$
 $V^1 \rightarrow V^2 / \text{in syllables with } /fi/, \text{ a nasal, or a liquid}$
 $V^3 \rightarrow V^4 / \text{in syllables with } /fi/$
 $? \rightarrow \emptyset$
 $V^5 \rightarrow V^2 / \text{in syllables with } /fi/$
 $V^5 \rightarrow V^4 / \text{in syllables with a nasal or liquid}$
 $V^5 \rightarrow V^3 / \text{else}$
 $\bar{f}i \rightarrow h / S_V^2$
 $\bar{f}i \rightarrow \emptyset / \text{else}$
 $C^j \rightarrow C / \{f,v\}_-$
 $w \rightarrow o / C^j_?w$
 $i \rightarrow \emptyset / C(w)_a$
 $ia \rightarrow e / \text{else}$
 $C \rightarrow C^j / \{K,C[+pharyngeal]\}_ \{a,a(ch)\}$
 $o \rightarrow a / C_w ! C = \{K,C[+pharyngeal]\}$
 $\eta \rightarrow n / n_C^ja(ta)$
 $\eta \rightarrow \emptyset / \#_ ! \#_o(w)$
 $k \rightarrow j / \{e,a,o\}_$
 $k \rightarrow w / V_$
 $\{o,a\} \{a(ta),a(ch)\} \rightarrow e a / _ \eta$
 $\{a(ta),a(ch)\} \rightarrow o / \text{else}$
 $? \rightarrow o / _ \eta$
 $\{A^j,F^j\}[+alveolar] \rightarrow \{A,F\} / _ ?^j$
 $\bar{t} \rightarrow \bar{t}s / _ r$
 $C \rightarrow C^j / ?^j\{p,t\}_$
 $\{p,t\} \rightarrow \emptyset / V_$
 $o \rightarrow a / C^j_w$
 $\emptyset \rightarrow w / C_o\# ! C = \{K,C[+pharyngeal]\}$
 $w \rightarrow \emptyset / \bar{C}C^j_?w \text{ ("optional")}$
 $w \rightarrow \emptyset / w? _$
 $? \rightarrow a / Cw_C^j$
 $\{o,e\} \rightarrow ? / _ C^j$
 $w^j \rightarrow w / _ ?C^j$
 $\emptyset \rightarrow w / \bar{C}_a\eta$
 $e \rightarrow o / w_ \eta$
 $w^j \rightarrow w / _ a\eta$
 $w^j \rightarrow w / \bar{C}_o\eta$

36.1.1.1 Old Mandarin to Modern Pekingese *Ran*, from Hsueh, F.S. (1975), *Phonology of Old Mandarin*

$\eta \rightarrow \emptyset / \#_$
 $\{e,o\} \rightarrow a / _w$
 $m \rightarrow n / V_$
 $o \rightarrow e / _ \eta$
 $i \rightarrow e / C_?$
 $? \rightarrow \emptyset$
 $j \rightarrow \emptyset / j\hat{i}_$
 $\#r \dots \hat{i}\# \rightarrow \#\hat{i} \dots r$
 $v \rightarrow \emptyset$
 $j \rightarrow \emptyset / C_$
 $o \rightarrow e / _ \#$
 $\hat{i} \rightarrow e / _ C\# ! C = r$
 $j \rightarrow \emptyset / C_we\eta$
 $k^{(h)} h \rightarrow \hat{c}^{(h)} \epsilon / _ j$

36.2 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 → (y)u

Finals:

m → n

long-tail vowel thing → i (or [truncated vowel-thing] “where GH sibilant initial variants occur”)

{long-tail vowel thing?,ə?} → ε?

i → [long-tail vowel thing] / ɕ₋ (“sometimes”, in “variant readings”); when following /s z/, sometimes yields [ʃi], other times [s truncated vowel-thing]

iʔ iw → eʔ ew / ɕ₋ (the latter with variant iɛu?)

iʔ → ieʔ (→ i[truncated vowel-thing]ʔ?)

uʔ → oʔ (occasionally → ueʔ?)

uj → u(ɛ)i / m₋

uj → uei / {P,C[+guttural],Ø}₋

uj → ui / {C[+dental],C[+sibilant]}₋

ujʔ → ueʔ (dialectally → uɔʔ?)

un → uɛn / ! {C[+dental],C[+sibilant]}₋

uɛn → ɛn / v₋

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 → ɥ (→ y~u dialectally?) / ɕ₋

yʔ → yɛʔ / {l,C[+dental +sibilant]}₋ in “QYS -juət-type” finals, dialectally?

yʔ → oʔ (eventually → {ʊʔ,(i)uʔ?}) / {l,C[+dental +sibilant]}₋, in “QYS -k-types”

yʔ → yʔ(˜yɛʔ?) / {Ø,C[+guttural]}, in -juət-types

yʔ → ioʔ (→ iʊʔ dialectally?) / {Ø,C[+guttural]}₋, in -k-types

yʔ → {ɥʔ,yʔ,uʔ} / ɕ, in -juət-types

yʔ → oʔ (→ ʊʔ?) / ɕ₋, in -k-types

yjʔ → yʔ

yn → un / ɕ₋ (may have stayed yn or → ɥn in at least one area?)

je jeʔ yeʔ → ɛ ɛʔ ueʔ / ɕ₋

je jeʔ → iɛ iɛʔ

yeʔ → yɛʔ (→ {uɔʔ,yɔʔ} in southern speech?)

ye jej → yɛ i

jew → au / ɕ(C?)₋

jew → iau / else

{jem,jen} → iɛn / sometimes after ɕ₋ (but ! z₋) (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)

36.3 Tibeto-Burman

36.3.1 Qiangic

36.3.1.1 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

$a \rightarrow i$ / $\{y, w\} _ \%$
 $a \rightarrow w$ / $\{K, \eta\} w _ \%$
 $\{a, i\} \rightarrow \text{ɯ}$ / $R _ \%$
 $a \rightarrow ie$ / $! K _ \%$
 $a \rightarrow \alpha$ / $\{a, u\}$
 $iN \rightarrow \text{æ}$ / $\{P, C\} r _ \%$
 $i \rightarrow \text{ɥ}$ / $m _ \%$
 $u \rightarrow \text{ɥ}$ / u
 $B \rightarrow o$ / $\{q^h, (N)q\} _$
 $V \% \rightarrow \text{low tone}$
 $\{Np, mb\} \rightarrow b$ / $_ V$ (the paper implies similar developments occurred at other POAs)
 $\{r, s\} p^{(h)} \{r, s\} \{Np, (m)b\} \rightarrow f \text{ v}$ / $_ V$ (the paper implies similar developments occurred at other POAs)
 $\{r, s\} k \{r, s\} Nk \rightarrow f \text{ w}$ / $_ V$
 $S\{b, g\} Sk \rightarrow v \text{ h}$ / $_ V$
 $\{r, s\} l \{r, s\} n \rightarrow \text{ɭ}$ / $N _ \% _ V$
 $n \rightarrow \text{ɭ}$ / $_ \% _ V$
 $NV \rightarrow h \tilde{V}$
 $\text{ɭ} \rightarrow \text{ɬ}$ / $_ \% _ V$

36.3.1.2 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

$a \rightarrow e$ / $\{R, T\} _ \%$
 $a \rightarrow w$ / $\{K, \eta\} w _ \%$
 $a \rightarrow i$ / $! K _ \%$
 $iN \rightarrow \text{æ}$ / $\{P, C\} r _$
 $\{iN, u\} i \rightarrow i \text{ ɯ}$ / $T _$
 $i \rightarrow \text{ɯ}$ / $\{R, Kr\} _$
 $i \rightarrow \text{ɥ}$ / $m _$
 $u \rightarrow \text{ɥ}$ / u
 $B \rightarrow \text{ɔ}$ / $\{q^h, (N)q\} _$
 $V \% \rightarrow \text{high rising}$
 $\{Np, mb\} \rightarrow b$ / $_ V$
 $\{r, s\} p^h \{r, s\} \{(N)p, (m)b\} \rightarrow p^h \text{ p b}$ / $_ V$ (the paper implies similar developments occurred with stops at other POAs)
 $\{r, s\} k \{r, s\} Nk \rightarrow k \text{ ɸ}$ / $_ V$
 $S\{b, g\} Sk \rightarrow \emptyset \text{ h}$

$\underset{\circ}{n} \rightarrow \underset{\circ}{l} / \%_{-}V$
 $\underset{\circ}{NV} \rightarrow h\tilde{V}$
 $\underset{\circ}{l} \rightarrow \underset{\circ}{t} / \%_{-}V$

36.3.1.3 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

$a \text{ iN } \{i, u\} \rightarrow e \text{ əw } / T_{-}\%$
 $a \rightarrow i / \eta_{-}\%$
 $a \rightarrow w / \{R, w\}_{-}\%$
 $a \rightarrow wa / \{K, \eta\}w_{-}\%$
 $a \rightarrow e / ! K_{-}\%$
 $a \text{ aS } \rightarrow \alpha \{a, o\} / _{\%}$
 $iN \rightarrow \text{ə} / \{P, C\}r_{-}\%$
 $i \rightarrow w / \{R, kr\}_{-}\%$
 $u \rightarrow \text{ə} / Pr_{-}\%$
 $u \text{ o } \rightarrow \text{y} u$
 $B \rightarrow \text{y} / \{q^h, (\eta)q\}_{-}$
 $V\% \rightarrow \text{mid tone} / C_{-}ru$
 $V\% \rightarrow \text{high tone} / \text{else}$
 $N \rightarrow \emptyset / _{p}V$
 $\{r, s\}p^h \{r, s\}(N)p \{r, s\}b \{r, s\}mb \rightarrow p^h p b mb / _{V}$ (the paper implies similar developments occurred with stops at other POAs)
 $\{r, s\}(N)k \rightarrow k / _{V}$
 $Sb \text{ Sk } Sg \rightarrow b ? g / _{V}$
 $\underset{\circ}{n} \rightarrow \underset{\circ}{l} \rightarrow h / \%_{-}V$
 $\{r, s\} \rightarrow \emptyset / \%_{-}V$
 $\{r, s\}N \rightarrow \underset{\circ}{N} \rightarrow h\tilde{V} \rightarrow hV$

36.3.2 rGyalrongic

36.3.2.1 Proto-rGyalrongic to bTshan La *Pogostick Man*, from Nagano, Yashuiki (1979), “A Historical Study of rGyarong Initials and Prefixes”. *Linguistics of the Tibeto-Burman Area* 4(2):44 – 68; and Nagano, Yashuiki (1979), “A Historical Study of rGyarong Rhymes”. *Linguistics of the Tibeto-Burman Area* 5(1):37 – 47

Initials:

$p \text{ b } \text{ɕp } \text{ɕb } sP \text{ rP } Np \text{ Nb } pr \{br, pj\} bj \rightarrow p^h p \text{ j}b \text{ ɕp } sp \text{ rp}^h \text{ mp}^h \text{ mb } br \text{ p}^h j \text{ pj}$
 $P \rightarrow p / l_{-}$

t d Nt Nd st sd ɕT tr (ɕ)dr KT → t^h t Nt^h md zd st ɕtj trh (ɕ)tr kt
 k sk kr g Pg sg Ng (s)gr ɕK rK Kɕ → k^h zgw dr Ng pk sk mk (s)kr ɕk rgj gɕkr
 (?)kj (s)gj Nkj → (k)tɕ (s)kj Ndʒ
 ɕr Nɕ → dr mk^hj
 K → ʔ / _s
 K → k / _ɕ
 C[+ sibilant] → s / _w
 Pɕ → mʃ
 TS → dʒ / l_
 NTS PTS KTS sTS ɕTS → {Ndʒ,mts} kts^(h) pts^h sts {sts,rj}
 (r)ts (r)dz → (r)ts^h (r)ts
 Ø → j / ɕm_
 N → m / _{ɲ.nj}
 rnj → rɲ ʔ
 w → ʔ / something to do with either back vowels or prefixes

Rhymes:

n → Ø / a_
 ɲ → Ø / i_
 u → a / _k
 u → i / _{r,s}
 o → e / _s
 a → e / _m
 aj → i
 ew iw → im ju
 i → e / _s

36.3.2.1.1 Proto-rGyalrongic to Chos Kia *Pogostick Man*, from Nagano, Yashuiki (1979), “A Historical Study of rGyarong Initials and Prefixes”. *Linguistics of the Tibeto-Burman Area* 4(2):44 – 68; and Nagano, Yashuiki (1979), “A Historical Study of rGyarong Rhymes”. *Linguistics of the Tibeto-Burman Area* 5(1):37 – 47

Initials:

b → m / _j
 p ɕp (ɕ)b rP Np Nb pr {br,pj} → p. ɕ.w (ɕ)p rp. kj m.p n.br p.j
 P → p / l_
 t st tr d sd (ɕ)dr Nt ɕT KT → t. s.d tr. t s.t (ɕ.)tr m.t. n.dr g.t
 r → Ø / _t
 ɕK → ɕ.k
 N → Ø / _g
 sk rK → j sg

kj Nkj ?kj gj sgj → kj. nj g.ts^h kj skj.
 kr (s)gr → n.br (s)kr
 C[+ sibilant] → s / _w
 K → g. / _ç
 Nç → n.pj.
 çl → sj
 Kts → g.ts^h.
 lTS → l.dz
 ts (r)dz dʒ PTS KTS sTS çTS → {ts^h,s} (r)ts ts^h g.ts s.{ts,pj} {s.ts,br}
 rm rn → mj rw
 çm çnj → ç.n
 N → m. / _ŋ
 Nn → m / _j
 w → Ø / ŋ_
 rnj → r.mj
 j → Ø / n_

Rhymes:

ut uk → ud og
 s → Ø / u_
 uj → ui
 ok → ig
 o → e / _l
 oj → oi
 a ap at ar am aj → e eb e(d) er om e.i
 {k,j} → Ø / i_
 e → i / _#
 et ej → o e.i
 iw → jo
 i → e / _m
 ip it → ib o

36.3.2.1.2 Proto-rGyalrongic to Hanniu *Pogostick Man*, from Nagano, Yashuiki (1979), “A Historical Study of rGyarong Initials and Prefixes”. *Linguistics of the Tibeto-Burman Area* 4(2):44 – 68; and Nagano, Yashuiki (1979), “A Historical Study of rGyarong Rhymes”. *Linguistics of the Tibeto-Burman Area* 5(1):37 – 47

NB: These changes are likely very incomplete. The source did not have much to say about this language.

Initials:

p k ts → p. k. tʃ.
 NTS → mnj
 m → mt.
 C[+ sibilant]w → s
 ɕl → rts

Finals:

k → Ø / {u,a} _
 or → ro
 an {at.is} → o ie
 t → Ø / i _

36.3.2.2 Proto-rGyalrongic to Japhug *Pogostick Man*, from Jacques, Guillaume (2004), “Phonologie et Morphologie du Japhug (rGyalrong)”. Universit Paris-Diderot - Paris VII <tel-00138568>. <<https://tel.archives-ouvertes.fr/file/index/docid/138568/filename/these-japhug.pdf>>

NB: This source is in French and looks to at least sometimes use a transcription that isn't IPA.

u o → w u / _#
 aŋ → o / _#
 ɔk → ɤɣ / _#
 ɔ → ɤ / _{t,r}# (possibly also _s# dialectally)
 a → o / _m#
 ʒ j → ndʒ ʒ
 b → w / #_{z,r} _
 ŋ → m / #_k^h

36.3.2.2.1 Proto-rGyalrongic to Kham To *Pogostick Man*, from Nagano, Yashuiki (1979), “A Historical Study of rGyarong Initials and Prefixes”. *Linguistics of the Tibeto-Burman Area* 4(2):44 – 68; and Nagano, Yashuiki (1979), “A Historical Study of rGyarong Rhymes”. *Linguistics of the Tibeto-Burman Area* 5(1):37 – 47

Initials:

p b pr br ɕp → p.j p br pj ʃb
 d(r) → t
 ɕT → ʃt
 r → s / _k
 k (N)g → k. (m)k
 Nkj gj sgj → mj ts stʃj

sgr → skr
 C[+ sibilant]w ç Pç Nç çl → s ʃ mʃ ʃl
 ts {dz,KTS} NTS rdz dzl dʒ → s ts {dz,mtʃ.} rts tsl tʃ.
 ç → ʃ / _N
 ŋ(w) N{ŋ,nj} → ŋ mn
 j → Ø / {ʃ,r}n_

Rhymes:

u → o / _k
 uʃ → os
 op → u
 at → {at,ɛ,ed}
 an → ia
 ŋ → ŋ / {o,a}_
 aʃ → oi
 e → i / _{s,#}
 et → o
 ej → ai i → o / _m
 {ŋ,j} → Ø / i_

36.3.2.2.2 Proto-rGyalrongic to lCog Rtse *Pogostick Man*, from Nagano, Yashuiki (1979), “A Historical Study of rGyarong Initials and Prefixes”. *Linguistics of the Tibeto-Burman Area* 4(2):44 – 68; and Nagano, Yashuiki (1979), “A Historical Study of rGyarong Rhymes”. *Linguistics of the Tibeto-Burman Area* 5(1):37 – 47

Initials:

(N)p Nb sP çp çb pr br {p,b}j → (m)p^h (m)p sp jʃ çp br p^hj p^hj
 (N)t (N)d st sd KT çT tr dr çtr → (N)t^h mt zd st kt çt(j) trh tr çtr
 (P)g sg çK Ng k sk rk (s)gj (?)kj → (p)k sk çk mk k^h zg Ng (s)kj (?)k^hj
 Nkj (s)gr Kç kr skr gr → mgj (s)kr gçkr k^hr zgr Ngr
 K → ? / _s
 C[+ sibilant] → s / _w
 N P K → m p k / _ç
 l → Ø / #ç_
 ts (r)dz dzl dʒ NTS PTS Kts KTS sTS çTS → ts^h (r)ts Ndʒ tsl ts ptç ktç kts sts {s,ç}ts
 LTS → ldʒ
 N → m / _{ŋ,n}
 w → ? / something to do either with back vowels or prefixes

Rhymes:

uʃ → ak

om → {o,a}m
ew iw → i jo

36.3.2.2.3 Proto-rGyalrongic to Pati *Pogostick Man*, from Nagano, Yashuiki (1979), “A Historical Study of rGyarong Initials and Prefixes”. *Linguistics of the Tibeto-Burman Area* 4(2):44 – 68; and Nagano, Yashuiki (1979), “A Historical Study of rGyarong Rhymes”. *Linguistics of the Tibeto-Burman Area* 5(1):37 – 47

NB: These changes are likely very incomplete. The source did not have much to say about this language.

Initials:

d → l
ts dʒ NTS → {s,tʃ.} tʃ. m
s → ʃ / _n

Rhymes:

n → Ø / a_
im it ik is ij → em u e es e
uk → o

36.3.2.2.4 Proto-rGyalrongic to Suo Mo *Pogostick Man*, from Nagano, Yashuiki (1979), “A Historical Study of rGyarong Initials and Prefixes”. *Linguistics of the Tibeto-Burman Area* 4(2):44 – 68; and Nagano, Yashuiki (1979), “A Historical Study of rGyarong Rhymes”. *Linguistics of the Tibeto-Burman Area* 5(1):37 – 47

Initials:

{p,b} Np pr {s,r}P ɕb Nb → p mp mbr sp ʃp p.s
Nt tr d KT ɕT → mt. tɕ t kt ʃt
kr rk {rK,Pg} g Pg sg → k.r rk. pk k sk
gj → cɕ ? (might be → tsɕ?)
ʔkj → ktʃ.
ɕ → zg / _r
g → Ø / #_r
rs → sr
C[+ sibilant] → s / _#
lts rts NTS PTS STS → ldʒ rts. {mdzr,mtʃ} nt. sts
ts dʒ → tʃ. tʃ
ŋ → ɲ
nʃ → ɲ / #(r)_
j → dz / #_

Rhymes:

u → o / _p
 a → o / _r
 es er → or ər
 e → iɛ
 i → a / _t
 i → iɛ / _s
 i → ɐ / _m

36.3.2.2.5 Proto-rGyalrongic to Trung *Pogostick Man*, from Nagano, Yashuiki (1979), “A Historical Study of rGyarong Initials and Prefixes”. *Linguistics of the Tibeto-Burman Area* 4(2):44 – 68; and Nagano, Yashuiki (1979), “A Historical Study of rGyarong Rhymes”. *Linguistics of the Tibeto-Burman Area* 5(1):37 – 47

NB: These changes are likely very incomplete. The source did not have much to say about this language.

Initials:

kr → dz
 z → k
 C[+ sibilant]w → s
 dʒ → tsh

Rhymes:

un → ial
 an → a(i)
 i → əi / _#
 i → iə / _m
 it → u

36.3.2.2.6 Proto-rGyalrongic to Tsa Ku Nao *Pogostick Man*, from Nagano, Yashuiki (1979), “A Historical Study of rGyarong Initials and Prefixes”. *Linguistics of the Tibeto-Burman Area* 4(2):44 – 68; and Nagano, Yashuiki (1979), “A Historical Study of rGyarong Rhymes”. *Linguistics of the Tibeto-Burman Area* 5(1):37 – 47

Initials:

Ø → n / _pr
 P → p / r_
 ɕb → ʂp
 Nb → p.
 d(r) ɕT → t ʃt

$k \{sg, \zeta K\} Ng rK \rightarrow k. sk mg nk$
 $kj \rightarrow tʃ.$
 $z \rightarrow ts / r_$
 $C[+ sibilant]w \rightarrow sj$
 $(P)\zeta N\zeta \zeta l \rightarrow (b)\epsilon np.j \zeta l$
 $ts dz NTS KTS sTS \rightarrow tʃ ts \{ts, m\} gts sp$
 $s \rightarrow \zeta / _n$
 $Nnj \rightarrow mɲ$
 $nj rnj \rightarrow nj rɲ$
 $\emptyset \rightarrow dz / \#_j$

Finals:

$ut u\{k, n\} ur \rightarrow ud uo u\epsilon$
 $uj \rightarrow ue$
 $om \rightarrow \{on, am\}$
 $a(t) \rightarrow \epsilon / _ \#$
 $ap \rightarrow \epsilon k$
 $an \rightarrow ɲ\epsilon$
 $ew e ej \rightarrow \emptyset i ei$
 $i \rightarrow e / _m$
 $i i\{t, k\} \rightarrow \{\emptyset, i\epsilon\} \emptyset$
 $iɲ \rightarrow ɭ$
 $j \rightarrow \emptyset / i_$

36.3.2.2.7 Proto-rGyalrongic to Tzu Ta *Pogostick Man*, from Nagano, Yashuiki (1979), “A Historical Study of rGyarong Initials and Prefixes”. *Linguistics of the Tibeto-Burman Area* 4(2):44 – 68; and Nagano, Yashuiki (1979), “A Historical Study of rGyarong Rhymes”. *Linguistics of the Tibeto-Burman Area* 5(1):37 – 47

Initials:

$P \rightarrow p / s_$
 $P t \rightarrow pdz tʃ / r_$
 $Np Nb Nt Ng N\zeta \rightarrow sts mp mt^h mk nts^h dz$
 $p \rightarrow b / _r$
 $\{d, KT\} st \rightarrow tʃ zdʒ$
 $dr \zeta dr \rightarrow t \zeta t dz$
 $\zeta K \rightarrow \zeta k$
 $k rk kr kj Nkj gr \rightarrow k^h dz ng k^h r tʃ^h dʒ nk^h r$
 $g \rightarrow \emptyset / _r$
 $P\zeta \rightarrow b.\zeta$
 $\zeta l \rightarrow sʈ$

C[+ sibilant]w ɕ → swdz sdz
 NTS KTS ITS → mɬs {kts, tɬ^h} bɬz
 ts dz rdz dʒ → {tɬ, ʒ} tsj rts^h tɬ
 Ø → j / rN_
 ɕ → ʃ / ɹm
 ŋ(w) → ŋ(wj)
 Nnj → mɲ ?
 j → s / #_

Rhymes:

uk uŋ → {u, o} e
 o → e / ɹs s → Ø / u_
 a → e / ɹ(p)
 t → ŋ / a_
 aw aj → au ai
 e i → i a / ɹm
 it ik → o ek
 iw ij → iu ei

36.3.2.2.8 Proto-rGyalrongic to Wassu *Pogostick Man*, from Nagano, Yashuiki (1979), “A Historical Study of rGyarong Initials and Prefixes”. *Linguistics of the Tibeto-Burman Area* 4(2):44 – 68; and Nagano, Yashuiki (1979), “A Historical Study of rGyarong Rhymes”. *Linguistics of the Tibeto-Burman Area* 5(1):37 – 47

Initials:

pr b → br p
 d KT → l kt
 k kr kj g → k. k.r ts. g
 g ɕ → Ø zg / ɹ
 Pɕ ɕl → ʃ ʃn
 ts dzl NTS → {tʃ., j} tɬl m
 s → ʃ / ɹn
 ŋ → j
 Nnj ɕnj → mn ʃn

Rhymes:

uk → o
 o → ə / ɹn
 t → Ø / a_
 an ap → ai ie
 aj → ui
 ew → i

it ik → o i
 is → eu
 im ij → wa ie
 ij → e

36.3.3 Tibetic

36.3.3.1 Old Tibetan to Amdo dialects *Pogostick Man*, from Jacques, Guillaume (2004), “Phonologie et Morphologie du Japhug (rGyalrong)”. Université Paris-Diderot – Paris VII <tel-00138568>. <<https://tel.archives-ouvertes.fr/file/index/docid/138568/filename/these-japhug.pdf>>

NB: This source is in French and looks to at least sometimes use a transcription that isn't IPA.

{d,g,s,l,r} → {h,r} / #-
 ʃ → x / #- (some dialects, never when following preinitials)
 k^(h){r,j} g{r,j} → tɕ^(h) dz
 p^h b → h w
 i → ə / -#
 sr → ʂ / #-
 s → either i or a diphthong ending in i? / -#
 d → l / -# (some dialects)
 t → l / -# (further development in bLa-brang)

37 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 ^h		t t ^h			k k ^h	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 ă	

For this following section, the sound transcribed here as ⟨r⟩ may in actuality represent something akin to /ɾ/.

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)

37.1 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 / _ă
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/.
 $x \rightarrow \emptyset / _k$
 $x \rightarrow h / _C! C_C$
 $x \rightarrow k$
 $? \rightarrow \emptyset / C_$

37.1.1 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:” $t \ ts \ k \ k^w \rightarrow d \ dz \ g \ g^w / _V$

37.1.2 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”
 $h \rightarrow \emptyset / \#_s$
 $n \rightarrow \emptyset / _ti$
 $t \rightarrow \emptyset / n_V$

37.1.2.1 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;” $! \{?,h\}_-$
 $j \rightarrow \emptyset / ts_$
 $h \rightarrow \emptyset / s_w$
 $r \rightarrow n / _ (h)j$
 $r \rightarrow w / \{o(\colon), \tilde{o}(\colon)\} _ \{a(\colon), e(\colon), \tilde{e}(\colon), i(\colon)\}$
 $r \rightarrow j / \{e(\colon), \tilde{e}(\colon), i(\colon)\} _ \{a(\colon), o(\colon), \tilde{o}(\colon)\}$
 $r \rightarrow \emptyset / VH_$
 $r \rightarrow \emptyset / _ H$
 $r \rightarrow \emptyset / w_$
 $r \rightarrow \emptyset / V_V$
 $V_1"V_2"V_1\colon V_2 \rightarrow "V_1V_2"V_1[-long]V_2$
 $e(\colon) \rightarrow \tilde{e} / _ \tilde{e}(\colon)$
 $o(\colon) \rightarrow \tilde{o} / _ \tilde{o}(\colon)$
 $"V_0V_0 \rightarrow V_0\colon[-accent]$
 $R \rightarrow \emptyset / ?_ \#$
 $C \rightarrow \emptyset / \{s,k\} _ \#$
 $Ch \rightarrow \emptyset / _ s \#$
 $h \rightarrow \emptyset / V\colon _ \#$
 $t \rightarrow h / _ t$
 $ths \rightarrow tsh$
 $\emptyset \rightarrow h / \{t,k\} _ n$

37.1.2.1.1 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:”

$s \rightarrow \int / _ \{r,j\}$
 $t k k^w \rightarrow d g g^w / _ \{V,R\}$

37.1.2.1.2 Cayuga to Lower Cayuga *cedh audmanh*, from Julian, Charles (2010), “A History of the Iroquoian Languages”, University of Manitoba, Winnipeg

ts → t / ₋(h)r
t → k / ₋j
V → V[-voiced] / ₋h “(odd syllables only)”
tʔ tsʔ kʔ kʷʔ → tʔ tsʔ kʔ kʷʔ

“Allophonic changes:”

s → ʃ / ₋{r,j}
t k kʷ → d g gʷ / ₋{V,R} ! ₋V[-voiced]

37.1.2.2 Proto-Northern Iroquoian to Huron *cedh audmanh*, from Julian, Charles (2010), “A History of the Iroquoian Languages”, University of Manitoba, Winnipeg

s → ʃ / ! ₋{n,t,k^(w),w} “or when part of the affricate /ts/”
ts → ʃ / ₋r
ts → s / ! ₋{i,j}
n → Ø / t(h)₋
n → Ø / ₋s
n → Ø / ₋i “(in pronominal prefixes only)”
k → i / #₋n
k → Ø / ₋n
n hn sC → t th Ch / s₋
k → h / ₋{t,ts,s,ʃ}
k → x / {#,R,ʔ,V}₋{V,ʔ,R,#}
kʷ → xʷ / V₋V
t → k / ₋(h)w
t → Ø / ₋k^(w)
j → Ø / ts₋
j → Ø / #₋V
j → Ø / V₋{V,#}
{r,w} → Ø / ₋j
w → Ø / #₋
w → Ø / ₋{r,#}
h → Ø / #₋w
Ø → k / s₋(h)w
Ø → a / CC₋ʔ

“Some known changes in dialects other than pre-Wyandot:”

r → h / ʃ₋
t → k / ₋r

37.1.2.2.1 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^w → w

{ʔ,h} → Ø / _nh

n → t / _h

h → Ø / {t,ts,s,k}_

Vh → V: / _R

Ø → w / {o(:),õ(:)}_V

Ø → j / {e(:),ẽ(:),i(:)}_V

x → Ø / _{i,j}

x → e / #_r

w j → m ɲ / between two vowels of unlike nasality

j → ʒ / {#,ʔ,V}_V

x → j / _V

x → Ø

k → Ø / _#

ẽ(:) õ(:) o(:) → ẽ(:) õ(:) u(:)

n → ⁿd / _{V[-nas],r}

n → ŋ / _{j,w}

ẽ(:) → ă(:) / w_

37.1.2.3 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^(w)

n → Ø / _s

”V(:)(C)(C)V: → V[-long](C)”(C)CV[-long] / _#

ara → a: / “unaccented syllables only”

jh → hj

n → t / _k^(w)

”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:"
 $ts \rightarrow t\int / _ \{(h)i,(h)j\}$
 $s \rightarrow \int / _ \{hi,hj\}$
 $t\ t\int\ k^{(w)} \rightarrow d\ d\int\ g^{(w)} / _ \{V,R\}$

37.1.2.4 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”)

37.1.2.4.1 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:”

— $ts \rightarrow t_f / _-\{(h)i,(h)j\}$
 — $t\ t_f\ k^{(w)} \rightarrow d\ d_3\ g^{(w)} / _-\{V,R\}$
 — $s \rightarrow \int / _-(h)j$
 — $s \rightarrow z / \{\#,V\}_-\{V,R\} ! R = j$

37.1.2.4.2 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,ʔ} → Ø / _R “in post-tonic syllables”
 ʔ → 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) → V̇:[+falling tone]Ċ(Ċ)V̇(Ḣ) / _#
 — CV:[+falling tone] → ĊV̇:[+falling tone] / _#
 — CVʔ → ĊV̇ʔ / _#
 — V[-long] → V̇ / R_#
 — OV[-long] → ȮV̇ / _#
 — jV → Ø / Ci_(H)#
 — ʔ → h / _C#
 — R → Ṙ / _#
 “Allophonic changes:”
 ts → tʃ / _{(h)i,(h)j}
 t tʃ k^{(w)} → d dʒ g^{(w)} / _{V,R}
 s → ʃ / _{(h)j}
 s → z / {#,V}_-{V,R}

37.1.2.5 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.”

$a \rightarrow \text{æ} / _ra(:)$

$a \rightarrow \text{e} / _ro(:)$

$\tilde{a} \rightarrow \tilde{\text{e}} / _r\tilde{o}:$

$a(:) \rightarrow \text{æ}(:) / r_$

$h \rightarrow \emptyset / _ \{tk,nh,sC,C\# \}$

$h \rightarrow \emptyset / \#_w$

$h \rightarrow \emptyset / w_j$

$hw \rightarrow \emptyset / \tilde{o}_$

$w \rightarrow \emptyset / _ \{r,j \}$

$r \rightarrow n / _ (h)j$

$r \rightarrow \emptyset / Vh_$

$Vh \rightarrow V: / _ \{n,w,j \}$

$h \rightarrow \emptyset / V_V$

$r \rightarrow j / C[-glottal](h)_ \{o(:),\tilde{o}(:) \}$

$r \rightarrow h / s_$

$r \rightarrow j / i(:)_V$

$r \rightarrow w / \{o(:),\tilde{o}(:) \}_V$

$r \rightarrow \emptyset$

$o \rightarrow \text{o}: / _ \{a:,æ: \}$

$V: \rightarrow V / V_$

$V_1V_2 \rightarrow V_1V_2$

$a(:) \rightarrow \tilde{\text{e}}(:) / \text{adjacent to a nasal vowel}$

$\tilde{\text{e}}(:) \rightarrow \text{e}(:) / _ \{e(:),o(:) \}$

$\text{ʔ} \rightarrow \emptyset / _nk^{(w)}$

$n \rightarrow t / _k^{(w)}$

$n \rightarrow t / \text{ʔ}_ \#$

$R \rightarrow \emptyset / _h$

$C \rightarrow \emptyset / s_ \#$

$C[-glottal] \rightarrow \emptyset / _s\#$

$k \rightarrow \emptyset / _hts$

$t \rightarrow h / _ \{n,t \}$

$t \rightarrow \emptyset / k_ \#$

$\{ths, tts\} \rightarrow tsh$
 $a(:) \ \text{æ}(:) \rightarrow \tilde{o}(:) \ \tilde{e}(:) / n_$
 $a(:) \rightarrow \tilde{o}(:) / V[+nas]H_$
 $a(:) \rightarrow \tilde{o}(:) / V[+nas](\{?, s\})w_$
 $\tilde{e}(:) \ \tilde{o}(:) \rightarrow \tilde{e}(:) \ \tilde{o}(:)$
 $\emptyset \rightarrow h / k.n$

“Allophonic changes:”
 — $t \ k^{(w)} \rightarrow d \ g^{(w)} / _ \{V, R\}$
 — $s \rightarrow \int / _ j$
 — $a \ e \ o \rightarrow \text{ə} \ i \ u / C_ \{C, i[-long]\}$

37.1.2.6 Proto-Northern Iroquoian to Tuscarora *cedh audmanh*, from Julian, Charles (2010), “A History of the Iroquoian Languages”, University of Manitoba, Winnipeg

$ts \rightarrow t\int / _ \{h, i, j\}$
 $ths \rightarrow t\int$
 $j \rightarrow \emptyset / t\int_$
 $t \rightarrow ?t$
 $”V \rightarrow ”V: / _ n$ in “penultimate syllables only”
 $n \rightarrow t / ! _ \{h, k^{(w)}, V[+nas]\}$
 $”V \rightarrow ”V: / _ \{k^{(w)}, (?)t\} \{s, R, H\}$ (“penultimate syllables only”)
 $”V \rightarrow ”V: / _ RR$
 $\{\tilde{e}(:), \tilde{o}(:)\} \rightarrow \tilde{a}(:)$
 $ts \rightarrow \theta$
 $?t \rightarrow t? / _ ?t$
 $?t \rightarrow \emptyset / _ t$
 $?t \rightarrow ? / _ r$
 $?t \rightarrow ?n / V_ \{V, w, j\}$
 $?t \rightarrow n / \{ \#, C \} _ \{V, w, j\}$
 $?t \rightarrow t$
 $h \rightarrow \emptyset / _ nh$
 $h \rightarrow \emptyset / \# _ w$
 $h \rightarrow \emptyset / k_ \{s, ts, t\int\}$
 $h \rightarrow \emptyset / V: _ \#$
 $w \rightarrow \emptyset / _ jh$
 $n \rightarrow t / _ k^{(w)}$
 $\emptyset \rightarrow t / hs_r$
 $\emptyset \rightarrow j / k_e(:)$

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”

$t k^{(w)} \rightarrow d g^{(w)} / -\{V, R\}$

$n r w j \rightarrow \underset{\circ}{n} \underset{\circ}{r} \underset{\circ}{w} \underset{\circ}{j} / -\{\#, O\}$

37.1.2.6.1 Tuscarora to Western Tuscarora *cedh audmanh*, from Julian, Charles (2010), “A History of the Iroquoian Languages”, University of Manitoba, Winnipeg

$\theta \rightarrow s$

$w \rightarrow \emptyset / -j$

$j\text{?} \rightarrow \text{?}j$

$\underset{\circ}{r} \underset{\circ}{w} \underset{\circ}{j} \rightarrow s f \int$

37.1.2.6.2 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”)

37.2 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

$\tilde{e} \tilde{o} \rightarrow \tilde{i} \tilde{u}$

$\{t, h\} \rightarrow \emptyset / s_$

$h \rightarrow \emptyset / V_C$

$s \rightarrow \emptyset / h_$

$\theta \rightarrow r$

$\text{?} \rightarrow \emptyset / V_$

$x \rightarrow \varsigma / -\{i, u\}$

Also, apparently $/t^j/$ got picked up and added to the phonology somewhere along the line, but the circumstances are unclear

37.2.1 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” *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^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. 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^j → ʃ / in ”U
 t^j → ʒ / else
 t → Ø / _k, when medial
 ”V[+nas] → Vn (*)
 Ø → ʔ / C_# (only sometimes?) (*)

37.2.2 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^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.

ɕ x → x {ʃ,ʒ}
 p → {p,b,m,w}
 t^j → ʃ / in ”U
 t^j → ʒ / else
 s → z / in U[-stress]
 s → z / V_V
 r → d / s_
 t^jr → {st,ʃt}

$r \rightarrow d / x_-$
 $mn \rightarrow mV_0nV_0 / \#_-$
 $km \rightarrow kV_0mV_0$
 $w \rightarrow p / _t$
 $t \rightarrow \emptyset / _k$, when medial
 $hk \rightarrow tʃ$
 $k \rightarrow \emptyset / _x''V$
 $x \rightarrow ? / ''Vk_-$

37.2.2.1 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.

$\{pr, mt\} \rightarrow md$
 $kr \rightarrow hd / \#_-$
 $kr \rightarrow gj / \text{medial}$

37.2.2.2 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.

$\{pr, mt\} \quad kr \rightarrow bl \quad gl$

37.2.2.3 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.

$r \rightarrow d / k_-$

37.2.3 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^j (L^y in the text) was apparently /j/, or maybe /ɤ/.

$s \rightarrow \int$

$t \rightarrow \emptyset / _s$

$\varsigma \rightarrow x$

$w \rightarrow m$

$L^j \rightarrow n / _V[+nas]$

$L \rightarrow r / _V[-nas]$

$\tilde{a} \rightarrow a / \text{in } ^\text{”}U \text{ (sporadic)}$

“Phonemic vowel length was gained somehow.”

$t^j \rightarrow s / _?V$

$C?V_0 \rightarrow CV_0?V_0$

$t^j r \rightarrow sV_0 rV_0$

$r \rightarrow \emptyset / k_-$

$mn \rightarrow mV_0 nV_0 / \#_-$

$mn \rightarrow mV_0 nV_0 / \{C, V\} _ \{C, V\}$

$sn \rightarrow \{\int V_0 nV_0, sV_0 rV_0\}$

$km \rightarrow kV_0 pV_0$

$t \rightarrow \emptyset / _k, \text{ when medial}$

$sk \rightarrow \int / _^\text{”}V$

37.2.4 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 /ɪ/ 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.

ɕ x → x {ʃ, ʒ}
 p → {p, b, m, w}
 w → Ø / _t
 t → tʃ / _"E
 t → dʒ / _E[-stress]
 t^j → ʃ / in "U
 t^j s → ʒ z / in U[-stress]
 k → g / V[+nas]_ ! _#
 k → g / _?
 kr → kV₀rV₀
 m → Ø / _n ! _n#

37.2.4.1 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 /ɪ/ 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 → {p, b, m, w} / _C
 p → w / V_V
 g → ŋ
 k → g / "V_
 s z → θ ð (sporadic)
 L → l
 L^j → n / _V[+nas]
 L^j → r / _V[-nas]
 t → tʃ / _?
 pr → bl
 sr → {θl, ɺl}
 t^jr → ʃV₀rV₀

$kr \rightarrow gl$
 $r \rightarrow l / x_$
 $k \rightarrow h / _m$
 $k \rightarrow \emptyset / \#t_$
 $tk \rightarrow g / \text{when medial}$
 $x \rightarrow \emptyset / _k$
 $x \rightarrow \emptyset / k_ "V$

37.2.4.2 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 /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.

$p \rightarrow \{p, b, m, w\} / _C$
 $V \rightarrow \emptyset / _ \#$
 $p \rightarrow b / V_V$
 $t \rightarrow \{tʃ, dʒ\}$
 Wolff says that “Winnebago preserved the intermediate stages of *k reflexes”
 $L \rightarrow r$
 $L^j \rightarrow n / _V[+nas]$
 $L^j \rightarrow r / _V[-nas]$
 $t^j \rightarrow x / _?$
 $pr \{sr, xr\} \text{ } sn \text{ } km \rightarrow pV_0rV_0 \text{ } fV_0rV_0 \text{ } sV_0nV_0 \text{ } kV_0wV_0$
 $mt \rightarrow r$
 $tk \rightarrow \{tʃk, tʃg\} / \#_$
 $t \rightarrow \emptyset / _k, \text{when medial}$
 $xk \rightarrow g$

37.2.5 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 aud-

manh'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^j (L^y in the text) was apparently /j/, or maybe /ʎ/.

s ɕ {t^j, 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 → wV₀tV₀

t → Ø / _k, when medial

37.2.5.1 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

37.2.5.2 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

$\text{ʔ} \rightarrow \emptyset / \text{C}_-$
 $\text{kr} \rightarrow \text{kV}_0\text{rV}_0 / \#_-$
 $\text{r} \rightarrow \emptyset / \{\text{C}, \text{V}\}_\text{k} _ \{\text{C}, \text{V}\}$
 $\text{mn} \rightarrow \text{w} / \{\text{C}, \text{V}\}_- _ \{\text{C}, \text{V}\}$
 $\text{sn} \rightarrow \text{tsV}_0\text{rV}_0$
 $\text{km} \rightarrow \text{hp}$
 $\text{sk} \rightarrow \text{tsuk} / _ \text{”u}$
 $\text{sk kx} \rightarrow \text{tsk hk} / _ \text{”V}$
 $\text{sk} \rightarrow \text{hts} / \text{”V}_-$
 $\emptyset \rightarrow \text{V} / \text{x}_\text{k}$

37.2.6 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 /ɪ/ or /l/; L^j (L^y in the text) was apparently /j/, or maybe /ɛ/. Also, the changes of /p/ before a consonant are unclear, as described within the text.

$\text{p} \rightarrow \{\text{p}, \text{b}, \text{m}, \text{w}\} / _ \text{C}$
 $\text{w} \rightarrow \emptyset / _ \text{t}$
 $\text{t t}^j \text{ s} \rightarrow \text{d ʒ z} / \text{ in U[-stress]}$
 $\text{t}^j \rightarrow \text{ʃ} / \text{ in ”U}$
 $\text{k} \rightarrow \text{g} / \text{ ”V}_-$
 $\text{s} \rightarrow \text{z} / \text{ V}_- \text{V}$
 $\text{L L}^j \rightarrow \{\text{ð}, \text{j}\} \text{ ʒ} / _ \text{”V}$
 $\text{L} \rightarrow \text{d} / \text{ ”V}_-$
 $\text{w} \rightarrow \beta$ (sporadic, allophonic)
 $\text{u} \rightarrow \text{i} / \text{ in ”U}$ (sporadic)
 $\text{k} \rightarrow \emptyset \# \text{t}_-$ (in morphemes)
 $\text{tk} \rightarrow \text{g} / \text{ when medial}$

37.2.6.1 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^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. 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^(j) → d j / #_ (*)
 L → bl / #_e (*)
 V → V[+nas] / N_
 N → S / V_V
 ũ → aN / stressed
 t → ts / _?
 t^jr kr → ft l
 mn → bl / {C,V}-{C,V}
 mt → d

37.2.6.2 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^j (L^y 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^j → {θ,n} / _V[+nas -stress]
 ũ → ã / stressed
 k → Ø / _?
 pr sr t^jr kr → bθ sn fn gθ

$mn \rightarrow mV_0nV_0 / \#_-$
 $mn \rightarrow b\theta / \{C,V\}_-\{C,V\}$
 $mt \rightarrow n$

37.2.6.3 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 /ɿ/ or /l/; L^j (L^y in the text) was apparently /j/, or maybe /ʌ/.

$p \rightarrow \{p,b,m,w\} / _C$
 $t \rightarrow ts / _E$
 $s \rightarrow \theta$
 $\{\zeta,x\} \rightarrow z$ (sporadic)
 $n \rightarrow \delta / _ \{\tilde{a},\tilde{e},\tilde{o}\}$
 $w \rightarrow b / \#_-$
 $L^j \rightarrow \delta / _V[+nas \text{ -stress}]$
 $\text{ʔ} \rightarrow \emptyset / p_-$
 $t \rightarrow ts / _ \text{ʔ}$
 $pr \ sr \ t^j r \ kr \rightarrow b\delta \ sts \text{ ʃ}d \ g\delta$
 $r \rightarrow \delta / x_-$
 $m \rightarrow \emptyset / \# _n$
 $mn \rightarrow b\delta / \{C,V\}_-\{C,V\}$
 $sn \ mt \rightarrow hn \ d$
 $\text{ʃ} \rightarrow s / _V _k$
 $xk \rightarrow (\text{ʃ})k / _ \text{ʔ}V$
 $xk \rightarrow g / _V _$
 $x \rightarrow \text{ʔ} / k _ \text{ʔ}V$

37.2.6.4 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^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. 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.

$p \rightarrow \{p, b, m, w\} / _C$
 $t^j \rightarrow \int$
 $L \rightarrow d / \#_$
 $x \rightarrow ʒ (*)$
 $L^j \rightarrow j / \#_ \tilde{o} (*)$
 $L^j \rightarrow t / \#_ \tilde{a} (*)$
 $\tilde{a} \rightarrow \tilde{o} (*)$
 $\tilde{u} \rightarrow \tilde{a} / \text{stressed} (*)$
 $m \rightarrow \emptyset / \#_n \text{ (in morphemes)} (*)$

37.2.7 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^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.

$p \rightarrow \{p, b, m, w\} / _C$
 $t^j L^j \rightarrow t \int j$
 $m \rightarrow \emptyset / \{C, V\}_n \{C, V\}$
 $\{w, m\} \rightarrow \emptyset / _t$

37.2.7.1 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^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.

$p \rightarrow \{p, b, m, w\} / _C$

$p \rightarrow w / V_V$, 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)

$? \rightarrow \emptyset / C_$

$r \rightarrow \{d, n\}$

$m \rightarrow \emptyset / \#_n$

$k \rightarrow \emptyset / \#t_$

$k \rightarrow \emptyset / "Vs_$

$k \rightarrow \emptyset / _x"V$

$kx \rightarrow xk / "V_$

37.2.7.2 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^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.

$p \rightarrow \{p, b, m, w\} / _C$

$s \{ç, x\} \rightarrow f s$

$w \rightarrow \emptyset / \#_$ (sporadic)

$m \rightarrow w / \#_$

$L j \rightarrow t t_j$

$\tilde{a} \rightarrow \{an, \tilde{o}\}$

$? \rightarrow \emptyset / C_$

$sr \ kr \rightarrow ft \ kV_0lV_0$

$m \rightarrow \emptyset / \#_n$

$\emptyset \rightarrow V / k_m$

$k \rightarrow \emptyset / \#t_$

$sk \rightarrow f / "V_$

$x \rightarrow s / _k$

$kx \rightarrow sk / \text{ }^nV_-$
 $kx \rightarrow s$

37.2.7.3 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^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. 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.

$p \rightarrow \{p, b, m, w\} / _C$
 $L \rightarrow l$
 $k \rightarrow \text{ }^n k / _?$
 $? \rightarrow \emptyset / C_-$
 $mn \rightarrow mV_0nV_0 / \#_-$ (in morphemes)
 $sn \rightarrow sV_0nV_0$
 $\emptyset \rightarrow V / k_m$
 $s \rightarrow \int / \text{ }^n V_k$

38 Tai-Kadai

38.1 Kam-Tai

38.1.1 Tai

38.1.1.1 Proto-Tai to Ahom *Pogostick Man*, from Li, Fang Kuei (1977). “A Handbook of Comparative Tai”. *Oceanic Linguistics Special Publications* (15), i – 389

$w \rightarrow \emptyset / m_$
 $\{f, v\} \{m, b\} \rightarrow p^h b$
 $pl b\{l, r\} \rightarrow v pj$
 $\{l, r\} \rightarrow \emptyset / \{d, d'\}_-$
 $d d' \rightarrow t d$
 $\dot{n} \rightarrow h$
 $N[- \text{voice}] \dot{l} \rightarrow N[+ \text{voice}] l$
 $t^h \rightarrow \emptyset / _r$
 $y \rightarrow k^h$
 $gl \rightarrow k(w)$
 $x \rightarrow \emptyset / _r$
 $r \rightarrow l / K_$
 $k \rightarrow k^h / _r$
 $x^w K^w \rightarrow \{k^h, x\} K^{(w)}$
 $V \rightarrow V: / _ \%$

38.1.1.2 Proto-Tai to Saek *Pogostick Man*, from Li, Fang Kuei (1977). “A Handbook of Comparative Tai”. *Oceanic Linguistics Special Publications* (15), i – 389

$\dot{n} \rightarrow j$
 $N[- \text{voice}] \rightarrow N[+ \text{voice}]$
 $w \rightarrow \emptyset / m_$
 $pr b\{l, r\} vr \rightarrow v bj d$
 $\{l, r\} \rightarrow \emptyset / \{n, d'\}_-$
 $d d' \rightarrow t d$
 $t \rightarrow \{p, t\} / _r$
 $l \rightarrow \emptyset / t^h_$
 $d \rightarrow t / _ \{l, r\}$
 $\{g, x\} \rightarrow k^h$
 $k \rightarrow t / _ l$
 $V \rightarrow V: / _ \%$

38.1.1.3 Proto-Tai to Central Tai *Pogostick Man*, from Li, Fang Kuei (1977). “A Handbook of Comparative Tai”. *Oceanic Linguistics Special Publications* (15), i – 389

$\text{ḃ d} \rightarrow \text{b d} / ! _ \{l, r\}$
 $\{l, r\} \rightarrow \emptyset / \text{n, d}_-$
 $\text{f} \rightarrow \text{p}^h$
 $\{m, w\} \rightarrow \text{v}$
 $\text{l} \rightarrow \emptyset / \text{p-}\{\text{w, e, i}\}$
 $\text{l} \rightarrow \text{j} / \text{p-}$
 $\text{b}\{l, r\} \rightarrow \text{pj}$
 $\text{v} \rightarrow \text{b} / _ \text{r}$
 $\text{l} \rightarrow \emptyset / \text{t}_-$
 $\text{tr} \rightarrow \text{t}^h(\text{r})_-$
 $\text{d} \rightarrow \emptyset / _ \{l, r\}$
 $\text{N}[- \text{voice}] \rightarrow \text{N}[+ \text{voice}]$
 $\text{g x} \rightarrow \text{k k}^h$
 $\text{kl kr} \rightarrow \{\text{kj, tʃ}\} \text{k}^h \text{j}$
 $\{l, r\} \rightarrow \emptyset / _ \eta_-$
 $\text{xr} \rightarrow \text{k}^h \{l, r\}$
 $\text{x}^w \text{y}^w \rightarrow \text{k}^{wh} \{\text{v, w}\}$
 $\text{V} \rightarrow \text{V:} / _ \text{C}^\circ$
 $\text{iə} \rightarrow \text{ĩ} / _ \text{C}^\circ$
 $\text{ĩa} \rightarrow \text{a:}$
 $\text{ẽi ei} \rightarrow \text{ai i:}$

38.1.1.3.1 Central Tai to Lungchow *Pogostick Man*, from Li, Fang Kuei (1977). “A Handbook of Comparative Tai”. *Oceanic Linguistics Special Publications* (15), i – 389

$\text{v} \rightarrow \text{f}$
 $\text{pr} \rightarrow \text{p}^h / _ \{\text{w, e, i}\}$
 $\text{pr} \rightarrow \text{p}^h \text{j}$
 $\{\text{r, s, z}\} \text{t}^h \text{dʒ} \rightarrow \text{ɬ ʃ tʃ}$
 $\text{ɲ} \rightarrow \text{j}$
 $\text{gl} \rightarrow \text{kj}$
 $\text{ĩ} \rightarrow \emptyset / _ \text{u}$
 $\text{iə} \rightarrow \text{ĩ} / _ \text{C}^\circ$
 $\text{ĩ} \text{ĩo} \rightarrow \text{u ə}$
 $\text{uə} \rightarrow \text{ũ}$
 $\text{ũĩ} \text{ũo} \rightarrow \{\text{ĩ, ə}\} \text{u}$
 $\text{uo} \text{ĩu} \rightarrow \text{u}(\text{:}) \text{u} / _ \text{C}^\circ$

$\text{iu} \rightarrow \text{u:}$
 $\text{o} \{ \text{u}\text{ɔ}, \text{i}\text{ɔ}, \text{ɔ} \} \rightarrow \text{u o:}$
 $\text{e} \rightarrow \text{i} / _C\%$
 $\text{ie} \rightarrow \text{i}$
 $\{ (\text{i})\text{ɛ}, \text{i}\text{ɛ} \} \rightarrow \text{e:}$
 $\text{u}\text{ɔ} \text{i}\text{ɔ} \rightarrow \text{o: i}$
 $\{ \text{i}\text{ɔ}, \text{i}\text{a}, \text{i}\text{e} \} \text{i}\text{e} \rightarrow \text{i: i:}$
 $\{ \text{u}\text{i}, \text{u}\text{a}, \text{u}\text{e} \} \rightarrow \text{u:}$
 $\text{ai} \rightarrow \text{a:i}$
 $\text{V} \rightarrow \text{V:} / _V$
 $\text{u}\text{əi} \text{u}\text{əi} \text{u}\text{ai} \text{i}\text{əu} \text{iau} \rightarrow \text{o:i u:i u:iau o:u}$
 $\text{a} \rightarrow \text{a:} / _u, \text{i}$
 $\text{əi} \rightarrow \text{ai}$
 $\text{i}\text{ai} \rightarrow \text{a:i}$
 $\text{ɔ i} \rightarrow \text{o: i:} / _i$
 $\text{u}\text{əi} \rightarrow \text{o:i}$
 $\{ \text{o}, \text{ə} \} \rightarrow \text{a} / _i$
 $\{ \text{ɛi}, \text{ei} \} \rightarrow \text{ai}$
 $\text{eu} \rightarrow \text{u:}$
 $\text{o} \rightarrow \text{a} / _u$
 $\text{i}\text{əu} \rightarrow \text{au}$
 $\text{ɛ i} \rightarrow \text{e: i:} / _u$
 $\{ \text{u}\text{əi}, \text{uai} \} \text{iau} \rightarrow \text{u:i e:u}$

38.1.1.3.2 Central Tai to Nung *Pogostick Man*, from Li, Fang Kuei (1977). “A Handbook of Comparative Tai”. *Oceanic Linguistics Special Publications* (15), i – 389

$\text{v} \rightarrow \text{f}$
 $\text{pr} \rightarrow \text{p}^{\text{h}} / _ \{ \text{u}, \text{e}, \text{i} \}$
 $\text{pr} \rightarrow \text{p}^{\text{hj}}$
 $\text{t}\text{f} \text{t}\text{f}^{\text{h}} \text{d}\text{ʒ} \rightarrow \text{f} \text{t}\text{s}^{\text{h}} \{ \text{f}, \text{t}\text{f} \}$

38.1.1.3.3 Central Tai to Tay *Pogostick Man*, from Li, Fang Kuei (1977). “A Handbook of Comparative Tai”. *Oceanic Linguistics Special Publications* (15), i – 389

$\text{v} \rightarrow \text{f}$
 $\text{pr} \rightarrow \text{t}^{\text{h}}$
 $\{ \text{s}, \text{z} \} \rightarrow \{ \text{x}, \text{t}^{\text{h}} \}$
 $\text{t}\text{f} \text{d}\text{ʒ} \rightarrow \{ \text{x}, \text{t} \} \text{t}\text{f}$
 $(\text{ʔ})\text{j} \rightarrow \text{ʒ}$

g → Ø / ɿ
 ɣ → k^h

38.1.1.3.4 Central Tai to Tho *Pogostick Man*, from Li, Fang Kuei (1977). “A Handbook of Comparative Tai”. *Oceanic Linguistics Special Publications* (15), i – 389

pr → t^h
 z → {r,s}
 dʒ → tʃ
 (?)j → ʒ

38.1.1.3.5 Central Tai to T’ien-Pao *Pogostick Man*, from Li, Fang Kuei (1977). “A Handbook of Comparative Tai”. *Oceanic Linguistics Special Publications* (15), i – 389

v → f
 pr → t^h
 r → ʀ
 {s,z} → t
 dʒ → tʃ
 ɣ → w / ɿV[+ round]
 ɣ → j
 i i: u → ə ei oʊ

38.1.1.4 Proto-Tai to North Tai *Pogostick Man*, from Li, Fang Kuei (1977). “A Handbook of Comparative Tai”. *Oceanic Linguistics Special Publications* (15), i – 389

{k^h,g}{l,r} → tʃ
 k{l,r} → {kj,tʃ}
 l → Ø / p^(h),b_E
 l → j / p^(h),b_V
 {l,r} → Ø / d_
 {p^h,b} ʔ {t^h,d} d {k^h,g} {k^{wh},g} → p b t d k k^w
 m̥ n̥ → m n
 mw f → f {f,v,w,h}
 t{l,r} → ʀ
 n → Ø / ɿ
 z → s
 {w,m} → v
 {tʃ^(h),dʒ} → ʃ

$xr \ x \ \{x,y\}^w \rightarrow r \ h \ \{w,v,h\}$
 $V \rightarrow V: / _ \%$
 $i\check{\theta} \rightarrow i / _ C\%$
 $\check{i} \rightarrow a / _ K$
 $uo \rightarrow \text{ɔ}:$
 $\{\check{i}u, i\check{e}\} \rightarrow i\check{\theta} \sim i\check{a} / _ \%$
 $uo \ \check{i}\check{o} \rightarrow u \ o$
 $\check{i}\check{a} \rightarrow i\check{a} \sim i\check{\theta}$
 $\{\check{u}\check{o}, u\check{a}\} \rightarrow ua \sim u\check{\theta}$
 $uo \rightarrow uu \rightarrow u / _ \%$
 $\check{i}\check{o} \rightarrow i\check{a} \sim i\check{\theta}$
 $u\check{i} \ u\check{a} \rightarrow i\check{\theta} \ u\check{o} \rightarrow i: \ \text{ɔ}:$
 $ei \ ei \rightarrow ai \ \check{\theta}i$

38.1.1.4.1 North Tai to Dioi *Pogostick Man*, from Li, Fang Kuei (1977). “A Handbook of Comparative Tai”. *Oceanic Linguistics Special Publications* (15), i – 389

$k \rightarrow tʃ / _ E$
 $kl \rightarrow \check{\theta}$
 $\{r, r_\circ\} \rightarrow \check{\theta}$
 $v \rightarrow w$ (possibly a conservation with other languages changing *w to v?)
 $\eta \rightarrow g$
 $TS \rightarrow TS$

38.1.1.4.2 North Tai to Po-Ai *Pogostick Man*, from Li, Fang Kuei (1977). “A Handbook of Comparative Tai”. *Oceanic Linguistics Special Publications* (15), i – 389

$k \rightarrow tʃ / _ E$
 $\{r, r_\circ\} \rightarrow l$
 $df \rightarrow n$
 $s \rightarrow \text{ɬ}$
 $i \rightarrow \emptyset / _ u$
 $i\check{\theta} \rightarrow i / _ C\%$
 $\check{i} \rightarrow a / _ K$
 $\check{i} \rightarrow \check{\theta}$
 $u\check{\theta} \rightarrow \check{u}$
 $\text{ɔ}: \rightarrow o:$
 $i\check{\theta} \sim i\check{a} \rightarrow i: / _ \%$
 $i\check{\theta} \sim i\check{a} \rightarrow i / _ C\%$
 $\check{i}\check{o} \rightarrow o$

$e \rightarrow o / _ \{m,p\} \%$
 $e \rightarrow \varepsilon / _ C \%$
 $\varepsilon i\varepsilon \rightarrow e: \check{i}$
 $\check{i}e \rightarrow i$
 $o \rightarrow \circ$
 $C^w \check{\theta} \rightarrow C\circ$
 $\check{\theta} \rightarrow \{a, \check{v}, a, \Lambda\} ?$
 $\check{u}\check{i} \rightarrow \circ / m_-$
 $\check{u}\check{i} \rightarrow i$
 $\check{i}a \sim \check{i}\check{\theta} \rightarrow i: / j_-$
 $\check{i}a \sim \check{i}\check{\theta} \rightarrow i:$
 $ua \sim u\check{\theta} \rightarrow u:$
 $\circ \rightarrow o:$
 $ua \sim u \check{u} \rightarrow u:$
 $i\check{\theta} \rightarrow i / _ C \%$
 $\check{i}a \sim i\check{\theta} \rightarrow i:$
 $u\check{e} \rightarrow u / _ C \%$
 $u\check{e} \rightarrow u:$
 $i\check{\theta} \check{i}a \check{i}e \check{i}e \rightarrow u: a: e: i:$
 $i a \rightarrow i: a: / _ i$
 $\{\check{\theta}i, \varepsilon i, ei\} \rightarrow ai$
 $\check{i}ai \rightarrow i:i$
 $\check{u}\check{\theta}i \check{\theta}i \rightarrow (w)i: o:i$
 $\check{\theta} \rightarrow a / _ \{u, i\}$
 $\{\varepsilon i, ei\} \rightarrow i:$
 $\{\circ u, oi\} \rightarrow o:$
 $\varepsilon e i \rightarrow e: a i: / _ u$
 $\check{i}\check{\theta}u \rightarrow u:$
 $u\check{\theta}i uai iau \rightarrow i: o:i e:u$

38.1.1.4.3 North Tai to Wu-Ming *Pogostick Man*, from Li, Fang Kuei (1977).
 “A Handbook of Comparative Tai”. *Oceanic Linguistics Special Publications* (15), i – 389

$r \rightarrow r$
 $s \rightarrow \theta$
 $i \rightarrow \{i, oi\} / _ \%$
 $u \rightarrow a\check{u}$
 $\check{\theta}i \rightarrow ai$

38.1.1.5 Proto-Tai to Southwest Tai *Pogostick Man*, from Li, Fang Kuei (1977). “A Handbook of Comparative Tai”. *Oceanic Linguistics Special Publications* (15), i – 389

$p \rightarrow p^{(h)}$
 $v \rightarrow f$
 $m \rightarrow w / _! _w$
 $w \rightarrow \emptyset / m_$
 $l \rightarrow \emptyset / \{p, k^{(h)}, \eta\} _$
 $pr \rightarrow t$
 $v \rightarrow b / _r$
 $\{l, r\} \rightarrow \emptyset / t, d _$
 $t^h l \ t^h r \rightarrow t^h \ r$
 $d \rightarrow \emptyset / _ \{l, r\}$
 $z \ r \rightarrow s \ r$
 $xr \rightarrow h$
 $x \rightarrow k^h$
 $g^w \rightarrow k^{wh}$
 $V \rightarrow V: / _ \%$
 $i\partial \rightarrow i:$
 $i\partial \rightarrow \imath / _ C\%$ (not in all languages)
 $\hat{i}a \rightarrow a:$
 $\varepsilon i \ ei \rightarrow ai \ i:$
 $o \rightarrow \alpha: / _ i$

38.1.1.5.1 Southwest Tai to Lao *Pogostick Man*, from Li, Fang Kuei (1977). “A Handbook of Comparative Tai”. *Oceanic Linguistics Special Publications* (15), i – 389

$\beta \ d \rightarrow b \ d$
 $bl \ br \rightarrow p \ p^h$
 $r \rightarrow h$
 $d\beta \rightarrow s$
 $g\{l, r\} \rightarrow k^h$
 $g \ y \rightarrow k^h \ g$
 $x^w \ y^w \rightarrow k^w \ g^w$

38.1.1.5.2 Southwest Tai to Lü *Pogostick Man*, from Li, Fang Kuei (1977). “A Handbook of Comparative Tai”. *Oceanic Linguistics Special Publications* (15), i – 389

$\beta \ d \rightarrow b \ d$
 $bl \ br \rightarrow p \ p^h$

$\text{r}_\circ \rightarrow \text{r}_\circ / \text{“literary”}$
 $\text{r}_\circ \rightarrow \text{h}$
 $\text{d}_3 \rightarrow \text{s}$
 $\text{ɲ} \rightarrow \text{j}$
 $\text{ʔ} \rightarrow \emptyset / \text{ }_\text{j}$
 $\text{gl gr} \rightarrow \text{k k}^h$
 $\{\text{k}^h, \text{ɣ}\} \text{ g} \rightarrow \text{x k}$
 $\text{k}^w \text{ ɣ}^w \rightarrow \text{x}^w \text{ x}^{(w)}$
 $\text{o} \rightarrow \text{u} / \text{ }_\text{N}$
 $\text{e} \rightarrow \text{i} / \text{ }_\text{N}^\circ$
 $\{\text{ui}_\circ, \text{ua}_\circ, \text{ue}_\circ\} \{\text{ia}_\circ, \text{ie}_\circ\} \text{ie}_\circ \rightarrow \text{o ə e}$
 $\text{əi} \rightarrow \text{ai}$

38.1.1.5.3 Southwest Tai to Shan *Pogostick Man*, from Li, Fang Kuei (1977). “A Handbook of Comparative Tai”. *Oceanic Linguistics Special Publications* (15), i – 389

$\text{ɓ} \text{ d} \rightarrow \text{b l}$
 $\text{bl br} \rightarrow \text{p p}^h$
 $\text{r}_\circ \rightarrow \text{h}$
 $\text{ts} \rightarrow \text{s}^j$
 $\text{d}_3 \rightarrow \text{s}$
 $\text{gl gr} \rightarrow \text{k k}^h$
 $\text{g ɣ} \rightarrow \text{k k}^h$
 $\text{x}^w \rightarrow \text{k}^w$
 $\{\text{ui}_\circ, \text{ua}_\circ, \text{ue}_\circ\} \{\text{ia}_\circ, \text{ie}_\circ\} \text{ie}_\circ \rightarrow \text{o ə e}$
 $\text{əi} \rightarrow \text{ai}$

38.1.1.5.4 Southwest Tai to Siamese *Pogostick Man*, from Li, Fang Kuei (1977). “A Handbook of Comparative Tai”. *Oceanic Linguistics Special Publications* (15), i – 389

$\text{b} \rightarrow \text{p}^h / \text{ }_\text{-}\{\text{l}, \text{r}\}$
 $\text{ɓ} \text{ d} \rightarrow \text{m d}$
 $\text{r}_\circ \rightarrow \text{h}$
 $\text{ɲ g ɣ} \rightarrow \{\text{h}, \text{f}\} \text{ k}^h \text{ g}$
 $\text{x}^w \text{ ɣ}^w \rightarrow \text{k}^w \text{ g}^w$
 $\text{u}\{\text{o}, \text{ə}\} \text{ iu} \rightarrow \text{u: i:}$
 $\{\text{uo}, \text{ui}\} \text{ uo} \rightarrow \text{o ɔ:}$
 $\text{ua} \rightarrow \text{a:}$
 $\text{iu io} \rightarrow \text{u: u}$

$e \rightarrow o / _ \{m, p\} \%$
 $\underset{\sim}{i}e \rightarrow e$
 $\{(i)\underset{\sim}{e}, i\underset{\sim}{e}\} \rightarrow \underset{\sim}{e}$
 $\{i\underset{\sim}{o}, i\underset{\sim}{o}\} \rightarrow \underset{\sim}{o}$
 $a \rightarrow a: / _ i$
 $\underset{\sim}{i}ai \rightarrow a:i$
 $\{\underset{\sim}{u}\underset{\sim}{o}i, \underset{\sim}{o}i\} \rightarrow \underset{\sim}{o}i$
 $\underset{\sim}{o}i \rightarrow ai$
 $\{\underset{\sim}{e}i, \underset{\sim}{e}i\} \rightarrow ai$
 $\underset{\sim}{o}i \rightarrow ai$
 $\{o, \underset{\sim}{o}\} \underset{\sim}{e} \rightarrow a \underset{\sim}{e} / _ u$
 $eu \rightarrow u:$
 $\underset{\sim}{i}\underset{\sim}{o}u au \rightarrow au a:u$
 $\underset{\sim}{i} \rightarrow \underset{\sim}{o} / _ i$
 $u\underset{\sim}{o}i \rightarrow uai$

38.1.1.5.5 Southwest Tai to Black Tai *Pogostick Man*, from Li, Fang Kuei (1977).
 “A Handbook of Comparative Tai”. *Oceanic Linguistics Special Publications* (15), i – 389

$\underset{\sim}{b} d \rightarrow b l$
 $bl br \rightarrow p p^h$
 $\underset{\circ}{r} \rightarrow h$
 $g gl \rightarrow k tʃ$
 $x^w y^w \rightarrow k^w g^w$

38.1.1.5.6 Southwest Tai to White Tai *Pogostick Man*, from Li, Fang Kuei (1977).
 “A Handbook of Comparative Tai”. *Oceanic Linguistics Special Publications* (15), i – 389

$\underset{\sim}{b} d \rightarrow b d$
 $bl br \rightarrow p p^h$
 $\underset{\circ}{r} \rightarrow h$
 $\{k^h, y\} g g\{l, r\} \rightarrow x k tʃ$
 $k^{wh} y^w \rightarrow x^w x^{(w)}$
 $o \rightarrow u / _ N$
 $e \rightarrow i / _ N\%$
 $\{\underset{\sim}{u}\underset{\sim}{i}, \underset{\sim}{u}\underset{\sim}{a}, \underset{\sim}{u}\underset{\sim}{e}\} \{\underset{\sim}{i}\underset{\sim}{a}, \underset{\sim}{i}\underset{\sim}{e}\} \underset{\sim}{i}\underset{\sim}{e} \rightarrow o \underset{\sim}{o} e$
 $\underset{\sim}{o}i \rightarrow ai$

39 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 ^h p' b	t ts t ^h ts ^h t' ts' d dz	k k ^w k ^h k ^{wh} k' k ^w ' g g ^w	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>)

39.1 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>, 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 ɱ

ts dz → s z

{t^h, ts^h} → ʃ

s → c

ts' → t'

d → n / _V[+nas]

k^(w) k^w k^(') g g^w → h g k k^w

39.2 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>

oldid=496916321>, citing Hale, Kenneth (1967), “Toward a Reconstruction of Kiowa-Tanoan Phonology”. *International Journal of American Linguistics*, 33.2:112 – 120

$\text{ʔ} \rightarrow \emptyset$

$\text{ts ts}^h \text{ ts}' \text{ dz} \rightarrow \text{t t}^h \text{ t}' \text{ d}$

$\text{w} \rightarrow \text{j}$

$\text{k}^w \text{ k}^{wh} \text{ k}^w, \text{ g}^w \rightarrow \text{k k}^h \text{ k}' \text{ g}$

39.3 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>, citing Hale, Kenneth (1967), “Toward a Reconstruction of Kiowa-Tanoan Phonology”. *International Journal of American Linguistics*, 33.2:112 – 120

$\text{b} \rightarrow \text{m}$

$\text{s} \rightarrow \text{ʈ}$

$\text{ts ts}^h \text{ ts}' \text{ dz} \rightarrow \text{tʃ s tʃ} \text{ j}$

$\text{d} \rightarrow \text{l} / _V[-\text{nas}]$

$\text{d} \rightarrow \text{n} / _V[+\text{nas}]$

$\text{k}^h \text{ k}^{hw} \text{ g g}^w \rightarrow \text{x x}^w \text{ k w}$

39.4 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>, citing Hale, Kenneth (1967), “Toward a Reconstruction of Kiowa-Tanoan Phonology”. *International Journal of American Linguistics*, 33.2:112 – 120

$\text{p}^h \text{ t}^h \text{ ts}^h \rightarrow \text{f } \theta \text{ s}$

$\text{b} \rightarrow \text{m}$

$\text{dz} \rightarrow \{\text{j}, \text{dʒ}\}$

$\text{k}^h \text{ k}^{wh} \text{ g}^w \rightarrow \text{x x}^w \text{ w}$

40 Totozoquean

The following inventory is from Brown, Beck, Kondrak, Watters, and Wichmann, with laryngeal modality on the vowels assumed to be distinctive (the authors consider it an option but do not explicitly propose it).

	Bilabial	Coronal	Palatal	Velar	Uvular	Glottal
Nasal	m	n	n ^j			
Stop	p	t	t ^j	k k ^j	q	ʔ
Affricate		ts				
Lateral Affricate		tʃ				
Fricative		s	ʃ	x		h
Lateral Fricative		ɬ				
Resonant	w	l	j			

	Front	Central	Back
High	i iː ị ịː	ɨ ɨː ɨ̣ ɨ̣ː	u uː ụ ụː
Mid	e eː ẽ ẽː	ə əː ɘ ɘː	o oː ɔ ɔː
Mid-Low			ɔ ɔː ɔ̣ ɔ̣ː
Low		a aː ɶ ɶː	

(From Brown, Cecil H., David Beck, Grzegorz Kondrak, James K. Watters, and Sren Wichmann, “Linking proto-Totonacan and proto-Mixe-Zoquean”. <<http://www.ualberta.ca/~dbeck/TzEILNXI.pdf>>)

40.1 Proto-Totozoquean to Proto-Mixe-Zoquean

Pogostick Man, from Brown, Cecil H., David Beck, Grzegorz Kondrak, James K. Watters, and Sren Wichmann, “Linking proto-Totonacan and proto-Mixe-Zoquean”. <<http://www.ualberta.ca/~dbeck/TzEILNXI.pdf>>

l → j
 q → ʔ
 n^j t^j tʃ k^j → n t s ts k
 x {ɬ, tʃ} → h j
 V[+ creaky voice] → V[- creaky voice]
 i ɔ → ə o

40.2 Proto-Totozoquean to Proto-Totonacan

Pogostick Man, from Brown, Cecil H., David Beck, Grzegorz Kondrak, James K. Watters,

and Sren Wichmann, “Linking proto-Totonacan and proto-Mixe-Zoquean”. <<http://www.ualberta.ca/~dbeck/TzEILNXI.pdf>>

$\text{ʔ} \rightarrow \emptyset$

$n^j \text{ } t^j \text{ } k^j \text{ } k \rightarrow l \text{ } t^j \text{ } k \text{ } q$

$h \rightarrow \emptyset \text{ } / \text{ } ! \text{ } \# \text{ } _$

$j \rightarrow t$

$o \text{ } ɔ \rightarrow u \text{ } ʉ$

$\{\emptyset, ɔ\} \text{ } \{\emptyset, ɔ\} \rightarrow a \text{ } \underline{a}$

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

41 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 ^m b	t ⁿ d	c ^j ɟ	k ^ŋ 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)

41.1 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 / #₋
p k ⁿd → β {h,k} nj / V_V
{p,t} → Ø / _#
e u i → a {u,i} {i,i}

41.2 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} / #₋

${}^m\text{b } \text{ŋ} \text{g} \rightarrow \text{p } \text{k} / \text{V_V}$
 $\text{p } \text{t } \text{n} \text{j} \rightarrow \{\text{t}, \text{r}\} \{\text{r}, \text{s}, \text{t}\} \text{s} / \text{-\#}$

41.3 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

$\text{t} \rightarrow \text{j} / \text{\#_i}$
 $\text{ŋ } \text{ŋ} \text{g} \rightarrow \emptyset \text{g} / \text{\#_}$
 $\text{n} \text{j} \rightarrow \text{s} / \text{\#_} (?)$
 $\text{t} \rightarrow \{\text{r}, \text{s}\} / \text{V_i}$
 ${}^m\text{b } {}^n\text{d } \text{ŋ} \text{g } \text{n} \text{j} \rightarrow \{\text{p}, {}^m\text{b}\} \{\text{}^n\text{d}, \text{z}\} \text{k } \text{z} / \text{V_V}$
 $\text{a} \rightarrow \{\text{a}, \text{o}\}$

41.4 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

$\{\text{p}, {}^m\text{b}\} \text{ŋ} \text{g} \rightarrow \text{b } \text{g} / \text{\#_}$
 $\text{ŋ} \text{g} \rightarrow \text{g}$
 ${}^n\text{d } \text{ŋ} \text{g} \rightarrow \text{d } \text{k}$
 $\text{u } \text{a} \rightarrow \{\text{u}, \text{o}, \text{y}\} \{\text{a}, \text{o}\}$

41.5 Kainantu-Goroka

41.5.1 Gorokan

41.5.1.1 Proto-Gorokan to Asaro *Pogostick Man*, from Haiman, John (1987), “Proto-Gorokan Syllable Structure”. *Language and Linguistics in Melanesia* 16(1 – 2):1 – 22 (Pogostick Man is not sure if it’s supposed to be 1985; the Web site says “1987, for 1985”); Ford, Kevin (1993), “A Preliminary Comparison of Kamano-Yagaria”. *Language and Linguistics in Melanesia* 24(2):191 – 202; and Lewis, M. Paul, Gary F. Simons, and Charles D. Fennig (eds.) (2014). “Gorokan”. *Ethnologue: Languages of the World*, Seventeenth edition. Dallas, Texas: SIL International. Online version: <<http://www.ethnologue.com/17/subgroups/gorokan/>>

$Nl \rightarrow nd$
 $N \rightarrow N[+ \text{ same POA}] / _S$
 $\text{?}\{l,d\} \text{ ?}g \rightarrow t k$

41.5.1.2 Proto-Gorokan to North Fore *Pogostick Man*, from Haiman, John (1987), “Proto-Gorokan Syllable Structure”. *Language and Linguistics in Melanesia* 16(1 – 2):1 – 22 (Pogostick Man is not sure if it’s supposed to be 1985; the Web site says “1987, for 1985”); Ford, Kevin (1993), “A Preliminary Comparison of Kamano-Yagaria”. *Language and Linguistics in Melanesia* 24(2):191 – 202; and Lewis, M. Paul, Gary F. Simmons, and Charles D. Fennig (eds.) (2014). “Gorokan”. *Ethnologue: Languages of the World*, Seventeenth edition. Dallas, Texas: SIL International. Online version: <<http://www.ethnologue.com/17/subgroups/gorokan/>>

$N \rightarrow \eta k / _V$
 $N \rightarrow \text{?} / _S[- \text{ voice}]$
 $\text{?} \rightarrow n / \text{ before modal suffixes}$
 $Nw Nm N\{n,j\} \rightarrow \eta k mp nt$

41.5.1.3 Proto-Gorokan to South Fore *Pogostick Man*, from Haiman, John (1987), “Proto-Gorokan Syllable Structure”. *Language and Linguistics in Melanesia* 16(1 – 2):1 – 22 (Pogostick Man is not sure if it’s supposed to be 1985; the Web site says “1987, for 1985”); Ford, Kevin (1993), “A Preliminary Comparison of Kamano-Yagaria”. *Language and Linguistics in Melanesia* 24(2):191 – 202; and Lewis, M. Paul, Gary F. Simmons, and Charles D. Fennig (eds.) (2014). “Gorokan”. *Ethnologue: Languages of the World*, Seventeenth edition. Dallas, Texas: SIL International. Online version: <<http://www.ethnologue.com/17/subgroups/gorokan/>>

$N \rightarrow \text{?} / _{\{V,S[- \text{ voice}]\}}$
 $\text{?} \rightarrow n / \text{ before modal suffixes}$
 $Nw Nm N\{n,j\} \rightarrow \eta k mp nt$
 $m n \rightarrow mb nd / \# _$
 $C \rightarrow \emptyset / VN_V$

41.5.1.4 Proto-Gorokan to Gende *Pogostick Man*, from Haiman, John (1987), “Proto-Gorokan Syllable Structure”. *Language and Linguistics in Melanesia* 16(1 – 2):1 – 22 (Pogostick Man is not sure if it’s supposed to be 1985; the Web site says “1987, for 1985”); Ford, Kevin (1993), “A Preliminary Comparison of Kamano-Yagaria”. *Language and Linguistics in Melanesia* 24(2):191 – 202; and Lewis, M. Paul, Gary F. Simmons, and Charles D. Fennig (eds.) (2014). “Gorokan”. *Ethnologue: Languages of the*

World, Seventeenth edition. Dallas, Texas: SIL International. Online version: <<http://www.ethnologue.com/17/subgroups/gorokan/>>

$r \rightarrow ? / _O$

41.5.1.5 Proto-Gorokan to Gimi *Pogostick Man*, from Haiman, John (1987), “Proto-Gorokan Syllable Structure”. *Language and Linguistics in Melanesia* 16(1 – 2):1 – 22 (Pogostick Man is not sure if it’s supposed to be 1985; the Web site says “1987, for 1985”); Ford, Kevin (1993), “A Preliminary Comparison of Kamano-Yagaria”. *Language and Linguistics in Melanesia* 24(2):191 – 202; and Lewis, M. Paul, Gary F. Simons, and Charles D. Fennig (eds.) (2014). “Gorokan”. *Ethnologue: Languages of the World*, Seventeenth edition. Dallas, Texas: SIL International. Online version: <<http://www.ethnologue.com/17/subgroups/gorokan/>>

$? \rightarrow \emptyset / _ \#$

$?v \ ?m \ ?g \ ?r \rightarrow t \ p \ k \ v$

41.5.1.6 Proto-Gorokan to Hua *Pogostick Man*, from Haiman, John (1987), “Proto-Gorokan Syllable Structure”. *Language and Linguistics in Melanesia* 16(1 – 2):1 – 22 (Pogostick Man is not sure if it’s supposed to be 1985; the Web site says “1987, for 1985”); Ford, Kevin (1993), “A Preliminary Comparison of Kamano-Yagaria”. *Language and Linguistics in Melanesia* 24(2):191 – 202; and Lewis, M. Paul, Gary F. Simons, and Charles D. Fennig (eds.) (2014). “Gorokan”. *Ethnologue: Languages of the World*, Seventeenth edition. Dallas, Texas: SIL International. Online version: <<http://www.ethnologue.com/17/subgroups/gorokan/>>

$\{N,r\} \rightarrow ? / _ \{ \#, C \}$

41.5.1.7 Proto-Gorokan to Kamano *Pogostick Man*, from Haiman, John (1987), “Proto-Gorokan Syllable Structure”. *Language and Linguistics in Melanesia* 16(1 – 2):1 – 22 (Pogostick Man is not sure if it’s supposed to be 1985; the Web site says “1987, for 1985”); Ford, Kevin (1993), “A Preliminary Comparison of Kamano-Yagaria”. *Language and Linguistics in Melanesia* 24(2):191 – 202; and Lewis, M. Paul, Gary F. Simons, and Charles D. Fennig (eds.) (2014). “Gorokan”. *Ethnologue: Languages of the World*, Seventeenth edition. Dallas, Texas: SIL International. Online version: <<http://www.ethnologue.com/17/subgroups/gorokan/>>

$r \rightarrow ? / _ \#$

41.5.1.8 Proto-Gorokan to Move *Pogostick Man*, from Haiman, John (1987), “Proto-Gorokan Syllable Structure”. *Language and Linguistics in Melanesia* 16(1 – 2):1 – 22 (Pogostick Man is not sure if it’s supposed to be 1985; the Web site says “1987, for 1985”); Ford, Kevin (1993), “A Preliminary Comparison of Kamano-Yagaria”. *Language and Linguistics in Melanesia* 24(2):191 – 202; and Lewis, M. Paul, Gary F. Simons, and Charles D. Fennig (eds.) (2014). “Gorokan”. *Ethnologue: Languages of the World*, Seventeenth edition. Dallas, Texas: SIL International. Online version: <<http://www.ethnologue.com/17/subgroups/gorokan/>>

$N \rightarrow ? / _ \{ \#, C \}$
 $?v ?m ?g ?r ?h \rightarrow p \ b \ k \ t \ \{s, f\}$
 $V[+ \text{ low tone}] \rightarrow \emptyset / C_hV[+ \text{ high tone}]$
 $V[+ \text{ low tone}] \rightarrow \emptyset / C_CV[+ \text{ high tone}]$ if both vowels are the same

41.5.1.9 Proto-Gorokan to Siane *Pogostick Man*, from Haiman, John (1987), “Proto-Gorokan Syllable Structure”. *Language and Linguistics in Melanesia* 16(1 – 2):1 – 22 (Pogostick Man is not sure if it’s supposed to be 1985; the Web site says “1987, for 1985”); Ford, Kevin (1993), “A Preliminary Comparison of Kamano-Yagaria”. *Language and Linguistics in Melanesia* 24(2):191 – 202; and Lewis, M. Paul, Gary F. Simons, and Charles D. Fennig (eds.) (2014). “Gorokan”. *Ethnologue: Languages of the World*, Seventeenth edition. Dallas, Texas: SIL International. Online version: <<http://www.ethnologue.com/17/subgroups/gorokan/>>

$C \rightarrow \emptyset / _ \#$
 $\{N, r\} \rightarrow ? / _ C$
 $?ng \ ?d \rightarrow \eta k \ t$

41.5.1.10 Proto-Gorokan to Yagaria *Pogostick Man*, from Haiman, John (1987), “Proto-Gorokan Syllable Structure”. *Language and Linguistics in Melanesia* 16(1 – 2):1 – 22 (Pogostick Man is not sure if it’s supposed to be 1985; the Web site says “1987, for 1985”); Ford, Kevin (1993), “A Preliminary Comparison of Kamano-Yagaria”. *Language and Linguistics in Melanesia* 24(2):191 – 202; and Lewis, M. Paul, Gary F. Simons, and Charles D. Fennig (eds.) (2014). “Gorokan”. *Ethnologue: Languages of the World*, Seventeenth edition. Dallas, Texas: SIL International. Online version: <<http://www.ethnologue.com/17/subgroups/gorokan/>>

$?v ?m ?g ?r ?h \rightarrow p \ b \ k \ t \ \{s, f\}$

41.5.2 Kainantu

41.5.2.1 Proto-Kainantu to Auyana *Pogostick Man*, from Haiman, John (1987), “Proto-Gorokan Syllable Structure”. *Language and Linguistics in Melanesia* 16(1 – 2):1 – 22 (Pogostick Man is not sure if it’s supposed to be 1985; the Web site says “1987, for 1985”); Ford, Kevin (1993), “A Preliminary Comparison of Kamano-Yagaria”. *Language and Linguistics in Melanesia* 24(2):191 – 202; and Lewis, M. Paul, Gary F. Simons, and Charles D. Fennig (eds.) (2014). “Gorokan”. *Ethnologue: Languages of the World*, Seventeenth edition. Dallas, Texas: SIL International. Online version: <<http://www.ethnologue.com/17/subgroups/gorokan/>>

N → [+ same POA] / _C

N{w,d,r} nj → ŋk nt (not sure if *nj is supposed to be *ŋj)

N → Ø / _#

r → ? / _{N,#}

r → Ø / _S[- voice]

41.5.2.2 Proto-Kainantu to Awa *Pogostick Man*, from Haiman, John (1987), “Proto-Gorokan Syllable Structure”. *Language and Linguistics in Melanesia* 16(1 – 2):1 – 22 (Pogostick Man is not sure if it’s supposed to be 1985; the Web site says “1987, for 1985”); Ford, Kevin (1993), “A Preliminary Comparison of Kamano-Yagaria”. *Language and Linguistics in Melanesia* 24(2):191 – 202; and Lewis, M. Paul, Gary F. Simons, and Charles D. Fennig (eds.) (2014). “Gorokan”. *Ethnologue: Languages of the World*, Seventeenth edition. Dallas, Texas: SIL International. Online version: <<http://www.ethnologue.com/17/subgroups/gorokan/>>

N → n / _{v,k,s}

N → Ø / _{p,t,#}

Nd → n

? → Ø / _{p,t}

?w ?b ?d ?g → m p t k

41.5.2.3 Proto-Kainantu to Gadsup *Pogostick Man*, from Haiman, John (1987), “Proto-Gorokan Syllable Structure”. *Language and Linguistics in Melanesia* 16(1 – 2):1 – 22 (Pogostick Man is not sure if it’s supposed to be 1985; the Web site says “1987, for 1985”); Ford, Kevin (1993), “A Preliminary Comparison of Kamano-Yagaria”. *Language and Linguistics in Melanesia* 24(2):191 – 202; and Lewis, M. Paul, Gary F. Simons, and Charles D. Fennig (eds.) (2014). “Gorokan”. *Ethnologue: Languages of the World*, Seventeenth edition. Dallas, Texas: SIL International. Online version: <<http://www.ethnologue.com/17/subgroups/gorokan/>>

$N \rightarrow \emptyset / _N$
 $N \rightarrow [+ \text{ same POA}] / _C$
 $nw \ nr \rightarrow mb \ nd$
 $\{D, Y\} \rightarrow \emptyset / _n$
 $YO[+ \text{ voice}] \ YO[- \text{ voice}] \rightarrow Y \ t$
 $DO[+ \text{ voice}] \ DO[- \text{ voice}] \rightarrow nd \ nt$

41.5.2.4 Proto-Kainantu to Usarufa *Pogostick Man*, from Haiman, John (1987), “Proto-Gorokan Syllable Structure”. *Language and Linguistics in Melanesia* 16(1 – 2):1 – 22 (Pogostick Man is not sure if it’s supposed to be 1985; the Web site says “1987, for 1985”); Ford, Kevin (1993), “A Preliminary Comparison of Kamano-Yagaria”. *Language and Linguistics in Melanesia* 24(2):191 – 202; and Lewis, M. Paul, Gary F. Simons, and Charles D. Fennig (eds.) (2014). “Gorokan”. *Ethnologue: Languages of the World*, Seventeenth edition. Dallas, Texas: SIL International. Online version: <<http://www.ethnologue.com/17/subgroups/gorokan/>>

$N_1 N_2 \rightarrow N_2: ?$
 $N \rightarrow ? / _O$
 $N \rightarrow n / _V$
 $N\{w, r\} \ Nj \rightarrow ?k \ ?t$
 $r \rightarrow ? / _C$

41.6 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

$t \rightarrow \{t, \emptyset\} / _ \#$
 $l \rightarrow \text{ɾ}$

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”

41.7 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

$k^m b^n d \rightarrow \{k, h\} b \{s, t\} / \#_-$
 $^m b^n d \rightarrow \{^m b, p\} s / V_V$
 $p k \rightarrow t \text{ ? } / _ \#$
 $p \rightarrow f$
 $u a \rightarrow \{u, \text{ɔ}\} \{\text{ɔ}, a\}$

41.8 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

$t k^m b \rightarrow \{s, t\} \{g, \emptyset\} \{b, p\} / \#_-$
 $t^m b^n d \{k, \text{ɰ}g\} nj \rightarrow \{r, t\} p \{d, t\} g r / V_V$
 $s \rightarrow \{s, t\} / \#_- (?)$
 $u i \rightarrow \{u, o\} \{i, e\}$

41.9 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

$^m b^n d s \rightarrow b \{s, t\} \{t, s\} / \#_-$
 $t^m b nj s \rightarrow r \{b, p\} ^n d \{s, d\} / V_V$
 $t \rightarrow t / _ \# (?)$
 $\eta \rightarrow \{m, \eta\} / _ \#$
 $\text{ɰ}g \rightarrow g$
 $u o a e \rightarrow \{u, \text{ɔ}\} \{o, \text{ɔ}\} \{a, \text{ɔ}\} \{e, o\}$

41.10 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

$\{p, ^m b\} \rightarrow f / \#_-$
 $s \rightarrow s / \#_- (?)$
 $^m b^n d \text{ɰ}g \rightarrow b n k / V_V$

41.11 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 ŋ → m n / #_

ᵑg → {ᵑg, ŋ} / V_V

i → {i, e}

42 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 ʎ					
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/.
- ^x 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>; the TCL thread and KQ pages proper; and Tropylium.)

42.1 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>; 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>

$\eta \rightarrow k / _ \#$, 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

42.1.1 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>; 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>

$V \rightarrow V: / _ \#$
 $\hat{e}\ \hat{o} \rightarrow e\ o / _ (X) Ci$
 $\hat{e} \rightarrow y / _ (X) CA$
 $\hat{o} \rightarrow \text{ɯ} \rightarrow i / _ (X) CA$
 $ej \rightarrow i /$ 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^j (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^j → ʃ s^j / #-
 ʃ^j s^j ts^j(:) l^j → ʃ s ts(:) l
 n^j → ni / #(C)i_V
 n^j → in / V_V
 n^j → 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

42.1.1.1 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>

j w → i U / V_{C,#}
i → Ø / {VC,ks}_ at the ends of a suffix
e → Ø / C[+coronal]_%
p: t: ts: k: → p' t' ts' k'
p t ts s k → b d s z g
b d g → β ð γ / ! N_
γ → j~v
βi → U / _#
f → v / #_
v → Ø / #_{o,u,y}
j → Ø / _i (*)
Ø → v / #_{y:,ø:,o:}
oi → o / unstressed
V: → V[-long] / _i
{kt,pt} {kts,pts} → t: t:s
xk → k: (even across word boundaries)
(t(:))sn kx(tx) rn ln → s: x: r: l:
{p,t,k}{(p,t,k)}n {p,t,k}{(p,t,k)}m → n: m:
{p,t,k} → Ø / _st
{ks,nts} nt → s t / _#
ts ts' ts: → s θ' θ:
{z,x(:)} → h
e → @ / h_ (suffixal)
{p,k} → h / _t

42.1.1.1.1 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>; 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>

mb nd ŋg → m: n: ŋ:
e: ø: o: → ie yø uo
p' t' θ' k' → p t θ k
j → 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)

42.1.1.1.2 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>; and from Janhunen, Juha (2007), “The pri-

mary laryngeal in Uralic and beyond”. *Mémoires de la Société Finno-Ougrienne* 253. <http://www.sgr.fi/sust/sust253/sust253_janhunen.pdf>

$n \rightarrow \emptyset / _ \#$
 $d \rightarrow \emptyset / _ r$ “in inherited vocabulary”
 $Va \rightarrow V: /$ unstressed
 $ie\ y\ uo \rightarrow i: y: u: / _ A$

42.1.2 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>; 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>

$t\ ts\ s(C)\ n\ l\ r \rightarrow t^j\ ts^j\ s^j(C)\ n^j\ l^j\ r^j / _ i$
 $ts^{(j)} \rightarrow s^{(j)} / _ !\ n_$
 $e \rightarrow \text{ɤ} / _ C(C)\{a,o,u\}$
 $\text{æ} \rightarrow \text{ɑ} /$ unstressed
 $h \rightarrow \emptyset / \{ \#, C \}_-$
 $Vn \rightarrow V: / _ s$
 $\text{ɑ}\ \text{æ} \rightarrow \text{æe} / _ (C \dots) i$
 $V \rightarrow \text{ə} /$ unstressed ! $V = \text{ɑ}$
 $\text{ɑ} \rightarrow \text{ə} / VC(C)\text{ɑ}C(C)_ \#$ when unstressed
 $Vh \rightarrow V:fi / _ C$, 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 $C[-\text{voice}]$
 $\emptyset \rightarrow ? / (C)V_CV$
 $\text{ə} \rightarrow \emptyset / _ \#$
 $\text{ə} \rightarrow \emptyset / VC_CV$
 $C \rightarrow C: / ?_V$
 $dj\ lj\ rj\ gj \rightarrow d^j\ l^j\ r^j\ jg$
 $v \rightarrow \emptyset / \{ d, z \}_-$
 $lv\ rv\ jv \rightarrow l: r: j:$
 $v \rightarrow \emptyset / C_$
 $VC:\text{ɑ} \rightarrow V:C\text{ɑ}$
 $C: \rightarrow C[-\text{long}] / _ !$ in verbal forms when $V_ \text{ə}$
 $\text{ɑ}: \text{au} \rightarrow \text{ɔ: ou}$ (though sometimes ɑ: develops, apparently at least partially due to metathesis?)

$e: \emptyset: o: \text{ɹ}(:) \rightarrow i:e y:\emptyset u:o i(:)$
 $h \rightarrow ʔ$
 $s^j ts^j z^j dz^j \rightarrow ʃ^j tʃ^j ʒ^j dʒ^j$
 $\text{æy ey} \rightarrow \text{æu eu}$
 $y \emptyset \rightarrow i e / \text{else}$
 $V \rightarrow V: / _RC(C)\alpha$ (includes diphthongs)
 $a \rightarrow a: / VC_$
 $e o \rightarrow e: o: / _C\alpha$
 $o \rightarrow o: / _ \{RC\#, i\}$
 $e: o: \rightarrow je wo$
 $w \rightarrow v / \#_o$
 $wo \rightarrow \upsilon / P_$
 $\text{ɔ}(:) \rightarrow o(:)$

43 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 ^w	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>; and from Radius Solis’ changes listed on KneeQuickie and in the TCL thread proper)

43.1 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)”. *International Journal of American Linguistics* 28: Memoir 17

$p \ t \ ts \ s \rightarrow v \ r \ \emptyset \ h$
 $\emptyset \rightarrow h \ / \ V_u _k$
 $s \rightarrow \emptyset \ / \ V_n _$
 $\{\eta, l\} \rightarrow n$
 $\{w, j\} \rightarrow \emptyset \ / \ \text{medial}$

43.2 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

$p \rightarrow v \ / \ V_n _$
 $k \rightarrow q \ / \ _V[+low]$
 $i \rightarrow j \ / \ h _ ! \ _ \#$
 $l \ h \rightarrow n \ \emptyset \ / \ \text{medially}$
 $w \rightarrow l \ / \ \{\#, V[+low]\} _ V[+low]$
 $w \rightarrow \eta^w \ / \ i_n _$
 $o \rightarrow \emptyset$

43.3 Proto-Uto-Aztecan to Luisiño

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 → e o

V → Ø / “in some final syllables (conditions are unknown and it varies by dialect)”

43.4 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 → tɬ / _{a,u}

p → Ø / {#,V_s}-

s ts → ʃ tʃ / _i

{ʔ,h} → Ø

ŋ → n

m → n / _#

l → n / #_

w → Ø / _o

i u → 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.)”

43.5 Numic

43.5.1 Mono-Kawaiisu

43.5.1.1 Proto-Mono-Kawaiisu to Kawaiisu *Pogostick Man*, from Klein, Sheldon (1959), “Comparative Mono-Kawaiisu”. *International Journal of American Linguistics* 25(4):233 – 238

Possible development of vowel harmony

hk^w hʔ (h)S S: → w ʔ S[+ voiced] S[- voiced - long] / V_V

ts → z / V_V

hts → z / V_i

h → Ø / V_tsV

h → Ø / _{n,s,ʔ}

p → b / m_

n: became “an apical nasal with devoiced release”

j: → j

a → o / P_

uV V: → u: V: (not sure if this occurs before or after the previous change)
 k → Ø / V_wV

43.5.1.2 Proto-Mono-Kawaiisu to Mono *Pogostick Man*, from Klein, Sheldon (1959),
 “Comparative Mono-Kawaiisu”. *International Journal of American Linguistics* 25(4):233
 – 238

(h)k → (h)q / _{o,a} ! i_
 kw → q / _a
 (h)k^w → hq(^w) / _{o,a}
 m → h / _p
 n: → h
 i → i / _h
 uV → u(i)

43.6 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)”. *Inter-
 national Journal of American Linguistics* 28: Memoir 17

p → w / {#,V_s}-
 t → tʃ / _V[+high]
 ts → s / _i
 k^w → b
 h → ʔ / #-
 s ŋ → h n
 n → ɲ / _V[+high]
 l → ɲ / #- “(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 → l
 l → ɫ / _a
 w → g
 j → dʒ / _V[+high]
 j → d / _V[+low]
 V → Ø / “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(^w),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: /l/ and /d/”

44 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	

	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>)

44.1 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>; Owstrowski, Manfred, “History of the Basque Language”. <<http://hisp462.tamu.edu/Courses/603/Lects/BasqueHist.pdf>>; Wikipedia contributors (2014), “Aquitanian language”. *Wikipedia, the Free Encyclopedia*. <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>; and Wikipedia contributors (2014), “Vasconic languages”. *Wikipedia, the Free Encyclopedia*. <http://en.wikipedia.org/w/index.php?title=Vasconic_languages&oldid=607530415>

ś → {s(:),f} / -#

ś → s

s → ʃ / i_#

ts may become ʃs 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

44.2 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_Proto-Basque_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>; Wikipedia contributors (2014), "Aquitanian language". *Wikipedia, the Free Encyclopedia*. <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>; Wikipedia contributors (2014), "Iberian language". *Wikipedia, the Free Encyclopedia*. <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>; Wikipedia contributors (2014), "Biscayan dialect". *Wikipedia, the Free Encyclopedia*. <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>; Wikipedia contributors (2014), "Vasconic languages". *Wikipedia, the Free Encyclopedia*. <http://en.wikipedia.org/w/index.php?title=Vasconic_languages&oldid=607530415>; Wikipedia contributors (2014), "Navarro-Lapurcian dialect". *Wikipedia, the Free Encyclopedia*. <http://en.wikipedia.org/w/index.php?title=Navarro-Lapurcian_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 \rightarrow [- voice] / else
 lenis \rightarrow devoiced / “in a prominent word-initial position”
 lenis \rightarrow voiced fricative (\rightarrow approximant, at least by the 12th Century?) / unstressed
 lenis (voiced) \rightarrow fricative / $\{l, r, s, \text{ʃ}, V\} - \{l, r, s, \text{ʃ}, V\}$
 — 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 -ts̥, and *-ś \rightarrow -ts̥, probably after the below-mentioned affrication. Beyond that, it’s messy. *-tso seems to have become -tʃo/-tʃu, though.
 S^h \rightarrow F \rightarrow h (\rightarrow Ø) / #-
 S \rightarrow S[+ voiced] / #-
 “[T]wo similar vocalic segments” usually contract, though some dialects (especially Biscayan) seem not to exhibit this
 Vn \rightarrow \tilde{V} / _# (seems to have been reverted in most dialects, except for Souletin)
 Vn \rightarrow \tilde{V} / _V (?)
 V \rightarrow \tilde{V} / _N (Souletin, perhaps in other dialects?)
 d \rightarrow l / #- (except verbs)
 n \rightarrow m / u_V
 n \rightarrow ɲ / {i, ɪ}_V
 n \rightarrow h̃ / V_V
 nb \rightarrow m: \rightarrow m
 N \rightarrow [+ same POA] / _C
 b \rightarrow m / _VN
 {ɾ, r} \rightarrow Ø / #-
 l \rightarrow r / V_V
 r \rightarrow r / _C r \rightarrow r / _#
 C \rightarrow Ø / r_
 Cr \rightarrow Cr \rightarrow CVr (perhaps not a sound change *per se*, just a historical tendency)
 r \rightarrow Ø / V_V (Souletin)
 L (fortis) \rightarrow l (or *lh \rightarrow l:, which then lost gemination?)
 ð \rightarrow some sort of tap distinct from r (Biscayan, Guipuscoan, High Navarrese)
 b \rightarrow Ø / _#_B (a few exceptions, mostly before _u)
 F[+ voiced] \rightarrow Ø / V_V (sometimes, usually involving “compound surnames”?)
 S[+ voice] \rightarrow S[- voice] / F[+ sibilant]_
 \tilde{V} \rightarrow Vɲ / _V (not Souletin)
 \tilde{V} \rightarrow Vn or a diphthong (not Souletin)
 h̃ \rightarrow h (not Souletin)
 u ù \rightarrow y ÿ / _r(p^(h)), β, k^(h)), ʎ, l, s̥, ʃ, h) (Souletin)
 u ù \rightarrow y ÿ / _{s̥, ts̥, ts̥} (but not _s̥) (Souletin)
 õ \rightarrow ù (Souletin)
 Ø \rightarrow a / _#{ra, ro} (sporadic)
 Ø \rightarrow e / _#_r

$\emptyset \rightarrow e / \#_{-}\{\text{ſ},\text{ſ}\}C$
 $i \rightarrow u / _{(C\dots)}u$ (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 $[\varepsilon]$ is tentatively marked as such; Egurtzegi transcribes it as $/e/$ but says it's not as close as $/e/$)
 $o \rightarrow u / _n\{C,\#\}$ (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)
 $e \rightarrow i / _{\{n,C[+ \text{sibilant}]\}}$ (sporadic)
 $e \rightarrow a / \{V,C\}_r$ ("mainly in the western dialects")
 $u i \rightarrow o e / _r\{C,\#\}$
 "[S]ome variations between $/a/$ and $/e/$ or $/e/$ and $/i/$ " $/ _l\{C,\#\}$
 $\emptyset \rightarrow j / V_{-}\{N,\text{ſ},\text{ſ}\}S$
 $\emptyset \rightarrow j / u_V$ (eastern dialects)
 $\{w,y\} \rightarrow \emptyset / _ja$
 $\emptyset \rightarrow m / o_{\$}V$ (Orozko Biscayan)
 $\emptyset \rightarrow V / V_k_{-}\#$ (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
 $l n \rightarrow \text{ɫ} p / E_{-}$
 $\{r,r\} \rightarrow \text{ɫ} / \{i,j\}_{-}$ (eastern dialects)
 $\text{ſ} \text{tſ} \rightarrow \text{ʃ} \text{tʃ} / \{E,j\}_{-}$ (mostly Biscayan)
 $t \rightarrow c / \{E,j\}_{-}$ ("some areas")
 $t \rightarrow \text{tʃ} / \{E,j\}_{-}$ (partially spread amongst Biscayan and Guipuscoan)
 $d \text{ð} \rightarrow \text{ʃ} j / \{E,j\}_{-} ?$ ("some dialects")
 $d \text{ð} \rightarrow \text{ʃ} j / \{\text{ɫ},n\}_{-}$ (Guipuscoan, High Navarrese)
 $\{g,\gamma\} \rightarrow \{j,j\} / \{E,j\}_{-}$
 $g \rightarrow dʒ / \{E,j\}_{-}$ ("in some Biscayan areas")
 $j \rightarrow j \rightarrow j$ (northern High Navarrese, most Labourd, some Biscayan)
 $j \rightarrow j \rightarrow ʒ$ (Souletin, sporadic in northwestern Biscayan)
 $j \rightarrow j$ (some Biscayan and Navarrese)
 $j \rightarrow j \rightarrow ʒ$ (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)
 $eu \rightarrow \{e,egu\}$
 $ei \rightarrow e / \#_{-}$
 $oi \rightarrow ui$ (rare)
 $e\check{d} (\rightarrow e ?) \rightarrow j / \#_{-}V$
 $e \rightarrow j / \#_{-}a$
 $e \rightarrow \emptyset / \#_{-}e$
 $ua \rightarrow o$ "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{g} 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 f- and tf- distinct; Labourdin only has f-, and the rest apparently only have tf-?

C[+ sibilant] → C[+ affricate] / -#

ɿ ts → ɿ ts (Biscayan, partially in Guipuscoan, Donostia, San Sebastián, though these latter two may be varieties of Guipuscoan)

ɿ → ɿ / -{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. ⟨s z⟩ are apparently ɿ ɿ, and ⟨x⟩ is f.

its → tf / -# (Biscayan)

oa ea → u(e) i(e) / -#

Beterri Guipuscoan has VjV# where Biscayan has VɿV# and regular Basque has VV#

ɿ → tf / #- (Guipuscoan)

ɿ → ʃ “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.

45 Yuman-Cochimí

45.1 Pai

45.1.1 Proto-Pai to Chapai

Pogostick Man, from Wares, Alan C. (1954?), “Three Pai Dialects of Lower California”.
Summer Institute of Linguistics Bartholomew Collection of Unpublished Materials

$tʃ \rightarrow ʃ / -\{w,i\}$

$tʃ \rightarrow \emptyset / -x^w$

$tʃ \rightarrow s$

$t \rightarrow tʃ / ! n_$

$k^w \rightarrow k / -\#$

$b \rightarrow p$

$o \rightarrow u$

$s \rightarrow ʃ$

$? \rightarrow \emptyset / -\{n,j\}$

$\{w,j\} \rightarrow \emptyset / a_$

$V: \rightarrow V ?$

Stress lost?

45.1.2 Proto-Pai to Paipai

Pogostick Man, from Wares, Alan C. (1954?), “Three Pai Dialects of Lower California”.
Summer Institute of Linguistics Bartholomew Collection of Unpublished Materials

$b \rightarrow \beta$

$x^w \rightarrow w / tʃ_$

$k^w x^w \rightarrow k x / -\#$

$ʃ ɬ \rightarrow ʃ l$

$i \rightarrow ə / \text{unstressed}$

$n \rightarrow \emptyset / .t$

$? \rightarrow \emptyset / .n$

$aw aj \rightarrow o e$

45.1.3 Proto-Pai to Tipai

Pogostick Man, from Wares, Alan C. (1954?), “Three Pai Dialects of Lower California”.
Summer Institute of Linguistics Bartholomew Collection of Unpublished Materials

$k^w x^w \rightarrow q \chi / \text{-}\#$ (the paper calls these “back velars”)

$b \rightarrow p$

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

$u \rightarrow o / \text{ }_K$

$t \rightarrow \emptyset / n\text{ }_-$

$tʃ \rightarrow \emptyset / \text{ }_x^w$

$ɲj \rightarrow n \emptyset / ?\text{ }_-$

$V\text{:} \rightarrow V$ (sporadic? conditioned?)

Contrastive stress lost?

46 Vowel Shifts

A miscellaneous collection of vowel shifts.

46.1 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. Dominicy 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/)

$i \ u \rightarrow i \ u$

46.2 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>; 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

$\text{æ} \rightarrow \{ \text{e}_{\text{̞}}, \text{i}_{\text{̞}} \} / _ \text{N}$

$\{ \text{æ}, \text{e} \} \rightarrow \text{ɛ} / _ \text{ɹ}$

$\text{æ} \rightarrow \text{a}$

$\text{ʊ} \ \text{ʌ} \ \text{ɛ} \rightarrow \text{ʌ} \ \text{ɛ} \ \text{æ}$

$\text{ɑ} \rightarrow \text{ɔ}$ (does not occur in Sacramento)

$\text{u} \rightarrow \{ \text{i}_{\text{̞}}, \text{ʊ}, \text{u} \}$

$\text{o}_{\text{̞}} \rightarrow \text{e}_{\text{̞}}$ (“common only within certain social groups”)

46.3 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>

$\text{ɛi} \ \text{œy} \ \text{ɔu} \rightarrow \text{ɛ} \text{:} \ \text{œ} \text{:} \ \text{ɔ} \text{:}$

46.4 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>

ɛi œy ʌu → ai ay au

e: ø: o: → ei œy ɔu

46.5 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>; 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>

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)

46.6 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.

46.7 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)

46.8 Greek Vowel Shift

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

u(:) → y(:)
 o: → u:
 e: ɛ: → i: e:
 ai oi → ε y:
 e: → i:
 y(:) ɔ: → i(:) ɔ
 εu au → εv av

46.9 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.

46.10 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 /uɑ/, /yæ/ and /iæ/ or /iɑ/ depending on front-back vowel harmony: /tieto/ to /tiɑto/ but /tietæ/ to /tiætæ/.”

“These shifts have occurred in some eastern dialects.”

ɑ: æ: ai æi → uɑ iæ æe æe

ei oi øi → e: oe øe

au ou → ɑ: o:

æy øy → æ: ø:

eu → eo

li ni ri si → lʲi nʲi rʲi sʲi

46.11 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)

46.12 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>

æ raises and diphthongizes, typically becoming one of {ɛə eə ɪə}

ɑ ɔ → a ɑ

ɛ → ɐ

ʌ → ɔ

ɪ → ɪ̃

46.13 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)”

46.14 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”
 $u: \rightarrow i$

46.15 Proto-Japanese to Old Japanese Vowel Shift

Pogostick Man, from Frellesvig, Bjarke and John Witman (2005), “The Japanese-Korean vowel correspondences”

$e \text{ o} \rightarrow \text{je wo} / _ \#$
 $e \text{ o} \rightarrow i \text{ u} / \text{else}$
 $\{i, \text{ə}\} \rightarrow o$
 $\{u, i\} i \{, a, i \{ii, i\{a, \text{ə}\}\} u\{i, a, \text{ə}\} \rightarrow \text{wi e je wo}$

46.16 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

$-i -i\{p, k\} -it -i\{m, \eta\} -in \rightarrow -i -i? -i? -\varepsilon -i$
 $-u -up -ut -uk -um -un -u\eta \rightarrow -u -\text{ɔ?} -\text{ə?} -u? -\text{ɔ} -\text{ə} -\varepsilon$

46.17 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.

$u \text{ i e a} \rightarrow y \text{ e a o}$

46.18 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

46.19 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) ij(ə)

ɛj(ə) ij(ə) i eɪ → ej(ə) ij(ə) ii ɛi

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

47 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^AT_EX handles the $\langle\%$ character.
- Subsection 4 is specifically listed as being “empty as of yet” for aesthetic purposes.
- Wikipedia URLs have been changed to `https://`.

47.1 List 1: Simple Consonant Changes

$w \rightarrow p$ (Navajo, some Polynesian languages)
 $k^j g^j \rightarrow k g$ (Danish)
 $\acute{s} \rightarrow k$ (Possibly unconditional; some Samoyedic langs)
 $p^j \rightarrow k^j$ (some Romanian dialects, Tsakonian)
 $ts \rightarrow t$ (unconditional; some Samoyedic langs)
 $t \rightarrow k$ (general Polynesian)
 $n \rightarrow \eta$ (Samoan, but only in colloquial speech)
 $j \rightarrow p$ (some Polynesian languages, such as Levei and Drehet) (https://en.wikipedia.org/wiki/Proto-Austronesian_language)
 $b \rightarrow \#c, -nc-$ (Sundanese)
 $\eta \rightarrow \{x, h\}$ (various Mayan languages)
 $h \rightarrow \eta$ (Nyole)
 $\text{ʕ} \rightarrow \eta$ (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, <http://sites.google.com/site/londonsephardiminhag/pronunciation>, <http://www.forward.com/articles/105938/>)
 $f \rightarrow p$ (? 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)

tš → t (general Baltic-Finnic; may not be unconditional but was certainly the most common outcome)

r → g_L → ɣ (Hiw) (<http://is.gd/jCDL01>)

mb nd → b dr (Nias)

47.2 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)

47.3 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)

i u → ɹ̥ ɹ̥ (Ōgami) (<http://amritas.com/101023.htm#10192359>)

47.4 List 4: Other

This section is empty as of yet.