Reconstructing Proto-Afroasiatic (Proto-Afrasian)

Vowels, Tone, Consonants, and Vocabulary

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Notes on Transcription

b'	Voiced labial implosive.
c	(1) In proto-Semitic (PS) reconstruction, denotes a proposed dental affricate [ts]; (2) in Soomaali (Cushitic) orthography, represents the pharyngeal voiced consonant [ʕ]; (3) in Afar (Cushitic) orthography, denotes the pharyngeal fricative [ħ]; (4) everywhere else, normally reflects a palatal or prepalatal affricate [č].
d'	Voiced alveolar implosive.
dh	In Soomaali orthography, denotes, depending on the particular dialect, either an apical voiced alveolar stop or a voiced alveolar implosive stop (elsewhere given as *d'*).
dl	(1) In Ngizim (Chadic), represents a voiced lateral fricztive [ɮ]; (2) elsewhere, denotes a voiced lateral affricate.
g'	Voiced velar implosive.
j'	Voiced palatal or prepalatal implosive.
q	(1) In Afar orthography, represents the pharyngeal voiced consonant [ʕ]; (2) in Dullay and Yaaku (Cushitic), denotes a voiceless ingressive uvular stop; (3) elsewhere, has its usual uvular voiceless stop value [q]
sh	Voiceless (pre)palatal fricative [š] (used in Soomaali, Sidamo [Cushitic], and Ngizim orthographies)
tl	(1) In proto-Cushitic reconstruction, denotes an ejective lateral affricate [tl']; (2) in Ngizim, represents the voiceless lateral fricative [ɬ]; (3) elsewhere, reflects a voiceless, non-ejective lateral affricate.
x	(1) In Afar orthography, denotes an apical voiced alveolar stop (equivalent to Northern Soomaali *dh*); (2) in Soomaali orthography, represents the pharyngeal voiceless fricative [ħ]; (3) elsewhere, has its usual voiceless velar fricative value.
zh	Voiced (pre)palatal fricative [ž] (in Ngizim orthography)

The alphabetic

b, c, c', d, dl,
ŋ^{w}, p, p', r, s, s', š

For further comme
notations used for t

Notes on Alphabetization

The alphabetic sequence of consonants followed in this work is as shown:

b, c, c', d, dl, dz, f, g, g^w, ɣ, $ɣ^w$, h, ɦ, j, k, k^w, k', $k^{w'}$, l, ɬ, m, n, ɲ, ŋ, $ŋ^w$, p, p', r, s, s', š, t, t', tl', ts, w, x, x^w, y, z, ʔ, ʕ.

For further commentary on the marking and ordering conventions and on the notations used for the data presented here, see first two sections of Chapter 4.

4

VOWELS AND TONE IN EARLY AFROASIATIC (AFRASIAN)

THE *PAA* VOWELS

With the structural issues necessary to the interpretation of the comparative data now dealt with, we can move on to the task of identifying the elements of the phonological system of proto-Afroasiatic (proto-Afrasian).

On present evidence, a PAA vowel system of five different vowel qualities, each occurring both long and short, must be postulated: *a, *aa, *e, *ee, *i, *ii, *o, *oo, *u, and *uu. There is one factor which somewhat complicates the reconstruction of the vowels: in a number of instances, early ablaut effects of verb conjugational marking on stem vowel quality can be invoked to explain the reconstructibility of alternate stem vowels in roots. This phenomenon has been encountered most significantly in the reconstruction of Cushitic verb roots (Sasse 1979; Ehret 1987) and may indeed have been particularly characteristic of the development of proto-Cushitic. But it can also appear in Omotic (e.g., root #51, among others, and the South Omotic entries in roots #676 and 928) and may account for some of the instances in Chadic where Newman (1977) or Jungraithmayr and Shimizu (1981) felt unable to decide on stem vowel reconstructions. Once these probable instances of ablaut are taken into account, however, clear regular vowel correspondence patterns can be discerned among the three branches, Cushitic, Chadic, and Omotic, that have best maintained the stem vowels in a form accessible to the investigation here.

Egyptian and Berber also preserved stem vowels, as did PS in its nominals. These three divisions of Afroasiatic, along with Chadic, have all greatly reduced the inherited PAA system, and much of the clarifying of their histories of vocalic sound change must be left to future work. Nevertheless, a first approximation of those histories can be laid out even now, and that matter is taken up later in this chapter.

In contrast to the balanced five-vowel system postulated for PAA, the Omotic sound-shift rules (see below, this chapter) imply an alternative, unbalanced array of shorter and longer vowels for the ancestor language of at least one of its two primary branches, North Omotic. Five long vowels *a:, *e:, *i:, *o:, and *u:, but only three short vowels, *a, *e, and *o — with the realization of *e as *[i] or [e] and of *o as [u] or [o] governed by definable consonantal environments — appear sufficient to explain the great majority of the modern North Omotic vowels (see below).

Might this system be projected back to PAA? The Cushitic and Chadic correspondences do not allow this interpretation. To be sure, recontructed PAA *a and *aa (as noted already for Southern Cushitic in Ehret 1980) are at least twice as common as the combined instances of *e/*ee and *i/*ii and of *o/*oo and *u/*uu, and this situation might lead scholars used to the traditional three vowels of Semitic reconstruction to suggest a derivation of *i/*ii and *e/*ee, and of *o/*oo and *u/*uu, by split from earlier single front and back vowels respectively. Consistent plausible conditioning environments for such splits are not at all apparent, however, in the overall data (for which see Chapter 5). Thus the overabundance of *a and *aa might just as well be explained by an alternative history, according to which a seven-vowel system, of *a, *ɛ, *e, *i, *ɔ, *o, and *u, once existed in pre-PAA, with *ɛ and *ɔ then falling together with *a in the PAA language to create the surfeit of PAA *a and *aa. Just such a history can be traced elsewhere among African languages, in particular in certain subgroups of the Nilo-Saharan family (Ehret MS). In any case, by neither hypothesis can the unbalanced patterning of long and short vowels found in proto-North-Omotic be understood to explain the observed vowel correspondence patterns of Afroasiatic. Nor does this evidence suggest an original two-tier system, like that proposed by Joseph Pia (1984).

The underlying pre-proto-North Omotic system of three short and five long vowels can thus best be understood as a specifically Omotic development, realized by the falling together of the respective pairs of PAA short front and back vowels. The drift toward similar eight-vowel systems discernable in some Cushitic languages, notably Afar and Soomaali of the Lowland Eastern Cushitic group — a drift which is, in the writer's view, the source of the vowel alternations and mergers that Pia (1984) attributes to a two-tier vowel system — may in turn reflect substratum effects of an earlier Omotic presence across the northern and eastern parts of the Ethiopian plateau, and not just in the southwest portions to which Omotic languages are restricted today. Such a presence is, in any case, distinctly indicated by the existence of Omotic loanwords in Agaw and in Lowland Eastern Cushitic (see, for example, roots #587 and 696 in Chapter 5). (The two-tier concept is adopted in modified form, however, as a way of looking at the contraction, discussed below, of the PAA vowel system in Chadic, Egyptian, Berber, and Semitic.)

In Table 4, in which the vowel correspondences of Cushitic, Chadic, and Omotic are laid out, the Cushitic long vowels, following established convention, are represented as VV; the same convention has been extended to PAA. In works on Omotic, however, a different representation of long vowels, as V: or V·, has commonly been used and so appears as such in the table. The Omotic vowel reconstructions presented here are those inferable for the much more diverse and better-known North Omotic branch.

Table 4:

PAA
*a
*aa
*e
*ee
*i
*ii
*o
*oo
*u
*uu

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#2. [+ph

Table 4: Afroasiatic (Afrasian) Vowel Correspondences

PAA	PC	PCh	North Omotic
*a	*a	*a	*a
*aa	*aa	*a	*a:
*e	*e	*a	*e (> *i in several environments)
*ee	*ee	*ə	*e:
*i	*i	*ə	*e (> *i in several environments)
*ii	*ii	*i	*i:
*o	*o	*a	*o (> *u /_[+labial])
*oo	*oo	*ə	*o:
*u	*u	*ə	*o (> *u /_[+labial])
*uu	*uu	*u	*u:

OMOTIC VOWEL REFLEXES

For Omotic the falling together of the respective pairs of PAA front and back vowels, as discussed above and as depicted in Table 4, cannot yet be traced with certainty before proto-North Omotic. Its sister branch, South Omotic, seems on present evidence not have shared in this particular vocalic development, although it must be noted that the South Omotic languages are still too poorly known phonologically for this conclusion to be asserted categorically.

Even in the present state of our knowledge, however, several vowel shifts do seem traceable to the proto-Omotic (PO) language or even to pre-proto-Omotic (pre-PO). One very early shift fronted PAA *a and *aa in the environment of a following pharyngeal:

PO #1. PAA *a(a) > PO *e(:) /_C- (C = PAA *ʕ or *ḥ).

This sound change necessarily preceded a general PO consonantal shift,

#2. [+pharyngeal] > [-pharyngeal],

which removed PAA *ʕ and *ḥ from the consonant inventory of PO by collapsing them with, respectively, *ʔ and *h.

A third very early vocalic sound change began the removal of labiovelars from PO:

#3. PAA *C^wa > *Co /#_C_2 (C_2 = *l, *dl, and *ts, in the examples so far noted).

It must be placed earlier in the evolution of proto-Omotic than still another consonant shift apparently general to the Omotic group,

#4. PAA *C^w > PO *C /#_V, V ≠ i(:),

which removed the conditioning environment of #3 by collapsing the word-initial PAA labiovelars with their equivalent simple velars in PO.

The disposition of *C^wi /#_ within this set of developments remains to be fully worked out. Its known modern North Omotic reflexes — *Ci in Gonga and *Cu in most other North Omotic tongues (roots #305, 347, 375, 377, 382, and 445) — indicate that it maintained a distinctive outcome in proto-North Omotic vis-a-vis other initial sequences of *C^wV-. One possibility is that *C^w /#_i was not affected by PO rule #4 and that it was repeatedly and universally simplified to *Cu or *Ci in different North Omotic subgroups at a much later period. The alternative solution is that *C^wi produced some intermediate outcome, possibly a rounded high central vowel (*C^wi > *Cɨ, as proposed in Ehret 1980 for the same environment in PSC).

One proto-Omotic sound shift must have preceded the disappearance of *C^wi,

#5. PAA *š > PO *$š_2$ /i, y_.

The reason for this ordering is that the loss of C^wi sometimes changed PAA *i to Omotic /u/ and would thus have removed the environment in which PO *$š_2$ apparently was created. For more on this shift, see the section on PAA alveolar and palatals in Chapter 5.

Still another PO shift eliminated nasal clusters in which the oral element was a voiceless obstruent, at the same time reflecting this loss in compensatory lengthening of the preceding stem vowel:

#6. PAA *VNC > PO *V:C (C = [-voice])

(e.g., in roots #324 and 365).

Also following #6 came another shift — on present evidence marking the start of the separate emergence of the proto-North-Omotic (NOm) language — by which PAA short *o and *u, and short *e and *i, fell together:

#7. PAA *u

The NOm short vo
ized as *[e] and *[e
phones *[i] and *[u]

#7a. */e/ ->
#7b. */e/ ->
#7c. */e/ ->
#7d. */e/ ->

#7e. */o/ ->
#7f. */o/ ->
#7g. */o/ ->
#7h. */o/ ->
#7i. */o/ ->

In at least one case
(#170); whether this
consequence of an e
fined set of C^w envi

In addition, som
least in a restricted a
tal or palatal conson

#8. *a > *o

Three subsequer
then rephonemicized

#9. *C^w > C

#10. *e(:) >

#11. *V: > V
w

along with a fourth s

#12. *u > *c

North Omotic da
one restricted enviro

#13. *u > *u

#7. PAA *u > NO *o, PAA *i > NO *e, except /#(ʔ)_V-.

The NOm short vowels represented as *e and *i were most commonly realized as *[e] and *[e], but they also apparently developed the respective allophones *[i] and *[u] in various restricted environments:

#7a. */e/ -> *[i] /#N_C (N = nasal);
#7b. */e/ -> *[i] /#l_C[+labial/+voice] (PO *l < PAA *l and *ɬ);
#7c. */e/ -> *[i] /#b, p_r;
#7d. */e/ -> *[i] /#S_K (S = PO *s, *s', or *š; K = PO *k, *k^{w}, or *ʔ);
#7e. */o/ -> *[u] /#C_C[+labial];
#7f. */o/ -> *[u], */e/ -> [i] /#(ʔ)_C;
#7g. */o/ -> *[u], */e/ -> [i] /#k, x, k'_C (C = PO *t, *t', *s');
#7h. */o/ -> *[u], */e/ -> [i] /#(ʔ)_C- (but not /#(ʔ)_CC-); and
#7i. */o/ -> *[u], */e/ -> [i] /#C[+labial]_C_2 (C_2 = ts, č').

In at least one case of stem-final C^{w}, preceding PAA *i also yielded NO *u (#170); whether this was another allophonic outcome of shift #7 or was the consequence of an earlier rule shifting pre-NO *i > *u in some, as yet undefined set of C^{w} environments.

In addition, some PAA *a went to NO *o before a [+labial] consonant, at least in a restricted and as yet only partially defined environment of a PO dental or palatal consonant (see #169, 193, and 463):

#8. *a > *o /#C_1_C[+labial]- (observed for C_1 = PAA *t, *z, or *j).

Three subsequent sound shifts in the evolution of proto-North-Omotic then rephonemicized these originally allophonic distinctions:

#9. *C^{w} > C (deleting all remaining labiovelars);

#10. *e(:) > i(:) /#S_C (S = sibilant; C = *d, *n, or *r); and

#11. *V: > V /#C[+velar, -voice]_C, where root had PAA falling word-tone (see discussion of tone below, this chapter);

along with a fourth shift apparently restricted to the Ometo subgroup,

#12. *u > *o, *i > *e /#(ʔ)_C[-continuant, -voice]-.

North Omotic data also indicate an apparent stem-vowel lengthening in one restricted environment (see roots #4, 148, 273, and 842):

#13. *u > *u: /#C_P (C = voiced oral stop, P = voiceless labial).

Another sound change, probably morphophonemic in inspiration and possibly still synchronically productive in some languages, may well be of wide Omotic occurrence, although the examples so far encountered come principally from Gonga and Ometo:

#14. *V: > V /#C_C- + -(V)C- suffix.

This rule is in fact probably of ancient proto-Afroasiatic provenance since it can be observed in early Afroasiatic formations (e.g., the root pair #709, 710) and is postulated for proto-Southern Cushitic (Ehret 1980: 70, 71).

VOWELS IN CHADIC AND BOREAFRASIAN

The proto-Chadic vowel correspondences can be explained by a brief sequence of shifts that yield Newman's four-vowel system of PCh, *a, *ə, *i, and *u. Note that the first three of these shifts are identified as North Erythraean (PNE) rules, the reasons for which will become clear shortly. A sound shift, represented formally as

PNE #1. *Vy, *Vw > *VV /#C__C,

is proposed to have intitiated this set of changes (see section on the glides in Chapter 5 for more on this sound shift). Its particular outcomes remain to be fully sorted out. PAA *ay in such environments, at least, apparently became *ee, and PAA *ey probably became *ii, and so both were subsequently further affected by the PNE shifts #2 and 3. The first of these,

#2. PAA *ee > pre-PNE *i, *oo > pre-PNE *u,

raised and shortened long mid vowels; it was followed by

#3. pre-PNE *o, *e, *a (< PAA *o, *e, *a) > PNE *ä,
pre-PNE *u, *i (created by #2) > PNE *ə.

centralizing all short vowels and, in consequence, resituating the formerly distinctive long vowels *ii and *uu in the slots in the vocalic system vacated by short *i and *u. A fourth sound shift,

PCh #1. PNE *a [aa], *ä > PCh *a,

then eliminated the last remaining environment of distinctive vowel length in PCh.

What has been treated to this point as simply Chadic vowel history was in all probability, however, a history of wider inclusiveness than Chadic alone. Sound shifts #1-3 appear to have been the common heritage of a North

Erythraean branch of the family, consisting of Chadic, Berber, Semitic, and Egyptian (for which see Chapter 6) — hence the denoting of rules #1-3 as "PNE." The Berber and Semitic vowel systems can each be seen to have passed through a stage in which the PAA system was contracted in a fashion parallel to that described for Chadic — into two vocalic tiers (to use a term coined in Pia 1984, although somewhat differently applied here). The central tier comprised one or both of two central vowels, high central *ə (realized probably as [ɨ] or [ʌ]) and low central *ä; the peripheral tier consisted of three vowels, *i, *u, and *a, or, if *a had fallen together with *ä, of two vowels, *i and *u. The vowels of the central set would have been articulated with shorter length than those of the peripheral set, but vowel quantity as a formal phonemic distinction would have been lost. Much the same history seems implied for the Egyptian vowels.

In the case of Berber, Prasse (1975) reconstructs on solid grounds a proto-Berber system composed of the full two tiers, five vowels in all — *ə and *ä, and *i, *u, and *a — the first two being shorter in quantity than the latter three. He goes on to conjecture that a pre-proto-Berber system with three vowels *i, *u, and *a, occurring both long and short, lies behind the proto-Berber array. But that conjecture is not directly implied by the Berber material itself, and reflects the influence of the usual attribution by scholars of such a three-vowel system to proto-Semitic.

Ironically, from the work of Diakonov (1970, 1975), it appears that Semitic vocalic history itself requires revision. Diakonov shows that just two vowels, *ə and *a, are enough to account for most stem vowel realizations in Semitic nominal roots of *CVC(C) shape. Apparently,

PS #1. PNE *i, *u, *ə > PS *ə;
PNE *a, *ä > PS *a /#C_C(C).

The two vowels, *u and *i, remained distinct only in verbal and other morphological operators and in word-final position in adverbials of the shape CV (e.g., roots #209, 310, and 803). Vowel length in Semitic is not required at the phonemic level in this PS reconstruction, and its latter-day occurrence in Semitic languages was in all probability generated anew by morphophonemic and word-structure requirements in PS and its various descendant languages. Diakonov's arguments thus leave us with a four-vowel array in PS, *ə, *a, *i, and *u.

The earliest Egyptian vowel system is normally represented as comprising *a, *i, and *u. The original Egyptian vocalism showed, in other words, reductions in the vowel-quality distinctions similar to those in the PCh, Berber, and PS and, as well, the same loss of phonemic vowel quantity (phonemic vowel length did, however, re-evolve in the language, through processes of consonantal merger and loss, by or before the Late Egyptian period). The indications therefore are that the proto-history of the Egyptian vowel system should fit quite well within the broad scheme of North Erythraean vocalic history outlined here.

BOREAFRASIAN VOCALIC HISTORY

Like all good hypotheses, this proposition provides a set of testable predictions. In the case of Semitic, the posited PNE sound shifts #2-3, together with PS shift #1, predict that in nominals PAA short *i and *u and long *ii, *uu, *ee, and *oo should all be realized as Diakonov's PS *ə, and PAA short *o, *e, and *a and long *aa, as his PS *a. In Arabic in particular (following Diakonov 1975), PS *ə should surface as *u* in the environment /_C[+labial] and often in the environment /C[+velar]_ but usually as *i* elsewhere, while PS *a should appear as *i* /C_CVC, where V is long, and as *a* in other /C_C(C) environments.

An examination of the Semitic (especially Arabic) vowel reflexes found in old Afroasiatic nouns or adjective roots and in very early derived nominals, as presented in Chapter 5, *consistently* bears out these expectations. PS *ə can be seen in these data to derive specifically from

PAA *i (roots #25, 230, 247, 255, 364, 445, 505, 513, 555, 556, 563, 564, 618, 621, 726, 809, 827, 836, 917, 935, and 985);
PAA *u (#133, 146, 366, 669, and 707);
PAA *u or *i (#220);
PAA *ii (#59 and 641);
PAA *uu (#282, 323, 501, and 515);
PAA *ay (> *ə /#C_C by PNE rules #1-3: roots #833 (2nd entry) and 984);
PAA *ee (#254);
PAA *oo (#422); and
PAA *oo or *ee (#28).

PS *a, for its part, is amply attested as deriving variously from

PAA *a (#47, 102, 140, 144, 154, 181, 201, 257, 259, 260, 262, 263, 264, 285, 324, 341, 374, 358, 383, 388, 399, 447, 477, 503, 520, 663, 706, 718, 724, 725, 727, 749, 864, 877, 891, 1000, and 1002);
PAA *aa (#26, 792, 958, and 974);
PAA *a or *aa (#887);
PAA *o (roots #29, 105, 243, 244, 318, 327, 550, 806, and 888);
PAA *e (#82, 247, 289, 529, and 558); and
PAA *o, *e, *a, or *aa (889).

Three modifications of Diakonov's specifications can be proposed from these examples. First off, in a restricted environment additional to those he cites — /#C_{n,r}, where C is a voiceless dental obstruent in Arabic (see #254, 255, and 501) — PS *ə yields Arabic *u* rather than *i*. Secondly, PS *a gives Arabic *i* in /#C_NC_r# word shapes (as in #47). Thirdly, the realization of PS *ə as *[u] (Arabic *u*) or *[i] (Arabic *i*) has no consistent rela-

tion to whether or not that velar derives from a PAA labiovelar or simple velar (cf. #317, 364, 366, and 422 versus 396 and 445). What does govern the appearance of these two alternative outcomes remains unclear (the two South Semitic instances cited here of [i] for *ə, in #396 and 445, both are followed in the same word by a voiceless fricative). These reflexes indicate that the labiovelar distinction was already lost in PS and must therefore have been recreated in Ethiopic Semitic by processes particular to that subgroup.

It appears also that two of the noun roots for which Diakonov reconstructs PS stem *a are better posited, on the basis of wider Afroasiatic comparisons and their specific Arabic vowel reflexes, as containing PS *ə or, alternatively, as preserving earlier *a/*ə stem-vowel alternances (#827 and 935). This latter suggestion points up a further consideration for PS vowel reconstruction — that seemingly irregular stem-vowel correspondences in nominals may not always trace back to intra-Semitic borrowing, but may at times reflect the PS retention of older Afroasiatic stem-vowel alternances. Some instances in a single language of alternative vowel realizations for the same noun may also derive from such phenomena (e.g., the two Arabic vowel reflexes in #121, which correspond to the respective alternate vowels reconstructed for the PAA etymon in question).

This reconstruction can similarly be tested against the Egyptian evidence as preserved in the Coptic reflexes of PAA roots. If, as is commonly presumed, Old Egyptian indeed had three vowels /a/, /i/, and /u/, the PNE set of sound shifts #2-3 predict that Eg. /a/ should have merged PAA *a, *aa, *e, and *o, and that Eg. /i/ should derive from PAA *ii and Eg. /u/ from PAA *uu. The hypothesis does not overtly predict the outcome for the posited North Erythraean high central vowel *ə, derived from the merger of PAA *i, *u, *oo, and *ee; but in fact, as will emerge below, it clearly fell together with Eg. /i/.

Between Old Egyptian and Coptic times, a complex history of vowel sound change took shape. Early Eg. /a/ evolved usually into Coptic *o* in closed syllables and *ō* in open syllables. Following a nasal consonant in an open syllable, however, Eg. /a/ yielded Coptic *ū*. Eg. /u/, like /a/, produced *o* in closed syllables, but its reflex in open syllables was long *ē*. More rarely, Eg. /u/ could also have a Coptic reflex transcribed as *ī*. Eg. /i/, for its part, developed into Coptic *a* in closed syllables, into *i* in most open syllables, and into *ē* in open syllables where the following consonants were *tn* or *ty*. A fourth direction of change, the deletion of Eg. /i/ altogether, took place in the environment /#C_C_2, where C_2 was a voiced continuant. Coptic short central *ɛ* also generally derives from earlier Eg. /i/. (See Vycichl 1990 for these various patterns; the data used here is drawn from the Sahidic dialect of Coptic, unless otherwise noted).

The Coptic vocalic system thus reflects a very long history of complex vocalic change. Nevertheless, even with the complexity of this history, the Coptic and the earlier Egyptian reflexes visibly confirm the predictions already generated by the examination of Chadic and Semitic.

Firstly, early Egyptian /a/ — yielding Coptic *o* in closed syllables, *ō* in open syllables, and *ū* following a nasal — combines, as the hypothesis predicts and the roots in Chapter 5 attest, the following reconstructed PAA vowels:

PAA *a (roots #48, 50, 69, 93, 110, 139, 145, 164, 167, 170 (v.), 198, 205, 229, 249, 279, 294, 297, 316, 330, 336, 352, 361, 367, 384, 381, 398, 401, 408, 442, 448, 460, 483, 498, 539, 552, 569, 587, 589, 590 (first alternant), 591, 621, 679, 685, 691, 703, 725, 734, 741, 747-749, 751 (first alternant), 754, 786, 788, 804, 810, 822, 837, 853, 864, 884, 885, 924, 926, 927, 933, 952, 955, 956, 965, 970, 982, 1002, 1004, and 1008);
PAA *aa (roots #78, 267, 379, 478, 491, 521, 600, 627 (second alternant), 637, 831, 862, 958, 962, and 1003);
PAA *a or *aa (roots #814 and 989);
PAA *e (roots #250, 793, and 890 (first alternant));
PAA *e or *a (root #42);
PAA *o (roots #435, 619, 629, 631, and 850); and
PAA *o or *e (roots #168 and 178)

In the rarer instances where PAA *a was word-initial and not preceded by any other consonant, even *ʔ, it yielded the reduced Coptic vowel *ɛ* (roots #23, 85, 616, and 924)

The second early Egyptian vowel phoneme, /u/ — realized in Coptic as *o* in closed syllables and as *ē*, or in some instances by the grapheme for *ī*, in open syllables — derives generally from PAA *uu (as shown by roots #282, 323, 546, 553, 595, 697, 713, and 930). Interestingly, in one restricted environment in Coptic, /#{h,x,p}_(y,t)#, Old Eg. /a/ and /i/ also regularly produced *ē* (#51, 374, 382, 399, and 757).

The third vowel, early Egyptian /i/ — changed in Coptic to *a* in closed syllables, to *ī* in most open syllables, to *ē* in open syllables before *tn* or *ty*, to Ø preceding a voiced continuant, and to a reduced central vowel *ɛ* in certain other contexts — combined the rest of the reconstructed PAA vowels:

PAA *i (roots #23, 85, 106, 187, 240?, 280, 301, 396, 405, 470, 479, 485, 538, 581, 611, 621, 683, 689, 698, 720, 725, 751 (second alternant), 808, 827, 918, 939, and 969);
PAA *u (roots #36, 146, 162, 240?, 265, 319, 330?, 366, 484, 546, 590 (second alternant), 810, and 866);
PAA *i or *u (roots #220, 419, and possibly 1015);
PAA *ii (roots #59, 268, 369, 382, 553, 627 (first alternant), 709, 873, and 944);
PAA *i. *ee, or *ii (root #616);
PAA *ay (> *ə /#C_C by PNE rules #1-3: roots #260, 309, 983, and 984);

PAA *ey (probably > *i by PNE rules #1-3: root #433, first entry, and root #565);
PAA *ee (roots #95, 537, 778 (second alternant), and 950); and
PAA *oo (roots #122, 355, 393, 500, 599, and 799).

Overall, these data show us that the derivation of the presumed Old Egyptian vowels /a/, /i/, and /u/ from the five vowels posited for the North Erythraean stage can be explained by a single rule change. This shift collapsed the high and low central vowels with equivalent members of the peripheral tier:

Eg. #1. PNE *ə > Old Eg. /i/,
PNE *ä > Old Eg. /a/.

Curiously, a reversal of the usual Coptic reflexes of Old Eg. /a/ and /i/ turns up in two kinds of consonantal environments. Most notably, Old Eg. /i/, when it occurs before a reconstructed laryngeal in the same word, often yields the usual Coptic reflexes of Old Eg. /a/ (notably, roots #275, 433 (second entry), 701, 800, 819, 834, 870, and 922). An opposite shift affected Old Eg. /a/, with such /a/ — again in the environment of a following laryngeal — producing the Coptic reflexes expected of Old Eg. /i/ (roots #357, 372, 373, 626, 659, 660, 817, 839, 858, 887, 888, 890 (second entry), 922, 948, 961, 990, and 1007, and possibly 627). The full environment of this dual sound shift has not been definitively established. In general, however, it appears to have switched vowel realizations of Old Eg. /a/ and /i/ before a laryngeal in C_2 or C_3 position, as long as the preceding word-initial consonant was not a PAA labial, dental, or alveolar-palatal obstruent. This vowel switch also seems not to have operated in triconsonantal words of the LE shape C_1_C[+laryngeal]C, in which C_1 was *w*, *y*, or a velar obstruent (see roots #297, 336, 398, 435, 873, 962, 989, and 1008).

The switching of the reflexes of /a/ with those of /i/ appears, too, in two other, rather different and more restricted contexts. The first of these is the Coptic environment /#[-contin /+velar]_r; examples include the Coptic reflexes of roots #285, 301, 329, 330, and 419). The second kind of environment in which the vowel reflexes are reversed consists of both /#(_)C_a(_)C_b and /#C_b_C_a, where C_a was a dental obstruent (cases of ME *s* or *d* are known) and C_b was a non-dental voiceless stop, Old Eg. /a/ again produced the expected reflexes of /i/, while Old Eg. /i/ and /u/ yielded the usual reflexes of /a/ (see roots #53, 251, 412, 426, 428, 620, and 705).

The shared Chadic and Boreafrasian vocalic history, proposed here initially on the basis of the Chadic data, thus proves out very well indeed for Semitic and for Egyptian as well for Chadic. Its applicability to Berber remains to be similarly tested, but the close structural fit of the proto-Berber vowel system with the expectations of this history gives us every reason to think that the Berber data too will turn out be well accounted for by this scheme.

To sum up, the systemic distribution of vowels in Chadic, Berber, and Semitic, and Egyptian indicate their having shared in a common proto-period, characterized by the contraction of the PAA system — which had five vowels occurring both long and short, in effect, a ten-vowel system — into a differently distributed set of five vowels, consisting of a peripheral tier (*i, *u, and *a) and a central tier (*ə and *ä). Seen in this light, the sequence of vowel sound shifts #1-3 emerge as rules of a wider proto-North Erythraean provenance (for this subgroup, see Chapter 6), able to explain the initial stages in the evolution of the vowel systems of proto-Berber, proto-Semitic, and Egyptian, as well as that of proto-Chadic.

In PCh an additional sound-shift (PCh #1) would have collapsed *ä with *a to produce a four-vowel system, composed of two peripheral vowels, *i and *u, and two central vowels, *ə and *a; alternatively the proto-Chadic vowels could be considered to consist of three peripheral vowels, *i, *u, and *a, and one central vowel, *ə.

In the proto-history of Semitic, a sweeping reduction of vowel distinctions apparently collapsed North Erythraean *u and *i with *ə, and *ä with *z (as per PS rule #1 above). This merger presumably took place in all CVC(C) stems, but its consequences in verb stems are no longer apparent — stem vowels in verbs having been deleted by the developments of PS verb conjugational history. In morphological contexts, i.e., outside of C_C(C) stem environments, *i and *u apparently did not fall together with *ə and so remained distinct PS vowels.

In the evolution of Egyptian, a less extensive merger of the North Erythraean vowels can be proposed from the evidence. The reflexes, it seems, of two members of the central tier, *ə and *ä, fell together respectively with those of the peripheral vowels *i and *a, creating a three-vowel array in Old Egyptian.

The proto-Berber system revealed in Prasse (1975) suggests that there, in contrast, the five vowels created by PNE rules #1-3 simply persisted, with PAA short *a being realized as a reduced central vowel *ä, and PAA *aa, in the guise of proto-Berber *a, filling the low-vowel slot of the peripheral tier. The assumption that a still earlier three-vowel array underlies that system would seem to be an unexamined transference to Berber of earlier ideas about proto-Semitic vowels, themselves in apparent need of revision. The investigation of the Berber correspondences of the reconstructed PAA vowels will thus provide a further testing ground for the propositions presented here.

We can now expand the charting of Afroasiatic vowel sound correspondences, presented above in Table 4, by integrating into a revised Table 5 the findings on North Erythraean vocalic history that emerge from the Semitic and Egyptian data:

Table 5: Afroasi

PAA	PC	PN
*a	*a	*ä
*aa	*aa	*a
*e	*e	*ä
*ee	*ee	*ə
*i	*i	*ə
*ii	*ii	*i
*o	*o	*ä
*oo	*oo	*ə
*u	*u	*ə
*uu	*uu	*u

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Table 5: Afroasiatic (Afrasian) Vowel Correspondences Revisited

PAA	PC	PNE	PCh	pre-Eg.	PS (in nouns)	NOm
*a	*a	*ä	*a	*a	*a	*a
*aa	*aa	*a	*a	*a	*a	*a:
*e	*e	*ä	*a	*a	*a	*e (> *i in several environments)
*ee	*ee	*ə	*ə	*i	*ə	*e:
*i	*i	*ə	*ə	*i	*ə	*e (> *i in several environments)
*ii	*ii	*i	*i	*i	*ə	*i:
*o	*o	*ä	*a	*a	*a	*o (> *u /_[+labial])
*oo	*oo	*ə	*ə	*i	*ə	*o:
*u	*u	*ə	*ə	*i	*ə	*o (> *u /_[+labial])
*uu	*uu	*u	*u	*u	*ə	*u:

TONE IN *PAA*

Phonemic tone is a widespread feature of Afroasiatic, appearing regularly in the languages of the Omotic, Chadic, and Southern and Eastern Cushitic divisions of the family. Only the Boreafrasian subgroup (Semitic, Berber, and Egyptian; see Chapter 6 for Afroasiatic subclassification) has entirely deleted tone. Tonal reconstructions have been produced previously for only one division of the Afroasiatic family, Southern Cushitic; proto-Southern Cushitic (PSC) had what has been depicted as three phonemic word-tones: falling, rising, and level (Ehret 1980). A provisional reconstruction of the PAA system can nevertheless be proposed by comparing the PSC patterns with those recorded for the Chadic language Ngizim and for the Omotic languages Mocha, Yem, and Bench, data from which are used extensively in

Chapter 5 to supplement the relatively sparse comparative evidence from their respective branches.

Ngizim has just two tones, high (/ˊ/ and low (/ˋ/), as do many of the Chadic languages; and if PCh had the same system, then Ngizim may well largely conserve the tonal situation of PCh. An alternative possibility, however, is that PCh had three tonemes.

Mocha, on the other hand, is given five separate prosodic markings by Leslau (1959). One, described as "secondary stress" ([ˌ]), occurs only in a few polysyllabic words and participates in no minimal pairs in the available data. It surely represents a conditioned development of original low tone ([ˋ]) and can safely be ignored here. Leslau's "main stress" ([ˈ]) and "low level tone" ([̠]) are in complementary distribution, the first appearing only on short-vowel syllables and the second only with long vowels. His high tone ([ˊ]) appears nearly always on nouns; and in fact internal reconstruction in Mocha supports the proposition that at least some [ˊ] were in origin the realization of the complementary pair, [ˈ] and [̠], in simple noun derivations from CVC- verb stems (e.g., root #842 in the comparative data of Chapter 5, and *tu̠:c'*- "to take a handful" versus *tú:c'c'o* "handful," among other examples in Leslau 1959). Still, by no means all cases of [ˊ] can be explained by such secondary developments. This high tone sign also occurs on terminal vowels where the CVC- stem to which it is attached is unmarked; in these cases the comparative evidence suggests the unmarked stem to have had original low tone. One is thus left with certainly two, and probably three, underlying Mocha prosodic phonemes:

a. /¯/ -> [ˈ] /V ("main" stress),
-> [̠] /V: ("low level tone"), and

b. /ˋ/ -> [ˋ], along with

c. /ˊ/ (sometimes deriving, however, < [ˈ] ~ [̠]).

Yem and Bench each have prosodic systems that probably reflect an earlier three-tone system, of high, mid, and low. In Yem the reconstructible root tone was usually retained in words of underlying *CVCC, *CCVC, and *VC root shapes. In CVCV words built on *CVC root shapes, however, a number of tone shifts, not yet fully understood, took place. Generally speaking, in such roots a reconstructible low tone changed in Yem to mid tone and, except where the second consonant (C_2) was a sibilant, the high and mid tones became low tone. But in words having a sibilant in C_2 position, it seems rather that the reconstructible mid and low tones both went to high.

In Bench the three-tone system has been expanded to one consisting of five level tones and one rising tone, largely through the reduction of bisyllabic stems (Wedekind 1985, 1990). In simple *CVC verb roots the original three tones — high, mid, and low — are, in general, maintained. They are realized, however, as respectively mid, low-mid, and low tones (coexisting with

the derived high and very-high tones), and are represented in the published Bench materials by the respective superscript numbers 3, 2, and 1 (Wedekind 1990; Breeze 1990). The high and very-high tones of Bench, marked by 4 and 5, and the rising tone, denoted by 2-3, normally reflect the former attachment of segmental morphemes, sometimes still present on the surface (e.g., Bench *sums*4 "to name, call out," which adds the PAA causative in *s as a denominative to *sum*1 "name"), but often no longer visible at the segmental level (e.g., Bench *k'og* 3 "cold" versus *k'og* 4 "to be cold"). In verbs the high tone (4) may derive from original low, mid, or high tone, but in nouns it seems generally to reflect reconstructed high tone. The very-high tone of Bench (5) is quite rare. In nouns of surface CVC shape, at least, its occurrence can signal the loss of a former medial consonant in a word that originally carried PO high tone (e.g., root #235); it also can occur in CVC nominals derived from verbs (see root #101), again possibly but not certainly where the PO tone was high. The sliding tone (2-3) in Bench occurs almost entirely in CVC nominals for which an earlier CVCV shape, with high or sometimes mid tone on the first syllable, can be posited.

The usual tonal correspondences among the three North Omotic (NOm) languages, Mocha, Yem, and Bench, appear to be the following:

(1) NOm *´ (high) = Mocha ['] ~ [_] = Yem /`/ = Bench 3 (/´/);
(2) NOm *` (low) = Mocha /`/ = Yem /¯/ = Bench 1 (/`/).
(3) NOm *¯ (mid) = Mocha /´/ = Yem /`/ = Bench 2 (/¯/);

As noted, Yem has /´/ for NOm *` and *¯, where C_2 is a sibilant, and apparently preserves the North Omotic values in underlying triconsonantal stems.

The reconstructed North Omotic tones in turn show regular correspondences with the PSC and Ngizim (Ng.) tones:

(1) PSC * ^ (falling word-tone) = Ng. /´/ = NOm *´ (high);
(2) PSC *ˇ (rising word-tone) = Ng. /`/ = NOm *` (low); and
(3) PSC *` (level word-tone) = Ng. /`/ = NOm *¯ (mid).

(In Ehret 1980, it should be noted, a different representations, /+/, /¯/, and /`/, were used for the respective PSC falling, level, and rising word-tones.) One notable, and seemingly regular although uncommon, exception to these patterns has been encountered in the Mocha data in the comparative lists of Chapter 5 (#304, 335, and 339):

Mocha ['] /#{g,k}oC-# (C = *s* or *t*) = NOm *` = PSC *ˇ = Ng. /`/.

Ngizim, for its part, regularly shifts high tone to low upon addition of an extension of the shape -C or -*a* to a CVC- verb stem; and some nouns may also be derived by tone shift from verbs (cf. root #880 for an example of noun derivation by tone-raising). The language appears also to reverse tone

in transitive verbs derived from CVC- intransitive stems by substitution of /ə/ for the stem vowel /a/ (e.g., roots #163 and 932, among others). But otherwise Ngizim consistently shows the correspondences noted.

On the basis of the three correspondence patterns, PAA is proposed here to have had definitely two reconstructible tone phonemes,

1. PAA *ˆ = PSC *+ = Ng. /´/ = NOm /´/, and
2. PAA *ˇ = PSC *¯ = Ng. /ˆ/ = NOm /ˆ/,

and probably a third,

3. PAA *¯ = PSC *¯ = Ng. /ˆ/ = NOm /¯/.

The reconstruction of the PAA etymons of the three correspondence sets as respectively falling, rising, and level word-tone in PAA would yield a neat phonetic accounting for the third pattern, but would also make the PAA reconstruction perhaps suspiciously parallel to that postulated by the writer for PSC (Ehret 1980). An alternative possibility is a system of high, low, and mid tones for the respective PAA markings *^, *ˇ and *¯, with the syllable rather than the word as the tonemic environment (as can be argued to be the case in Omotic). A third alternative, that distinctions of *stress* underlie the tonal correspondences presented above, is possible but — in view of the weight of the evidence from all over the family, viz. Omotic, Cushitic, and Chadic (see discussion of subclassification in Chapter 6) — much less probable than some kind of tonal system in PAA.

Diagnostic evidence for tone in Cushitic generally comes from Southern Cushitic, but in a number of cases the Eastern Cushitic language Arbore (Hayward 1984a) and the Agaw language Awngi (Hetzron 1978) provide the necessary indications. The following regular correspondences of Arbore (Arb.) and Awngi (Aw.) to Southern Cushitic word-tone have been noted:

a. PSC *ˆ = Arb. CVCv́, CVVC = Aw. CVCv́, VCV, CVCCVCVCv́;
b. PSC *ˇ = Arb. Cv́CV, Cv́v́C = Aw. Cv́Cv́(C), Cv́C, VCv́;

and probably

c. PSC *¯ = Aw. CVCVC,

where sequences of C and V (or v) represent Arbore and Awngi word and verb-stem shapes. The Arbore and Awngi tone patterns seen in (a), (b), and (c) thus correspond to PAA (1) *ˆ, (2) *ˇ, and (3) *¯ respectively.

The data drawn from Southern Cushitic, along with Arbore and Awngi, from Ngizim, and from Mocha, Yem, and Bench have made it possible for a considerable fraction of the Afroasiatic roots presented in Chapter 5 to be marked for tone. For many others, however, such marking cannot yet be ventured, and these have been left with tone not indicated.

5

PROTO-AFROASIATIC (PROTO-AFRASIAN) CONSONANT RECONSTRUCTIONS

PRESENTING THE DATA FOR *PAA* RECONSTRUCTION

About forty consonant phonemes can be firmly attributed to the proto-Afroasiatic (proto-Afrasian) language. And it is the presentation of these consonants that brings this study around finally to the main body of primary evidence: the comparative listing of Afroasiatic roots and their reflexes, referred to repeatedly in previous chapters, on which PAA reconstruction as a whole rests. The consonants come to the fore at this point because the fundamental data — the more than 1000 reconstructed roots presented in this chapter — are grouped for discussion according to their first stem consonants.

The order of presentation will follow two patterns. The obstruents, with the exception of the three laterals, are treated in sets defined by shared *point* of articulation. The comparative data for such consonants are therefore grouped into sets of roots beginning respectively in labial, dental, alveolar-palatal, velar, labiovelar, and pharyngeal-glottal obstruents. Within each of these sets, the listing starts with voiced-stop-initial roots and moves on to roots beginning in, successively, the equivalent voiceless stop, voiced fricative (where present), voiceless fricative, and ejective. The pharyngeal-glottal set differs in having PAA *h rather than an ejective as its glottalic member.

The sonorants, and also the non-sonorant laterals, are grouped instead by *manner* of articulation: there are thus three further sets of roots beginning respectively in nasals, liquids (the laterals and *r), and the glides *w and *y. Within the nasal set, roots are subgrouped by point of articulation, beginning with the labial *m and moving back through the mouth. The liquid set, in contrast, is arranged much like the obstruents, with the voiced member *l opening the set and the voiced lateral affricate, the voiceless lateral fricative, and the equivalent ejective lateral following; PAA *r rounds out the set. This method of grouping the evidence for the Afroasiatic consonants is heuristically important because a great many of the consonant sound shifts in the family have taken place within such sets, and the majority of the numerous consonant co-occurrence constraints have operated within the same confines.

The actual order in which the eight consonant sets (the velars and labiovelars are combined as one for heuristic purposes) are discussed is somewhat different from the order in which they have just been defined. The PAA labial, dental, velar, and labiovelar consonants form natural groups of clearly parallel composition, with equivalent stops, fricatives, and ejectives occurring in each. The alveolar-palatal set, in contrast, may eventually come to be seen as a grouping of convenience. Its voiced and voiceless non-continuants seem

better reconstructible as affricates than as stops. The alveolar-palatals will thus be discussed immediately following the four well-defined obstruent sets, but before the presentation of the set of nasals, because each of the points of obstruent articulation (including the palatal) can be matched up with either definitely or provisionally with a PAA nasal stop. The presentation proceeds thereafter to the pharyngeal-glottal (laryngeal), liquid, and glide sets, each of which lacks a corresponding nasal.

Within each main group of roots — those beginning with the same PAA consonant — the reconstructions are ordered according to their second root consonant, alphabetized as follows: *b, *c, *c', *d, *dl, *dz, *f, *g, *gʷ, *ɣ, *ɣʷ, *h, *ḥ, *j, *k, *kʷ, *k', *kʷ', *l, *ɬ, *m, *n, *ɲ, *ŋ, *ŋʷ, *p, *p', *r, *s, *s', *š, *t, *t', *tl', *ts, *w, *x, *xʷ, *y, *z, *ʔ, and *ʕ. If two roots have identical consonants, they are ordered according to the usual alphabetic sequence of their vowels. If they differ only in vowel quantity, the root with a long vowel is put after the root containing the short one.

Because of the overwhelming evidence that Egyptian and Semitic (along with Berber) form a single subgroup of Afroasiatic, called here North-Afroasiatic (see Chapter 6 below), a cognate was normally allowed into the comparative data *only* if the root could be found in Cushitic, Chadic, or Omotic, as well as in Egyptian and/or Semitic. A very, very few items having just Semitic and Egyptian attestations do appear, however, because they provide essential illustration of a rare correspondence or a point in need of clarification (e.g., the actually quite restricted distribution of a root for "two" that has commonly been presumed to be PAA: see root #503 versus #505 and 877). Roots so far known only from Cushitic and Omotic have also only rarely been used here, since the ancient long-term geographical proximity of these two divisions of the family increases the possibility of undetected word-borrowing in such cases.

The primary aim in selecting among the welter of possible sources of data was to obtain high-quality evidence from as far back in time as possible for each major subgroup or, failing that, for individual languages that have been well recorded and are especially conservative in phonology — thus the importance of the works by Jungraithmayr and Shimizu (1981) and Newman (1977) on Chadic reconstruction; by Sasse (1979) on proto-Eastern Cushitic, as revised and added to by Arvanites (1990) and Ehret (1991); by Appleyard (1984; n.d.) on Agaw reconstruction (as supplemented in Ehret 1987); and by the writer on Southern Cushitic and proto-Cushitic reconstruction (Ehret 1980, 1987). The provisional and partial reconstructions of Omotic consonants arrived at in Chapter 2 (Table 1), and of vowels in Chapter 4, above similarly provide a comparative perspective on the data cited from languages of that branch.

The longest timeline for Semitic comes from the pre-proto-Semitic biconsonantal roots reconstructed in Ehret (1989), supplemented by those to be found in Appendix 1 of the present work. Many of the classically accepted PS triliteral roots are thus only implicitly present in the comparative data that follow, because they are themselves subsumable as derivatives of the pPS bi-

consonantals that are directly cited here or indirectly implied in the citations of Arabic words. Of major importance as a second and direct source of Semitic data is Arabic, which has maintained all but one of the PS consonant distinctions, although changing many of the individual consonant articulations. Definitions of Arabic words are commonly cited here from Steingass 1884, not because his is a particularly good dictionary but because his meticulously detailed glosses are especially useful in the comparative semantic analysis. A third source of value here, because of the conservatism of its rendering of a number of key PS phonemes, is Modern South Arabian (especially Johnstone 1977, 1981).

The views of Alice Faber (1985) on PS sibilant realizations are followed in the representation here of the PS and pPS roots. The only two significant departures from convention are the substitution of *c ([ts]) for traditional PS *s, and of *s for traditional PS *š. The validity of using *s in place *š is nicely backed up by the wider Afroasiatic comparisons, from which it is clear that PS *s (erstwhile *š) is the regular PS reflex of PAA *s. In addition, the now standard recognition that the conventional PS *ś was a lateral fricative is given overt expression here by representing it as PS *ɬ.

Egyptian materials are drawn principally from the dictionary of R. O. Faulkner (1964), supplemented by data from Late Egyptian (Lesko 1982-90). The Coptic evidence, useful in establishing vowel correspondences, is taken in all but one instance from the Sahidic dialect (Vycichl 1983; Czerny 1976).

PRESENTING THE ARGUMENTS AND SUPPORTING EVIDENCE

In order to encompass within a single volume the amount of argumentation and supporting information required in a reconstruction of this scale, it was necesssary to develop a shorthand format for presenting the historical-comparative evidence. This format includes a regular sequence of laying out the different kinds of data and supporting materials, and the use of a variety of signs and abbreviations to convey concisely the particular bits of evidence and argument needed for interpreting each data set.

A first set of conventions used here governs the transcription of data:

1. Reconstructed Afroasiatic roots normally appear in either of two forms in the tabulations of this chapter: (a) in the case of verb stems, as *-CVC(C)-, *-VC-, or *-CV-, with the initial and terminal hyphens indicating the points of attachment of conjugational and derivational affixes; and (b) as *CVC(C)- or sometimes *VC- or *C- in nominals, where the hyphen denotes the point of attachment of the PAA suffixed TVs (terminal vowels) as proposed in Chapter 3 above. A few pronominals and markers of position (notably roots #1, 2, 118, 181, 209, 210, 309-311, 470, 482, 568, 571, 608, 609, 803, 924, and 949) manifest the shapes *C-, *-C-, or *CV, presumably reflecting their different syntactical or morphological positioning from those of the verbs and the

more common nominals, as well as their sometimes variable vowel components.

1.1. Two subsidiary conventions followed in the root reconstructions require mention here. One has to do with interpreting the instances where alternate shapes are given for a particular root. If such alternants are linked by the conjunction "or," the evidence is considered insufficient to decide which one is correct. If, on the other hand, the alternant forms are separated by a slash (/), then they represent alternate pronunciations that may have existed in the proto-language.

1.2. The second convention involves tonal representations. In general, tone when known is marked on the first vowel of a reconstructed root; in the case of long vowels represented as VV, the tone mark will reside above the first V.

2. For each comparative-historical data set, the reconstructed root and its meaning are presented in the lefthand column, with, successively, the Semitic, Egyptian, Cushitic, Chadic, and Omotic attestations of the root in the next five columns. Reconstructed roots are usually shown in the Cushitic and Omotic branches as stems of the shapes *CVC(V)C)-, *C-, and *VC-, and also, in the case of verbs, sometimes as CV-, where the hyphen denotes the stem-final point of attachment of any applicable suffixes. Verb stems cited from particular Cushitic, Chadic, and Omotic languages are given the same kind of representation.

2.1. A few verbs in their Cushitic reconstructed forms appear with hyphens both preceding and following the stem; in these instances, the roots are known, unlike most Cushitic verbs, to have been prefix- rather suffix-conjugating. For one particular Eastern Cushitic language, Yaaku, all verbs have conventionally been represented in this fashion and appear so in the data cited from it.

2.2. A rather different use of the hyphen appears in the Chadic reconstructions of Jungraithmayr and Shimizu (1981). In their Chadic root representations, such marking forms part of the root itself, in general denoting a consonant of undetermined reconstruction. Usually such consonants can be derived from one of the PAA laryngeals, *ʕ, *ʔ, *ḥ, or *h, but in some root-initial instances they indicate the presence of the Afroasiatic attributive prefixes *a-/*i- (as in the their reconstruction of PCh "four" in #94).

The morphological composition of an attestation and its semantic explanation, if not self-evident, are laid out parenthetically, directly following the citation of the reflex (or root) and its meaning. Where further information on the phonological derivation of an entry is needed, this too is presented within the parentheses. Cushitic correspondences are taken from Sasse (1979), Appleyard (1984; n.d.), and Ehret (1980, 1987, 1991); for Omotic correspondence patterns, see Table 1, Chapter 2. If no such further information is proffered, the particular cited form, whether an attested word or a reconstructed root, should be understood to preserve the same realization of its

segments as that reconstructed for its PC, PCh, PS, or PO etymon (as described in Chapter 4 for the vowels and in Chapter 5 for the consonants).

A second set of conventions is followed in communicating the etymological information about particular reflexes and their roots:

3. Within the parentheses that follow the root or word and its gloss, the first item of information offered — provided more than a simple stem is involved — is an abbreviated morphological analysis of that root or word, following the format: prefix (if any) + stem + suffix(es). The nominal affixes and verb extensions are given in their reconstructed PAA shapes, for the patterns of which see Chapter 3 above, and the name of each affix is abbreviated as indicated in the list of Abbreviations. For example, the finitive fortative verb extension in *p' is represented as "*p' fin. fort.," and the non-finitive extension in *n as "*n non-fin." To cite a particular case, proto-Eastern Cushitic (PEC) *bakkal- "morning star" in root #12 is followed by the notation "(stem + *l n. suff...)," indicating that the PEC root is composed of a PAA stem, in this case *-bâk-, plus a named nominal suffix, here of the shape *-l- (gemination in this instance is a secondary morphophonemic consequence). The lack of any further identification of this suffix means that its function and form are as discussed in Chapter 3.

3.1. In a few instances (nearly all from Egyptian), where a very common suffix is self-evidently present, the morphological explanation has been left out as superfluous. These cases typically involve occurrences of stem plus PAA *y inchoative/denominative (Egyptian *i* or *y*), PAA *t noun suffix, PAA *w deverbative, or Egyptian *w* plural, *wy* dual, or *t* feminine markers.

3.2. Nominals derived from verbs by stem-vowel lengthening are depile depicted differently, by the expression, "n. (or adj.) < v. by V > VV (or V:)." Also, in a scattering of cases, verbs seem to have been derived from nominals directly, without overt extensional marking, by simply applying the conjugational system to the stem of the word. Outside of Semitic, examples of this kind are relatively rare. They are identified by the notation "(v. < n.)" or "(v. < adj.)." Here as elsewhere in the text and in the tabling of data, the sign "<" denotes "derives from," while ">" signals the opposite derivational connection, "becomes" or "yields."

4. Next, if needed, comes a short semantic explanation, introduced either by the word "semantics" or the expression "i.e." For instance, the PEC root *biš- "body," entered under PAA root #25, *biš- "skin," is followed by the notation "(semantics: "skin" > "body")." Here the sign ">" ("yields") indicates that a meaning shift from earlier "skin" to "body" accounts for the Eastern Cushitic meaning; no morphological addition to the stem appears in this case, and thus only the semantic change needs to be mentioned.

4.1. The expression "i.e." has a particular signification when used in a semantic explanation: in instances where a word or root has developed a range of meanings, it directs attention to the specific part of the gloss that supports the morphological argument contained within the parentheses. For

example, in root #57, PAA *-pax- "to bend," the Egyptian entry — *phr* "to turn, turn about; revolve; surround, enclose" (stem + *l fin., i.e., surround, enclose) — has such a range of meanings. But it is the last of these, "surround, enclose," that preserves the finitive sense which the parenthesized morphological information, "stem + *l fin.," would lead us to expect. The use of "i.e." specifically singles out that meaning from among the several glosses and identifies it as the bearer of the connotation imparted by its given affix.

5. Usually last within the parenthesis, and again only when needed, comes the phonological derivation. Most often, this information identifies an earlier consonant or vowel reconstruction that gave rise, by regular sound changes within the relevant branch of the family, to the particular segment or segments in question. Either of two formats is followed in transmitting the phonological information:

5.1. If the attested segment collapses two or more proto-segments, then the identified proto-segment is said to yield the attested reflex, and the statement of this proposition conforms to the format, "X > Y." For instance, Eastern Cushitic *beel- "to lose," a reflex of PAA *-pêel- (root #44), carries the parenthetical comment, "PC *p > PEC *b," thus implying that at least one other PC consonant (in this case PC *b) can also have PEC *b as its outcome.

5.2. If, however, the attested segment has only a single possible source, then an opposite format is used, "Y < X." Once again drawing on an Eastern Cushitic example, we may cite from PAA *-p'ac'- "to cut off" (root #100) the PEC entry *b'ac'-, to which the following notation is appended: "(PEC *b' < PC *p')." This abbreviated commentary declares that PEC *b' derives regularly from proto-Cushitic (PC) *p', and implies as well that only PC *p' can yield PEC *b'. No further comment is necessary because the regular correspondence of PC *p' to PAA *p' is established in the portion of Chapter 5 that immediately precedes the presentation of the labial consonant data, of which root #100 is a part. (A tabular summary of such information for all the consonants is contained in Table 8 at the end of the chapter.)

6. Most of the conventions followed in representing the governing environments of particular phonological outcomes need no further explanation. But two particular notations may cause some confusion and so are worth special mention. First, the notation /_-# signifies a stem-final as opposed to a word-final environment, indicated by /_#. Second, the notation /C can be taken to mean "in the environment of a proximate consonant in the same word, whether following or preceding the sound in question."

7. Sometimes, too, a particular language's reflex of a reconstructed root may be cited within the parentheses, usually because that reflex provides information not otherwise available regarding tone or, in the case of Ngizim (Chadic), vowel realization. In addition, in a number of Omotic and a few Chadic and Eastern Cushitic entries, two or more cognate forms from different languages or subgroups have been included in the parenthesized part of the entry in order to substantiate a root not previously reconstructed for the particular Afroasiatic branch in question.

8. Not explicitly commented on in the parenthetical data are two kinds of gemination: (1) verb-stem-finally in Eastern Cushitic, connoting durational action; and (2) as a morphophonemic concomitant of certain suffixation processes in Eastern Cushitic and other divisions of the family. For discussion of these two processes, see the concluding section of Chapter 3.

THE *PAA* LABIAL OBSTRUENTS

In labial position proto-Afroasiatic (proto-Afrasian), like its daughter languages proto-Chadic (Newman and Maa 1966) and proto-Cushitic (Ehret 1987), must be postulated to have had four obstruents. The demonstration of PAA *b, *p, and *f is straightforward. One-to-one correspondences of PC *b, Egyptian *b*, and PCh *b are amply attested. Similarly, PC *p matches up with Egyptian *p* and PCh *p, and PC *f with Egyptian *f* and PCh *f. (Curiously, Jungraithmayr and Shimizu seem not to have recognized this last pattern, found both in Newman's data and in the evidence of Ngizim separately presented here, and offer only *p for both our *p and our *f.)

The fourth PAA labial was the least common in occurrence and is therefore less strongly attested than any of the other three. The wider systemic patterning of the PAA inventory and the actual reflexes of this consonant make a clear case, however, for reconstructing it as an ejective *p'. Its PC realization was apparently *p' (Ehret 1987), while its PCh reflex was the voiced counterpart of [p'], the implosive *ɓ. In Egyptian, PAA *p' yielded *p*, except in environment /#dlV_, where instead it seems to have produced *b* (roots #853 and 854).

In Semitic, normally reconstructed with just two labial obstruents *b and *p, the PAA consonants *p and *f fell together as PS *p while PAA *b and *p' both yielded PS *b. For proto-Omotic three labials were preserved: PAA *b as PO *b, PAA *p' as PO *p', and PAA *p and *f collapsing to PO *p.

Consonant co-occurrence constraints are prominently visible in the occurrence patterns of the PAA labials. The oldest and most widely found of these, forbidding non-identical labials (other than *w) from occupying the two consonant slots of a biconsonantal stem, goes back at least to the common point of ancestry of all the Afroasiatic divisions except probably Omotic. The evidence is as yet insufficient to fully prove the case for the archaic character of Omotic in this matter. But there is one strong datum, root #3, in its favor. This example supports the conclusion that the constraint came into being after the splitting off of the pre-Omotic ancestry from the rest of Afroasiatic, and indicates that its effect in the common ancestor language of the rest of the family would have been to shift the second of two unlike labials to identity with the first (in root #3, PAA *p or *f > *b /#bV_). Where two non-identical labials other than *w compose the first two consonants of a word in Cushitic, Egyptian, Chadic, or Semitic, one must thus postulate the loss of a former intermediate non-labial consonant, the addition of a labial-consonant prefix (e.g., the instrument-agent prefix in *m) to an already labial-initial

stem, or a borrowed or onomatopoetic origin for the word. As part of a more general development, proto-Semitic extended its labial co-occurrence constraint to forbid even instances of *identical* labials in the first two consonants of a root.

In its more general form, this pPS or PS co-occurence constraint apparently forbade any and all sequences of the same consonant in C_1 and C_2 position in PS (noted as pPS/PS rule #8 in Appendix 4). Only two simple verbs with identical C_1 and C_2 appear in Steingass's dictionary of Arabic, *hahh* "to stammer" and *zazz* "to touch lightly on the neck," the first transparently onomatopoetic and the second perhaps arguably of such an origin; and only a handful of nouns have this shape. What became in Semitic of PAA *C_1VC_2- sequences where $C_1 = C_2$ is a matter for future investigation. Among the five Afroasiatic roots here reconstructed with identical C_1 and C_2 (#354, 355, 489, 708, and 911), just two have identified Semitic reflexes (#708 and 911), each showing a different kind of dissimilation of the consecutive root consonants.

A rather different constraint in Egyptian greatly reduced the frequency of [f] in the language by blocking its occurrence as an initial consonant when the following stem consonant was Eg. *r* or one of the voiceless fricatives *s, h, ḥ*, or *ḫ*. (Curiously, however, a new *f* apparently deriving from earlier *p appears in the case of the alternate Egyptian forms *fsi ~psi* "to cook," root #53.) In such instances PAA *f was replaced with [p] (roots #74, 76, 85, 86, and 89). That this shift is specifically counter-indicated for Eg. *ḫ* (root #72) is further demonstration of the originally voiced pronunciation of *ḫ* (and its derivation from PAA *ɣ and *$ɣ^w$, as shown below in the section on velar consonants):

Eg. #9. PAA *f > Eg. *p* /#_VC[+continuant, -voice] and /#_Vr.

(Egyptian sound shift rules #2 and 4-8 are given below in the section on PAA dental obstruents below, while rule #3 appears in the section on the velar and labiovelar obstruents.) A further shift collapsing PAA *p' with *p,

#10. PAA *p' > Eg. *p*,

may have preceded a sound change,

#11. *p > Eg. *b* /#dl_ (= Eg. /#*ḏ*_).

But as yet the only known examples of the shift to *b* involve PAA *p' and not *p (roots #853 and 854)

One notable but as yet rarely attested labial sound shift marks off the Cushitic division of the family. In one environment PAA *b did not yield PC *b, but rather *m:

PC #1. PAA *b >

The rule thus appears
19). The same assim
Chadic languages ar
Mocha entry in root #
sions of the family.

PC #1. PAA *b > PC *m /#_Vn.

The rule thus appears to be a PC phonological innovation (see roots #18 and 19). The same assimilatory sound shift developed independently in certain Chadic languages and apparently in the Gonga subgroup of Omotic (see Mocha entry in root #32), but is not a general feature of either of those divisions of the family.