

An Introductory Note to Noam Agmon's “Materials and Language” with Special Attention to the Issue of Biliteral Roots*

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Abstract

Biliteral roots have been, and still are controversial. Because Noam Agmon's paper, to which this note is an introduction, assumes the reality of biliteral roots, the issue is revisited. Several important arguments in support of the biliterality of $C_1C_2C_2$ and $C_1C_1C_2$ verbs were put forth in the course of the past thirty years. They are reviewed here, along with the criticisms they have triggered. It is concluded that the evidence weighs in favor of recognizing synchronically active biliteral roots subjected to templatic pressure. It is further suggested that a by-product of Agmon's study and findings is a time frame for the emergence of templatic morphology in the Middle East.

Keywords

biliteral and trilateral roots; deaf verbs; templates; OCP; Arabic; Aramaic; Ethiopic; Chaha

Pour Monette Beserman

0. Preamble

BAALL is primarily committed to the publication of theoretical and descriptive articles on the phonology, morphology, syntax, semantics and diachrony of Afroasiatic languages, including work of a comparative nature possibly involving non-Afroasiatic as well as Afroasiatic data. Nevertheless, at the invitation of one of the editors, BAALL may occasionally publish research conducted at the periphery of these subfields, along with an editorial comment aimed at providing perspective and highlighting the theoretical significance of the contribution. Our first such article is Noam Agmon's "Materials and Language: Pre-Semitic Structural Change Concomitant with Transition to Agriculture". Agmon is a theoretical physical chemist at the Hebrew University in Jerusalem.

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The research on which he reports in his paper was presented and discussed in several places, including an interdisciplinary group involving two archeologists, a philologist, and a computer scientist. It has also benefitted from the input of a geologist and a linguist. The copious etymological appendix at the end of the paper is due to Yigal Bloch, a doctoral candidate in Jewish Studies at the Hebrew University in Jerusalem.

1. Introduction

Proto-Semitic takes us approximately 6000 years back, that is some 4000 years after the completion of the agricultural revolution in Western Asia. Is it possible to go back further beyond those 6000 years without having to tap the much more speculative results of the reconstruction of proto-Afroasiatic? It is Agmon's claim that consideration of astutely selected external evidence makes it possible to discern distinct layers in the proto-Semitic lexicon. Specifically, archeological evidence interpreted in the light of what is known of early technology yields the striking generalizations in (1).

- (1) i. the names of materials and technological processes which could not possibly have been available before the agricultural revolution all involve triconsonantal roots
- ii. biconsonantal roots exclusively underlie the names of materials and technological processes which had to be available before the agricultural revolution

Of course, Agmon's thesis presupposes that there is such a thing as a biconsonantal root. As such, it naturally links up with, and possibly sheds light on, a great classic of Semitic linguistics, viz. does the currently prevailing triconsonantal root format stem entirely or partially from an earlier biconsonantal structure? The spectrum of emotions, attitudes, opinions, and postures that have been triggered by this query for over a millenium is unparalleled, ranging from sheer passion to cold dismissal of the issue itself.¹ For general discussion, cf. Goldenberg (2005), Voigt (1988), Zaborski (1991) and references therein.

This writer is entirely dispassionate with respect to the answer, or even the value of raising the question itself. Indeed, whether it can be established that Semitic

¹ See for instance the summary dismissal of Mayer Lambert (1897)'s early theory of etymons by Kautzsch, the editor of various versions of Gesenius's Hebrew Grammar (Gesenius himself died in 1842), starting with the 27th edition (1902) and reproduced thereafter in all subsequent editions.

roots were originally biconsonantal, or alternatively triconsonantal, or whether both types have to be recognized, is an empirical issue. If it can be settled (one way or the other), a *fact* will have been brought to light. The importance of such a fact is exactly defined by a) the status of the question to which that fact is a possible answer, b) the theoretical framework from which the question itself derives.²

In this brief note, I intend to offer a personal assessment of the importance of Agmon's findings, one which may or may not exactly correspond to his own. I will proceed in roundabout fashion. First, in the next section (2.), I rapidly sketch out some of the arguments which have led to the idea that (some) Semitic roots might have originated as biconsonantal. In the following section (3.), I will revisit what I see as a highly significant trilogy of papers directly bearing on the issue, viz. a) McCarthy's treatment of Arabic deaf verbs (McCarthy 1981), b) Chaha morphology (McCarthy 1983), and c) a brief but important note on Aramaic due to Georges Bohas (Bohas 1990). In a fourth section, I discuss and evaluate some of the objections that have been raised in connection with McCarthy's proposals. Specifically, I argue on the basis of Chaha $C_1C_2C_2$ and $C_1C_1C_2$ verbs that the existence of the latter class does not invalidate McCarthy's analysis of Arabic deaf verbs. Finally, in the fifth and concluding section, I return to Agmon's paper proper. There, I suggest that Agmon may have dated the emergence of templatic morphology in Western Asia.

2. How did the issue of biradicality arise in the first place?

Two main considerations are involved. The first consideration has to do with the intriguing properties of Semitic roots in (2).

- (2) i. systematic root trilaterality is rare in the language families of the world, even in the Afroasiatic family
- ii. strictly consonantal roots are rare too, both outside *and* inside the Afroasiatic family

A second consideration can be illustrated by means of the hypothetical array of roots in (3).³

²) Sheer curiosity is also a possible source of questions, though in that case their relevance remains unspecified.

³) Any resemblance between the hypothetical roots in (3) and actual Semitic roots should be viewed as irrelevant.

- (3) a. \sqrt{tff} f. \sqrt{tfq}
 b. \sqrt{ytf} g. \sqrt{rzq}
 c. \sqrt{tfy} h. \sqrt{wdq}
 d. \sqrt{ntf} i. \sqrt{btq}
 e. \sqrt{dtf} j. \sqrt{sgq}

Suppose the following:

- (4) i. all the roots in the leftmost column in (3) share a core meaning, say ‘move’
 ii. the initial *n* in (3d) can plausibly be analyzed as an affix, say an inchoative
 iii. the *d* in (3e) cannot be identified as a specific affix, but the fact that it violates a prohibition against homorganicity between adjacent consonants, singles it out as a likely augment of some sort⁴
 iv. all the roots in the rightmost column are realized as say, telic verbs; accordingly, the fact that they all share a final *q* suggests that *q* signals telicity; hence *q* is an augment, too⁵

The conclusion is inescapable: \sqrt{tf} can be isolated as an ingredient, possibly a root. But suppose further (5).

- (5) i. no known Semitic language displays a CVC noun, verb or adjective whose paradigm of realization exclusively includes *tif*, or *tāf*, or *tūf* (crucially, not *tiff*, or *tāff*, or *tūff*)
 ii. no known single Semitic language displays the entirety of the array in (3); rather several, say 6, different Semitic languages were required for the sample in (3) to be put together

A qualification now appears to be required: if \sqrt{tf} is an ingredient (possibly a root), it can only pertain to an older, more ancient, reconstructed, layer. Thus, for Ewald (1870), \sqrt{tf} would be a proto-root (Urwurzel), while a corresponding, synchronically active, “truly alive” root (‘wirklich lebende Wurzel’) could only be trilateral, viz. \sqrt{tff} (cf. Goldenberg 2005 for a contemporary endorsement of Ewald’s position). But, if \sqrt{tf} is never a synchronically active root, is it more than just a linguistic fiction? One generation earlier, Gesenius (1834) had expressed similar misgivings, though in more tentative tone, noting that ‘monosyllabic (= biconsonantal) Hebrew roots are like the hidden root of a

⁴ An argument of just that type is put forth in Kuryłowicz (1972).

⁵ Arguments of that nature are developed in Bohas (1997, 2000) and Ehret (1989), though to different ends.

tree, of which only the trunk, the branches and the buds are visible'.⁶ He went on to say that the roots of words are proto-ingredients, 'often unknown and problematic inasmuch as they do not occur as such, and can only be accessed by means of combinatory procedures', presumably of the kind sketched out in (4) above. Without making too much of it, and with all due respect, it is tempting to object that Gesenius's botanical metaphor cuts both ways: invisible as it may be, the root of a tree is itself as alive as the trunk, the branches or the buds. In fact, there *could* be no tree without a root. In the next section, I examine a compelling bundle of arguments leading to a forceful rejection of the idea that the biradical root belongs in the world of fossiles. On the contrary, it appears to be thriving in rich and fragrant synchronic soil.⁷ The following remarks are confined to two types of verbal formations, the deaf kind, C₁C₂C₂, and the stutterers, C₁C₁C₂.

3. Three important papers

A major conceptual breakthrough in the approach to the structure of Semitic roots is due to John McCarthy. In two important papers, (McCarthy 1981, 1983), McCarthy put forth arguments which have become impossible to ignore both by those who oppose the idea that some roots are biradical, e.g. Goldenberg (2005), and by those who question the very relevance of the root (cf. Faust & Hever (this volume) for discussion of such positions). A third important paper (Bohas 1990) completes the demonstration.

3.1. Classical Arabic deaf verbs

In his treatment of Classical Arabic verbal morphology, McCarthy (1981) proposes that consonantal roots link up to templatic positions as shown in (6), where the template directly represents the prosody of the derivational class in which the verb is realized. The examples in (6) describe the realization of roots \sqrt{ktb} and $\sqrt{ħmr}$ in Forms I and IX, respectively (cf. e.g. *katab-tu* 'I wrote', *(?)ħmarar-na* 'we reddened').⁸ The mode of association is one-to-one and left-to-right, as *per* the classic conventions of autosegmental phonology (Goldsmith 1976), reflected here in the numbering of arrows.

⁶ Whereas Gesenius published his first grammar in 1813, he does not discuss the root until the 11th edition (Gesenius 1834).

⁷ Cf. also Nöldeke (1910).

⁸ For the sake of clarity, the vocalic melody, as well as inflectional and prothetic material, has been left out of the description in (6).

of unrealistic reconstructionists;¹² rather, it is as synchronically real today as it must have been at every earlier stage, going as far back as proto-Semitic. As it turns out, further evidence comes forth in support of the biradical analysis.

3.2. *Chaha 2nd person singular feminines*

In McCarthy (1983), several processes of Chaha are reviewed and shown to provide very strong evidence for one-to-many associations of root consonants to templatic positions. 2nd Person Singular Feminine Palatalization will be discussed here. Impersonal formation will be briefly discussed in 4. below.¹³

In Chaha, the 2nd Person Singular Feminine minimally differs in the following way from its corresponding Masculine in the Imperfective and Jussive paradigms: the 2nd Person Singular Feminine is realized by means of a floating palatalizing prosody affecting the rightmost palatalizable root consonant, a velar or an oral coronal obstruent.¹⁴ Examples appear in (11), each paired with its corresponding Masculine for control. In (11a), the last root consonant is palatalizable.¹⁵ Not so in (11b). In consequence, the Feminine exponent has to look further inside the root and eventually docks onto C₂.

(11)		Imperfective		Jussive	
		2nd ms.	2nd fem.	2nd ms.	2nd fem.
a.	√dmd ‘put together’	tɪdämɪd ¹⁶	tɪdämɪd ^y	dɪmd	dɪmd ^y
b.	√rgf ‘fall (leaves)’	tɪrägɪf	tɪräg ^y ɪf	nɪɟf	nɪɟ ^y ɪf

If both the last and the penultimate root consonants are palatalizable, the last one only, crucially not both, will be affected, as shown in (12).

¹² See also Zygmunt Frajzyngier’s valuable contemporary paper (Frajzyngier 1979) which deals with very similar concerns.

¹³ Cf. Leslau (1950, 1997) for a description of the Impersonal.

¹⁴ Reconciling the floating behavior of the 2nd Feminine Singular exponent with its unquestionable suffixal identity, is a representational challenge. Cf. Lowenstamm (2000) for a proposal.

¹⁵ All palatalized coronals are realized as palatoalveolar stridents. For the sake of clarity, I follow McCarthy (1983), in representing all palatalized consonants, coronals as well as velars, with a superscript y, viz. C^y.

¹⁶ [ä] and [ɪ] are central vowels, low and high, respectively. For an account of the proliferation of central vowels in Ethiopian Semitic, cf. Lowenstamm (1991). For a rejoinder based on Tigrinya evidence, cf. Buckley (1997b). [ɪ] is extremely unstable and drops out from the phonetic signal at the first opportunity. The effects of the syncope leading to its absence are not recorded in this paper.

(12)		Imperfective		Jussive	
		2nd ms.	2nd fem.	2nd ms.	2nd fem.
	√dgs ‘entertain’	tūdāgıs	tūdāgıs ^y *tūdāg ^y ıs ^y	dıgıs	dıgıs ^y *dıg ^y ıs ^y

Now, deaf verbs such as *sādādā* ‘he drove cattle’, *nāzāzā* ‘he dreamed’, *fägägä* ‘he died without being slaughtered’ provide a crucial test. If their roots are √sdd, √nzz, √fgg (as Ewald or Goldenberg would have it, *contra* the OCP), the rightmost instances only of the repeated consonant of each root should undergo palatalization, viz. *tısādıd^y*, *tırüzız^y*, *tıfägıg^y*. Indeed, Feminine palatalization never affects C₂ if C₃ is itself palatalizable, as evidenced in (12). If, on the other hand, the relevant roots are √sd, √nz, √fg, as McCarthy claims, the rightmost consonants are *d*, *z*, and *g*, respectively. They, that is both of their two instantiations, should palatalize in the context of 2nd Person Singular formation. That the facts vindicate the biliteral analysis is shown in (13).

(13)	Imperfective		Jussive	
	2nd ms.	2nd fem.	2nd ms.	2nd fem.
	tısādıd	tısād ^y ıd ^y	sıdıd	sıd ^y ıd ^y
	tırüzız	tırüz ^y ız ^y	nızāz	nız ^y āz ^y
	tıfägıg	tıfäg ^y ıg ^y	figäg	fig ^y äg ^y

In the next subsection, I turn to Bohas’s diachronic evidence.

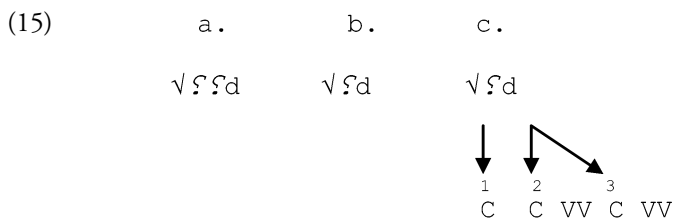
3.3. Classical Arabic, proto-Semitic, and Aramaic

Let us assume with Moscati and many others (cf. Moscati 1964, and references therein) that proto-Semitic possessed a voiced emphatic interdental (possibly lateral) consonant, Δ. The Arabic reflex of this consonant is an emphatic dental stop D. Its Syriac reflex is the guttural ʕ. Some examples given by Bohas appear in (14).

(14)		Syriac	Arabic
	In root-initial position	ʕfō ‘increase’	Dafā ‘be abundant’
	In root-medial position	rʕē ‘content with’	raDiya ‘content with’
	In root-final position	?arʕō ‘earth’	?arD ‘earth’

Bohas next examines the reaction of Syriac when the historical change under discussion, Δ → ʕ, affects a root already containing a ʕ. The necessary

comparison is provided by Arabic roots displaying D and ʕ in adjacent positions. For instance, if Arabic $\sqrt{Dʕf}$ ‘to double’ arises from proto-Semitic $\sqrt{\Deltaʕf}$, the Syriac reflex of proto-Semitic Δ being ʕ, a sequence such as $\langle ʕʕf \rangle$ should arise. Similarly, if the Arabic root $\sqrt{ʕDd}$ ‘prune a tree’ reflects proto-Semitic $\sqrt{ʕ\Delta d}$, a sequence such as $\langle ʕʕd \rangle$ should arise in Syriac. In both cases, the adjacency of the gutturals in the Syriac output of $\Delta \rightarrow ʕ$ amounts to a violation of the OCP. Yet, Syriac in both cases manifests deaf verbal or deverbal formations instead of the offending sequences, e.g. ʕʕfō ‘double’, ʕuffōfō ‘multiplication’ corresponding to $*\langle ʕʕf \rangle$, and ʕdīdō ‘weeded’ corresponding to $*\langle ʕʕd \rangle$. Bohas interprets the intermediate change whereby deaf roots arose, as in (15).



(15a) is the offending Syriac output of $\Delta \rightarrow ʕ$. The violation of the OCP is immediately dealt with by removing one of the gutturals. A biliteral root (15b) results. When matched with a template, it behaves as expected with rightward spreading of C_2 .¹⁷

No less elegant than McCarthy’s demonstration, Bohas’s adds a new argument against Ewald’s skepticism with respect to the reality of biradical roots: biradical roots can evolve from triradical roots through the course of history.

In the next section, additional evidence in support of the reality of biradical roots is considered.

4. The OCP and the Ethiopian ‘challenge’

4.1. The challenge

Unlike Classical Arabic, Ethiopian Semitic languages display numerous $C_1C_1C_2$ verbs. This fact seems to have been interpreted by Gideon Goldenberg as weakening McCarthy’s proposal on Classical Arabic deaf verbs (Goldenberg 1998, 2005). It is entirely legitimate to bring Ethiopian Semitic into the discussion in an attempt to evaluate McCarthy’s predictions in that area,

¹⁷⁾ The template in (15c) is meant as underlying ʕdīdō . The vocalic melody /i-o/ has been left out.

yet things are perhaps not as simple as it might seem. Consider for instance the two propositions in (16).

- (16) i. All aquatic creatures have scales
ii. Scales make it possible for trouts to resist buoyancy

A priori, both (16i) and (16ii) could be true, or both false, or (16i) could be true while (16ii) is false, or (16i) could be false while (16ii) is true. In reality, we know (16i) is false, and we wonder about (16ii). The point here is that the truth (or falseness) of (16i) is of no help in the assessment of (16ii): (16ii) could be false for a number of reasons, but surely not because (16i) is false.

Now, consider the two propositions in (17).

- (17) i. All languages exhibiting non-concatenative morphology reject $C_1C_1C_2$ verbs
ii. McCarthy's explanation of the absence of $C_1C_1C_2$ verbs in Classical Arabic is the correct explanation of that phenomenon

The system in (17) replicates the same possible *non sequitur* as could be observed in (16) in the sense that the falseness of the first proposition sheds no light on the status of the second: (17ii) may well be false, but certainly not because (17i) itself is false. Clearly, a bit more elaboration is required before we can assess the possible relevance of Ethiopian Semitic with respect to evaluating (17ii). Perhaps, the problem should be reframed in such way that we can have a sense of what can be expected and what can not be expected.

I suggest the following two moves. First, that McCarthy's proposal be considered against the background of the whole of Arabic (henceforth 'Arabic'), i.e. not just Classical Arabic, but also the modern dialects. Two possibilities now arise with respect to consistency, and they will be considered in turn: either 'Arabic' is consistent with respect to the ban on $C_1C_1C_2$ verbs, or inconsistent. By *inconsistent*, I refer to a hypothetical state of affairs such that some dialects of Arabic would enforce the prohibition, while others would not. Then, depending on whether 'Arabic' is consistent or not, we can ask what can be expected from the Ethiopian evidence, depending on whether Ethiopian Semitic languages (henceforth 'Ethiopic') are consistent in their toleration of $C_1C_1C_2$ verbs, or not. The four logical possibilities in (18) arise:

- | | | | | |
|------|--------------|--------------|--------------|--------------|
| (18) | a. | b. | c. | d. |
| 'A' | – consistent | – consistent | + consistent | + consistent |
| 'E' | – consistent | + consistent | – consistent | + consistent |

(18a) and (18b), both represent the hypothetical situation in which 'Arabic' would *inconsistently* enforce the ban on $C_1C_1C_2$ verbs. This hypothetical inconsistency will suffice to cast doubt on McCarthy's program and analysis. Whether 'Ethiopic' consistently or inconsistently tolerates $C_1C_1C_2$ verbs provides no insight into the issue at hand.

(18c), whereby 'Arabic' consistently behaves as expected by McCarthy validates his claim in the strongest fashion, but 'Ethiopic', if inconsistent in the relevant respect, again fails to contribute anything.

Finally, (18d), the hypothetical situation whereby 'Arabic' *consistently* rejects what 'Ethiopic' *consistently* tolerates, is the only configuration in which 'Ethiopic' can possibly be of relevance to the assessment of McCarthy's idea. But an obligation now weighs on those who wish to jointly discuss 'Arabic' and 'Ethiopic': if 'Ethiopic' is systematic in the relevant respect (by hypothesis (18d)), its contribution can no longer be the raw data of the group's languages. Rather, it must be an analysis of what makes it possible for $C_1C_1C_2$ verbs to proliferate in Ethiopian Semitic.

As it turns out, the hypothetical configuration in (18d) exactly matches the empirical situation on the ground, as we know: a) no Arabic dialect has been reported to tolerate $C_1C_1C_2$ verbs, other than in exceptional fashion, b) all Ethiopian Semitic languages (to the best of my knowledge) display verbs of that type. Of course, the reality of differences of that nature is what motivates the recognition of *distinct* 'groups' or 'branches' in the Afroasiatic family, in the first place.¹⁸ Consequently, we have no choice but to assume that the differential behavior of 'Arabic' and 'Ethiopic' with respect to $C_1C_1C_2$ verbs, rather than being an isolated fact, proceeds from a more general system of differences distinguishing the two groups. In the case at hand, the obvious place to look for an answer is the fundamental difference in the organization of the verbal systems of the two groups.

The facts are well known, and will be summed up only briefly. A root in Arabic, here \sqrt{ktb} 'write', can be realized in more than one of the various conjugation classes, of which three are given in Roman numerals in (19a). Depending on the conjugation, the argument structure of the verb will be modified as the glosses suggest. Moreover, each conjugation is characterized by formal properties: initial vowel length in III, gemination of the medial consonant in II, short vowels and no gemination in I. The Ethiopian state of affairs can be illustrated by means of Tigrinya, a member of the Northern subgroup of Ethiopic. Tigrinya, as the other Ethiopian Semitic languages, shows three *types* of verbs characterized by formal properties reminiscent of those exhibited by the three

¹⁸ This is a good thing to keep in mind when evidence from one group is marshalled to evaluate an analysis resting on data from a different group.

'measures' of Arabic illustrated in (19). The similarity goes no further, however. Indeed, a root can be realized in no more than one type. This is reflected in the fact that three different verbs have been necessary for the illustration of each type. Moreover, no type carries specific argument structure.¹⁹

(19)	a.		b.
	Arabic		Tigrinya
I	katab-a 'he wrote'	Type A	säbär-ä 'he broke'
II	kattab-a 'he cause (x) to write'	Type B	wässäx-ä 'he added'
III	kātab-u 'they corresponded'	Type C	bāräx-ä 'he blessed'

Chaha, a member of the Gurage cluster of the Southern subgroup of Ethiopic, displays all three types, as well. But because of specific developments in Southern Ethiopic in general, and because of the opacity of the gemination patterns of Chaha in particular, the Perfective paradigm does not indicate type membership as crisply as say, Tigrinya. Accordingly, a different criterion—not justified here—will be used for type detection in Chaha, viz. the type specific vocalization of the stem of the Jussive paradigm.²⁰ This is illustrated in (20). An important point is the specific status of verbs from quadriliteral roots. They are exceptionlessly assigned to Type B, as shown with the example of *siräpätä* 'he spent time away'.

(20)	Perfective	Jussive	Root	Typical Vocalization Pattern
Type A ₁	kätäfä	yä-k ₁ t ₁ f	√ktf 'chop meat'	1-1
Type A ₂	sänäxä	yä-s ₁ r ₁ x	√srx 'be impure'	1-ä
Type B	q ^w ämärä	yä-q ^w äm ₁ r	√q ^w mr 'become strong'	ä-1
	siräpätä	yä-sämbıt	√snbt 'take a sabbatical'	
Type C	č'af ^w ärä ²¹	yä-č'af ₁ w ₁ r	√č'f ^w r 'scratch'	a-1

¹⁹ The seemingly arbitrary assignment of a given root to a type is reminiscent of the Romance verbal system where verbs are similarly assigned to a unique conjugation type identifiable by the thematic vowel of the infinitive, e. g. Spanish *dorm-i-r* 'sleep', *tom-a-r* 'drink', *com-e-r* 'eat'.

²⁰ Another criterion, Type B palatalization, will be discussed in 4.3.

²¹ [č'] is an ejective palato-alveolar.

Armed with this criterion, we can immediately bring to light a significant difference between $C_1C_2C_2$ verbs and $C_1C_1C_2$ verbs: while deaf verbs appear in all types, $C_1C_1C_2$ verbs appear in one type only. The fact that $C_1C_2C_2$ verbs can belong to any type is illustrated in (21).

(21)	Perfective	Jussive	Root	Typical Vocalization Pattern
Type A ₁	gämämä	yä-gımım	√gm 'chip'	ı-ı
Type A ₂	fäzäzä	yä-fızız	√fz 'surpass'	ı-ä
Type B	m ^w ätätä	yä-m ^w ätıt	√m ^w t 'coax'	ä-ı
Type C	bazäzä	yä-bazız	√bz 'feel lonely'	a-ı

The fact that $C_1C_1C_2$ verbs are restricted to one type only is shown by means of several examples in (22). The issue of the composition of the root will be taken up below.

(22)	Perfective	Jussive	Root	Typical Vocalization Pattern
Type A ₁				ı-ı
Type A ₂				ı-ä
Type B	k ^y äk ^y ärä g ^y äk ^y ätä	yä-käkır ²² yä-gäkıt	√? 'hug' √? 'escort'	ä-ı
Type C	q ^w äq ^w äsä	yä-q ^w äq ^w ıs	√? 'become burnt'	a-ı

Even before we ask why $C_1C_1C_2$ verbs are exclusively of Type B, one thing is already abundantly clear: deaf verbs are treated as 'regular' with respect to type membership; $C_1C_1C_2$ verbs are not. Thus, while Chaha tolerates such verbs, there are obvious signals that their makeup must be quite different from

²²⁾ For the absence of palatalization in the Jussive, see below.

4.3. *The OCP*

Here, I adduce evidence, already mentioned in Banksira (2000), from the behavior of Chaha $C_1C_1C_2$ verbs of Type B. To appreciate the point, a further piece of information about Type B exponence is necessary. Under specific conditions pertaining to the consonantal composition of the root, Type B membership may be marked by a palatalization prosody accompanying the realization of the Perfective and Imperfective paradigms, crucially not the Jussive. This may take different forms: in order of preference, palatalization of C_1 or C_2 , never both C_1 and C_2 . Both kinds are exemplified in (24a) and (24b), respectively. (24c) is meant to document the fact that Type B palatalization never affects two different consonants of the same root: palatalization of C_1 in (24a) precludes concomitant palatalization of C_2 , even though k in root medial position is a possible target of Type B palatalization when C_1 itself is incapable of sustaining palatalization, to wit (24b).

(24)	Perfective	Imperfective	Jussive	Root ²⁵
a.	sʾākātā	y1sʾākıt	yäsākıt	√skt 'fix'
b.	mākʾārā	yımäkʾır	yämäkır	√mkr 'burn'
c.	*sʾäkʾātā	*y1sʾäkʾıt		

An important point for what follows, just mentioned but worth stressing again, is the systematic absence of the palatalization prosody characteristic of Type B in the Jussive paradigm (*yäsʾākıt, *yämäkʾır).

With these rough elements of description of Type B palatalization in mind, consider now the formation of the Impersonal person. The Impersonal involves a complex suffix consisting of a floating labialization prosody, followed by suffix +i.²⁶ The labialization agent will dock onto the rightmost labializable consonant, if there is one. Unless the rightmost labializable consonant is itself the rightmost radical consonant, the +i suffix will palatalize the last root consonant

²⁵ Because palatalization in *sʾākātā*, *y1sʾākıt*, *mākʾārā*, and *yımäkʾır* is a consequence of Type B membership, it has been factored out of the characterization of the relevant roots; hence √skt, √mkr not *√sʾkt, *√mkʾr.

²⁶ The Impersonal equipment can be represented as [v ... +/w+y/] or [v ... +/u+i/]. Mohammed El Medlaoui gets credit for noting the striking similarity between the Impersonal melody of Chaha and the Passive melody of Classical Arabic, cf. *kuṭīb+a* 'it was written' (El Medlaoui 1995). At this point, no one is in a position to implement the correlation in the form of an articulated proposal, as El Medlaoui (p.c.) is the first to emphasize. We do know however that passives are often mobilized for the expression of the Impersonal, cf. Latin *fertur* 'it is reported', German *es wurde getanzt* 'dancing took place'.

(if palatalizable). An example of full realization of the entire set of characteristics of the Impersonal is given in (25b), along with the third person masculine singular for comparison in (25a).

(25)	Perfective	Imperfective	Jussive	Root
a.	käfätä	yikäfit	yäkıfit	√kft 'open'
b.	käf ^w ät'i	yikäf ^w ıt'i	yäkıf ^w ıt'i	

An interesting example of the interaction between the three phenomenologies discussed here, Type B palatalization, Impersonal Formation, and deaf verbs is afforded by verb *k'äsäsä* 'he accused', of which the relevant forms of 3rd person singular masculine (not impersonal!) appear in (26). Because the number of consonants involved in the makeup of the root is precisely what is at stake here, it has been left undecided in (26). On the other hand, because palatalization is credited to type membership, it has been left out of the characterization of the root.

(26)	Perfective	Imperfective	Jussive	Root
	k'äsäsä	yık'äsıs	yäkäsıs	√ks or √kss?

The ä-ı vocalization of the Jussive clearly indicates membership in Type B. So does the selective palatalization, present in both the Perfective and the Imperfective, but absent from the Jussive. Now, consider the Impersonal realizations for verb *k'äsäsä*, in (27).

(27) a.	b.	c.	
Perfective	Imperfective	Jussive	Root
^(w) k'yäs'yäs'i	^(w) yık'yäs'yıs'i	yäk ^w äs'yıs'y'i	√ks

The first thing to note is the double palatalization of the last two root consonants. This is reminiscent of the behavior of the 2nd Person Feminine illustrated with the examples in (13). As McCarthy (1983) had pointed out, this is further proof of the biliteral character of roots underlying deaf verbs in Chaha. Note, moreover, that Type B palatalization, stable throughout both the Perfective and Imperfective paradigms precludes the realization of the labializing component of the Impersonal.²⁷ On the other hand, the regular absence of

²⁷ The fact that Type B palatalization on a potentially labializable radical (such as a velar, as in (27a,b)) has not yielded to the labializing component of the Impersonal, rather has forced it to

type B palatalization in the Jussive makes room for the expression of the full complex Impersonal affix, with both labialization on C_1 , the important point here, and palatalization of the two instances of C_2 , viz. $yäk^{w}äsʔiʔi$.

Having reviewed the behavior of Type B $C_1C_2C_2$ verbs and the formation of their Impersonal, we can now turn to $C_1C_1C_2$ verbs in similar contexts and see whether the evidence militates in favor of a biradical or triradical analysis of the roots involved. Consider $kʔäkʔärä$ 'he hugged'.

(28) Perfective	Imperfective	Jussive	Root
$kʔäkʔärä$	$yikʔäkʔır$	$yäkäkır$	\sqrt{kr} or $\sqrt{kkʔ}$

In view of the vocalization of its Jussive, we can safely conclude that $kʔäkʔärä$ is a Type B verb. This is corroborated by the distribution of palatalization, present in the Perfective and Imperfective, but absent from the Jussive.

Less straightforward is the fact that both instances of the velar are palatalized. Indeed, we saw earlier that type B palatalization never affects simultaneously C_1 and C_2 (cf. $sʔäkätä$ 'he fixed', not $*sʔäkʔätä$), and targets C_1 preferentially. Clearly, if the root is $\sqrt{kkʔ}$, ungrammatical $*kʔäkärä$ is expected. In order to avoid this embarrassment, an exceptionless generalization regarding what consonants palatalize or not in Type B would now have to be amended so as to make room for cases where C_1 and C_2 are identical, clearly an *ad hoc* move. On the other hand, under the view that a) the root of $kʔäkʔärä$ is \sqrt{kr} , and b) it has been restructured as in (29) as a consequence of the OCP, double palatalization follows with no need to bend the relevant generalization.

(29) a.	b.	c.
Perfective	Imperfective	Jussive

But in addition, a prediction now follows regarding the form of the Impersonal of $kʔäkʔärä$. The careful reader will remember that Type B palatalization does not yield to the labializing portion of the impersonal. Again, this has been noted by means of the parenthesized symbol, ^(w), in (30a,b). By contrast, the

remain in a kind of limbo, is graphically represented by the parenthesized ^(w) next to its otherwise expected docking site.

canonical absence of Type B palatalization in the Jussive will no longer thwart the expression of the labializing component of the Impersonal, noted therefore without parentheses in (30c).

(30) a.	b.	c.
Perfective	Imperfective	Jussive
$\begin{array}{c} \text{C} \quad \text{VX} \quad \text{C} \\ \text{V} \quad \text{C} \quad \text{V} \end{array}$	$\begin{array}{c} \text{C} \quad \text{VX} \quad \text{C} \\ \text{V} \quad \text{C} \quad \text{V} \end{array}$	$\begin{array}{c} \text{C} \quad \text{VX} \quad \text{C} \\ \text{V} \quad \text{C} \quad \text{V} \end{array}$

Under the biliteral proposal in (30), it is expected that both instantiations of the velar in (30c) will undergo labialization. This is the correct outcome, as shown in (31).

(31) Perfective	Imperfective	Jussive	Root
k ^w äk ^w äri	yäk ^w äk ^w iri	yäk ^w äk ^w iri	√kr

Under the rival trilateral hypothesis, √kk^wr, ungrammatical *yäk^wäk^wiri was expected.

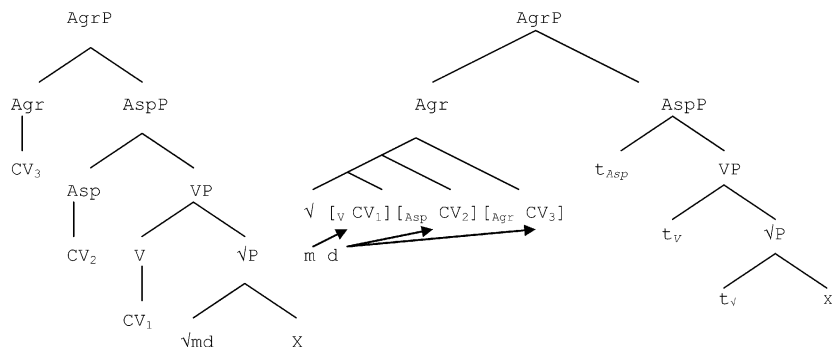
Based on the evidence presented in 2. and 3., I conclude that the biliteral root is well alive in Chaha today. There is no reason to suppose that biradical roots were not equally alive at every other earlier synchronic stage. We know indeed from Leslau (1950) and Polotsky (1938) that Chaha was not significantly different, in the relevant respects, half a century ago. Why should McCarthy's analysis of Classical Arabic deaf verbs not be valid at every synchronic stage of the language? Why should proto-Semitic itself not have had synchronically very real biradical roots, as well? The burden of the proof squarely rests with the opposition. It is incumbent on the opposition to address the Chaha evidence.

In the next section, I return to Agmon's paper.

5. Concluding remarks

Agmon's results can be appreciated from a variety of viewpoints. For instance, some readers (of which I am not) might be especially interested in the vistas opened on the origin of language. Possibly, some such readers will point out that Western Asia is unlikely to be the cradle of human language. Others might retort that one of the paths to the origin of language necessarily runs through one of the better documented parts of the world, both linguistically

(33)



If this is on the right track, then the templatic pressure effect follows. Indeed, if templates have internal architecture, and that architecture is syntactic structure itself, the root will be expected to adapt to the template, not vice versa. In offering a time frame for dating the drive towards root trilateralism, Agmon may actually have dated the rise of root-and-template (binyanic) morphology.

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