

Materials and Language: Pre-Semitic Root Structure Change Concomitant with Transition to Agriculture

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Abstract

Materials and language have evolved together. Thus the archaeological dating of materials possibly also dates the words which name them. Analysis of Proto-Semitic (PS) material terms reveals that materials discovered during the Neolithic are uniquely triconsonantal (3c) whereas biconsonantal (2c) names were utilized for materials of the Old Stone-Age. This establishes a major transition in pre-Semitic language structure, concomitant with the transition to agriculture. Associations of material names with other words in the PS lexicon reveal the original context of material utilization. In particular, *monosyllabic* 2c names are associated with a pre-Natufian cultural background, more than 16,500 years ago. Various augments introduced during the Natufian, and perhaps even more intensively during the Early Neolithic, were absorbed into the roots, tilting the equilibrium from 2c toward 3c roots, and culminating in an agricultural society with strictly triconsonantal language morphology.

Keywords

Semitic languages; Levant; transition to agriculture; biconsonantalism

Introduction

The origin of one of the most useful human “inventions”, language, is shrouded in mystery. Ancient language study relies on written documents. Yet the invention of writing, which evolved almost simultaneously in Egypt and Mesopotamia, about 5,200 years Before Present (BP)¹, occurred much later than the

¹ This article includes an Etymological Appendix by Yigal Bloch, Department of Jewish History, The Hebrew University, Jerusalem 91904, Israel. I have benefited from discussions, references and comments from Yigal Bloch, Edit Doron, Eran Cohen, Steven E. Fassberg, Shlomo Izre'el, Paul V. Mankowski and Alexander Militarev (linguistics), Ofer Bar-Yosef, Anna Belfer-Cohen, Leore Grosman, and David Wengrow (archaeology/prehistory), and Amotz Agnon (Geology). We are grateful to the editors of BAALL for advice and assistance. Work supported by The Hebrew University Program for Converging Sciences (2007).

¹ All dates are in the calibrated ¹⁴C scale. BP=BCE+1950.

early stages of language development. To understand the origin of language one must venture into prehistory. Comparative historical linguistics has succeeded in revealing common origins and reconstructing hypothetical prehistoric languages, most notably Proto-Indo-European. Yet linguistic archaeology, which seeks to relate these to archaeological findings (e.g., Blench and Spriggs 1997–1999; Renfew, McMahon and Trask 2000), seldom deals with the oldest documented family of languages, the Semitic languages. Progress in comparative Semitic linguistics, originally motivated by the study of the Biblical lexicon, was recently extended to additional segments of the Semitic lexicon through several ambitious yet unfinished projects (*LCS*, *DRS*, *SED 1*, *SED 2*). Others have attempted to use it to reconstruct prehistoric developments (Moscati 1957; van Selms 1971; Zohar 1992; Diakonoff 1998). There is a broad consensus over the dating of proto-Semitic (PS) to the Chalcolithic period, ca. 6,300 BP (Militarev 2000) or 5,750 BP according to Kitchen et al. (2009). Beyond that, however, there is no agreement regarding the origin of the Semitic people, and no detailed discussions of correlations with the dense archaeological finds of W. Asia.

For example, archeology has unraveled a major development in human prehistory: the “agricultural revolution” (Smith 1998; Clutton-Brock 1999). Despite its name, in W. Asia it was a rather prolonged process (terminating around 10,500 BP) during which *Homo-sapiens* forsook their nomadic way of life based on hunting and gathering in favor of sedentarism and dependency on domesticated crops and mammals. It is likely that the mentality of humans also changed, from perceiving themselves as an integral part of nature to bearing aspirations of dominion over the plant and animal kingdoms. Was such a dramatic change accompanied by a concomitant “linguistic revolution”? Answering this question is a major goal of the present treatise.

The PS lexicon is highly suitable for addressing this problem. It postdates the transition to agriculture, yet is not too temporally distant for the hunter-gatherer lexicon to have been completely forgotten. Possibly, then, it contains contributions from both civilizations. PS is based on some of the oldest documents in human history, which leads to reliable reconstructions. Yet it belongs to an era before the rise of the big empires, which mixed up populations and their languages. Proto-Afroasiatic (PAA), an older proto-language from which the Afroasiatic (AA) language families (Semitic, Egyptian, Berber, Cushitic, Omotic, and Chadic) have evolved, might also be relevant to our discussion (Blench 2006). However, unlike Semitic and Egyptian, the other African languages have only recently been documented. Consequently, there is as yet no consensus over the PAA lexicon and its temporal or geographic origins (indeed, there are many profound disagreements between recent studies that attempt to reconstruct a sizeable PAA lexicon: *HSED*, updated as *DAE*, on the one hand,

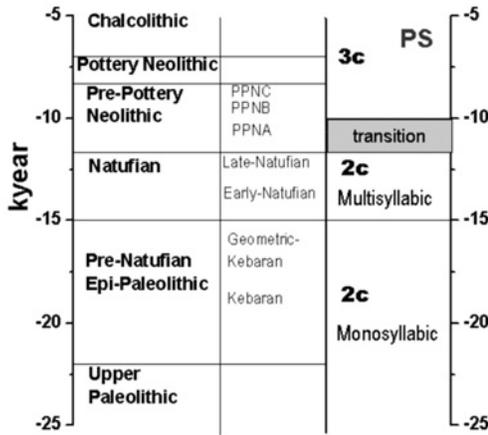


Figure 1. A model for the pre-Semitic language chronology (in kyr BP) and its relation with the corresponding archaeological periods in the Southern Levant.

and Ehret 1995, on the other). Therefore, we will deal with PAA in the present study only anecdotally. However, even if we restrict our attention to the PS lexicon, it cannot be studied all at once. Hence, the first step is the judicial choice of a semantic field best amenable to a comparison with archeological data.

In parallel to developing their communication skills, humans harnessed new materials and developed methods for processing them. The study of the history of chemistry and technology reveals the long and tortuous path involved in this endeavor (Singer, Holmyard and Hall 1954; Lambert 2005). New materials evidently required new words for describing them. A main goal of the present work is thus to correlate PS material names from before and after the transition to agriculture with recent archaeological data. As shown below, this reveals a major change in linguistic structure, in which biconsonantal (2c) material names refer only to materials already known in the Old Stone Age, whereas materials discovered as of the Neolithic have only triconsonantal (3c) names. In addition, we discuss the likely characteristics of the hunter-gatherer language that predated the transition, and suggest the schematic model for its development presented in Figure 1.

The Biconsonantal Conundrum and Levantine Prehistory

Since the work of the 10th-century CE philologist Menaḥem ben Saruq (1986), there has been an ongoing debate over whether Semitic languages once had a predominantly 2c structure (see del Olmo Lete 2008: 53–86, and the earlier literature cited there). Indeed, numerous 3c roots appear to have been extended

from 2c roots by the addition of a third consonant, e.g. in Hebrew (Hurwitz 1966 [1913]), or AA languages in general (Ehret 1995, Ehret 1989, Bohas 1997, Zanned 2005). This process is exemplified in Tbl. A2 of Appendix A for roots depicting “prehistoric activities” such as breaking, cutting, and burning (Tbl. A1 there provides transliterations). Such root extensions are debatable, because there are no clear rules for predicting which consonants have been added and in which position (see Zaborski 1991). For example, could one reconstruct a 2c root **bt* ‘cut’ based on the Hebrew root *btr* and Akkadian *btq*, without the independent attestation of *btt*?²

Root extensions can be placed on safer grounds by limiting the consonants that participate in the augmentation process. For example, it is well recognized that the so-called 3c “weak roots” (involving the consonants *n, w, y*), indeed appear to have a 2c structure (Lipiński 2001: §§ 44.1–15). Thus, if C_1 and C_2 denote two consonants, the “hollow” roots of the form C_1wC_2 and C_1yC_2 are considered of 2c origin, as well as wC_1C_2 , nC_1C_2 and roots with a duplicated last consonant, $C_1C_2C_2$ (whenever there is a cognate with no vowel in-between the reduplicated radicals). The situation is more problematic in cases of roots of the form yC_1C_2 , C_1C_2w and C_1C_2y , since in these categories roots that were probably originally 2c co-exist with those which show no signs of 2c origin, and hence must have been 3c from the beginning. The roots above the dashed lines in Tbl. A2 belong to the weak root category, and they make the case that there are many 2c roots in Biblical Hebrew (BH) and Syriac depicting these prehistoric activities.

In addition, some Semitic affixes are widespread in AA, such as instrumental *m-*, feminine *-t* or causative *š-* (see Lipiński 2001: §§ 29.20, 30.1–3, 41.7). These may have been absorbed into the root, which was thereafter perceived as 3c. For example, the BH root *šhr* ‘black’, taken together with the weak root *hry* ‘anger; fire’ and the reduplicated root *hrr* ‘burn’ (Tbl. A2), attest quite convincingly to the existence of a 2c root **hr* ‘burn’, which evolved to yield these three 3c roots.

Was there thus an archaic 2c “language” which evolved into the 3c Semitic languages? Evidence such as that listed in Tbl. A2 is still a far cry from a solution to this “2c conundrum”. First, instead of relying on individual languages, we should go back in time to their common proto-language, provided that it can be reliably reconstructed. Then, we would like to be able to “date” 2c vs. 3c roots in this proto-language, almost as if they were objects from an archaeological excavation, and establish a temporal hierarchy of language morphology.

² The (strong) consonants that form the root are denoted in bold.

We achieve this in the limited semantic field of materials. The first step involves reconstructing material names in PS. Reconstructing this hypothetical prehistorical language is far less controversial than its ancestral PAA, yet it has sufficient time-depth to make the comparison of 2c vs. 3c roots interesting and meaningful. There has been noticeable progress in comparative Semitic linguistics, as manifested e.g., in LCS, *DRS*, *SED 1* and *SED 2*. Yet these projects are unfinished, so that a “dictionary” of PS has yet to be compiled. Within the limited realm of materials, this is achieved in the etymological appendix (EA) by Yigal Bloch, appended to this treatise. By collecting cognates from different Semitic languages, the EA establishes the PS origin of a root whenever it is attested in Akkadian and at least one additional West Semitic language.³ In this process it is crucial to eliminate loanwords, because borrowing between daughter languages at a later period may be confused with a common origin within their proto-language. Here the EA discusses the different opinions found in the literature and, as a rule, adopts a consensus viewpoint whenever such exists. Subsequently it also determines the 2c vs. 3c morphology of each root according to the principles detailed above. We believe that most of the reconstructions in the EA would be considered commonly acceptable, with a few exceptions (such as **šupr* ‘yellow; copper’) for which we think there is nevertheless reasonable evidence.

The outcome of the EA is summarized in Table 1, in a two-dimensional structure. One dimension is used for linguistic and the other for archeological input. The columns summarize the linguistic data of the EA by giving the Hebrew and Akkadian cognates with the PS reconstructions classified by their 2c vs. 3c morphology. In the rows, materials are arranged according to the period of their initial utilization as deduced from archeological studies.

Prehistoric chronology is geography-dependent. In the present work it is based on the prehistory of W. Asia and, particularly, the archeology of the Levant (Mazar 1992, Bar-Yosef 1992; Bar-Yosef 2002; Kuijt and Goring-Morris 2002; Goring-Morris and Belfer-Cohen 2003). This does not necessarily mean that the “homeland” of pre-PS speakers was the Levant rather than, for example, NE Africa (Ehret, Keita and Newman 2004, Blench 2006). The Fertile Crescent (and notably Israel) is one of the more intensively investigated regions archeologically. By contrast, archeological studies of Africa, particularly for the pre-Neolithic era discussed herein, are very rudimentary (Blench 2006). Thus, archeological findings from the Levant may be interpreted as representative of their time rather than their precise location. More fundamentally, the Levant is unique in hosting the Natufian culture, ca. 15,000–11,700 BP

³) Sometimes the necessity for an Akkadian cognate may be relaxed if the root is attested widely in AA languages.

Table 1. Raw materials in Semitic languages classified according to: (rows) the period (in Levantine prehistory) of their first utilization; (columns) their (reconstructed) 2c vs. 3c PS structure (where radicals are in boldface, and “NONE” indicates the absence of a 3c or 2c PS synonym). See EA for a justification of the reconstructions (asterisks omitted for brevity). All reconstructed lexemes are PS, unless noted otherwise.

Material	BH	Akkadian	2c	3c	Reference
Upper Paleolithic >22,000					
water	<i>mayim</i>	<i>mû, mā'û</i>	<i>mā'/māy</i>	NONE	LCS 3.21
fire (light)	[?] <i>ēš</i> [?] <i>ūr</i> <i>nēr</i>	<i>išātu</i> <i>nūru</i> <i>girru</i>	[?] <i>iš</i> [?] <i>ūr</i> <i>nūr</i> <i>gir(r)</i>	NONE	LCS 3.10; <i>DRS</i> [?] <i>šš</i> ,1 <i>DRS</i> [?] <i>ur</i> ,1
rock flint	<i>šūr</i> <i>šōr</i>	<i>šūru</i> <i>šurru</i>	<i>zūr</i> <i>zurr</i>	NONE	LCS 5.07
pebble	<i>ḥāšāš</i>	<i>ḥiṣṣu</i>	<i>ḥaš</i>	<i>ḥašaš</i>	LCS 5.06
stone	[?] <i>eben</i>	<i>abnu</i>	<i>bun</i> (PAA)	[?] <i>abn</i>	LCS 5.05; <i>DRS</i> [?] <i>bn</i> ,1
wet clay	<i>ṭin</i> (<i>ṭiṭ</i>)	<i>ṭidu, ṭiṭu</i>	<i>ṭin</i> (<i>ṭiṭ</i>)		LCS 5.04
mud, sand, dirt	<i>bōš</i>	<i>bāšu</i> <i>rušu</i>	<i>bad</i> <i>ruṭ</i>		<i>DRS</i> <i>bd/šd/š</i>
wood	[?] <i>ēš</i>	<i>išu</i> <i>qišu, qištu</i>	[?] <i>iḏ</i> <i>qays</i>		LCS 5.28 LCS 5.32
pole, stick	<i>mōṭ</i>	<i>miṭṭu</i>	<i>maṭ</i>		
leather	[?] <i>ōr</i>	<i>āru</i> <i>mašku</i>	[?] <i>ār</i>	<i>mašk</i>	<i>SED</i> 1, # 106 <i>SED</i> 1, # 190
tendon	<i>gid</i>	<i>gidu</i>	<i>gid</i>		LCS 2.41
cloth(es)	<i>šit</i>	<i>šutu</i>	<i>šit</i>		LCS 2.68
Epipaleolithic 22,000–11,700					
lime	<i>gīr</i>		<i>gir</i> (PWS)		<i>DRS</i> <i>gyr</i> ,1
reed	<i>qānē</i> [?] <i>ēbē</i>	<i>qanū</i> <i>apu, abu</i>	<i>qan-</i> [?] <i>ib-</i>		LCS 5.27 <i>DRS</i> [?] <i>by</i> ,2

Material	BH	Akkadian	2c	3c	Reference
Pre-Pottery Neolithic 11,700–8,500					
bitumen	<i>zēpet</i> <i>ḥēmār</i>	<i>ziptu</i> (loan)	NONE	<i>zipt</i> (PWS) <i>ḥimar</i> (PWS)	DRS <i>zpt</i> ,1
straw	<i>teben</i>	<i>tibnu</i>		<i>tibn</i>	LCS 6.34
brick	<i>lōbēnā</i>	<i>libittu</i>		<i>labin-at</i>	
dust, soil, ore	ʿ <i>āpār</i>	<i>eperu</i>		ʿ <i>apar</i>	LCS 5.03
lead	ʿ <i>ōperet</i>	<i>abāru</i>	NONE	ʿ <i>abār</i>	
copper/ bronze		<i>siparru</i>	<i>qū?</i>	<i>sipar/šupr</i> <i>nuḥāš</i> (PWS)	
date uncertain					
salt (saltpeter)	<i>melaḥ</i>	<i>mil'u, milḥu</i>	NONE	<i>milḥ</i>	LCS 7.46
sulfur	<i>goprit</i>	<i>kibritu</i>	NONE	<i>kabr-it</i>	
Pottery Neolithic 8,500–7,000					
pottery	<i>ḥāsap</i> (Aramaic)	<i>ḥašbu</i>	NONE	<i>ḥašb</i>	
clay vessel	<i>qōdērā</i> (post-Biblical)	<i>diqāru</i>		<i>qidr</i>	LCS 7.72
wool	<i>šemer</i>			<i>ḍamr</i> (PWS)	LCS 6.58
Chalcolithic–Bronze 7,000–3,300					
antimony	<i>kōḥal</i> (post-Biblical)	<i>guḥlu</i>	NONE	<i>kuḥl</i>	
silver	<i>keseḥ</i>	<i>kašpu</i>	NONE	<i>kašp</i>	
gold	<i>ḥārūš</i> <i>zāḥāb</i>	<i>ḥurāšu</i>	NONE NONE	<i>ḥarūd</i> <i>ḍaḥab</i> (PWS)	
charcoal	<i>peḥām</i>	<i>pēm̄tu</i>	NONE	<i>paḥm</i>	LCS 7.61
to smelt, refine	<i>šrp</i>	<i>šarāpu</i>		<i>šrp</i>	
bellows	<i>mappūaḥ</i>	<i>nappāḥu</i>		<i>manpuḥ</i>	SED I, verbal roots # 45

(Bar-Yosef 2002). Up to the Natufian, the “classical” nomadic lifestyle of the hunter-gatherer prevailed, more or less as it existed during the Upper Paleolithic (UP). The Natufians constituted a more complex society, with innovations in sedentary and hunting techniques; among other things, they are accredited for introducing the sickle and the bow (Peterson 1988). It is possible that this was a trigger for the development of a more complex language (PAA, Militarev 2002).

The transition to agriculture in the Levant began earlier than in other regions of the world, in the Pre-Pottery Neolithic A (PPNA, 11,700–10,500 BP), and it was essentially complete by the Pre-Pottery Neolithic B (PPNB, 10,500–9,000 BP), when large agricultural villages were established. Pottery was introduced during (or slightly before) the Pottery Neolithic (PN, 8,500–7,000 BP), whereas the first metal processing installations are from the Chalcolithic period (7,000–5,500 BP). PS is attributed to this period, and therefore it is the most recent period relevant to our PS reconstructions. Nevertheless, we advance one step further in time, to discuss proto-West-Semitic (PWS) words as well, which already belong to the Early Bronze (see Kitchen et al. 2009).

Table 1 clearly shows that as of the Early Neolithic, all novel materials received 3c names. It appears that there are almost no exceptions to this rule.⁴ This provides quite convincing evidence for a language morphology change occurring roughly concomitant with the transition to agriculture, when a strictly 3c morphology was imposed.

Was the earlier morphology strictly 2c or just enriched in 2c roots in comparison with its later Neolithic developments? This question is harder to answer from this table: While most materials known from pre-Neolithic times have 2c names, they occasionally also have 3c names. We tend to interpret such 3c terms as due, at least partly, to a word-replacement process.

It is known that all languages replace portions of their vocabulary over time. For example, in Indo-European it was found that a typical cognate is replaced 3 times in 10,000 years, with less frequently used words replaced more often (Pagel, Atkinson and Meade 2007). Moreover, languages may undergo periods of more rapid development as populations diverge and new languages are formed (Atkinson et al. 2008). Hence the split of the AA languages might have also been a catalyst in the systematic replacement of 2c words by 3c ones.

A documented example of 2c word replacement in historical times is provided by the 2c/PS root **šly* ‘ascend’, which was replaced in Aramaic by 3c *slq* (HALOT: 828). It is more difficult to find examples for 2c>3c replacements that occurred during the PS era or before. An example with prefixed

⁴ We have searched extensively for exceptions and found two questionable examples, based on Akkadian *qû* ‘bronze’ and *šādu* ‘melt’, with their possible Arabic cognates (see the EA).

**n-* (later absorbed into the root) is PS **nph* ‘blow, breath’, “eventually derived from **ph/h* ‘to breath, blow’ ” (*SED 1*, verbal roots #45 and 54). In spite of this temporal development, the derived 3c root is attested in all major Semitic branches, whereas its 2c predecessor is missing from Akkadian and S. Arabian. Thus, the extension to 3c occurred in PS or before, and the 2c verb was subsequently elided in some daughter languages (whereas others retained the old form side by side with the new one). A similar analysis is valid for **pd* > **npd* ‘smash, scatter’ (*HALOT*: 711).⁵ Therefore, 2c>3c word replacement is not just a hypothetical possibility—it did occur after the Early Neolithic.

As a consequence, the dominance of 2c roots in the pre-Neolithic era must be based on additional arguments. The present work suggests that the Semitic root structure was preceded by a more generalized notion, here termed “strong association” (SA). This term implies a possible semantic relationship between 2c words that share the same two radicals, even if they are considered different weak roots within traditional grammar, such as *C₁wC₂* and *C₁C₂C₂*. Additionally, a direct relationship can exist between nouns without any verbal attestation of their root, such as 2c **zr*, from which **zurr* ‘flint’ and **zūr* ‘rock, mountain’ are derived in various Semitic languages.⁵ A summary of associations mentioned in this work is provided in Table 2.

Table 2. A list of 2c roots discussed in the text as exhibiting associations consistent with a Stone-Age hunter-gatherer society.

2c root	Associated meanings
<i>bn</i>	stone; build
<i>dr</i>	round; house
<i>gr</i>	fire; pit; lime
<i>hš/hʃ</i>	gravel, pebble; cut, half
<i>kr</i>	round; kiln
<i>qn</i>	reed; spear; create, acquire
<i>šm(n)</i>	fat; oil
<i>št</i>	buttocks; cloth, clothes, warp
<i>zr</i>	flint; rock; mountain

⁵⁾ The PS consonant **d* in **npd* ‘smash’ was retained in Arabic, but merged in Akkadian and Hebrew with *ṣ* and in Aramaic with *ṣ̣*, see Tbl. A1 in the Appendix for mapping of consonant mergers. Likewise, PS ‘rock’, **zūr*, is spelled here with the PS consonant **z*, which merged in Hebrew with *ṣ* and in Aramaic with *ṣ̣*. The reconstruction of the ancient consonant is made possible through the recognition of the common origin of Hebrew *šūr* (‘rock’) and Aramaic *ṣūr* (‘mountain’). Note how a short vowel followed by a long consonant, interchanges with a long vowel followed by a short consonant in the **zurr* - **zūr* pair.

As will be demonstrated in detail in the next section, the SA's allow one to connect language with the culture of the people who created it. Indeed, certain associations are meaningful and understandable *only* in light of the background of their period of inception, whereas at later periods the connection may have been totally forgotten. When implemented based on valid archeological evidence, this provides an additional useful means of “dating” words, supporting the supposition that the 2c words in the PS lexicon were coined *before* (in fact, long before) the transition to agriculture.

Pre-Neolithic Material Names

In this section we discuss PS (and PWS) names of materials whose use goes back to the Old Stone Age. These tend to be of 2c morphology and their SA's can consistently be understood as based on the hunter-gatherer way of life.

(a) *Water and fire* have been two basic elements of human survival since the dawn of prehistory. The substance ‘water’ (PS **māy* or **māʔ*) has a unique and universal 2c name in all Semitic languages. Whereas frequently used words are seldom replaced (Pagel, Atkinson and Meade 2007), it appears that roots depicting the most fundamental notions for human existence, such as ‘water’, were never replaced.⁶ The great stability of the PS word for ‘water’ in the lexicon suggests that it was an indispensable part of daily speech for numerous generations.

‘Fire’ has had a pivotal role in processing materials. One finds four different PS terms for it, all of which are 2c: **ʔiš*, **ʔūr*, **nūr* and **gir(r)*. In fact, there seem to be no PS term for ‘fire’ that is not 2c. These terms are also widely attested in AA etymology (see *DAE*), further corroborating their antiquity. Concomitantly, Tbl. A2 lists numerous 2c verbal roots for ‘burn’, of which **ḥm*, **ḥr*, **kb*, **kwy*, **šb*, **qd* and **ql* are PS, and even PAA (see *DAE*). Like the Eskimos, who have numerous terms for ‘ice’, prehistoric man must have recognized various forms of fire and methods for igniting it.

Indeed, certain types of ‘fire(s)’ were used for ‘light’, as manifested by the SA between PS **ʔūr* ‘fire’ and **ʔār* ‘light’ (see EA). Similarly, PS **nūr* means simultaneously ‘fire’ and ‘light’. The latter meaning also finds expression in nouns for ‘lamp’ derived from the root **nr* (BH *nēr*, *mānôrâ*, Ugaritic *nr*, and Akkadian *nūru*).

During historical times, lamps were made from fired clay and used mostly olive oil. However, lamps were already in use in the Paleolithic era. Dozens, if not hundreds, of lime- and sand-stone lamps were found in Southwestern

⁶ Indeed, this lexeme is attested in all AA families except Omotic (*DAE* #999).

France, some with rather elaborate handles (de Beaune and White 1993). They were dated to the UP, a few as old as 40,000 years. Some of these lamps were used in conjunction with cave mural painting, but most of them were actually discovered in open camps. Analysis of the soot on their rims revealed that they utilized animal fat oils (rather than vegetable oils).

PS appears to “know” about the archaic use of animal fat for oil, because PS *šamm means both ‘oil’ and ‘fat’. In fact, ‘animal fat’ may be considered a “body part”, in which case the final *-n* could be a relic of the Semitic body-part gender (cf. Lipiński 2001: §30.11). To a certain extent, this supposition is also corroborated by AA data (*SED 1* #248; *DAE* #1571). If so, one may reconstruct 2c *šam as originally meaning ‘animal fat oil’, such as was used for light in the UP (other Paleolithic uses may have been in ointments, but frying with animal fat already required metal pans). As seen repeatedly below, nouns of the *CVC* morphology (where *C* = any consonant; *V* = any vowel) appear to have originated in the UP. When the body-part suffix was added, *šam must have still meant ‘fat’—part of an animal’s body—hence this development likely occurred in the pre-Neolithic era (perhaps during the Natufian, to which we attribute other augments; see below). During the Neolithic, vegetable oils (flax, olive, sesame, castor) were introduced, and the meaning of *šamm was extended to encompass these newly introduced materials.

(b) *Flint* (PS/2c *zurr) is a hard, sedimentary cryptocrystalline silicate form of quartz (SiO₂ tetrahedra), often found as nodules in sedimentary ‘rock’ (PS *zūr). Figure 2 shows flint nodules embedded in limestone from a PPNA open-sky quarry (cf. Grosman and Goren-Inbar 2007). Thus, geologically ‘flint’ and ‘rock’ appear in close proximity, semantically they denote types of ‘stone’, and phonetically they differ only slightly in pronunciation.⁵ The SA of *zurr and *zūr likely reflects the dominance of flint as the raw material of prehistoric lithic industries. Throughout prehistory, flint was a key material for tool-making, apparently long before the utility of stone as a building material was appreciated. The first stone foundations for houses are Geometric Kebaran (ca. 17,000 BP), whereas prior to that there is a single evidence from the UP (ca. 30,000 BP) of a stone wall constructed to segregate activities within a cave (Goring-Morris and Belfer-Cohen 2003). People associating rocks with flint, rather than with such building activities, may have lived before these became prevalent, and that is an incredible time-depth indeed.

Flint is abundant in the Middle East and N. Africa, but not in E. Africa (Bar-Yosef and Garfinkel 2008: 42, 76), from where modern humans are believed to originate (Liu et al. 2006). The rock-flint association is found both in Semitic and Berber, implying knowledge of the natural occurrence of flint within limestone sediments. Thus, the ancestors of Berber and Semitic speakers



Figure 2. Rocks in a PPNA open-field quarry near Modi‘in (the Judean foothills) bear evidence of ancient digging activity. An aborted extraction of a flint nodule from limestone is shown, as evidenced by flint chips found in its vicinity (photograph by the author). Related findings were reported from Hatula (Grosman and Goren-Inbar 2007, Fig. 7). They demonstrate the close geological association between (limestone) ‘rock’ and ‘flint’.

must have lived in a region where flint was available in Cretaceous rocks. In the Chadic languages, words of the same root depict ‘knife’, ‘sword’ and ‘axe’ (*DAE* #528), which is understandable if these people were acquainted with the end-product rather than with the raw material. This could be in agreement with a model for PAA expansion (Blench 2006, Map 4.3), in which “North AA” population (predecessors of Semitic, Berber and Egyptian speakers) moved north, from southwest Ethiopia (where flint is absent) to the Upper Nile (where flint is available). According to this model, pre-Chadic speakers moved due west, through the Sahara, to Lake Chad. If the root **zr* is pre-Kebaran, or even UP as suggested above, then the movement out of E. Africa must have occurred much earlier than typically considered (e.g., 7,500 BP according to Blench 2006), leading to the establishment of a new homeland in a region where flint was readily available.

An important source of flint were ‘pebbles’ (PS **ḥaṣ* or **ḥaṣ*, see EA)⁷ from dry river beds. For example, a Chalcolithic flint sickle-blade workshop has been recently unearthed in Beit-Eshel St., Beer-Sheba, Israel (Gilead et al. 2004). It utilized pebbles from the nearby dry river bed as raw material, likely reflecting an old tradition in this region. The first step in pebble processing (Singer, Holmyard and Hall 1954: 128–143) required “quartering”, namely cutting in order to create a flat working surface. Indeed, cutting was an archetypical prehistoric activity (cf. Tbl. A2 in the Appendix).

Now **ḥaṣ* may be either ‘pebble’ or ‘gravel’; could it have a SA with the PS verb **ḥsy* ‘divide/cut’ (HALOT: 343)? Such a SA would go beyond the traditional Semitic root analysis, by connecting roots that in 3c grammar are formally different: *ḥṣṣ* and *ḥsy*. Indeed, gravel is broken/ground stones, divided into bits, and ‘pebble’ is a rounded piece of gravel. Yet the verbal root *ḥsy* has derived forms such as ‘snap off’ (Akkadian *ḥaṣāṣu*, CDA: 110) and ‘half’ (BH *ḥāṣi*, HALOT: 343). These appear to correspond to the process of quartering pebbles, in which one part is *snapped-off* and the other *half* is utilized for producing flint bladelets, and thus this SA could be a relic of prehistoric flint-knapping terminology.

(c) *Stone* (PS **ʔabn*) is of the 3c root *ʔbn* all across the Semitic family. The fact that the only PS term for ‘stone’ is 3c is problematic for our thesis because stone was, after all, one of the main materials of the Stone Age. Although some 2c terms would have been replaced by 3c ones (see above), one might expect that such a characteristic term would be frequently used and therefore not easily replaced (cf. Pagel, Atkinson and Meade 2007). The answer may be found in Ancient Egyptian (EDE 2: 213–215), as well as in Chadic languages (DAE #1248), from which the 2c PAA noun **bun* ‘stone’ may be reconstructed. The *ʔa-* in **ʔabn* is thus an augment⁸ from a period in-between PAA and PS, most likely Neolithic. Eventually the consonant *aleph* (ʔ) was interpreted as a radical that is absorbed into the root.⁹

Stones were used for building houses only as of the Geometric Kebaran, 17,000–15,000 BP, and early Natufian, ca. 15,000–13,000 BP (Goring-Morris

⁷ There are a number of PS words in which it is impossible to determine whether the original radical was **ḥ* or **ḥ*. An example already mentioned is **ḥb/ḥ* ‘to breath, blow’ (SED I, verbal roots #45).

⁸ We use “augment” rather than “affix” whenever its grammatical role is unclear. The interpretation that the *ʔa-* is an augment contrasts with an earlier reconstruction of PAA **ʔabn* (HSED #9), but agrees with a much earlier suggestion by Gesenius (see DRS: 4).

⁹ A preformative *ʔa-* is rather common in Semitic languages (Lipiński 2001 §29.16) and this may be a more archaic example of it.

and Belfer-Cohen 2003). The weak root *bny* ‘build’ is attested in all Semitic languages. Thus, it is possibly an extension of the root underlying **bun* ‘stone’. Such a development must have occurred before the **bun* > **abn* transition, hence *bny* is plausibly a Kebaran or Natufian innovation.¹⁰ As of the PPNA, building in brick became widespread, and thereafter building was no longer exclusively associated with stone.

The first stone buildings were circular, and they dominated architecture throughout the Natufian and PPNA periods (Goring-Morris and Belfer-Cohen 2003). A rather abrupt and complete transition to rectangular houses occurred with the establishment of the large PPNB villages (Saidel 1993). A fine example for this transition (around 10,500 BP) is found in Jerf el Ahmar (Syria).¹¹ Thereafter, round houses were seldom constructed.¹²

Interestingly, PS contains several 2c roots for ‘round/circle’, such as **gl* (DRS: 108, 116) and **dr* (DRS: 239–241, 306), but none for ‘square’.¹³ This attests to a special affinity that the hunter-gatherer culture may have had with circular geometry. From the root **dr* we have Arabic *dār* ‘house; dwelling’. Its sole cognate in the Hebrew Bible (*dôr*, Isaiah 38:12) is often interpreted as a ‘(circular) tent camp’ (HALOT: 217). Yet this verse in Isaiah contrasts *dôr*, as a symbol of longevity, with an ephemeral shepherd’s tent. Thus, *dôr* must be a stable house, not a tent (and this is likely also the origin of the village names *dôr* and *‘ên-dôr* in Israel). The Akkadian cognate *dûru* means ‘(circular) city wall’, a sturdy construction which is not movable like a tent. The common denominator for a reconstructed PS¹⁴ **dār* would be a ‘house with solid round walls’. A reasonable explanation is that this term used to denote the Natufian round house until ca. 10,500 BP. As this structure disappeared,¹² the term was borrowed to denote a round wall in E. Semitic and a permanent dwelling in W. Semitic. Possibly, then, **dār* dates back to the inception of round architecture (16,500 BP), when a new term was required to differentiate it from the brush huts which prevailed during the UP (Nadel and Werker 1999). Even then it developed from an already existing term, **dûr* ‘circle’, indicating that CVC nouns may indeed go back to the UP.

¹⁰ If this observation can be generalized, possibly all III-*y* “weak” roots, CC*y*, emerged at this period (as opposed to the CVC roots that were a heritage from the UP).

¹¹ See pictures of rectilinear architecture on top of circular houses in: <http://www.cnrs.fr/Cnrs-presses/Archeo2000/html/archeo11.htm>.

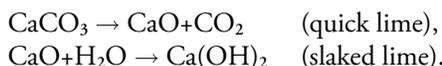
¹² A brief “revival” of curvilinear architecture featuring oval houses occurred in the Levant during the Early Bronze I, 3,500–3,100 cal. BCE (Mazar 1992: 96–98). This period is admittedly after the split of PS, and hence irrelevant to the discussion of PS lexemes such as **dār*.

¹³ ‘Square’ is expressed by the 3c PS root **rb̄*, cf. BH *rābūaʿ* (HALOT: 1180) and Akkadian *rebītu* ‘city square’.

¹⁴ This noun could be PAA if the Berber cognates are not loans from Arabic (DAE #925).

The round house is so characteristic to the Natufian/PPNA Levant that the above interpretation implies, if correct, that pre-Semitic speakers have occupied the Levant (at least) as of the Epipaleolithic period. This predates by many millennia some customary estimates for the “out of Africa” movement of PAA populations (Blench 2006) and PS arrival in the Levant (Zohar 1992), but agrees with the assessment above that pre-PS population must have lived in a region where flint is abundant.

(d) *Lime* is an artificial stone prepared in a two-step process (Davey 1961: 97):



Heating limestone gravel to 800–900 °C releases carbon dioxide, leaving behind a powder of calcium oxide (“quick lime”). This requires special kilns, heated to the prescribed temperature for up to three days. When quick lime is mixed with water, calcium hydroxide (“slaked lime”) is produced. In the air, the reaction is reversed and a hard rocky surface is formed. By the PPNB, lime was used in large quantities in plastered floors (Bar-Yosef 1992), an industry that must have eliminated large stretches of forest, which were possibly cleared for agriculture. By comparison, gypsum ($\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$) requires heating only to ca. 170 °C in order to yield the hemihydrate $\text{CaSO}_4 \cdot \frac{1}{2}\text{H}_2\text{O}$. Therefore it was inferred that lime-burning was generally a later development than gypsum utilization (Davey 1961: 93–94).

It may thus seem counterintuitive that archaeology reveals that ‘lime’, PWS **gīr*, predated gypsum utilization (Kingery, Vandiver and Prickett 1988). Figure 3A shows a 16,500 years old flint blade from a Geometric Kebaran site in N. Sinai (Bar-Yosef and Goring-Morris 1977). The lime ridge, remaining after the wooden handle had decayed, indicates that the first use of lime plaster was for hafting tools. Subsequently, Early Natufians utilized lime plasters in building, as evidenced by the lime ‘kiln’ (PS **kūr*) found in Hayonim Cave, W. Galilee, Israel, 14,000 BP (Bar-Yosef 2002).¹⁵ The fact that both terms connected with lime processing and utilization, PWS **gīr* and PS **kūr*, are 2c in accord with the archeological evidence for the early introduction of lime kilns, in the Early Natufian or even Kebaran periods.

As Figure 3B shows, there was a clear geographic separation between lime-plasters in the Levant and gypsum-plasters in Mesopotamia during the PPN. The absence of an E. Semitic cognate for ‘lime’ (PWS **gīr*) in this case, may be

¹⁵ Earlier suggestions that West Semitic *kūr* is an Akkadian loanword have recently been rejected (Mankowski 2000: 67–69) thus leading to better agreement with archaeological finds of lime-kilns in the Levant.

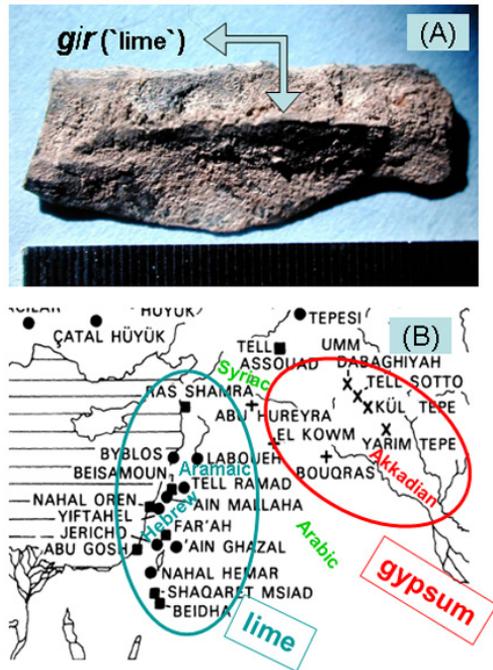


Figure 3. The history of lime: (A) 16,500 year old flint blade from Lagama 8 in N. Sinai with ridge-like traces of lime plaster used by the Geometric Kebarans for hafting tools (Bar-Yosef and Goring-Morris 1977). Courtesy of O. Bar-Yosef and N. Goring-Morris, photograph by N. Goring-Morris. (B) PPN sites where plaster was found (Kingery, Vandiver and Prickett 1988, Fig. 14, reproduced from Journal of Field Archaeology with the permission of the Trustees of Boston University. All rights reserved. www.maney.co.uk/journals/jfa, www.ingentaconnect.com/content/maney/jfa.) show a clear division between gypsum (+, x) in Mesopotamia and lime (●, ■) in the Levant.

due to the fact that ‘lime’ was not frequently used in Neolithic Mesopotamia, and this word thus underwent rapid replacement. However, PS **gir(r)* ‘fire’ is attested (see EA)¹⁶. Given the intense prolonged *fire* required for lime production, a connection is not improbable. If **gir* ‘lime’, which dates to 16,500 BP, indeed derives from PS **gir(r)* ‘fire’, the latter must be an appreciably older term, possibly UP (cf. **dūr* ‘circle’ above).

(e) *Reed*, PS **qan* or **qan-ay* (see EA for justification of the 2c form), is comprised of organic material that does not normally survive from prehistory.

¹⁶ Evidence in the EA for **gir* ‘fire’ may seem scant, but when we take into account also the possibility that Syriac *šgr* ‘to heat up, inflame’ may be the ʕ- causative of *gir*, as well as its AA etymology (DAE # 1178), the case becomes quite convincing.

Yet one can be quite certain that reeds had important prehistoric applications in producing mats, baskets and spears. From the root **qn* one finds derived Arabic and BH terms for ‘spear’, and Ugaritic ‘arrow’, which could have originated from the vocabulary of prehistoric hunters whose spears were made of reeds. In addition, the multiple meanings of the PS verbal root *qny* ‘create; acquire; buy’ (HALOT: 1111) suggests denomination from **qan*. What could have been the connection? The efforts that went into *creating* spears and reed mats (which allowed for comfortable sleep and cover from rain) made such items the few *possessions* that the hunter-gatherer would carry on his person when relocating camp. Without pack animals (not yet domesticated), only a few valuables could be carried away, and these could be conveniently rolled inside a reed-mat.

The denomination of *qny* from **qan* parallels the suggested denomination of *bny* ‘to build’ from **bun* ‘stone’, and hence it should tentatively be assigned to the same period (Geometric Kebaran/Natufian). This period, which followed the Last Glacial Maximum (LGM, circa 25,000 BP), saw the receding of Lake Lisan that connected the Dead Sea with the Lake of Galilee during the LGM (Bartov et al. 2002). Reeds might have proliferated in the marshes left behind the drying lake, possibly resulting in increased reed utilization as manifested by the above SA.

(f) *Textile* weaving from perishable plant material may have started as far back as 32,000 BP, as attested by cloth clay imprints and signs of use-wear on tools (Soffer et al. 2000; Soffer 2004). In the absence of flax, a PPNB innovation (Bar-Yosef 1992), it is believed that other plant fibers were utilized, such as nettles (Soffer 2004: 407). Thus, as opposed to the impression of some, prehistoric attires were not limited to animal hides. Commensurate with the observation of pre-Neolithic textile production, we find in PS a 2c word for ‘cloth(es)’, **šit* (see EA). It must depict woven clothes (rather than, for example, animal hides) because BH *šatî* means ‘warp on the loom’ (HALOT: 1669) whereas Akkadian *šatû* is to ‘weave’ (CDA: 364), and *šutû* refers to ‘woven material, warp’ (CDA: 391). Alongside the evidence for weaving in the UP, **šit* has CVC morphology which, we claim, originates from that period.

Woven clothes, PS **šit*, may have originally been utilized for loincloths, because **šut* is a widespread PS word for ‘buttocks’ (inseparable from its secondary meaning ‘foundation’, see *SED 1* #255).¹⁷ Only later did the meaning of **šit* expand to denote ‘clothes’ in general. Body-part terms are considered to belong to the oldest layer in any language. Correspondingly, many PS body parts have 1c or 2c morphology, with or without the Semitic body-part suffix,

¹⁷ It may in fact go back to the origins of PAA in E. Africa, since reflexes of PAA **sut* are found in Omotic and Cushitic (DAE #2500).

-an (see *SED* 1). This agrees with the present analysis because the term for ‘buttocks’ would presumably have predated the ‘loincloth’ made to cover it.¹⁷

Another PS word for ‘clothes’, **kisūt* (or **kusīt*), is considered to originate from the PS root **ksy* ‘cover’ with the feminine ending -t (*HALOT*: 487–488, *DAE* # 1390). If indeed *CVCy* roots are an innovation of the Kebaran/Natufian period (or later), **kisūt* would denote a later type of clothes than **šit*, perhaps a garment that *covers* the (whole) body, as opposed to the UP loincloth.

During the Early Neolithic, flax was domesticated. The first evidence for cultivated flax is from Tell Ramad in Syria, ca. 9,000 BP (van Zeist and Bakker-Heeres 1975). Genetic studies suggest a single domestication event of a flax variety, which was initially used for oil rather than fiber (Allaby et al. 2005). Thereafter it became the most common material for textile production. Unfortunately, the Akkadian word for ‘flax’ (*kitū*) was borrowed from Sumerian, so that a PS reconstruction for it is not available.

Wool is an even later innovation, because early sheep had dark hair rather than a white woolly fleece (Chessa et al. 2009). Woolly sheep evolved several millennia after sheep domestication, perhaps during the Late Chalcolithic (Sherratt 1983). With this in mind, it is interesting to note that *SED* 1 (# 259) reconstructs PS **šV(ʔ)p-at* (where -at is the feminine ending), meaning ‘(tuft of) hair’, and possibly giving rise to Akkadian *šāptu* ‘wool, fleece’. Thus, the 2c root **šp* might have described the hairy fleece of the pre-domesticated animal. The apparently more recent PWS **damr*, meaning only ‘wool’ (see EA), belongs to the Early Bronze (5,400 BP, Kitchen et al. 2009)—the onset of wool utilization according to Sherratt (1983)—and has exclusively 3c morphology. We shall discuss below many more examples of post-agricultural material names, all possessing 3c morphology.

Neolithic Material Names

In this section we discuss materials discovered in the first few millennia following the agricultural revolution, and show that their names all have 3c morphology.

(a) *Sun-baked mud bricks* were first utilized for building in PPNA sites of the Jordan Valley, Israel (Kuijt and Goring-Morris 2002) and N. Mesopotamia—Nemrik, near Mosul, Iraq (Moorey 1994: 304). Straw was often used to fortify bricks, ca. 600 grams per brick (Oates 1990: 390). It became readily available after PPNA wheat domestication (see Smith 1998). There are PS words for both ‘brick’ (**labin-at*) and ‘straw’ (**tibn*), and they already possess 3c structure. It thus appears that the PPNA transition to agriculture correlates with the transition in language structure.

(b) *Bitumen* was used as an adhesive (Connan 1999). Hafting flint blades to wooden handles and coating baskets were its two most frequent early applications. Evidence from the Syrian Desert from ca. 40,000 BP was attributed to Neanderthals. The earliest recorded use by *Homo-sapiens* is from the Sultanian PPNA site of Netiv-Hagdud, north of the Dead-Sea (Bar-Yosef et al. 1991, Fig. 9). Table 1 shows that ‘bitumen’ has two PWS names: **zipt* may derive from a 2c **zɸ* ‘brown(?)’ by the addition of the feminine suffix *-t*,¹⁸ whereas W. Semitic **ħimar* is already 3c (this noun may actually be PAA if its Egyptian cognate is not a loanword, see EA). It was possibly derived by adding *-r* to PWS **ħim* ‘black’.¹⁹ PPNA thus marks the end of the 2c era, when new words already have 3c structure due, perhaps, to the addition of various augments subsequently perceived as radicals. The 2c bases upon which these 3c nouns were built must consequently be pre-Neolithic. Augmenting them might have been a common word-forming mechanism of the PPNA.

(c) *Salt*, a mixture of NaCl and KCl, is essential for survival. It is generally believed that hunter-gatherers do not need to supplement their diet with salt (Cordain et al. 2005), which is obtained from the hunted meat, and hence salt-craving is a result of the Neolithic agricultural revolution. Commensurate with this view, the oldest known salt exploitation is from hot springs in Romania, 8,000 BP (Weller and Dumitroaia 2005). Closer to the Levant, there is evidence for salt excavations near a salt lake in Central Anatolia during the Chalcolithic and Neolithic periods (Erdoğan and Fazlıoğlu 2006). Because we know that people learned to extract salt from hot-springs, it is reasonable to assume that at about the same time (or later) they also started exploiting sulfur from sulfur springs.

There is a single Semitic word for ‘salt’, **milh*, and it is 3c. Likewise, ‘sulfur’ **kibr-īt* is also 3c. Because sulfur burns, its name may have been derived by *-r* addition to PS **kab* ‘burn’.²⁰ This would then be analogous to the formation

¹⁸ The structure of BH *zəpet* is analogous to *qəšet* (‘arc’) and *dəlet* (‘door’), assumed to develop from **qaš-t* and **dal-t*, *-t* being a feminine gender suffix (Lipiński 2001 §§ 30.1–3). Indeed, *dāl* (the masculine form of *dalt*) is found in Psalms 141:3. The 2c root **zɸ* may be preserved in the BH verb *šzɸ* ‘turn brown’ (HALOT: 1456), in which *š-* may be a causative prefix (cf. Lipiński 2001 §§ 41.7–10).

¹⁹ Semitic **ħam* ‘become black’ (HSED # 1232); Hebrew *ħum* ‘undefined color between black and white’ (HALOT: 297); Syriac *šhēm* ‘black’ (causative *š*); Tbl. A2. The basic meaning of the 2c verb **ħamm* is ‘to heat’ (HALOT: 328), and therefore from the root *ħmr* one also finds meanings such as ‘burn’ and ‘red’, e.g. PS **ħimār* ‘donkey’ (‘the red animal’, HALOT: 327). The *-r* is sometimes perceived as a “domesticated animal” gender (Lipiński 2001 § 30.10), in which case it might also denote a “domesticated material”.

²⁰ This reconstruction is based on the W. Semitic weak root *kby* ‘extinguish’ (HALOT: 457) and

of PWS **ḥimar* ‘bitumen’. We may thus conjecture that extension of 2c words to 3c by the addition of *-r* as a third radical was common during the Early Neolithic.

(d) *Pottery*. Clay statuettes were produced in the UP long before the manufacture of pottery (Soffer et al. 2000; Soffer 2004). In agreement with this finding, PS **ṭin* ‘clay’ has *CVC* morphology. In the Levant, fired clay vessels that can hold liquids are an innovation of the Pottery Neolithic (PN, 8,500–7,000 BP), although sherds of pottery from Tell Sabi Abyad (Syria) were recently dated to 8,900 BP.²¹ Table 1 lists PS terms for ‘pottery’ (**ḥašb*) and ‘clay vessel’ (**qidr*). The identification of the latter as a *clay* vessel (likely used for cooking) is assisted by post-BH and Jewish Palestinian Aramaic *qaddār* ‘potter’ (see EA). It would not be a surprise if **qidr* also evolved by *-r* addition, to 2c **qad* ‘burn’,²² indicating that such vessels were *fired*. A similar evolutionary pathway may have produced the NW Semitic root *qdr* ‘darken’ (HALOT: 1072).²³ Utilized in BH for darkening skies, it might have been associated with smoke from intense fires (BH *môqēd*), which literally obscures daylight.

(e) *Metals* present a complex problem, yet they are pivotal to the development of human civilization (Craddock 1995). Native (metallic) copper was cold hammered several thousand years before metals were smelted from ores (Moorey 1994: 249–250). Objects of native copper from the early PPNB have been unearthed in the N. Fertile Crescent. Other metals found in their metallic state are gold and silver (Craddock 1995: 93, 110–119, 211–212). The oldest gold objects in the Levant were found in a cave in Nahal Kana, Israel, where carbon specimens yielded dates between 5,900 and 6,300 BP (Gopher et al. 1990). Given that metals in prehistory were often recycled, gold certainly belongs to the PS era (ending 5,750 BP according to Kitchen et al. 2009). It is less certain that silver utilization is as ancient, since the first finds date approximately to 5,500 BP (Moorey 1994: 235–237). Comparative linguistics does, however, reconstruct a PS term, **kasp*, for silver (Diakonoff 1998: 213). Not surprisingly, this term is 3c.

Akkadian *kabābu* ‘burn’. Also **kabkab* > **kawkab* ‘star’ (HALOT: 463). See Appendix A2 for 2c roots for ‘burn’.

²¹ Rijksmuseum van Oudheden, Leiden. See: http://www.sabi-abyad.nl/tellsabiabyad/resultaten/index/0_49/49_57/?language=en.

²² This reconstruction is deduced from the PS weak-root **wqd* ‘burn’ (DRS: 601), attested in all major Semitic branches (e.g., Akkadian *qādu* ‘ignite, set fire’ and BH *yāqad* < **waqad* by a regularly process in BH). See also Tbl. A2.

²³ Alternately, there could have been a direct etymological connection between *qdr* ‘darken’ and PS **qidr* ‘pottery vessel’, see EA and references therein.

Prehistoric man was likely attracted to native metals due to their bright colors and shiny surfaces. The EA argues in favor of the PS origin of **šupr* ‘copper’ and **ḥarūd* ‘gold’. It is perhaps significant that both these 3c names also mean ‘yellow’, correlating with their likely discovery as native metals in the Neolithic period. A PWS name for ‘copper’, **nuḥās*, is also of 3c morphology.

As natural resources depleted, smelting became a major means of obtaining copper and silver. However, the first metal to be smelted was probably lead rather than copper, perhaps already in the late PPNB (Moorey 1994: 294, Craddock 1995: 145, 205). Lead is rarely found in its native form, but it is easily recovered from galena (PbS) at temperatures below 800 °C using dry wood fires. Commensurate with lead being the first metal to be smelted from ores, which were likely first crushed to powder, its PS name, **abār* or **āpart*, may derive from PS **apār* ‘soil, dust’ (but also ‘ore’, see EA).²⁴

In contrast to lead, ‘copper’ (PS **šupr*, PWS **nuḥās*) requires higher temperatures (ca. 1,100 °C). Copper smelting in the Tauros-Zagros belt (Anatolia-Iran) started over 7,000 years ago. But (unlike the previous erroneous dating of copper smelting in Timna, Israel, to the same period) smelting in the Southern Levant (with ores from Timna, Israel, and Feinan, Jordan) began only in the Early Bronze, ca. 5,500 BP (Hauptmann 2003: 91–92). It is tempting to ascribe PS **šupr*, which is not attested in Semitic languages of the Levant (except as a loanword), to the early phase of copper extraction in Anatolia. It is likewise tempting to ascribe PWS (dated to 5,400 BP by Kitchen et al. 2009) **nuḥās* to the copper endeavors of the S. Levant.

The high temperatures required for copper smelting are only achievable using charcoal furnaces. Charcoal (nearly pure carbon) has an additional role in this process, in reducing CuO to metallic Cu. Thus, although there is no field evidence allowing us to date the onset of charcoal production, it can tentatively be attributed to the PN or Chalcolithic periods. Indeed, ‘charcoal’ has a 3c reconstructed PS name, **paḥm*.²⁵

Finally, antimony is a trace element, rarely located in archeological finds and often confused with silver. The earliest find (Tello, Mesopotamia) dates approximately to 3,000 BCE (Moorey 1994: 240–242). We have reconstructed PS **kuḥl* (or **guḥl*) for ‘antimony’ (see EA), and it is 3c like all other metals. The fact that PS is attributed to the 5th millennium BCE, whereas the earliest archeological evidence for antimony is from the early 3rd millennium, can be due to the scarcity of antimony finds. Thus, all PS materials related to metallurgy are 3c.

²⁴ In turn, PS **apār* ‘soil, dust’ and **apar* ‘dust, ashes’ likely evolved from 2c/PAA **par* ‘dust, sand’ (DAE # 1577) by the addition of a preformative ‘a- and ‘a-, respectively (cf. Gevirtz 1982).

²⁵ Like PWS **ḥimar* ‘bitumen’, PS **paḥm* ‘charcoal’ may derive from PS/2c **ḥam* ‘heat, black’.

In addition, the characteristic PS verb for ‘smelt, refine’ is 3c **šrp*. While refining could have been performed in a crucible with blow-pipes, smelting took place in specially constructed furnaces equipped with bellows (Craddock 1995: 126–137, 180–187). It is thus significant that we also find **manpab* ‘bellows’ in PS, which derives from the 3c root *nph* ‘blow, breath’, rather than from the 2c root *pb*. Hence the **pab* > **napab* extension could have occurred already by 7,000 BP, suggesting that the 2c>3c word replacement process began somewhat earlier than that, perhaps in the Pottery Neolithic. Now it was no longer enough that newly coined words conformed to the 3c norm. Three thousand years after the transition, the old 2c words seemed archaic, and needed remodeling according to the new 3c standard.

Conclusion

This work has reconstructed PS material names and confronted them with archeological data of material use on two levels. First, the 2c vs. 3c morphology of material names was correlated with the date of their inception. Here a striking correlation was found. All material innovations of the Neolithic period have 3c structure. All 2c material names refer to materials that were utilized from the Old Stone Age onwards. Lime, perhaps the last material to be given a 2c name, was introduced 16,500 years ago. Although some pre-Neolithic materials, such as ‘skin’, have both 3c and 2c names (which we attribute to a word-replacement process), they have all preserved a 2c name. Second, we have used associations between 2c roots to project further into the past (Tbl. 2). Thus, the **zurr*-**zūr* association, between ‘flint’ and ‘rock’, suggests a culture in which stone was not yet used for building. The **dūr*-**dūr* association, between ‘circular stone house’ and ‘round’, suggests that the term ‘round’ was in the lexicon before the first stone-houses were built. The **gīr*-**gīr(r)* association, between ‘lime’ and ‘fire’, suggests that the term for ‘fire’ preceded the discovery of lime. Both round house building and lime production are innovations of the Geometric Kebaran period, from around 16,500 BP. These examples thus consistently point to words of monosyllabic *CVC* morphology as characterizing languages during the pre-Kebaran period. Furthermore, words such as **dūr* ‘round’ and **gīr(r)* ‘fire’ may date back to the UP period, if indeed they gave rise to other *CVC* nouns almost 17,000 years ago. These considerations lead to the pre-Semitic chronology depicted in Fig. 1.

The abundance of *CVC* terms for ‘fire’ is in line with the expected significance of fire for these archaic societies. Likewise, one might infer that the abundance of terms for ‘round’ (as opposed to the absence of any 2c term for ‘square, rectangular’) hints that these people attributed special significance to round geometries. This may not be the reason for the predominance of round

architecture, but it is symbolic that this architecture disappeared together with the change in language.

In addition to the incredible time-depth suggested by the above analysis, it also indicates that pre-PS speakers may have inhabited the Levant as of the Kebaran period or before. This follows because flint is characteristic to W. Asia, but not to E. Africa, and the round house is archetypical to the Natufian/PPNA architecture of the Levant. If true, this is a major departure from models which advocate a rather recent Semitic invasion of the Levant. However, more evidence is required for addressing this issue.

With the evidence collected here, one might envision the transition to tri-consonantalism as a lengthy process which paralleled the increased complexity of the pre-Semitic society, culminating in the transition to agriculture. The nomadic hunter-gatherers emerging from the last Ice-Age still retained the 2c/CVC language morphology of the UP. As of the Geometric Kebaran, certainly by the Natufian, society became increasingly more complex. Permanent (round stone) houses were built to complement the traditional brush huts, lime was manufactured for hafting weapons and tools, and the sickle was applied extensively for reaping wild cereals. This increased complexity was likely mirrored in the language, which no longer retained its simple morphology. Bisyllabic verbs (such as the Hebrew *bānâ*, Akkadian *ibni* 'he built', of the verbal root *bny*) were denominated from older 2c/CVC nouns (like PAA **bun* 'stone').

The suggested development **bun* > **bny* is interesting because archeological evidence for the onset of permanent (stone) house building around 16,500 BP suggests that the III-y root *bny* emerged after this date. In PS we already find **²a-bun* for 'stone', so that the augmentation **bun* > **²a-bun* must have occurred earlier, most likely during the Neolithic. These two events bracket the formation of the III-y root *bny*, which could thus be Natufian.

If one were to generalize and assume that all III-y roots date from the same period, one would obtain interesting conclusions regarding social developments that are not easily accessed from the archeological evidence. For example, the SA **qan-qny*, between 'reed' and the verbal root 'to possess', suggests that the concept of personal property (beyond one's clothes and weapons) first emerged in the Natufian period. Another interesting observation corresponds to the two types of 'clothes' in PS: **šit*, which has a SA with 'buttocks', and might have therefore originally depicted loincloth, dates to the UP by its CVC morphology; **kisit*, derived from the root **ksy* 'cover', and hence depicting clothes that cover the (whole) body, would be Natufian, judging by its CCy morphology. This hints to a change in dressing fashion that occurred over 12,000 years ago, perhaps due to the cold conditions during the Younger Dryas period.

Indeed, some Semitic affixes are widespread in AA (instrumental *m-*, feminine *-t*, causative *š-*, see Lipiński 2001: §§ 29.20, 30.1–3, 41.7), and thus they are plausibly innovations of the Natufian/PPNA period.²⁶ Augments continued to pile up throughout the Neolithic. We have already mentioned the preformative *ʔa-* in PS **ʔa-bun* ‘stone’ and a possible **-r* augment in several material names: See the above discussion of PWS **hīmar* ‘bitumen’, PS **kibr-īt* ‘sulfur’ and **qidr* ‘clay vessel’. Such augments were eventually absorbed into the root and created an ensemble of 3c roots supplementing the archaic 2c roots.

The agricultural “revolution”, which began with PPNA wheat domestication, continued with the replacement of hunting by domesticated mammals, the founding of large agricultural villages, the introduction of square brick houses and an everlasting quest for new materials. This was apparently accompanied by a “revolution” in language. Contrary to the implication of the term “revolution”, it did not occur overnight. The transition to agriculture likely followed many millennia of wild cereal harvesting, penning of wild animals, experimentation in propagating fig twigs, and the like. Eventually, the previous equilibrium was disturbed to the extent of inducing a seemingly spontaneous transition. Analogously, the transition to triconsonantalism did not occur overnight. It likely followed many millennia of experimentation in more complex linguistic forms, such as various augments. As these became absorbed into the root, the equilibrium between 2c and 3c words was disturbed and the stage was set for a new language structure. The correlations revealed in this study suggest that the transition to agriculture, one of the most dramatic divergences in human lifestyle throughout prehistory, was the final catalyst that brought about a period of dramatic language development, creating, within just a few thousand years, a distinctly different language structure. The emerging Neolithic society turned out to be particularly conservative in adhering to the new 3c morphology, which was required for the development of the templatic grammar characterizing the Semitic languages. Formation of new 2c words became a taboo, as reflected in Tbl. 1, and this enables us now to identify the occurrence of the transition. By the end of the Neolithic, the biconsonan-

²⁶ On the one hand, we have noted an AA reconstruction which does not include a Semitic augment: **bun* > **ʔa-bun*. Other notable examples (PAA>PS): **qis* > **qaš-t* ‘bow’ (DAE # 323, 524), **lis* > **liš-ān* ‘tongue’ (DAE # 141 & 2147), **ngl* ‘to reap’ > **mi-ngal* ‘sickle’ (DAE # 1949 & 2335), **kvl* > **kal-b(?)* ‘dog’ (DAE # 2396 & 2516). On the other hand, AA languages do use similar augments, but not necessarily where Semitic has them. Likely, these augments were introduced before the split of the AA family, and continued to be appended afterwards. Incidentally, the CVC morphology of **qis* may imply that the arc was conceived in the pre-Natufian period, in contrast to common wisdom that it is a Natufian invention (Peterson 1988).

tal languages of our hunter-gatherer predecessors had been completely replaced by a triconsonantal morphology that formed the basis for the languages of the great Semitic civilizations of the Ancient Near East.

Appendix A

Table A1(a). Transliteration: Proto-Semitic (PS) consonants with their Hebrew and Arabic equivalents (see Lipiński 2001):

<i>l</i>	<i>k</i>	<i>y</i>	<i>z</i>	<i>t</i>	<i>ḥ</i>	<i>ḥ</i>	<i>z</i>	<i>w</i>	<i>h</i>	<i>ḏ</i>	<i>d</i>	<i>g</i>	<i>b</i>	²	PS	
ל	כ	י		ט	ח	ח	ו	ה		ד	ד	ג	ב	ב	א	Hebrew
ل	ك	ي		ظ	ط	خ	ز	ح	و	ذ	د	ج	ب	أ		Arabic
<i>t</i>	<i>t</i>	<i>ś</i>	<i>š</i>	<i>r</i>	<i>q</i>	<i>ḏ</i>	<i>ṣ</i>	<i>p</i>	<i>ḡ</i>	^ʿ	<i>s</i>	<i>n</i>	<i>m</i>			
	ת	ת	ש	ר	ק		צ	פ	ג	ע	ס	נ	מ		מם	
ث	ت		ش	ر	ق	ض	ص	ف	غ	ع	س	ن	م			

Table A1(b). Consonant mapping: The “lost” PS consonants (depicted by blank spaces in the transliteration table) were mapped to remaining consonants according to the scheme below (see Lipiński 2001):

<i>ḏ</i>	<i>ḥ</i>	<i>z</i>	<i>ḡ</i>	<i>ḏ</i>	<i>ś</i>	<i>t</i>	PS
ז	ח	צ	ע	צ	ש	ש	Hebrew
ד	ח	ט	ע	ע	ס	ת	Aramaic
(z) ^a		(š) ^a		(q) ^a	(ś) ^a	(š) ^a	
<i>d/d</i>	<i>ḥ</i>	<i>z/ḡ</i> ^b	<i>ḡ</i>	<i>ṣ</i>	<i>ś</i>	<i>t</i>	Ugaritic

^a Old Aramaic; ^b Rare

Abbreviations

1c	monoconsonantal
2c	biconsonantal
3c	triconsonantal
AA	Afroasiatic (=Hamito-Semitic)
BCE	Before the Christian Era
BH	Biblical Hebrew
BP	Before Present (<i>calibrated</i> ¹⁴ C dates)
EA	Etymological Appendix
E.	East
W.	West
N.	North
NE	North-East
NW	North-West
PAA	Proto-Afroasian
PN	Pottery Neolithic
PPN	Pre-Pottery Neolithic
PPNA/PPNB	Pre-Pottery Neolithic A/B
PS	Proto-Semitic
PWS	Proto-West Semitic
SA	Strong Association
UP	Upper Paleolithic

Table A2. Breaking cutting, digging and burning 2c verbs as deduced from BH (*HALOT*) and Syriac (*CAL*), with meanings provided as numerical footnotes. These were either “identified” from “weak” 3c verbs (above dashed lines) and/or “reconstructed” from “normal” 3c verbs (below dashed lines). Asterisks have been omitted, for purposes of brevity. Cf. chap. III in Hurwitz 1966 (1913)

cleave	Hebrew	Syriac	cut	Hebrew	Syriac
bq	<i>bqq</i> ^{9c}		bt	<i>bt</i> ¹⁰	
	----- <i>bq^f</i> ^{8a}	<i>b^fq</i> ⁹		<i>bt^r</i> ^{10e}	<i>btq</i> ^{10d} (Akkad.)
dk	<i>dwk</i> ^{9a}	<i>dwk</i> ⁹	gd	<i>gdd</i> ^{10f}	<i>gdd</i> ^{10d}
	<i>mādōkâ</i> ³⁰	<i>dkk</i> ⁹		----- <i>gd^f</i> ^{10d}	<i>gdm</i> ^{10g}
	----- <i>dk^r</i> ^{9b} <i>hdk</i> ⁹				
dq	<i>dwq</i> ^{9d}	<i>dwq</i> ⁹	gr	----- <i>gr^r</i> ^{10a,j}	<i>gr^f</i> ¹⁰ⁱ
	<i>dqq</i> ^{9d}	<i>dqq</i> ⁹		<i>grm</i> ^{9g}	
	----- <i>dqr</i> ^{4b}	<i>dqr</i> ^{9,4b} <i>sdq</i> ^{8a}		<i>māgērā</i> ³⁵	<i>magrā^f ā^r</i> ^{35a}
dš	<i>dws</i> ^{9c}	<i>dws</i> ^{9c}	gz	<i>gz^b</i> ^{10d}	
ht				<i>gzz</i> ¹⁰ⁱ	<i>gzz</i> ¹⁰ⁱ
	<i>htt</i> ^{5c}			<i>gez</i> ²⁵	<i>gizzā</i> ²⁵
			<i>gizzā</i> ²⁵	----- <i>gzz</i> ¹⁰	
			<i>gzz</i> ¹⁰	<i>gzz</i> ¹⁰	
			<i>gzl</i> ^{10k}	<i>magzar</i> ^{35a}	
ḥš	<i>ḥšḥ</i> ^{8c}		ḥt	----- <i>ḥt^r</i> ^{14b}	<i>ḥrt</i> ^{10b}
	<i>ḥšš</i> ^{8c}			<i>ḥtb</i> ^{10h}	
ḥš	<i>ḥāšī</i> ²⁷				
	<i>ḥāšāš</i> ³¹	<i>ḥšāšā^r</i> ^{31a}			
	----- <i>ḥšb</i> ^{7a}				
	<i>lḥš</i> ^{9b}	<i>lḥš</i> ^{9b}			
kt	<i>kt</i> ⁹	<i>kt</i> ^{9a}	ḥq	<i>ḥqb</i> ⁷	<i>ḥwq</i> ^{8c,11a}
		<i>kettā</i> ²²		<i>ḥqq</i> ⁷	
	----- <i>ktš</i> ^{9a}			<i>ḥoq</i> ^{34a}	<i>ḥwq</i> ^{34b}
	<i>kōiāb</i> ⁴⁰	<i>ktāb</i> ⁴⁰	----- <i>ḥḥq</i> ⁹	<i>ḥḥq</i> ^{9,9a}	
			<i>ḥrq</i> ¹³	<i>ḥrq</i> ¹³	
pk		<i>pkk</i> ⁵	šr		<i>šry</i> ^{8a}

cleave		crush			
	Hebrew	Syriac	cut	Hebrew	Syriac
pl		<i>pwl</i> ^{5b} <i>pll</i> ⁵	qd		<i>qdd</i> ^{10d}
	<i>plh</i> ^{8a, 4b} <i>plg</i> ^{8a}	<i>plh</i> ¹⁵ <i>plg</i> ^{8c} <i>pls</i> ^{5a}			<i>qdh</i> ^{4b}
pd	<i>pwš</i> ^{5b} <i>pšš</i> ^{5c} <i>npš</i> ^{5d} <i>mappēš</i> ²⁹	<i>p^{ss}</i> ^{5f, 9} <i>np^s</i> ^{5c}	qt	<i>qātān</i> ³⁶ <i>qtl</i> ¹⁴ <i>qtp</i> ^{10l}	<i>qtn</i> ³⁶ <i>qtl</i> ¹⁴ <i>qtp</i> ^{10l} <i>qt^s</i> ^{10d} <i>qtm</i> ^{10a}
	<i>pr</i> ⁵ <i>āpār</i> ²² <i>prq</i> ^{5g} <i>hpr</i> ¹¹ (?)	<i>prr</i> ⁵ <i>pār</i> ²² <i>prēq</i> ³⁴ <i>hpr</i> ¹¹ (?)		<i>qšb</i> ^{10d} <i>qšš</i> ^{10d, j} <i>qāšē</i> ²⁴ <i>qšb</i> ^{10d} <i>qšr</i> ^{10m}	<i>qšē</i> ^{10d} <i>qšē</i> ²⁴ <i>qaššāba</i> ^{221a}
pt	<i>ptt</i> ^{5c}	<i>ptt</i> ⁵ <i>ptpt</i> ⁵ <i>ptq</i> ^{5a, 8a}	šb	<i>šbb</i> ^{10a}	
	<i>ršš</i> ^{5d, 9b} <i>ršh</i> ^{14a}	<i>r^{ss}</i> ⁹ <i>tr^s</i> ⁵		šr	<i>maššór</i> ³⁵
rš		<i>ršš</i> ⁹ <i>drš</i> ⁹ <i>maršā</i> ^{230a}			

dig bore	Hebrew	Syriac	burn roast	Hebrew	Syriac
hl	<i>hll</i> ^{4b}	<i>hlāl</i> ²⁸	hb	<i>hbb</i> ³	<i>hbb</i> ^{3,6}
hr	<i>hor</i> ²⁸ ----- <i>hārāk</i> ^{28h} <i>hērem</i> ^{28b}	<i>hōr</i> ²⁸ <i>hrz</i> ^{4b}	hm	<i>hwm</i> ^{2a} <i>hmm</i> ^{6c, 6d} <i>hammā</i> ^{2a} <i>hēmā</i> ³² ----- <i>hmr</i> ⁶	<i>hwm</i> ^{6d} <i>hmm</i> ^{6c} <i>hemmā</i> ³² ----- <i>šhm</i> ^{2b}
kr	<i>krh</i> ¹¹ ----- <i>kerem</i> ³⁸ <i>ʔikkār</i> ^{21b} (?)	<i>krēm</i> ³⁸ <i>ʔikkār</i> ^{21b} <i>krāb</i> ^{23b}	hr	<i>hrb</i> ^{6c, f} <i>hrr</i> ⁶ <i>hōri</i> ²⁶ ----- <i>hārōn</i> ³² <i>hrk</i> ^{6b} <i>hōreb</i> ^{26a} <i>šhr</i> ^{2a}	<i>hrk</i> ^{6c} <i>herkāʔ</i> ³⁹ <i>hrēb</i> ^{26b} <i>šhr</i> ^{2b}
qb	<i>nqb</i> ⁴ <i>nqbh</i> ^{28a} <i>yeqeb</i> ^{28c} ----- <i>qeber</i> ^{28g}	<i>nqb</i> ^{4b} <i>nqēb</i> ²⁸ <i>qebyāʔ</i> ^{28d} ----- <i>qabrāʔ</i> ^{28g}	kb	<i>kbb</i> ^{6g}	<i>kbb</i> ^{6h}
qr	<i>qwr</i> ¹¹ <i>nqr</i> ^{11a} <i>nīqrāʔ</i> ^{28a} <i>māqōr</i> ^{28f} ----- <i>qōʔārā</i> ²⁰	<i>nqr</i> ¹¹ <i>māqor</i> ^{28e}	kw	<i>kwh</i> ^{6, 6a} -----	<i>kwy</i> ⁶ <i>kw</i> ⁶
			sṯ		<i>swṯ</i> ^{6a}
			sp		<i>spp</i> ⁶
			šp		<i>špp</i> ⁶
			sl	<i>šlh</i> ^{6b} <i>šəli</i> ³³	<i>šly</i> ^{6b}
			qd	<i>yqd</i> ⁶ <i>yāqūd</i> ^{26d} <i>mōqēd</i> ^{26c} ----- <i>qdh</i> ^{6c} <i>qaddaḥat</i> ^{26e}	<i>yqd</i> ⁶ <i>yaqdaʔ</i> ^{26d} <i>mawqad</i> ^{26c} ----- <i>qdh</i> ^{6c}
			ql	<i>qlh</i> ^{6b} <i>qāli</i> ^{33a}	<i>qly</i> ^{6b}
			šb	<i>šābīb</i> ^{26f}	<i>šbibāʔ</i> ^{26f}

VERBS: 1) bake; 2) blacken: a. black, b. be black; 3) love; 4) bore: a. drill, b. pierce; 5) break: a. break through, b. scatter, c. shatter, d. smash, e. crumble, f. beat, g. tear off; 6) burn: a. be scorched, b. roast, c. be hot/warm, d. heat, e. ignite, f. become angry, g. extinguish, h. char; 7) carve: a. hew; 8) cleave: a. split, b. crack, c. divide; 9) crush: a. pound, b. oppress, c. trample, d. pulverize, e. ruin, f. grind, g. gnaw (bones); 10) cut: a. cut down, b. cut in, c. cut into, d. cut off, e. cut to pieces, f. make incisions, g. cut a branch, h. cut wood, i. shear (sheep), j. trim, k. tear off, l. pluck, m. shorten (harvest?); 11) dig: a. dig out; 12) form; 13) gnash (teeth); 14) kill: a. murder, b. slaughter; 15) work.

NOUNS: 20) bowl; 21) a. butcher, b. farmer; 22) dust; 23) ditch: a. pit, b. furrow; 24) end, extremity; 25) fleece; 26) heat: a. dryness, b. desolation, c. hearth, d. fire, e. fever, f. spark; 27) half; 28) hole: a. excavation; b. net, c. winepress, d. cistern, e. well, f. water source, g. grave, h. window; 29) mace; 30) mortar: a. pestle; 31) pebble: a. gravel; 32) rage: a. poison; 33) roast: a. roasted grain; 34) segment: a. portion; b. line; 35) saw: a. sharp knife; 36) small; 37) sun; 38) vineyard; 39) wood (for fire); 40) writing (previously 'pierce, carve').

Etymological Appendix: Semitic Terms for Materials

Yigal Bloch

The leftmost column of the following table presents proto-words whose reconstruction is based on actual words attested in different Semitic languages. For the purposes of our reconstruction, a proto-word is a lexical unit expressing a definite semantic notion and possessing a more-or-less stable morphology—i.e., the same set of radicals (with possible metathesis of the radicals, or interchanges of homorganic consonants), and a small set of patterns (defined by the placement of vowels, prefixes and suffixes), in which those radicals are materialized. More often than not, the variety of morphologically and semantically related forms in the individual languages does not permit the reconstruction of a single form for a given proto-word. Nevertheless, the very existence of morphological and semantic similarity between the attested forms strongly suggests that these forms are reflexes of earlier forms belonging to a linguistic stratum that existed prior to the languages to which the attested forms belong.

Each reconstructed proto-word is classified as Proto-Semitic (PS) if its reflexes can be recognized in additional Afro-Asiatic languages beyond the Semitic family, or are attested in East Semitic (Akkadian) and at least one other Semitic language (while not an Akkadian or non-Semitic loanword in the latter). If no reflexes of a given proto-word are attested either in non-Semitic Afro-Asiatic languages or in Akkadian, that proto-word is classified as Proto-West Semitic (PWS). All proto-words of this kind quoted in the table below are attested, on the one hand, in Ethiopic or South Arabian (the Southwest Semitic languages), and on the other hand, in Hebrew, Aramaic, Ugaritic or Arabic (the Central Semitic languages).

The classification of languages adopted here is based on Huehnergard 1992. The entries in the table are ordered according to the alphabetical order of their roots (based on the Latin alphabet used for transliteration, see Tbl. A1).

Abbreviations used for Aramaic dialects:

BArm.	Biblical Aramaic
CPArm.	Christian Palestinian Aramaic
EgArm.	Egyptian Aramaic (6 th –4 th centuries BCE)
JArmTg	Jewish Aramaic of Targum Onkelos and Targum Jonathan (both composed in Palestine and edited in Babylonia in the early first millennium CE)
JBArm.	Jewish Babylonian Aramaic
JPArm.	Jewish Palestinian Aramaic
Mnd.	Mandaic
OArm.	Old Aramaic (9 th –6 th centuries BCE)
Palm.	Palmyrene (early centuries CE)
Sam.	Samaritan Aramaic
Syr.	Syriac

Dictionaries and lexicographical works used for individual languages and language groups:

Akkadian	<i>AHw</i> ; <i>CAD</i> ; <i>CDA</i>
Arabic	<i>AEL</i> ; <i>BK</i>
Aramaic	<i>CAL</i> ; Jastrow 1996 (1903); <i>LSyr</i> ; Tal 2000
Ge'ez	<i>CDG</i>
Hebrew	<i>BDB</i> ; <i>HALOT</i>
Modern South Arabian	<i>JL</i> ; <i>LSoq</i> ; <i>ML</i>
Old South Arabian	<i>DOSA</i> ; Müller 1963
Ugaritic	<i>DULAT</i>

For identification of loanwords (lw.), beside the dictionaries of the specific languages, the following sources were used: Fraenkel 1962 (1886); Kaufman 1974; Leslau 1990; Mankowski 2000. In those instances where the origin of a word in a given language—either as a loanword or as a word indigenous to that language—merits further discussion, such discussion is provided in the footnotes to the table.

Proto-word	Hebrew	Aramaic	Ugaritic	Arabic	South Arabian ¹	Ethiopic ²	Akkadian ³
* ² ab, * ² ap, “reed(s)” (PS, 2c) ⁴	² ebē “reed, papyrus”			² abā “reed, papyrus”			<i>apu, abu</i> “reed-bed, reeds”
* ² abn “stone” (PS, 3c)	² eben “stone”	² abnā ² “stone” (common)	<i>abn</i> “stone”	² abān “stone” (in toponyms)	² bn “stone”	² əbn “stone”	<i>abnu</i> “stone”
* ² ār, * ² urr “light”; “fire” (PS, 2c)	² ūr “fire”; “light”	² wr “to shine” (JPArm.)	<i>ar, ir</i> “light”; <i>ur</i> “warmth, fire”	² uwār “heat of fire”		² arwa “to flame, blaze” (Tigre)	<i>urru</i> “daytime”
* ² iš, * ² išāt “fire” (PS, 2c) ⁵	² ēš “fire”	² š (OArm.), ² šb (EgArm.), ² ēššā, ² ēššātā ² (BArm., JArmTg., JPArm., JBArm.), ² ēššātā ² (Syr.) “fire”	<i>išt</i> “fire”			² əsāt “fire”	<i>išātu</i> “fire”
* ⁵ apar “dust, soil” (PS, 3c)	⁵ āpār “dust, loose earth, soil”	⁵ āpār, ⁵ apṛā ² “dust, earth” (common)	⁵ pr “dust, earth, ground, steppe”	⁵ afār “dust, surface of the earth”			<i>epṛu, eperu</i> “earth, soil, dust, ore (of metals), territory”

¹ Unless otherwise noted, the words in this column are from Epigraphic South Arabian.

² Unless otherwise noted, the words in this column are from Ge^{ez}.

³ Final mimation in Akkadian forms is not marked, unless a specific syllabic spelling with final mimation is quoted.

⁴ In Akkadian, the spellings *a-pa-a-am* and *a-pi-i-im* (Old Babylonian, with word-final mimation) suggest a form in which a stem vowel had originally preceded the case-ending, which implies a 3c proto-form with *y* as the final radical. However, these spellings are exceptional, and the vast majority of spellings of this noun (which is relatively common in Akkadian) do not mark the final vowel as long (see *CAD A/2*: 199a–201a; *AHW*: 62a). Thus it is justified to provide a normalized transcription of the noun in question (in the nominative) as *apu, abu* (rather than **apú, *abú*)—as it indeed appears in the major dictionaries of Akkadian. The forms *apu, abu* suggest a 2c proto-form *²ap or *²ab.

⁵ *-āt* in the form *²išāt is the feminine ending.

Proto-word	Hebrew	Aramaic	Ugaritic	Arabic	South		
					Arabian	Ethiopic	Akkadian
* ^s āpart, * ^s ābār “lead” (PS, 3c) ⁶	^ʿ ōperet “lead”	^ʿ ābār, ^ʿ ābārā, ^ʿ abbārā ⁷ “lead” (Syr., JArmTg., JBArm., JPArm., Mnd.; Akkadian lw.)	^ʿ prt “lead (?)”	^ʿ ābār “lead” (Aram. lw.)			<i>abāru</i> “lead”
* ^s iq, * ^q a ^s “a metal (bronze or gold)” (PS?, 2c) ⁷				^ʿ iqyān “native gold, pure gold” ⁸			<i>qū</i> “bronze, copper (?)” ⁹

⁶ Hebrew ^ʿōperet is often spelled plene in the Masoretic text of the Hebrew Bible: ^ʿōperet (four out of nine occurrences: Exod. 15:10, Ezek. 22: 18, 20, 27:12, according to BHS). Tiberian Masoretic *ō* (*hōlem*) can originate from PS **u*, **ā* (which must have shifted to *ō* as early as the second millennium BCE with the so-called Canaanite shift) and the contracted diphthong **aw* (Joüon 1993: § 6i). There is no reason to postulate an original diphthong in Hebrew ^ʿōperet, and since the original **ā* > *ō* is often spelled plene in the Masoretic text, while the plene spelling of originally short vowels is rare (Andersen and Forbes 1986: 94–100, 193–197), it is likely that the original form reflected in Hebrew ^ʿōperet should be reconstructed as *^sāpart. This form is phonologically very close to Akkadian *abāru*, given that PS **s* was lost in Akkadian (this loss was not always accompanied by the vowel shift **a* > *e*—see Kogan 2001: 264) and that the interchange of voiced labial *b* with voiceless labial *p* is common in Semitic languages (Lipiński 2001: § 11.4). This suggests that Akkadian *abāru* is an original Semitic noun (whose original form is to be reconstructed as *^sābār) and the source of Sumerian A.BĀR rather than a loan from Sumerian (for Sumerian spelling A.BĀR for “lead” in the late 3rd - early 2nd millennium BCE, see Reiter 1997: 120).

⁷ The spelling *qā-e* for Akkadian *qū* “bronze, copper (?)”, attested in a bi-lingual Sumerian-Akkadian lexical list (see CAD Q: 291a), suggests that the second radical of *qū* was originally a guttural. Although such etymological connection is uncertain, it is tempting to suggest that the Arabic ^ʿiqyān “gold” and Akkadian *qū* “bronze, copper (?)” are derivatives of the original 2c root *^sq^l*^q^s, and that metathesis of the root consonants had occurred either in proto-Akkadian or in proto-Arabic. The difference in meaning between “gold” and “bronze” is not an obstacle to the etymological connection suggested here, because the names of metals have a well-known tendency to be transferred from one metal to another in the process of linguistic development (cf., e.g., Hittite *ḫarāšu-* “bronze”, borrowed from Akkadian *ḫurāṣu* “gold”, as specified in HSED: # 1412).

⁸ This noun is listed in AEL: 2118b under the root ^ʿqy, but it has no clear relation to the attested meanings of this root: “to void one’s excrement, to rise high in flight, to be bitter”. It appears that this noun derives from a separate, homonymous root, which was restricted to the semantic field of metallurgy.

⁹ For *qū* “bronze” see Reiter 1997: 295–296. CAD Q: 291a, has the entry “*qū* C” which it translates as “copper, bronze” (and which includes the occurrences quoted by Reiter), apart from the entry “*qū* B” (pp. 288b–291a), which is translated as “a measuring vessel of standard capacity,

Proto-word	Hebrew	Aramaic	Ugaritic	Arabic	South Arabian	Ethiopic	Akkadian
* <i>ār</i> “skin, hide” (PS, 2c)	^ʿ <i>ōr</i> “skin, hide, leather”	* <i>ūrāʾ</i> “skin” (JPArm.) ¹⁰	<i>ḡr</i> , syllabic [ú-]ru, pl. <i>ú-ra-tu</i> “skin, leather” ¹¹	<i>ḡarrat</i> , <i>ḡurrat</i> “fold (of skin, cloth, etc.)”	<i>ḡarḡārāt</i> , <i>ḡarḡārāt</i> “dewlap” (Jibbāli) ¹²		* <i>āru</i> “(ox)-hide” (Old Akka- dian) ¹³
* <i>īd</i> “tree, wood” (PS, 2c)	^ʿ <i>ēs</i> “tree, wood”	^ʿ <i>q</i> (EgArm.), ^ʿ <i>āʾ</i> (< <i>iš-šū</i>) * ^ʿ <i>āḡ</i> ; from BArm. onwards) “wood”	^ʿ <i>š</i> (syll. <i>iš-šū</i>) “wood”	^ʿ <i>īdāt</i> “small thorny trees”; ^ʿ <i>īdāb</i> “large thor- ny trees”; <i>ḡadan</i> “a species of trees, with the hardest wood” ¹⁴	^ʿ <i>d</i> “wood”	^ʿ <i>d</i> “tree, shrub, bush, wood, staff (of spear)”	<i>īsu</i> “tree, wood”

a measure of capacity”, etc. According to *CAD* Q: p. 291a, “It is possible that *qū* B ‘vessel’ is metonymically derived from *qū* C ‘copper, bronze’”. This suggestion is indeed likely and probably explains why the meaning “copper” is given in the *CAD* in addition to “bronze”: due to the lower price of copper, a copper vessel would be much more likely to gain currency as a standard measure of capacity than a bronze vessel. However, while lexical lists equate *qū* with *siparru* (a word whose meaning was originally and predominantly “bronze”; see below, n. 57), there are no known attestations of *qū* where the meaning “copper” is preferable to “bronze”.

¹⁰ This word is not attested in singular but only in plural, in the unvocalized spelling ^ʿ*wry* (Jerusalem Talmud, Nedarim, fol. 37d). The form in question evidences the replacement of the original *^ʿ by ^ʿ due to a gradual loss of distinction between the different laryngeal consonants in Jewish Aramaic of the 1st millennium CE.

¹¹ For the syllabically spelled form, see Huehnergard 1987: 47–48, 159. The spelling with initial vowel-sign *ū* reflects a form beginning with ^ʿ rather than *ḡ*. On the other hand, the translation of the alphabetic Ugaritic noun *ḡr* as “skin” (as opposed to the translation “pit of the chin”, suggested by G.R. Driver and quoted in *DULAT*: 325) is supported by the cognates from Arabic and Modern South Arabian, as well as by the non-Semitic Afro-Asiatic cognates listed in *HSED*: 227. Thus, the Ugaritic noun in question appears to belong to a small group of Semitic words, in which interchanges between ^ʿ and *ḡ* are attested (see Tropper 2000: § 32.146.33).

¹² Although Jibbāli *ḡarḡārāt*, *ḡarḡārāt* belongs to a group of Modern South Arabian words with throat-related meanings (Jibbāli *aḡarḡēr*, Mehri *aḡarḡār* “to gargle”, Mehri *ḡarḡār*, *ḡarḡārōt* “bubble, side of the throat”—see *JL*: 88; *ML*: 141), the plausible etymological connection with Arabic *ḡarrat*, *ḡurrat* “fold (of skin, cloth, etc.)” suggests a semantic development “fold of skin on the throat” > “side of the throat (and the like)”.

¹³ This word is attested only in plural: *a-ru*, *a-ri*, *a-re-e* (*CAD* A/2: 318a, which also suggests a connection with the Hebrew ^ʿ*ōr* “skin, hide, leather”).

¹⁴ The fact that Arabic has cognate forms with both ^ʿ and *ḡ* as the first radical indicates that we are dealing with an interchange between ^ʿ and *ḡ* in one and the same root (cf. above, n. 11). However, since *ḡ* is not attested as the first radical in cognate forms in other languages, we reconstruct the PS form with ^ʿ.

Proto-word	Hebrew	Aramaic	Ugaritic	Arabic	South Arabian	Ethiopic	Akkadian
* <i>baḏ</i> “mud, sand” (PS, 2c)	<i>bōš</i> “silt”	<i>bšyn</i> “marsh” (CPArm.); <i>buš</i> “mud” (JPArm.); <i>bšš</i> “to dry up” (Syr.); Canaanite lws. ¹⁵		<i>baḏḏat</i> “water- logged ground,” <i>baḏḏa</i> “to seep”		<i>bāšbāšā</i> “to mix up by steering, be putrid” (Tigrinya)	<i>bāšu</i> “sand”
* <i>dahab</i> “gold” (PWS, 3c)	<i>zāhāb</i> “gold”	<i>dāhāb</i> , <i>dāhābāʔ</i> “gold” (common)		<i>dahab</i> “gold”	<i>ḏbb</i> “gold”		
* <i>ḏamr</i> “wool” (PWS, 3c)	<i>šemer</i> “wool”	<i>qmrʔ</i> (EgArm.), <i>ʕāmār</i> , <i>ʕamrāʔ</i> (common) “wool”	<i>šml</i> “wool (?)” ¹⁶			<i>ḏamr</i> “wool”	
* <i>gīd</i> “tendon” (PS, 2c)	<i>gīd</i> “tendon”	<i>gīdāʔ</i> (JArmTg, JBArm.), <i>gūdāʔ</i> (JPArm.), <i>gyādāʔ</i> (Syr.) “sinew, tendon”	<i>gd</i> “sinew, tendon”	<i>gīd</i> “neck”	<i>zīd</i> “nerve” (Soqoṭri)		<i>gīdu</i> “sinew, gristle (of an animal)”
* <i>gīld</i> , * <i>gald</i> “skin, hide, leather” (PWS, 3c)	* <i>gēled</i> “skin” (Aram. lw.) ¹⁷	<i>gīldāʔ</i> “skin, hide” (common)		<i>gīld</i> , <i>gīlid</i> , <i>gālad</i> “skin, leather”	<i>gad</i> , pl. <i>ʕegēlid</i> “skin, leather” (Soqoṭri) ¹⁸	<i>gald</i> “skin, hide”	<i>gīldu</i> , <i>gīladu</i> “hide, leather bottle” (Aram. lw.)

¹⁵ The cited forms appear to be Canaanite loanwords, because the normal Aramaic reflex of PS **d* in the 1st millennium CE would be ʕ.

¹⁶ The meaning of this word is not fully clear (see *DULAT*: 786). If cognate with Hebrew *šemer*, Aramaic *ʕamrāʔ* and Geʕez *ḏamr*, it must have undergone a *r/l* interchange.

¹⁷ The only form actually attested in Biblical Hebrew is the one with the 1 sg. possessive suffix: *gīldi* “my skin” (Job 16:15).

¹⁸ The singular form *gad* (cf. also Mehri *ged*, Jibbali *god*, Harsusi *gōd*) results from assimilation of *l* to *d*. The radical *l* appears in the plural form (*LSog*: 101).

Proto-word	Hebrew	Aramaic	Ugaritic	Arabic	South Arabian	Ethiopic	Akkadian
* <i>guprīt</i> ,	<i>goprīt</i>	<i>kbry</i>		<i>kibrīt</i>	<i>kibrīt</i>	<i>kabārīt</i> ,	<i>kibrītu</i> ,
* <i>kibrīt</i>	“brim- stone”	(EgArm),		“sulfur”	“sulfur”	<i>kabrīt</i> ,	<i>kubrītu</i>
“sulfur”		<i>kebrītāʔ</i>		(Aram. lw.)	(Soqotri; Arabic lw.)	<i>kəbrīt</i>	“sulfur”
(PS?, 3c) ¹⁹		(Syr.),				“sulfur”	
		<i>kabbārītāʔ</i> ,				(Arabic lw.)	
		<i>kubrītāʔ</i>					
		(JBArm.,					
		JPArm)					
		“sulfur”					
		(Akkadian					
		lw.?):					
		<i>gwprry</i> ,					
		<i>gwprryʔ</i>					
		(CPArm.,					
		JPArm.),					
		<i>guprītāʔ</i>					
		(JArmTg.)					
		“sulfur”					
		(Hebrew					
		lw.?)					

¹⁹ Ellenbogen 1962: 58–59 suggested that Hebrew *goprīt*, Aramaic *kebrītāʔ*, *guprītāʔ* and their variants in other West Semitic languages are all ultimately loans from Akkadian, and that Akkadian *kibrītu*, *kubrītu* is derived from *kibru* “shore, bank”, which is not attested in other Semitic languages. The reasons for this suggestion, beside the phonological and morphological similarity of Akkadian *kibrītu*, *kubrītu* with West Semitic *goprīt*, *kebrītāʔ*, etc., are the existence of sulfur springs on the banks of the Tigris river and the fact that Akkadian *kibru* and *kibrītu*, *kubrītu* have the same logographic Sumerian equivalent: K1.A (PIŠ₁₀; *kibrītu*, *kubrītu* was sometimes written K1.A.𐎠𐎢, which would be equivalent to *kibir nārī* “river bank”, but the use of the signs 𐎠𐎢 even in phonetic spellings such as *kub-ri-𐎠𐎢* [to be read *kub-ri-(𐎠)𐎢*], in which the divine names determinative 𐎠 would not be functional, indicates that the use of the component 𐎠𐎢 in the spellings of *kibrītu*, *kubrītu* was probably based on folk etymology—see *AHW*: 471a). This argument is suggestive, but the folk-etymologizing logogram K1.A.𐎠𐎢 for *kibrītu* makes it possible that the logogram K1.A for this word was likewise based on a folk etymology (on the other hand, the use of K1.A, literally “water-place” in Sumerian, for the Akkadian word for “bank, shore” would be natural). Cf. the situation with the two Akkadian verbs *erēšu*, one meaning “to sow, cultivate a field” (PS **hrt*) and the other meaning “to ask for, desire” (PS **rs*), which have one and the same logographic Sumerian equivalent: APIN, also read as UDU₄ (*CAD* E: 281a–289a; *AHW*: 238b–240a). Since the original meaning of APIN in Sumerian is “plough”, it would naturally be perceived as semantically equivalent to *erēšu* “to sow, cultivate a field”, but its use for *erēšu* “to ask for, desire”, a verb of wholly different origin and meaning, must have been due to folk etymology. As for the location of sulfur springs, such springs exist in the Levant as well—e.g., on the shores of the Dead Sea (see Amar 1998)—and it is not self-evident that the use of sulfur among the Semitic-speaking peoples originated in Mesopotamia (from the archaeological point of view, the dates of the beginning of utilization of sulfur springs in the different parts of the Near East are unclear). From the linguistic aspect, it is well possible that Aramaic *kbry*, *kebrītāʔ* are loans from Akkadian, while Arabic *kibrīt* is commonly understood as a loan from Aramaic and Geʿez *kabārīt*, *kabrīt*—as a loan from Arabic. However, as far as Hebrew *goprīt* is concerned, it should be borne in mind that there is no clear case of an Akkadian loanword beginning with *k* which

Proto-word	Hebrew	Aramaic	Ugaritic	Arabic	South		
					Arabian	Ethiopic	Akkadian
* <i>gīr</i> “lime” (PWS, 2c) ²⁰	<i>gīr</i> “lime”	<i>gīr, gīrā</i> “chalk, lime, plaster” (BArm., JArmTg., JPArm.) ²¹		<i>ǧīr</i> “gypsum, lime,” <i>ǧāyyār</i> quick lime and mixtures thereof; a mixture of gypsum with ashes”	<i>gyrm, gyrm</i> “plaster”	<i>gərgər</i> “lime- stone” (Tigre) ²²	
* <i>gīr(r)</i> “fire, heat” (PS, 2c) ²³				<i>ǧāyir</i> “burning, intense heat inside the body”			<i>girru</i> “fire, fire-god”
* <i>hīmar</i> “bitumen” (PWS? PAA? 3c) ²⁴	<i>hēmār</i> “asphalt, bitumen”	<i>hymr</i> (CPArm.), <i>hēmārā</i> (JArmTg., JPArm.) “bitumen”		<i>humar,</i> <i>hamīr</i> “bitumen”	<i>hymr</i> “bitumen”		

appears in Hebrew as *g* (Mankowski 2000: 155). Thus, whether or not Aramaic *gupry*, *guprītā* (attested only in Jewish and Christian Palestinian Aramaic) is a loan from Hebrew, it is likely that both Hebrew *goprīt* and Akkadian *kibrītu*, *kubrītu* are reflexes of a genuine PS lexeme, which had variants with initial *g* and *k*. The first-syllable vowel of the PS lexeme is reconstructed here as *i* because the variation between *ile* and *u* in individual languages (Akkadian and Aramaic) shows that *u* probably results from partial assimilation of the vowel to the following labial consonant *b/p*.

²⁰ Since the meaning “gypsum” for reflexes of PWS **gīr* is attested only in Arabic, there is no reason to assume that this meaning—as opposed to “lime”—goes back to Proto-West Semitic. PWS **gīr* may be etymologically connected with PS **gīr(r)* “fire, fire-god” (see below, n. 23), because of the process of burning involved in the production of lime. Cf. Arabic *nār* “fire”, *nūrat* “tar, liquid pitch, limestone, quick lime, a mixture of quick lime with arsenic” (*AEL*: 2865a–2866a).

²¹ *HALOT*: 201b suggests that Hebrew and Aramaic *gīr* “lime” is a loanword from Akkadian *kīru*, which is, in turn, a loanword from Sumerian *gir* (read GIR₄). However, although Akkadian *kīru* was sometimes used with reference to a lime-producing kiln, it was commonly used to signify a bitumen-producing kiln (see *AHW*: 484b–485a; *CAD* K: 415b–416a). Sumerian GIR₄ was also borrowed into Akkadian as *qīru* “bitumen”, which was later borrowed into Aramaic, and from there—into Arabic and Geʿez (see *AHW*: 923a). Thus, the proposal raised by *HALOT* is unlikely.

²² *gīr* “lime”, attested in Geʿez, is evidently a loan from Arabic *ǧīr* (*CDG*: 208a).

²³ Akkadian *girru*, reflecting formally the geminate root *grr*, and Arabic *ǧāyir*, reflecting formally the hollow (II-*y*) root *ǧyr* (*BK*: 361b), suggest that both these forms are extensions of the original 2c form **gīr(r)*, which may well be of the same origin as **gīr* “lime, gypsum” (see above, n. 20).

²⁴ Proto-West Semitic **hīmar* “bitumen” appears to be etymologically connected with Egyptian *mrḥ* “bitumen, asphalt, resin”; however, it is not clear whether the Egyptian noun (attested since

Proto-word	Hebrew	Aramaic	Ugaritic	Arabic	South Arabian	Ethiopic	Akkadian
* <i>ḥarūd</i> , * <i>ḥurād</i> “gold” (PS, 3c) ²⁵	<i>ḥārūs</i> “gold”	<i>ḥrāṣā</i> “yellow (i.e., gold- colored)” (Syr.) ²⁶	<i>ḥrṣ</i> “gold”	<i>ḥariḏa</i> “to be yellow” ²⁷			<i>ḥurāsu</i> “gold”
* <i>ḥašb</i> “pottery, pot- <i>sherd</i> ” (PS, 3c) ²⁸	<i>ḥāšāb</i> “stone pitcher, earthen jug” (post- Biblical, Aram. lw.)	<i>ḥāsap</i> (BArm.), <i>ḥaspā</i> ² (JArmTg., JPArm., JBArm.), <i>ḥašbā</i> ² (JBArm.), <i>ḥezbā</i> ² , <i>ḥešbā</i> , <i>ḥespā</i> ² (Syr.) “pottery, clay vessel(s), clay sherd(s)” ²⁹		<i>ḥazaf</i> “pottery, jars, earthen vessels” (Aram. lw.)		<i>ṣāḥb</i> “vessel, jar, pitcher, bowl” ³⁰	<i>ḥašbu</i> “pottery, terra-cotta, pot- <i>sherd</i> ”

the early 2nd millennium BCE) is a genuine cognate of the Semitic one, or an early borrowing from Semitic (*EDE* 3: 435–436). If Egyptian *mṛḥ* is a genuine cognate of PWS **ḥimar*, then both these nouns go back to a Proto-Afro-Asiatic ancestor, and a reflex thereof must have existed in Proto-Semitic as well.

²⁵ The initial *ḥ* is clearly indicated by the Ugaritic form; one should also add that *chrysos* “gold” in Greek, a Semitic loanword, reflects a Semitic articulation with uvular *ḥ*. The laryngeal *ḥ* in Arabic *ḥariḏa* “to be yellow” constitutes an example of interchange between *ḥ* and *h* in cognate words in different Semitic languages (for this phenomenon, see Tropper 2000: §32.146.23).

²⁶ For the etymological connection between “yellow” and “gold”, cf. Ugaritic *yṛq*, Epigraphic South Arabian *wṛq*, Geʿez *warq* “gold”, derived from the common Semitic term for “yellow, green” (*CDG*: 618a); cf. also below, nn. 54–55.

²⁷ Arabic *ḥurṣ* “gold ring”, given in *HALOT*: 352a as a possible cognate of Hebrew *ḥārūs*, appears to be a Canaanite loan. The existence of this apparent loanword makes it unlikely that Arabic *ḥariḏa* “to be yellow”, with a rather different consonantal structure, is a secondary derivation from Northwest Semitic **ḥarūs*, as suggested by G.R. Driver (quoted in Eilers 1954–1959: 466). The conclusion that *ḥariḏa* is original to Arabic appears more plausible, and it also supports the possibility that **ḥarūs* “gold” is original to Northwest Semitic, rather than a loanword from Akkadian, as suggested by Driver (*ibid.*).

²⁸ Since all the languages besides Akkadian feature the laryngeal *ḥ* (rather than the uvular *ḥ*) in this lexeme, it appears that *ḥ* in Akkadian is a reflex of PS **ḥ*. For the admittedly rare phenomenon of PS **ḥ* > Akkadian *ḥ*, see Kogan 2001: 264; Tropper 1995.

²⁹ Kaufman 1974: 54 argued that all the Aramaic forms of this word are loans from Akkadian, “perhaps from different periods or dialects”. The variation of Aramaic forms of this lexeme is not supportive of Kaufman’s proposal, but it is difficult to substantiate any specific conclusion on this issue.

³⁰ Geʿez *ṣāḥb* appears to be a variant form of the lexeme in question, with metathesis of the first and the second radicals. This form is not easily explained as a loan from Akkadian via Aramaic,

Proto-word	Hebrew	Aramaic	Ugaritic	Arabic	South Arabian	Ethiopic	Akkadian
* <i>ḥaš(s)</i> , * <i>ḥiṣ(s)</i>	<i>ḥāšāš</i> “gravel”	<i>ḥšāšāʾ</i> “gravel” (Syr.)	<i>ḥš</i> “gravel”	<i>ḥašan</i> “pebbles, small stones”		<i>ḥōšā</i> “gravel, sand” ³²	<i>ḥiṣṣu</i> “gravel, pebbles” <i>ḥašāṣu</i> “to break off”
* <i>kuḥl</i> , * <i>guḥl</i>	<i>kḥl</i> “to paint the eyes”; <i>kōḥal</i> , <i>kāḥōl</i> “powder used for eye-lids, stibium” (post- Biblical)	<i>kuḥlāʾ</i> “antimony” (JPArm., JBArm., Syr.); <i>kḥālāʾ</i> “eye-paint” (JPArm., Syr.); <i>kḥl</i> “to paint the eyes” (JArmTg., JBArm., Syr.)		<i>kuḥl</i> “black paint applied to eyes”	<i>kēḥal</i> “kohl”; <i>kəḥāwl</i> “to apply kohl to the eyes” (Mehri)	<i>kʷəḥl</i> “antimony, dye for the eye-lid”; <i>kʷəḥala</i> “to anoint the eyelid (with antimony), to mark with iron, cauterize”	<i>guḥlu</i> “antimony”

which suggests that at least some West Semitic languages preserved genuine reflexes of PS **ḥašb* “pottery, potsherd”. On the other hand, since the metathesis of the first and the second radicals is attested only in Geʿez, it appears reasonable that this metathesis should not be traced back to Proto-Semitic.

³¹) This lexeme appears to be another example of interchange between *ḥ* and *ḥ* in different Semitic languages (cf. above, n. 25).

³²) The transcription *ḥōšā* given in *HALOT*: 344b is evidently a misprint.

³³) The basic semantic content of the term **kuḥl*, and its variations and derivatives in West Semitic languages, is connected to antimony powder-based cosmetics and its application to eyes, with some further semantic developments in individual languages, such as the generic color term “blue” in Hebrew: *kāḥōl* (first attested in medieval Hebrew texts) and in Geʿez: *kʷəḥli* (*CDG*: 279b), or the verb “to mark with an iron, cauterize” in Geʿez (*ibid.*). Akkadian *guḥlu* is attested in a couple of instances as a substance applied to eyes, for medicinal and ritual purposes, and the equation between Akkadian *guḥlu* and Sumerian IM.SIG₇.SIG₇ and IM.ŠIM.BI.ZI.DA in lexical lists (see *CAD* G: 125a–b; *AHW*: 296b) implies that the term *guḥlu* refers to a soft plastic substance (i.e., antimony paste). But on the other hand, at least in the extant sources, *guḥlu* is more frequently used with reference to raw material (received by Assyrian kings of the 1st millennium BCE as tribute from client rulers). According to Moorey 1994: 241–242, the raw antimony which could be used in the Ancient Near East would be a native metal, and objects made of metallic antimony, or of an alloy of antimony with tin, have been discovered in archaeological excavations in both Mesopotamia and the Levant (remarkably, the beads made of an alloy of antimony and tin and discovered in Tell el-Farah South, in the western Negev in modern Israel, date from the Iron Age—approximately the same period when *guḥlu* was mentioned as a raw material in Assyrian sources). Since phonologically there is no compelling reason to maintain that the West Semitic terms for antimony (used as an eye-paint) are derived from Akkadian (*ḥ* in West Semitic forms may well be original, while *ḥ* in Akkadian *guḥlu* may be understood as a reflex of PS **ḥ*—see

Proto-word	Hebrew	Aramaic	Ugaritic	Arabic	South Arabian	Ethiopic	Akkadian
* <i>kasp</i> “silver” (PS, 3c)	<i>kesep</i> “silver”	<i>kəsap</i> , <i>kəspāʾ</i> “silver” (common)	<i>ksp</i> “silver”	<i>kasafa</i> “to cut into pieces”; <i>kisf</i> “piece”			<i>kaspu</i> “silver”; <i>kasāpu</i> “to break into pieces” ³⁴
* <i>labin(a)t</i> , * <i>libint</i> “brick” (PS, 3c) ³⁵	<i>ləbēnā</i> “brick”	<i>lbnh</i> (EgArm.), <i>lbn</i> (JPArm.), <i>ləbēnāʾ</i> (JArmTg., JBArm.), <i>lbettāʾ</i> (Syr.) “brick”	<i>lbnt</i> “brick”	<i>labinat</i> “brick” (Aram. lw.?)	<i>lbt</i> “brick (?)” ³⁶		<i>libittu</i> “brick”
* <i>milḥ</i> , * <i>malḥ</i> “salt, saltpetr” (PS? PWS? 3c) ³⁷	<i>melah</i> “salt”	<i>mələḥ</i> , <i>milḥāʾ</i> “salt” (common)	<i>mlḥt</i> “salt, salted”	<i>milḥ</i> “salt”	<i>malḥāt</i> “salt, brackish water, saltpetr, sulfur” (Mehri)	<i>malḥ</i> , <i>mālḥ</i> , <i>malḥā</i> “salt, taste, savor, judgment”	<i>milʿu</i> , <i>milḥu</i> “saltpetr (?)” ³⁸

above, n. 28), and since there is some difference between the semantic content of Akkadian *gublu* and West Semitic *kuḥl* (and its variants), it appears that we are dealing with a genuine PS term which has reflexes all over the Semitic language family, rather than with an Akkadian loanword in West Semitic (cf. Mankowski 2000: 155, n. 7; contra Leslau, *CDG*: 279b).

³⁴ The likely etymological connection of *kaspu* and *kasāpu* in Akkadian may be due to the breaking of the silver-containing ore to pieces before smelting, or to the use of silver as currency, whereby the value of a silver piece was determined by its weight, and payment for everyday needs was conducted by chopping small bits of silver off a larger piece (see Driver 1954–1959: 25–26; Eilers 1954–1959).

³⁵ *-(a)t* in **labin(a)t*/**libint* is the feminine ending. As noted by Kaufman 1974: 66, and n. 178, “There is no compelling reason to assume that the Akk[adian form] is the origin of this common Sem. term and its related forms”, and “It is, in fact, difficult to account for the derivation of the Heb. form ... from any of the Akkadian forms” (contra *HALOT*: 518a).

³⁶ This translation is not clear; cf. *DOSA*: 257, which translates as “closely-laid stonework”.

³⁷ The original linguistic layer to which this lexeme can be reconstructed depends on the understanding of Akkadian *milʿu*, *milḥu* and *mallaḥtu* (see the following note).

³⁸ For the form *milḥu* (spelling *mil-ḥi*, in the genitive), occurring in one lexical list from the first millennium BCE, see *CAD* M/2: 69b. It appears that here, as in the case of **ḥašb* “pottery, potsherd” mentioned above (n. 28), Akkadian *ḥ* reflects PS **ḥ*. The translation of *milʿu*, *milḥu* as “saltpetr” follows *AHw*: 653a. Oppenheim 1970: 57 disputed this translation, noting that it “is based solely on etymological considerations and is not supported by Akkadian texts”; consequently, in

Proto-word	Hebrew	Aramaic	Ugaritic	Arabic	South Arabian	Ethiopic	Akkadian
* <i>mašk</i>	<i>mešek</i> “leather” (PS, 3c)	<i>mašák,</i> <i>mašká,</i> <i>meška</i> “skin, hide, leather” (common)		<i>mask</i> “hide recently removed from a lamb or a kid”			<i>mašku</i> “skin, hide, leather”
* <i>maṭ,</i> * <i>miṭ</i>	<i>môṭ</i> “pole, carrying pole” (PS, 2c)		<i>mṭ</i> “rod, staff”		<i>mīṭāyn,</i> <i>mīṭōn</i> “tree, the wood of which is very hard; a favorite wood for making sticks and clubs” (Mehri)		<i>miṭṭu</i> “a kind of weapon (prob. mace)”
* <i>māy,</i> * <i>mā</i>	<i>mayim</i> “water” (pl.) (PS, 2c)	<i>my</i> (OArm.), <i>myn</i> (EgArm.), <i>mayyā</i> (JArmTg, JPArm., JBArm., Syr.) “water” (all forms plural)	<i>mb, my</i> “water”	<i>mā</i> “water”	<i>muy</i> “water”	<i>māy</i> “water”	<i>mū, mā’ū</i> “water” (pl.)
* <i>nuḥuš(a)t,</i> * <i>nuḥāš</i>	<i>nəḥōšet,</i> <i>nəḥūšā</i> “copper, bronze” (PWS, 3c)	<i>nəḥāš,</i> <i>nəḥāšā</i> “copper, bronze” (common)		<i>nuḥās</i> “copper, brass”		<i>nāḥš</i> “copper, bronze”	

CAD M/2: 69b, *miṭ’u*, *miḥu* is translated generally as “a mineral”. Still, etymological parallels are not to be dismissed out of hand when trying to determine the meaning of words in a dead language (such as Akkadian), and the semantic connection between salt and saltpeter in Semitic languages receives important support from Mehri *məḥāt*. It is also worth noting that first-millennium BCE lexical lists attest the word *mallaḥtu* as the name of a kind of grass (CAD M/1: 169b; AHw: 596a). Although the precise meaning of *mallaḥtu* is unclear, an etymological connection with West Semitic **miḥ*, **malḥ* looks reasonable—hence the translation “a saline grass” in AHw: 596a, contra CAD. If correct (and if *mallaḥtu* is not a West Semitic loanword), this link implies that in Proto-Akkadian **miḥ* was used with the meaning of “salt” beside “saltpeter”.³⁹⁾ This word appears only in Ps. 126:6 and Job 28:18; in the first instance it refers to a vessel filled with seed for sowing, and in the second it is a metaphoric reference to a vessel of wisdom. The assumption that the vessel spoken of is a leather bag is based on etymological considerations.

Proto-word	Hebrew	Aramaic	Ugaritic	Arabic	South Arabian	Ethiopic	Akkadian
* <i>manpāḥ</i> * <i>manpūḥ</i> “bellows” (PS, 3c) ⁴⁰	<i>mappūāḥ</i> “bellows”	<i>mappūḥā</i> “bellows” (Syr.); <i>mḥ</i> “coal” (JPArm.)	<i>mḥm</i> (dual) “bellows of the forge”	<i>munfāḥ</i> , <i>munfāḥ</i> “bellows”		<i>manfāḥ</i> “bellows”	<i>munappiḥtu</i> (?) <i>nappaḥu</i> “bellows” ⁴¹
* <i>nūr</i> “fire, light” (PS, 2c)	<i>nēr</i> “light, small clay lamp”; <i>nūr</i> “light, lamp”	<i>nūr</i> , <i>nūrā</i> (BArm., JArmTg., JBArm., JPArm., Syr.) “fire”; <i>nəḥōr</i> , <i>nəḥōrā</i> (BArm., JArmTg., JPArm., JBArm.), <i>nūḥrā</i> (Syr.) “light” ⁴²	<i>nr</i> “to shine, burn” (verb); <i>nr</i> “sheen, gleam, lamp” (noun)	<i>nār</i> “fire”; <i>nūr</i> “light”	<i>nwr</i> “to make a burnt offering”	<i>nūru</i> “light, gleam”; <i>nawāru</i> “to be(come) bright, shine”	
* <i>pāḥm</i> , * <i>pāḥimt</i> “charcoal” (PS, 3c) ⁴³	<i>peḥām</i> “charcoal”	<i>pḥm</i> , <i>pāḥmā</i> “coal” (JPArm., Syr.)	<i>pḥm</i> “ember, glowing coal”	<i>fāḥm</i> “charcoal”	<i>fḥam</i> “coal” (Soqotri)	<i>fəḥm</i> “coals, carbon, embers”	<i>pēntu</i> , <i>pēntu</i> , <i>pe’ittu</i> “charcoal”

⁴⁰ The root of this lexeme is *nḥb*; *m-* is a nominal prefix. The comment offered in *SED* 1 (verbal roots # 45), that a term for “bellows” would be anachronistic in Proto-Semitic, is puzzling, given the fact that the names of several metals (listed in this table) can be traced back to the same linguistic level.

⁴¹ Akkadian *munappiḥtu* appears only in one lexical list dating to the first half of the 2nd millennium BCE, and its meaning is not sufficiently clear from the context (*CAD* M/2: 199b). The term *nappaḥu* (< **nanpaḥu* < **manpaḥu*) is used for “bellows” in Akkadian texts of the 1st millennium BCE (*CAD* N/1: 307a).

⁴² In Aramaic, the so-called “hollow” roots (II-*w/ḥ*) are sometimes extended to a 3c pattern through the addition of *h* as the second radical; cf. Aramaic *rhḥ* “to run”, Hebrew *ruḥ*, PS **rwḥ*. This phenomenon supports our classification of the “hollow” roots as originally 2c.

⁴³ In the form **pāḥimt* (reconstructed based on Akkadian *pēntu*, *pe’ittu*), *-t* is the feminine ending.

Proto-word	Hebrew	Aramaic	Ugaritic	Arabic	South Arabian	Ethiopic	Akkadian
* <i>qidr</i> ,	<i>qadērā</i>	<i>qadar</i> ,	<i>dkrt</i> (pl.)	<i>qidr</i> , <i>qidrat</i>	<i>qāder</i> ,		<i>diqāru</i>
* <i>diqār</i>	“cooking pot”	<i>qidrāʾ</i> ,	“jars (for wine)” ⁴⁶	“cooking pot”	<i>zādher</i>		“a bowl with a round bottom for serving, and heating” ⁴⁷
“bowl, cooking pot”	(post-BH) ⁴⁵	(JArmTg., JBArm., JPArm.),		(Aram. lw.)	“cooking pot” (Soqotri)		
(PS, 3c) ⁴⁴		<i>qedrāʾ</i> (Syr.) “pot, jar”					

⁴⁴ Since the form **qidr* (and its variations) is attested only in West Semitic languages, it may be PWS rather than PS, but its monosyllabic character suggests that it is earlier than **diqār*—a form with metathesis of the first and the second radicals, which is reflected in Akkadian and evidently also in Ugaritic (with de-emphatization of the velar consonant: **q* > *k*). In any event, the difference of the vowel patterns in **qidr* and **diqār* suggests that we are dealing with variants of a genuine PS lexeme and not with an Akkadian loan in West Semitic (with the possible exception of Ugaritic). With this consideration in mind, we reconstruct both **qidr* and **diqār* as PS forms.

⁴⁵ Rabin 1999: 76 suggested that the BH verb *qdr* “to become dark, dirty” (see *HALOT*: 1072a) is etymologically connected with the noun *qadērā* “cooking pot” (and related nouns in other Semitic languages), because the surface of a cooking pot would appear black after some usage. If this suggestion is correct, it would imply that the noun *qadērā* belongs to the native Hebrew vocabulary and is not an Aramaic loan.

⁴⁶ The translation given in *DULAT*: 737 (s.v. *rḥbt*), “jars of wine”, is preferable to that given *ibid.*, 269–270 (s.v. *dkrt*), “bowl-goddesses”.

⁴⁷ Although Akkadian sources attest *diqāru*-vessels made of silver, copper, bronze and stone, mentions of earthenware *diqāru*-vessels are much more frequent in these sources (see *AHW*: 172b; *CAD* D: 158a–159a). Since in West Semitic languages reflexes of **qidr* normally refer to vessels made of pottery (cf. also post-Biblical Hebrew and Jewish Palestinian Aramaic *qaddār* “potter”), it appears that the original PS lexeme under consideration primarily signified a clay vessel.

Proto-word	Hebrew	Aramaic	Ugaritic	Arabic	South Arabian	Ethiopic	Akkadian
* <i>qanay</i> (3c) originally probably * <i>qan</i> (2c) “reed, cane” (PS) ⁴⁸	<i>qānē</i> “reed, stalk”	<i>qn</i> ² (EgArm.), <i>qny</i> (Sam.), (Syr., JArmTg., JPArm., JBArm.) “reed”	<i>qn</i> “cane, arrow”	<i>qanāt</i> “spear- shaft, spear hollow like a cane”			<i>qanū</i> “reed, cane”
* <i>qayś</i> “wood” (PS, 2c) ⁴⁹		<i>qēsā</i> ² “twig, chip, wood, tree” (JPArm.); <i>qaysā</i> ² “wood” (Syr.)			<i>qásen</i> “wood, forest” (Soqoṭri)		<i>qīšu, qīštu</i> “forest, wood”
* <i>rūt</i> “dirt, mud” (PS) ⁵⁰			<i>rṭ</i> “mud”	<i>rawṭ</i> “animal dung”			<i>rūšu</i> “dirt”
* <i>šād</i> “a metal (copper, gold?) (PS?, 2c)				<i>šād</i> “copper, brass, a cooking pot made of copper”			<i>šādu</i> “to become molten, to melt (down)”; <i>šā²idu</i> “gold” ⁵¹

⁴⁸ The forms cited in the table for individual Semitic languages support the reconstruction of 3c PS form **qanay*. However, given the Biblical Hebrew noun **qayin* “spear” (2 Sam. 21:16), which is evidently cognate with *qānē* “reed”, it is likely that both **qayin* and **qanay* are different formations derived from an earlier proto-form **qan* by extending it to fit a 3c pattern.

⁴⁹ As noted above (n. 42), we consider the “hollow” roots (II-*w/y*) to be originally 2c.

⁵⁰ In both Akkadian and Ugaritic sources, *rūšul/rṭ* is mentioned as a substance used by major deities in creating minor deities or supernatural agents (see *CAD* R: 432a; Greenstein 1997: 38, l. 29). Thus, besides denoting merely “dirt”, *rūšul/rṭ* could be perceived, at least in mythological thought, as a useful raw material.

⁵¹ Morphologically, *šā²idu* is the participle of the verb *šādu* “to become molten, to melt (down)” (see Reiter 1997: 17–18). The etymological connection between this Akkadian verb (used predominantly with reference to metals and metal objects, and sometimes metaphorically, with reference to a star, or to enemy countries) and the Arabic noun *šād* “copper, bronze”, is not certain but likely. Other Akkadian nominal formations derived from the root *šwd* (originally 2c **šd*) and belonging to the semantic field of metallurgy are: *šīdu* “molten (adj.), silver ingot” (*CAD* Š: 174a; *AHW*: 1100a); *šūdu* “molten (said of metal)”, *ša šūdi* “melting pot” (*CAD* Š: 229b; *AHW*: 1108b); *mašādu* “a crucible used for melting” (*CAD* M/1: 329; *AHW*: 619b).

Proto-word	Hebrew	Aramaic	Ugaritic	Arabic	South		
					Arabian	Ethiopic	Akkadian
*šup(p), “white sheep, wool” (PS, 2c) ⁵²	šippā “flake of wool” (post- Biblical; Aramaic lw.)	šwp (Sam.), šwpyʔ (Mnd.) “wool”		šūf “wool, fleece”	sawf (Mehri), sof (Jibbāli) “wool” šāf “wool” (Soqoṭri; Arabic lw.)	suf “wool” (Amharic, Tigrinya; Arabic lw.?)	šuppu “white sheep”; šuppātu “strip of carded wool” (Aramaic lw.)

⁵² Post-Biblical Hebrew *šippā* “flake of wool” (Jastrow 1996 [1903]: 1278b) and Akkadian (Neo-Babylonian) *šuppātu* “strips of carded wool” (CAD Š: 249b) are rare words in their respective languages, attested at historical stages when both of them were subject to heavy Aramaic influence, which suggests that these words are loans from Aramaic. Thus, the word *šippāʔ or *šuppāʔ “flake of wool” is likely to have existed in Aramaic between ca. 500 BCE and ca. 400 CE, which makes it unlikely that *šwp “wool” in Samaritan Aramaic and *šwpyʔ “wool” in Mandaic are Arabic loanwords. Amharic and Tigrinya *suf* “wool” have been classified by Leslau (1990: 366) as Arabic loanwords, which is well possible, given that in Arabic loanwords in Ethiopic languages, Arabic š is often rendered by s (see Leslau 1990: 189). However, it is less likely that Mehri *sawf* and Jibbāli *sof* “wool” are loans from Arabic *šūf*, because other Modern South Arabian loans of the same word exhibit š as the first radical: Soqoṭri *šāf*, Harsūsi *šawf* (see SED 1: #259). It appears more reasonable that the Mehri and Jibbāli forms are native to Modern South Arabian, and that the first radical in these forms had undergone the process of de-emphatization: *š > s. All the above suffices to establish *šup(p) “wool” for Proto-West Semitic. Akkadian *šuppu* “white sheep”, attested from the early 2nd millennium BCE onwards (AHw: 1113a; CAD Š: 249a–b), appears as a reasonable East Semitic cognate for PWS *šup(p) “wool”. Thus, we can reconstruct *šup(p) as a Proto-Semitic lexeme, although it is unclear whether it originally referred to a particular kind of sheep (possibly already before their domestication) or specifically to wool (of domesticated sheep). One may further tentatively suggest that Akkadian *šipātu*, *šāptu* “wool, fleece”, attested in syllabic spellings from the early 2nd millennium BCE onwards (AHw: 1244a–b; CAD Š/3: 57b–64b) is also etymologically related to PS *šup(p) “wool, white sheep”; in this case, the first consonant of Akkadian *šipātu*, *šāptu* would be Proto-Semitic *š, and the etymology would go back to PS *šVpat “(tuft of) hair” (for Akkadian *šipātu*, *šāptu* deriving from PS *šVpat, see SED 1: #259). However, an interchange between PS *š and *s in cognate words would be problematic, even though one relatively secure instance of such interchange appears to be attested in *šmb/’ šmh “to glow, to be high, to be proud, to be happy” (Greenfield 1995 [1959]).

Proto-word	Hebrew	Aramaic	Ugaritic	Arabic	South Arabian	Ethiopic	Akkadian
*š _{pr} , *š _{ipar}	[šēper “yellow metal: copper, bronze” (PS, 3c) ⁵³	š _{apra} ² “morning” (Syr., JArmTg., JPArm., JBArm.) ⁵⁵	s _{pr} “bronze” (Akkadian lw.)	š _{ufr} “copper, brass, gold”; ʔ _{asfar} “yellow” ⁵⁶	š _{āfār} “brass, yellow, green” (Mehri)		s _{iparru} “bronze, copper (?)” ⁵⁷

⁵³ For the interchange between *s* and *š* as the first radical, cf. Akkadian *sullû* and *šullû* “to pray (to gods), appeal, implore”. Aramaic *šly* “to pray” is commonly considered a loanword from Akkadian, while Arabic *šallā* and Ge’ez *šallaya* are usually viewed as loanwords from Aramaic (see *AHW*: 1110a–b; *CDG*: 557a). However, the noun *šalōtā* “prayer” in Aramaic (commonly understood to be the source of Arabic *šalāt*, *šalūt*, of Ge’ez *šalōt* and of Epigraphic South Arabian *šlt*, with the same meaning) lacks a morphological parallel in Akkadian but has such a parallel in Ugaritic: *šlt* “prayer” (*DULAT*: 783). Hence, it seems more likely that the root **šly* “to pray, implore” goes back to Proto-Semitic, and was preserved in Akkadian both in the original form and in the de-emphatized form *sly*. Another comparable example is offered by Akkadian *siāqu*, *sāqu* “to be(come) narrow, constrained” vs. Arabic *dyq* “to be narrow, limited, distressed, avaricious”, Hebrew *šwq* “to be pressed hard, oppressed”, Syriac *ʔayyīq* “narrow, greedy, sad”. Here, the West Semitic attestations point to the PS root *dyq*, whose first radical must have developed in proto-Akkadian into **š* and then was de-emphatized to *s*. With these examples in mind, one is inclined to suggest that Akkadian *siparru* “bronze, copper (?)” (see below, n. 57) is a reflex of Proto-Semitic **šipar*.

⁵⁴ Earlier suggestions to interpret the noun *šēper* in some verses of the Hebrew Bible (Exod. 17:4; Isa. 30:8; Job 19:23) as an Akkadian loanword meaning “bronze” have been justifiably rejected by *HALOT*: 767.

⁵⁵ A connection between Aramaic *šapra*² “morning” and Arabic *ʔasfar* “yellow” has been suggested in *LSyr*: 635a. This connection implies that the basic semantic notion expressed by the root *spr/spr* was that of yellowness (as supported also by Mehri *šāfār*). In this case, the Aramaic term for “morning” would be semantically based on the yellow color of the rising sun, and the Mehri, Arabic and Akkadian terms for “bronze” and “copper” would be semantically based on the yellow color of these metals (see also the following note).

⁵⁶ The etymological connection between *ʔasfar* “yellow” and *šufr* “copper, brass” in Arabic is beyond doubt, and it appears that the rare meaning “gold” for *šufr* in Arabic derives from the yellow color of copper and bronze objects, which resembles that of gold (*AEL*: p. 1697b).

⁵⁷ According to *CAD* E: 323a, Mesopotamian scribes differentiated between the terms for copper (Akkadian (*w*)*erû*, Sumerian URUDU) and bronze (Akkadian *siparru*, Sumerian ZABAR, (UD.)KA.BAR), although in later texts the sign URUDU was sometimes used as a determinative for bronze objects. However, as argued by Brinkman 1988: 136–138, by the first millennium BCE both (*w*)*erû* and *siparru* could be used with reference to either bronze or copper. It does appear that (*w*)*erû* (URUDU) was generally used for copper, and *siparru* (ZABAR) for bronze (i.e., an alloy of copper and tin), but it is not clear whether such a semantic distinction already existed in pre-historic times; the situation is further complicated by the existence of arsenic bronze, produced from copper ores which had a naturally high admixture of arsenic (Reiter 1997: 288, suggested that arsenic copper was called URUDU/(*w*)*erû*, but that is unclear).

Akkadian *siparru* has often been considered a loan from Sumerian ZABAR, or both these forms have been considered as reflexes of a Kulturwort—i.e., a word denoting a specific commodity spread over a number of languages in an area where that commodity was traded, without a possibility to find out the language in which such word originated. In keeping with this

Proto-word	Hebrew	Aramaic	Ugaritic	Arabic	South Arabian	Ethiopic	Akkadian
*šrp	šrp	šrp	šrp	širf	šrp		šarāpu
“to burn, fire, to smelt and refine (metals), to dye red” (PS, 3c) ⁵⁸	“to smelt, refine (metals)”	“to refine (metals)” (common)	“red dye (?), silversmith (?)”; mšrp “crucible (?), com- pensation (?)” ⁵⁹	“pure (adj.), red dye”	“silver”		“to burn, fire, to smelt and refine (metals), to dye red”; šarpu “burnt, fired (pottery), refined (metal), silver”

hypothesis, Salonen 1952: 7–8 listed Arabic *šufr* as another manifestation of the same Kulturwort. However, given the difference in the vowel patterns of *šufr* and *siparru*, and the likely etymological connection between *šufr* and Aramaic *šaprā* “morning” (which is not a Kulturwort), it appears that *šufr* and *siparru* are genuine Semitic cognates. This implies that *siparru* is the origin of Sumerian ZABAR rather than the other way around.

⁵⁸) It seems that the original meaning of *šrp was “to burn”, and the meanings “to smelt and refine” and “to dye red” (originally “to make glow”?) are derived from it—see Reiter 1997: 409. Both the basic and the apparently derived meanings are attested in Akkadian, and to some extent, in West Semitic (“to refine metals” in Hebrew and Aramaic, “red dye” and “pure” in Arabic). The use of the Geʿez verb *ʾašraya* (*šry* in the causative stem) with reference to refining metals (*LLA*: 1275) is probably a specification of the general semantic field covered by the verb *šarya* in the basic stem: “to purify by immersion, to be pure”, and that verb has no etymological connection to the verb *šrp* attested in other Semitic languages.

⁵⁹) The meaning of these words is not entirely clear, and different interpretations (quoted here) have been proposed (see *DULAT*: 588–589, 790–791).

Proto-word	Hebrew	Aramaic	Ugaritic	Arabic	South Arabian	Ethiopic	Akkadian
*šamn	šemen	šamēn,	šmn	samina	šēn	šamūt	šamnu
“oil, fat”	“oil”;	šumnaʾ	“oil, fat,	“to	(< *šamn)	“oint-	“oil, fat,
(PS, 3c);	šmn	“fat”	butter”	be(come)	“fat,	ment”,	cream”
originally	“to	(JArmTg,		fat”;	fatness”	səmsəm	
*šam	be(come)	JPArm.,		samn	(Jibbāli)	wadā	
(2c)? ⁶⁰	fat”	JBArm.,		“clarified		“to become	
		Syr.);		butter,		fat in the	
		šmn		ghec”		neck”	
		“fat, oil”				(Tigre)	
		(Palm.);					
		šmn					
		“to					
		be(come)					
		fat”					
		(JPArm.,					
		Syr.);					
		šmn					
		“cream”					
		(JArmTg,					
		JPArm.);					
*šit,	šit	šetyāʾ		satan, sadan		šutū	
*šutī	“clothing,	“the warp		“the warp		“woven	
“warp,	garment”	of woven		of a		material,	
woven		material”		garment”		fabric” ⁶¹	
material,		(Syr.,					
fabric”		JArmTg.,					
(PS, 2c)		JPArm.,					
		JBArm.);					
		maštuta					
		“woven					
		material”					
		(Mnd.)					

⁶⁰ The possibility that originally the noun for “fat, oil” was 2c *šam is based on the evidence of Tigre and on comparative Afro-Asiatic evidence (*SED* 1: # 248).

⁶¹ *CAD* Š/3: 408a–b, translates *šutū* as “warp, wool used for the warp”, with the latter meaning applied particularly to occurrences such as the one in a letter where the addressor claims to have sent to a third person *paršiga ša šutū* “a headdress of *šutū*.” However, the translation “a headdress of wool used for the warp” appears rather forced; it is more reasonable to translate “a headdress of cloth”, which implies that *šutū* refers to cloth as a whole rather than only the warp. It is evidently because of this and similar occurrences, which mention items of dress made of *šutū*, that *AHW*: 1293b–1294a translates *šutū* as “cloth”. Indeed, the meaning “cloth” also fits perfectly with those occurrences, which are listed in the *CAD* under the meaning “warp”.

Proto-word	Hebrew	Aramaic	Ugaritic	Arabic	South Arabian	Ethiopic	Akkadian
* <i>tibn</i> “straw” (PS, 3c)	<i>teben</i> “crushed stalks, straw, chaff”	<i>tbrʾ</i> (EgArm., Palm., CPArm.), <i>tebnāʾ</i> (Syr., JArmTg., JPArm., JBArm.) “straw”		<i>tibn</i> “straw” (Aram. lw.)			<i>tibnu</i> “straw, chaff”
* <i>tīd</i> , * <i>tīt</i> “dirty liquid substance, clay (?)” (PS, 2c) ⁶²	<i>tīt</i> “wet loam, mud, potter’s clay”	<i>tyt</i> “to fill blank space with marks of ink” (JBArm.); <i>tītē</i> (pl.) “rheum” (Syr.)					<i>tīdu</i> , <i>tītū</i> “clay, mud”
* <i>tīn</i> “clay, soil, mud” (PWS, 2c)	<i>tīn</i> “mud, clay” (post-Biblical)	<i>tīnāʾ</i> “mud, clay” (common)	<i>tt</i> / * <i>tītutl</i> < * <i>tītutl</i> “mud”	<i>tīn</i> “clay, soil, mud”	<i>ṭayn</i> “clay, soil” (Mehri)	<i>tyn</i> “to silt up” (Tigre)	

⁶² Mankowski 2000: 57–58, classified Hebrew *tīt* as an Akkadian loanword, because the more regular term for “clay, mud” in West Semitic languages is *tīn*. However, the verb *tyt* “to fill blank space with marks of ink” in Jewish Babylonian Aramaic and the plural noun *tītē* “rheum” in Syriac suggest that the root *tyt* (originally 2c **tīt*) existed in Proto-Semitic (rather than being an Akkadian/East Semitic innovation) and that its original semantic field was something like “dirty liquid substance”. The formation of the noun *tīt*/*tīdu* with the specific meaning “clay, mud”, might have already occurred in PS, or independently in Akkadian and Hebrew, but it is also possible that Hebrew *tīt* was a direct loan from Akkadian.

Proto-word	Hebrew	Aramaic	Ugaritic	Arabic	South Arabian	Ethiopic	Akkadian
* <i>zipt</i> “pitch, bitumen” (PWS?, 2c) ⁶³	<i>zepet</i> “pitch” ⁶⁴	<i>ziptā</i> , <i>zaptā</i> ² (JArmTg., JPArm., Syr., Sam.) “pitch” ⁶⁵		<i>ziḫ</i> “pitch, tar, resin” (Aram. lw.)		<i>zəḫt</i> “pitch, bitumen, resin” (Arab. lw.); <i>zafata</i> “to coat with tar, mix ingredients for beer and allow to ferment”	<i>ziptu</i> “pitch, bitumen” (Aram. lw.)
* <i>zūr</i> “rock, mountain” (PS, 2c) ⁶⁶	<i>šūr</i> “rock, boulder, mountain”	<i>ṭūr</i> , <i>ṭūrā</i> ² “rock, mountain” (common); <i>ṭarānā</i> ² “rock, cliff” (Syr.)	<i>ḡr</i> “rock, mountain”		<i>zrn</i> “mountain”		<i>šūru(m)</i> “cliff, rock” (Old Babylo- nian)

⁶³ *-t* in **zipt* is the feminine ending. The original linguistic layer, to which this lexeme can be reconstructed, depends on the status of Ge'ez *zəḫt* and *zafata*. Leslau 1990: 75, classified Ge'ez *zəḫt* “pitch” as an Arabic loanword (the relevant chapter in Leslau's book is actually a re-published version of his article from 1958). Conversely, in *CDG*: 632b, Leslau indicated a wider scope of meaning for *zəḫt* (reproduced in the present table) and merely noticed the Arabic cognate, without suggesting it as the origin of Ge'ez *zəḫt*. The verb *zafata*, which is obviously denominative from *zəḫt* (and which treats the original feminine ending *-t* as though it was a radical) can also mean “to mix ingredients for beer and allow to ferment”, which is not attested in Arabic. If *zəḫt* and *zafata* are original to Ge'ez, then **zipt* is to be classified as a genuine PWS lexeme. Otherwise, it is a Proto-Northwest Semitic lexeme (based on its attestations in Hebrew and Aramaic; for Arabic *ziḫ* being a loan from Aramaic, see Fraenkel 1962 [1886]: 151).

⁶⁴ The post-Biblical Hebrew verb *zpp* “to line vessels with pitch” (Jastrow: 408b) appears to be a denominative verb, reflecting analysis of *-t* in *zepet* as the feminine ending.

⁶⁵ Aramaic *zēpā*², attested in Targum Jonathan to Isa. 34:9, is probably a back-formation from *ziptā*², based on the metanalysis of the feminine ending *-t* as part of the feminine definite article (Steven E. Fassberg, personal communication).

⁶⁶ *š* in Hebrew and Akkadian, and *ṭ* in Aramaic are reflexes of PS **z* (emphatic voiced interdental), which, under certain conditions, can be reflected in Ugaritic by *ḡ* (Tropper 2000: §32.123.3). Old South Arabian *zrn* “mountain” (*DOSA*: 224, s.v. *zwr* II) supports the reconstruction of **z* for Proto-Semitic.

Proto-word	Hebrew	Aramaic	Ugaritic	Arabic	South Arabian	Ethiopic	Akkadian
* <i>zurr</i>	<i>šōr</i> “flint, hard stone” (PS, 2c)	<i>šinnār</i> , <i>šinnāra</i> ⁶⁷ “stone, flint” (JArmTg., JBArm.), ⁶⁷ <i>šarārā</i> ⁶⁷ “pebble” (JPArm., evidently Hebrew lw.)		<i>zīrr</i> , <i>zurar</i> “sharp-edged hard stone”			<i>šurru</i> “flint, obsidian”

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⁶⁷ In Jewish Palestinian Aramaic texts, the same word is used with the meaning “rock, mountain”.

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