Reflexes of Proto-Semitic sounds in daughter languages

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(Aschmann.net/BibleChronology/Proto-SemiticSoundsInDaughterLanguages.pdf)

(I expanded this article from http://en.wikipedia.org/wiki/Semitic_languages way back before 2014, with modifications and additions marked in green. Some of the links will not work, for which I make no apology: if you want them, refer to the original article.)

Consonants

Each Proto-Semitic phoneme was reconstructed to explain a certain regular sound correspondence between various Semitic languages. Note that Latin letter values (*italicized*) for extinct languages are a question of transcription; the exact pronunciation is not recorded.

Most of the attested languages have merged a number of the reconstructed original fricatives, though South Arabian retains all fourteen (and has added a fifteenth from *p → f).

In Aramaic and Hebrew, all non-emphatic stops were softened to fricatives when occurring singly after a vowel, leading to an alternation that was often later phonemicized as a result of the loss of gemination.

In languages exhibiting pharyngealization of emphatics, the original velar emphatic has rather developed to a uvular stop [q].

Proto-Semitic		Modern South Arabian	Ge'ez		Akkadian	Arabic[1]		Ugaritic		Phoenician		Early Hebrew		Modern Hebrew	Early Aramaic[4]		Later Aramaic	
29		29		19?	19		28		27?		22?		25	?		29		24?
***b**	[b]	[b]	ቡ	[b]	*b*	ب	*b*	2. 𐎁	*b*	𐤁	*b*	ב	*(b̲)/b*	[v], [b]	ב	*b*	ב	*b̲/b*
***d**	[d]	[d]	ደ	[d]	*d*	د	*d*	5. 𐎄	*d*	𐤃	*d*	ד	*(d̲)/d*	[d]	ד	*d*	ד	*d̲/d*
***g**	[g]	[g]	ገ	[g]	*g*	ج	*ǧ* *[gʲ]→[dʒ][1]	3. 𐎂	*g*	𐤂	*g*	ג	*(ḡ)/g*	[g], [dʒ]	ג	*g*	ג	*ḡ/g*
***p**	[p]	[f]	ፈ	[f]	*p*	ف	*f*	21. 𐎐	*p*	𐤐	*p*	פ	*(p̄)/p*	[f], [p]	פ	*p*	פ	*p̄/p*
***t**	[t]	[t]	ተ	[t]	*t*	ت	*t*	27. 𐎕	*t*	𐤕	*t*	ת	*(t̲)/t*	[t]	ת	*t*	ת	*t̲/t*
***k**	[k]	[k]	ከ	[k]	*k*	ك	*k*	12. 𐎊	*k*	𐤊	*k*	כ	*(k̲)/k*	[χ], [k]	כ	*k*	כ	*k̲/k*
***ṭ**	[t’]	[t’]	ጠ	[t’]	*ṭ*	ط	*ṭ* [tˤ]	10. 𐎈	*ṭ*	𐤈	*ṭ*	ט	*ṭ* [tˤ]	[t]	ט	*ṭ*	ט	*ṭ*
***ḳ**	[k’]	[k’]	ቀ	[k’]	*q*	ق	*q*	23. 𐎒	*ḳ*	𐤒	*q*	ק	*q*	[k]	ק	*q*	ק	*q*
***d̲**	[ð]	[ð]	ዘ	[z]	*z*	ذ	*d̲* [ð]	16. 𐎖	*d̲→d*	𐤆	*z*	ז	*z*	[z], [ʒ]	ז[4]	*d̲*[4]	⇒ד[4]	⇒*d*[4]
***z**	[z/dz]	[z]				ز	*z*	8. 𐎇	*z*						ז	*z*	ז	*z*
***t̲**	[θ]	[θ]	ሰ	[s]	*š*	ث	*t̲* [θ]	25. 𐎗	*t̲*	𐤔	*š*	שׁ	*š* [ʃ]	[ʃ]	שׁ[4]	*t̲*[4]	⇒ת[4]	⇒*t*[4]
***š**	[ʃ]	[ʃ], [h]				س	*s*	13. 𐎌	*š*						שׂ	*š*	שׂ	*š*
***ś**	[ɬ]	[ɬ]	ሠ	[ɬ]		ش	*š* [ʃ]					שׂ[2]	*ś* [ɬ][2]	[s]	שׂ[4]	*ś*[4]	⇒ס[4]	⇒*s*[4]

s	[s]	[s]	ሰ	[s]	*s*	س	*s*	19. 𐩪	*s*	𐤎	*s*	ס	*s*		ס	*s*	ס	*s*
ṯ̣	[θ’/tθ’]	[θ’]	ጸ	[ts’]		ظ	*ẓ* [ðˁ~zˁ]	18. 𐩼 ?*ẓ*/[ð̣]	*ṯ̣*→*ġ*						צ[4]	*ṯ̣*[4]	⇒[4]ט	⇒*ṭ*[4]
ṣ	[s’/ts’]	[s’]			*ṣ*	ص	*ṣ* [sˁ]	22. 𐩮	*ṣ*	𐤑	*ṣ*	צ	*ṣ* [(t)sˁ]	[ts], [tʃ]	צ	*ṣ*	צ	*ṣ*
ṣ́	[ɬ’/tɬ’]	[ɬ’]	ፀ	[ɬ’]		ض	*ḍ* *[ɮˁ]→[dˁ][1]								ק[4]	*ṣ́*[4]	⇒ [4]ע	⇒**ġ*[4] ⇒ ʿ
ġ	[ʁ]	[ɣ]	ዐ	[ʕ]	–	غ	*ġ* [ɣ~ʁ]	26. 𐩶	*ġ*, ʿ	𐤏	ʿ	ע[3]	*ġ* [ʁ][3]	[ʔ], -	ע[4]	*ġ*[4]	[4]ע	*ġ*[4]⇒ ʿ
ʿ	[ʕ]	[ʕ]			-[5]	ع	ʿ [ʕ]	20. 𐩲	ʿ				ʿ [ʕ][3]		ע	ʿ	ע	ʿ
ʾ	[ʔ]	[ʔ]	አ	[ʔ]	–	ء	ʾ [ʔ]	1. 𐩱	ʾ	𐤀	ʾ	א	ʾ	[ʔ], -	א	ʾ	א	ʾ
ḫ	[χ]	[x]	ኀ	[χ]	*ḫ*	خ	*ḫ* [x~χ]	4. 𐩭	*ḫ*	𐤇	*ḥ*	ח	*ḫ* [χ][3]	[χ]	ח[4]	*ḫ*[4]	[4]ח	*ḫ*[4]/*ḥ*
ḥ	[ħ]	[ħ]	ሐ	[ħ]	-[5]	ح	*ḥ* [ħ]	9. 𐩢	*ḥ*				*ḥ* [ħ][3]		ח	*ḥ*	ח	*ḥ*
h	[h]	[h]	ሀ	[h]	–	ه	*h*	6. 𐩠	*h*	𐤄	*h*	ה	*h*	[h], -	ה	*h*	ה	*h*
m	[m]	[m]	መ	[m]	*m*	م	*m*	15. 𐩣	*m*	𐤌	*m*	מ	*m*	[m]	מ	*m*	מ	*m*
n	[n]	[n]	ነ	[n]	*n*	ن	*n*	17. 𐩬	*n*	𐤍	*n*	נ	*n*	[n]	נ ר	*n*	נ ר	*n* *r*
r	[ɾ]	[r]	ረ	[r]	*r*	ر	*r*	24. 𐩧	*r*	𐤓	*r*	ר	*r*	[ʁ]	ר	*r*	ר	*r*
l	[l]	[l]	ለ	[l]	*l*	ل	*l*	14. 𐩡	*l*	𐤋	*l*	ל	*l*	[l]	ל	*l*	ל	*l*

***w**	[w]	[w]	𐩥	[w]	*w*	و	*w*	7. 𐎆	*w* *y*	𐤅 𐤉	*w* *y*	ו י	*w* *y*	[v], [w] [j]	ו י	*w*	ו י	*w* *y*
***y**	[j]	[j]	𐩺	[j]	*y*	ي	*y* [j]	11. 𐎊	*y*	𐤉	*y*	י	*y*	[j]	י	*y*	י	*y*
	Proto-Semitic	**Modern South Arabian**		**Ge'ez**	**Akkadian**	**Arabic**[1]		**Ugaritic**		**Phoenician**			Early **Hebrew**	**Modern Hebrew**		Early Aramaic[4]		**Later Aramaic**

The data in green was added by Rick Aschmann. See my *Semitic Alphabets* for the Ugaritic info.

For most Proto-Semitic consonants Modern South Arabian has retained the probable original pronunciation. These Modern South Arabian consonants are marked in red. When this is not the case, and another consonant in the same row does have the original pronunciation, then this has been marked in red.

Notes:

1. Arabic pronunciation is that of reconstructed Qur'anic Arabic of the 7th and 8th centuries CE. If the pronunciation of Modern Standard Arabic differs, this is indicated (for example, [ɡʲ]→[d͡ʒ] and [ɮˤ]→[dˤ]).
2. Proto-Semitic */ś/ was still pronounced as [ɬ] in Biblical Hebrew, but no letter was available in the Phoenician alphabet, so the letter ש did double duty, representing both [ʃ] and [ɬ]. Later on, however, [ɬ] merged with [s], but the old spelling was largely retained, and the two pronunciations of ש were distinguished graphically in Tiberian Hebrew as שׁ [ʃ] vs. שׂ [s] < [ɬ].
3. Biblical Hebrew as of the 3rd century BCE apparently still distinguished the phonemes /ġ/ [ʁ] and /ḫ/ [χ], based on transcriptions in the Septuagint. As in the case of [ɬ], no letters were available to represent these sounds, and existing letters did double duty: ח [χ] and [ħ] and ע [ʁ] and [ʕ]. In both of these cases, however, the two sounds represented by the same letter eventually merged, leaving no evidence (other than early transcriptions) of the former distinctions.
4. Although early Aramaic (pre-7th century BCE) had only 22 consonants in its alphabet, it apparently distinguished all of the original 29 Proto-Semitic phonemes, including *ḏ, *ṯ, *ṱ, *ś, *ṣ́, *ġ and *ḫ — although by Middle Aramaic times, these had all merged with other sounds. This conclusion is mainly based on the shifting representation of words etymologically containing these sounds; in early Aramaic writing, the first five are merged with *z*, *š*, *ṣ*, *š*, *q*, respectively, but later with *d*, *t*, *ṭ*, *s*, ʿ.[26][27] (Also note that due to begadkefat spirantization, which occurred after this merger, OAm. *t*→*ṯ* and *d*→*ḏ* in some positions, so that PS *t,ṯ and *d,ḏ may be realized as either of *t*,*ṯ* and *d*,*ḏ* respectively.) The sounds *ġ and *ḫ were always represented using the pharyngeal letters ʿ and *ḥ*, but they are distinguished from the pharyngeals in the Demotic-script papyrus Amherst 63, written about 200 BC.[28] This suggests that these sounds, too, were distinguished in the Old Aramaic language, but written using the same letters as they later merged with.

5. These are only distinguished from the zero reflexes of *[h], *[ʔ] by e-coloring adjacent *a, e.g. pS *[ˈbaʕal-um] 'owner, lord' → Akk. */ˈbēlu(m)/*.[29]
6. Hebrew and Aramaic underwent begadkefat spirantization at a certain point, whereby the stop sounds */b g d p k t/* were softened to the corresponding fricatives [v ɣ ð f x θ] (written */b̲ ḡ d̲ p̄ k̲ t̲/*) when occurring after a vowel and not geminated. This change probably happened after the original Old Aramaic phonemes */t̲, d̲/* [θ, ð] disappeared in the 7th century BC,[19] and most likely occurred after the loss of Hebrew [χ, ʁ] c. 200 BC.[nb 1] It is known to have occurred in Hebrew by the 2nd century AD.[20] After a certain point this alternation became contrastive in word-medial and final position (though bearing low functional load), but in word-initial position they remained allophonic.[21] In Modern Hebrew, the distinction has a higher functional load due to the loss of gemination, although only the three fricatives [v χ f] are still preserved (the fricative [x] is pronounced [χ] in Modern Hebrew). (The others are pronounced like the corresponding stops, apparently under the influence of later non-native speakers whose native European tongues lacked the sounds [ɣ ð θ] as phonemes.)
7. In the Northwest Semitic languages, *[w] became *[j] at the beginning of a word, e.g. Hebrew *yeled* "boy" < **wald* (cf. Arabic *walad*).

In addition to those in the table, Modern Hebrew has introduced the new phonemes [tʃ], [dʒ], [ʒ] through borrowings.

Vowels

Proto-Semitic vowels are, in general, harder to deduce due to the templatic nature of Semitic languages. The history of vowel changes in the languages makes drawing up a complete table of correspondences impossible, so only the most common reflexes can be given:

Vowel correspondences in Semitic languages (in proto-Semitic stressed syllables)[30]

pS	Hebrew			Aramaic		Arabic	Ge'ez	Akkadian
	/ˈ_.[1]	/ˈ_C ː[2]	/ˈ_C.C[3]	usually[4]	/_C.ˈV			
a	*ā*	*a*	ɛ	*a*	*ə*	*a*	*a*	*a, e, ē*[5]
i	*ē*	*e*	ɛ, *e*	*e, i,* WSyr. ɛ	*ə*	*i*	*ə*	*i*
u	*ō*	*o*	*o*	*u, o*	*ə*	*u*	*ə*, ʷ*ə*[6]	*u*

ā	*ō*[nb 2]			*ā*		*ā*	*ā*	*ā, ē*
ī	*ī*			*ī*		*ī*	*ī*	*ī*
ū	*ū*			*ū*		*ū*	*ū*	*ū*
ay.	*ayi, ay*			BA, JA *ay(i), ē,* WSyr. *ay/ī & ay/ē*		*ay*	*ay, ē*	*ī*
aw.	*ō,* pausal *ʿāwɛ*			*ō,* WSyr. *aw/ū*		*aw*	*ō*	*ū*

1. in a stressed open syllable
2. in a stressed closed syllable before a geminate
3. in a stressed closed syllable before a consonant cluster
4. when the proto-Semitic stressed vowel remained stressed
5. pS **a*,**ā* → Akk. *e*,*ē* in the neighborhood of pS **[ʕ]*,**[ħ]* and before **r*.
6. I.e. pS **g*,**k*,**ḳ*,**χ* → Ge'ez g^w,k^w,$ḳ^w$,$χ^w$ / _*u*