articulate any of the details, for which the reader is referred to a forthcoming volume on Amorite Grammar that unfortunately Gelb did not live to complete; still, the volume is extremely significant not only because of the exhaustive database it provides, but also because important phonemic decisions are presented, particularly with regard to the establishment of the phonemic inventory (especially pp. 8f., 538f.).

Knudsen (1991; see also 1982a: 4–7) is of great import in that it proposes explicit criteria for assessing the relative degree to which Amorite consonants may be attributed full phonemic status (pp. 874f.), and divides the consonantal phonemes into three classes ranked in descending order of probability; unfortunately, Knudsen's contribution is only a summary which, by virtue of its self-imposed limitations, can neither develop a full articulation of its own argument, nor provide an adequate documentation for its conclusions. .

1.3. Phonemics

1.3.1. Phonemic inventory

That we are able to reconstruct a plausible phonemic inventory for these languages is due to the essentially graphemic nature of the cuneiform writing system. For the most part, the scribal tradition was sensitive to the phonemic, rather than phonetic, dimension of Akkadian (Greenstein 1980; but see Diakonoff 1991–92: 3) and, though perhaps to a lesser extent, of Amorite. (It is due to this sensitivity that the invention of the alphabet was eventually possible.) The oppositions that are marked in the graphemic system correlate well to what we otherwise know, on the basis of living Semitic languages, about phonemic oppositions. It is for this reason that we can presume to draw up a phonemic inventory for dead languages on the basis of articulatory categories, a procedure which may appear at first bizarre considering that we have no record at all, acoustic(!) or descriptive, about the nature of such articulation. The exact articulatory nature of a group of consonants considered bilabial may well remain hypothetical, but its structural contrast with another category (which we will call, say, also hypothetically, dental) is beyond doubt. A simplistic way of expressing the net result of this procedure is to say that, were we to meet a living Akkadian-speaking informant and were we to try to speak Akkadian to him or her, we might be deemed to have an accent, but would not be incomprehensible, for the most part.

For Amorite, there is the additional filter of non-Amorite scribal transmission, which is especially critical in the rendering of phonological values. But just as Old Akkadian graphemics (though not paleography) was accurately preserved by Old Babylonian scribes, so it is to the credit of Mesopotamian scribes that they preserved many of the Amorite phonemic oppositions, even when they did not introduce any new graphic symbols.

One problem should be pointed out. In terms of their structural oppositions, the accuracy of the presumed articulatory identifications is not crucial. Such phonetic labels may serve just as such, i.e., as tags which approximate phonetic reality and are more convenient than non-descriptive labels (e.g., "labial" instead of "category A"). As with the reconstruction of proto-languages, emphasis tends to be on phonemic rather than specific phonetic identifications. Accordingly, we must be careful about raising articulatory terms, used as descriptive labels, to the status of real phonetic phenomena without the benefit of thorough critical analysis. To have done the latter is the merit of Diakonoff (1981; 1991–92: 1–4). A particular warning should be voiced against charting historical processes of change on the basis of definitions that have been introduced as labels. Change presupposes real sounds, not just labels. The case has been made recently for Proto-Semitic (Bomhard 1988), but it obtains of course for Akkadian and Amorite as well.

There are considerable difficulties in establishing a complete phonemic inventory for the third-millennium languages, and for second-millennium Amorite. This is due in part to the nature of the graphemic documentation, as mentioned above. But, considering the sizable amount of textual data available, the difficulty may also be attributed to the lack of in-depth studies on the subject. This is all the more remarkable in view of the widespread attention that has been lavished in recent years on the language evidenced by the texts of Ebla. It would seem that a proper understanding of Ebla phonology would be greatly enhanced by a detailed study of Amorite and Old Akkadian. This remains to be accomplished.

1.3.2. Consonants and semivowels

Besides giving an overall synopsis of the phonemic inventory (Table 1-1), I will deal with phonemic classes which present special problems and which have been the object of important recent contributions, especially the Old Akkadian sibilants.[4] For comparative purposes I will refer to proto-forms or

4. This term is retained here because of its widespread use even though it describes improperly the acoustic, rather than articulatory, nature of the phoneme.

Table 1-1. Synopsis of Consonants and Glides (semivowels) for Amorite, Old Akkadian, and Later Akkadian Dialects (OB+)

			Labial	Dental	Interdental	Denti-alveolar	Alveolar	Palato-a lveolar	Velar	Pharyngeal	Laryngeal
Stops	Unvoiced	Am	p	t					k	ʿ	ʾ
		OAkk	p	t					k	ʿ	ʾ
		OB+	p	t					k		ʾ
	Voiced	Am	b	d					g		
		OAkk	b	d					g		
		OB+	b	d					g		
	Emphatic	Am		ṭ					q		
		OAkk		ṭ					q		
		OB+		ṭ					q		
Fricatives	Unvoiced	Am		s		s̱	š	ḫ?		ḥ	h
		OAkk		s	t̲		š	ḫ			
		OB+		s			š	ḫ			
	Voiced	Am		z	d̲						
		OAkk		z			[ž]				
		OB+		z							
	Emphatic	Am		ṣ							
		OAkk		ṣ							
		OB+		ṣ							
Sonants	Nasal	Am	m	n							
		OAkk	m	n							
		OB+	m	n							
	Lateral	Am					l				
		OAkk					l				
		OB+					l				
	Trill	Am					r				
		OAkk					r				
		OB+					r				
	Glide	Am	w					y			
		OAkk	w					y			
		OB+	w					y			

to Proto-Semitic, but I use these terms cautiously. We must remember that the validity of these forms is only proportional to the comparative basis from which they are derived, and that the posited proto-forms from which a historical derivation is assumed are in the first place projected back through a logical process. A proto-form is actuarial, as it were, rather than actual; it is an index for a set of correspondences, and should strictly be considered as such.

The inventory given here is in the form of a synopsis that offers a complete list for the consonants from each of the three major language groups. The listing should not be understood as describing historical development; the superposition of phonemes within the same cell is rather to be viewed as some sort of three-dimensional array which simply describes the phonemic attestations for the same type of articulation.

1.3.3. Special problems concerning Amorite

In the consonantal inventory of Amorite given here I use the list found in Gelb 1980: 9, which corresponds to the first two classes of Knudsen 1991: 874 ("established positive consonants," i.e., consonants whose phonemic status is based on both unequivocal comparative and graphemic considerations, and "established neutral consonants," based only on unequivocal comparative considerations, without graphemic support).

A questionable phoneme in Amorite is the unvoiced fricative palato-alveolar *ḫ*. While it is attributed specific phonemic status in Gelb 1980: 8, 538, most of the entries given to support its existence are followed by a question mark. In Knudsen 1991: 874, *ḫ* is considered a "non-established neutral" phoneme (i.e., a phoneme for which neither comparative nor graphemic criteria can be applied in a unequivocal way). I include it here in the inventory, but with a question mark.

Three additional consonantal phonemes have been proposed for Amorite,[5] namely *ḍ*, *ẓ*,[6] and *ġ*.[7] They are best considered, however, as historical reconstructions since there is no real evidence for their independent phonemic status. Gelb 1980: 8, 538 does not include them in his inventory, and Knudsen 1991: 874 defines them correctly as "non-estabished neutral" consonants. Accordingly, they are omitted in the inventory.

5. Gelb 1958 § 2.7.2; Knudsen 1991: 874.

6. Knudsen 1991: 874 uses the symbol *ṯ* for this phoneme; but this must be a typographical error for *ṱ*, which is analogous to Gelb's *ẓ*. The example *ṱabū* 'gazelle' (written *ṱabū* in Knudsen 1991: 874) corresponds to graphemic *ṣa-bu-um*, see Knudsen 1982a: 15.

7. Knudsen uses the symbol *γ* to render this phoneme.

1.3.4. Laryngeals and pharyngeals

Laryngeals are distinguished graphemically in Amorite but not in Akkadian, where *h* is subsumed under ʾ. The pharyngeals are distinguished graphemically as a set, but it cannot be determined whether they are further distinguished from each other. In Amorite, they are rendered by signs with *ḫ*. In Akkadian there is no overt graphemic marker, but we can infer that they were still present in Old Akkadian, because of the way in which they affect the vocalism of the word in which they appear: in Old Akkadian the vowel in contact is *a*, except in closed syllables beginning with pharyngeal, where it becomes *e*,[8] while in the later dialects all *a* vowels in the core of the word become for the most part *e* (see § 1.4.2). Table 1-2 lists the correspondences for laryngeals and pharyngeals among the various dialects and their posited Proto-Semitic equivalent.

Table 1-2. Correspondences among Laryngeals and Pharyngeals

*	Am	OAkk	OB+	Am	OAkk	OB+	Gloss
ʾ	ʾ A	ʾ A	ʾ A	*ʾabu*	*ʾabu*	*ʾabu*	'father'
h	h ḪA	ʾ A	ʾ E	*haddu*	*ʾadad*	*ʾadad*	'storm god'
ʿ	ʿ ḪA	ʿ A	ʾ E	*ʿzb*	*ʾzb*	*ʾzb*[a]	'to leave'
ḥ	ḥ ḪA	ʿ A	ʾ E	*bḥr*	*bʾr*	*bʾr*[b]	'to choose'
ġ	? ḪA	ʿ A	ʾ E	?	*ʾrb*	*ʾrb*[c]	'to enter'

a. Babylonian *ezēbu*, Assyrian *ezābu*.

b. Babylonian *bēru*, Assyrian *beʾāru*.

c. Babylonian *erēbu*, Assyrian *erābu*. Knudsen 1991: 874 gives *purġušu* 'flea' as an Amorite example for *ġ*. See Diakonoff 1985: 20 for an Eblaite equivalent.

1.3.5. Sibilants

The treatment of the sibilants (see notes 4 and 5) presents us with severe problems. (A) The graphemic rendering, while relatively consistent within each dialect, appears to us confusing when comparing different dialects. (B) The phonetic realization of some of the phonemes is in part uncertain. (C) The notations used in the literature are often ambiguous.

It is regrettable that Gelb, while distinguishing clearly the various categories on the theoretical level, does not carry this over to either the text of his *Grammar* (1961) or the entries of his *Glossary* (1957); rather, he uses capital *Š* to subsume without differentiation *š*, *ś*, *ž*, and *ṯ*. In their edition of Old

8. For a fuller statement of the pertinent rules see Gelb 1961: 123–25.

Akkadian royal inscriptions, on the other hand, Gelb and Kienast (1990) use a hybrid system whereby the phoneme *ś* is marked in the transliteration (e.g., *u-śa-am-qí-it*), even though the value is not recognized in the standard syllabaries. Von Soden (1965–81) uses the same symbol *ś* to render both **ś* (he writes *śiāmu* s.v. *šiāmu* 'to set') and **ṯ* (*waśābu* s.v. *wašābu* 'to dwell').

Diakonoff 1985, 1991–92 and Faber 1985 present a divergent interpretation whereby they assume an affricate realization for the sibilants (see already Steiner 1977: 144–48, 159; 1982: 70–74). Their theory is of great interest and is all the more noteworthy since they arrived at it independently of each other (Diakonoff 1991–92: 55, n. 61) and from different points of departure. While it affects especially phonetic realization[9] rather than phonemic distribution, it is important in that it proposes new possibilities for historical derivation and for morphophonemic alternations, though not without difficulties (see § 1.4.3). I will not follow their theory here because I feel that more reflection is needed before their results may be accepted. As already noted in the case of Gelb, it is regrettable that Diakonoff himself does not carry through his notation consistently: generally he uses the traditional notation *š* (e.g., *šin-a* 'two', 1991–92: 17), and only occasionally the notation he proposes (e.g., *sawxat* for traditional *šamḫat*, 1991–92: 114; *'uč:ič* for traditional *uššiš*, 1991–92: 52).

Here I will attempt to clarify the situation by comparing various aspects of the problem. Table 1-3 summarizes the terms of the problem with regard to graphemic rendering and divergent modern notations. Graphemes are grouped in sets which share the same consonantal realization, and have a different vowel for each sign. (It should be noted that accent marks and subscripts have no phonemic implication, but simply serve as standard Assyriological indices for the identification of homophonous cuneiform signs.) For each graphemic set I show the variant modern notations used to render the phonemic value of the consonant in question for different dialects and periods. It must be stressed that this table establishes only a synopsis of graphemic correspondences; in other words, the chart should not be understood to say that Old Akkadian *š* corresponds to Old Babylonian *s*, but only that graphemes of the class SÁ are used to render *š* in Old Akkadian and *s* in Old Babylonian.

Table 1-4 singles out those phonemes which present divergent realizations in the different dialects and periods, and it shows their correspondence with

9. Diakonoff 1991–92: 39–41 goes into great detail as to the precise phonetic "pronunciation" of this series.

Table 1-3. Graphemic Sets and Modern Phonemic Notations for Sibilants with Divergent Realizations[a]

	AMORITE			OAKK					OB+	
GRAPHEMES	G	K	B	G	GK	D	F	B	c	D
SA SE_{11} SI SU	ś	ś	ŝ	{š, $š_1$ / ś, $ś_2$}	š	c	s	š	s	c
SÁ SU_4 ŠÈ	ž	ḏ	ḏ	ž, $š_4$	š	c	s	š	s	c
ŠA ŠI ŠU	š	š	š	ṯ, $š_3$	ś	č	ṯ	ṯ	š	{s / č}
ZA ZI ZU	s / ṣ / z	s / ṣ / z	s / ṣ / z	s / ṣ / z	s / ṣ / z	c / ç / ʒ	ts[b] / ts' / ds	s / ṣ / z	(s) / ṣ / z	c / ç / ʒ

a. B, Buccellati; c, common use; D, Diakonoff; F, Faber; G, Gelb; GK, Gelb–Kienast; K, Knudsen.

b. Digraphs of the type *ts* stand for single (affricate) phonemes; similarly, *ts'* stands for a single phoneme which Faber defines as a glottalic pressure affricate. Note that Faber 1985: 105 considers *ts*, *ts'*, and *ds* to be phonetic realizations of one and the same phoneme *z*.

Table 1-4. Phonemic and Graphemic Correspondences for Sibilants with Divergent Realizations

*	Am		OAkk		OB+		Ar	Am	OAkk	OB+	Ar	Gloss
š	ŝ	SA	š	SA	š	SA	s	*ŝumu*	*šumu*	*šumu*	*ʾism*	'name'
ś							š	*šym*	*šym*	*šym*	*(šym)*	'to place'
ṯ	š	ŠA	ṯ	ŠA			ṯ	*yšb*	*wṯb*	*wšb*	*(wṯb)*	'to dwell'
ḏ	ḏ	SÁ	z	ZA	z	ZA	ḏ	*ẖḏ*	*ẖz*	*ẖz*	*ẖḏ*	'to take'

regard to a posited proto-form, and, for ease of reference, with Arabic (or South Semitic) as well. I give here only the phonemic notation that I have chosen to use, plus the graphemic rendering with only one sign for each of the sets given in Table 1-3. I also add representative word examples.

Following are comments on each of the phonemes listed in Table 1-4. I relate in some detail the definitions given by various scholars, because they are often presented cryptically in the literature, and it is difficult to correlate opinions about what should be simple facts.

ś is the symbol for a lateral that is reconstructed for Proto-Semitic,[10] but is not preserved as such in either Amorite or Akkadian.[11] Even though it is used often in the Assyriological literature, this notation should be avoided when dealing with those two languages.

š is a symbol I am using to render what I assume to be a distinctive Amorite phoneme, at least in terms of its derivation. The Amorite phoneme corresponds to "Proto-Semitic" **š* and **ś*. Though it is often transliterated as *ś*, it does not appear to be a lateral,[12] because of the writing with signs of the class SA. It seems possible to postulate a phonetic development similar to Arabic, i.e., a change in the direction of *s*,[13] with place of articulation shifting toward the dental position. But that it could not simply have merged with *s* is also indicated by graphemic considerations.[14] Hence I am postulating, on a purely indicative basis, that this phoneme may have been realized as a denti-alveolar fricative. At any rate, the phoneme is distinct from any other in terms of its correspondences (i.e., it corresponds to **š* and **ś*, but not to **ṯ*), and this by itself is sufficient to justify the use of a different symbol.

ṯ is the symbol used for the voiceless interdental fricative (*θ*) in the posited proto-form. The Old Akkadian correspondence is generally transcribed as *ś* in the literature, but, since there is no reason to assume a lateral realization for this phoneme in Old Akkadian, I prefer to retain consistently the notation *ṯ* on the assumption that the original interdental realization was preserved.[15]

10. The autonomy of this phoneme for "Proto-Semitic" is controversial, but it can at least be safely postulated as an antecedent to Amorite and Old Akkadian (Gelb 1961: 34f.).

11. Except possibly in Old Akkadian, see Reiner 1966: 110; Greenstein 1980, with review of previous literature; also Diakonoff 1985: 22, where the notation *ḏ* is used. The strongest indication in its favor is based on the explanation of the assimilation *š+š* > *ss* as presupposing a second consonant *ś*, see § 1.4.3, where I also give reasons why it seems nevertheless better not to include it in the standard phonemic inventory.

12. As Greenfield 1969: 94 seems to suggest, on the assumption that **š* coalesced with **ś*, so that both came to pronounced *ś*.

13. Knudsen 1982a: 5 says that its phonetic realization is "similar to Old Babylonian *s*." Gelb does not address the issue of articulation for this phoneme.

14. To render *š*, signs of the SA class are used next to signs of the ŠA class, and only signs of the AŠ class are used. To render *s*, only signs of the SA and AS classes are used.

15. "Possible pronunciation in the direction of Arabic *ṯ*, perhaps not in Mesopotamia proper but in an outlying region" (Gelb 1961: 37). In the chart in ibid. p. 39, the "sound" of this phoneme is indicated as *ṯ'*, which, according to the discussion on p. 33, would seem to stand for an aspirated correlative of *ṯ*.

š is the standard symbol for the voiceless palatal or alveo-palatal fricative. It continues in OAkk and OB+ (where it comes to subsume other phonemes as well). Amorite *š*, on the other hand, corresponds to PS *ṯ*, and is presumed to be phonetically the same as Akkadian *š*,[16] because the graphemes used to render it are those used to render *š* in contemporary Old Babylonian.

z is the standard symbol for the voiced denti-alveolar fricative. It corresponds in OAkk and OB+ to PS *ð*. In addition, *z* is also the normal Am, OAkk, and OB+ correspondence for PS *z* (not shown in the chart above).

ð is the voiced interdental, which has a correspondence in Amorite.[17] Gelb also thinks that there may be an archaic *ž* in OAkk, derived from PS *ð*.[18] Since this is, however, uncertain, I omit it from the phonemic inventory given above.

1.3.6. Vowels

Both Old Akkadian and later Akkadian share the same inventory of four vowels (Table 1-5).[19]

Table 1-5. Akkadian Vowels

	Front	Back
High	i	u
Low	e	a

16. "Probabilmente una sibilante *š* piuttosto che una dentale fricativa *ṯ*" (Gelb 1958 § 2.7.9). "Similar to Old Babylonian s" (Knudsen 1982a: 5); "one of the two Amorite phonemes [*ś* and *š*] probably represented the palatal groove spirant *š*" (Knudsen 1982a: 6).

17. "Voiced interdental spirant" (Knudsen 1982a: 4; he uses the symbol *đ* to render this phoneme). "Support in favor of [a pronunciation as *ž*] is to be found in the phonemic analysis of Old Akkadian ..., Amorite and Ugaritic" (Gelb 1980: 8b).

18. "Signs of the $š_4$ class are to be considered as leftovers from a period in which Akkadian recognized a phoneme *ž* (=$š_4$) < *ḏ*" (Gelb 1961: 38). In the chart in ibid. p. 39 the "sound" of this phoneme is indicated as *ṯ*, i.e. the non-aspirated member of the pair discussed on p. 33. This phoneme is omitted from the list given on p. 119.

19. Diakonoff 1991–92: 68 has noted that in Akkadian primary nouns, the vocalic system essentially excludes *u*, and that *e* is used only in Sumerian loanwords, while conversely in verbal roots the vocalic system excludes *e* except as allophone of *a* (on the phonemic status of *e* see also p. 123). This interesting observation pertains more to the study of word formation than of phonology per se. On the phonemic status of *e* see Izre'el 1987.

Diakonoff (1991–92: 123–25), following a suggestion by Lieberman (1979), concludes that at least from OB on Akkadian had a phoneme *o* (and, with corresponding length, *ō*). He argues in part from the observation that the presence of a phoneme *e* causes the system to be asymmetrical, and therefore unstable. However, the phoneme *o* (and *ō*) is in fact understood by him as a phonetic realization of *u* (and *ū*), so that the asymmetry noted is simply shifted to another plane. Accordingly, I prefer to retain the traditional scheme as given above.

The situation in Amorite seems to be limited to three vowels (Table 1-6).

Table 1-6. Amorite Vowels

	Front		Back
High	i		u
Low		a	

The vowel *e* does appear in the writing of Amorite, but, given the absence of contrasting minimal pairs, it may more properly be understood as an allophone of *i* or *a* (Knudsen 1991: 870). Gelb 1958 § 2.1.1–4 assumes the existence of a phoneme *ē*, and Knudsen 1991 : 870 the existence of both *ē* and *ō*, i.e., long vowels without a corresponding short vowel. For neither vowel, however, can one adduce a convincing minimal pair. Thus *ē* and *ō* are considered here as special phonetic realizations deriving from the contraction of diphthongs.

1.3.7. Suprasegmentals

All consonants and vowels can be lengthened in Akkadian and Amorite. Considering certain practices which are current in standard Assyriological tradition, and which are misleading for a proper understanding of length, it bears mentioning that this phenomenon is to be understood as the holding of the articulation for a fraction of time. (1) One speaks of "doubling" of consonants (so much so that the derived verbal stem with lengthening of the middle radical is labeled with D for doubling): but there is obviously no reason to suppose that the articulation was repeated twice, only that it was held longer. (2) One uses a two-tiered notation for long vowels, e.g., *ā* and *â*, but there is no conclusive evidence that this corresponds to a phonemic distinction; in other words, there are no minimal pairs to show that there were two contrasting degrees of length. The distinction made in standard Assyriological notation between *ā* and *â* is etymological rather than

phonemic (circumflex is used to mark derivation from contraction). It also leads to confusing and contradictory applications, so that it should best be ignored.

It is possible that the phenomenon behind the dual notation of length envisaged by our modern grammatical tradition may, instead, have something to do with stress (on this see Sarauw 1939; Knudsen 1980; Greenstein 1984: 24–27; Diakonoff 1991–92: 104–15). Consider the following: *'panū* 'face' vs. *pa'nū* 'first'. If there is in fact a contrast based on stress (thus also Diakonoff 1991–92: 111), it is because the second word derives by contraction from *pan-ī-u*. The traditional view about Akkadian stress is that it falls on the first long syllable from the end of the word, except that morphemic length in final position is disregarded (as with *'panū*). A possible case for an alternative theory has been made by Reiner (1966: 38, following a suggestion of Poebel 1939: 60): she thinks it probable that in Assyrian, at least, primary (non-phonemic) stress would fall on the first syllable of the word. Diakonoff (1991–92: 104–15) has argued convincingly in favor of the traditional view, which is retained here.

1.3.8. Phonotactics

A number of distributional limitations affect the actual cooccurrence of phonemes in a variety of ways. I will describe them here as functions of word boundaries, clustering, and syllabic structure.

1.3.8.1. Word-initial position

Any simple consonant may occur in word-initial position in both Amorite and Akkadian; of the semivowels, only *y* may occur in Amorite, and only *w*[20] in Old Akkadian and Old Babylonian/Old Assyrian (in the later Akkadian dialects initial *w* is also excluded). The exclusion of initial long consonant or consonantal cluster is no surprise, since it is a common Semitic feature. Only two additional comments are in order. (1) We assume that vowels are not allowed in word-initial position on account of comparative and (to some extent) graphemic considerations. The alternation in the writing of forms like <i-il-la-ak> and <il-la-ak> 'he goes' suggests that in the first instance ' was overtly indicated (one could transliterate <'i-il-la-ak>), while in the second the notation was omitted because its presence was assumed as automatic. In modern transcription, ' is regularly omitted, for the same reason (hence our writing *illak* really means *'illak*); see also § 1.1.2. (2) The con-

20. For the exclusion of initial *y* in Akkadian see Reiner 1964; Gelb 1970a: 536–43.

trast between *ʿy* in Amorite and *ʿw* in Akkadian is particularly significant because the Amorite situation is universally assumed to be an innovation that closely links it with West Semitic.

1.3.8.2. Word-final position

Any simple vowel (short or long), and any simple consonant, may occur in word-final position. Specifically, no semivowel, long consonant, or consonantal cluster may occur in this position. These rules apply equally to Amorite and Akkadian.

1.3.8.3. Clusters

Consonantal clusters of two, but not more, consonants occur in word-medial position. Vocalic clusters occur in Amorite, Old Akkadian, and Old Babylonian/Assyrian when a morphemic boundary intervenes between them, e.g., *rabī+at* 'she is great' (with but few exceptions, e.g., *ʾiqīaš* 'he donates', without morphemic boundary). It is likely that in these cases a glide was present (*rabīyat*, *ʾiqīyaš*). In some cases, both graphemics and word structure suggest the presence of a long glide, e.g., *dayyānum* 'judge'. Vocalic clusters do not occur in later Akkadian.

1.3.8.4. Syllabic structure

(See especially Greenstein 1984 with the reviews Edzard 1986; Knudsen 1986.) The following distributional rules apply: the components of a cluster are always separated by syllabic boundary; long consonants are treated like a cluster, as if we had reduplicated consonants with syllable boundary between them, even though there is no reason to assume double articulation (see § 1.3.7); no syllable begins with a vowel, except as second element of a vocalic cluster; no long vowel occurs in front of either a consonantal cluster or long consonant. These rules apply equally to Amorite and Akkadian.

Vowel harmony is a very distinctive Assyrian phenomenon: *a* in a short medial syllable which follows a stressed syllable assumes the quality of the following vowel, e.g., OB *ʾiṣbatū* ~ OA *ʾiṣbutū*. (One may consider the possibility that in OB short *a* may have been used in writing to render *ə*, see § 1.3.9; if so, *iṣbatū* and *iṣbutū* may be understood as graphemic equivalents rendering one and the same form *iṣbətū*. In other words, vowel harmony would be a graphemic rather than a specifically phonemic feature, in the sense that both Babylonian signs with *a* and Assyrian signs with *a/e/i/u* would stand for a purely phonetic *ə*.)

Reiner's suggestion (1966 § 4.1.2.5) of an equivalence between V:C and VC: is applicable only in prosodic terms, and should not be taken to mean (as seems to be the case in Diakonoff 1991–92: 116) that no phonological opposition exists. An opposition is clearly apparent in such morphemically diverse minimal pairs as *šūma* 'he himself' vs. *šumma* 'if'; *dānum* 'judge' vs. *dannum* 'powerful'; *'ikūnū* 'they stood firm' vs. *'ikunnū* 'they stand firm'.

1.3.9. Phonetic realizations

While the cuneiform writing is essentially phonemic in nature, there are clues to abnormal phonetic realizations which, as far as we can tell, fall outside the phonemic range. Some of the more interesting pertain to vocalic quality (*ö, ü*, von Soden 1948b; *ə*, Buccellati forthcoming §§ 14.1, 55; see also § 1.3.6, and § 1.4.2 herein); nonemphatic realization of velar emphatic (*k* for *q*, Knudsen 1961); spirantization of stops (*p, b, t, d, k, g*, von Soden 1968); realization of *m* as *w* from OB on (Diakonoff 1991–92: 125); stress (Aro 1953). All these phenomena have been observed for the dialects later than Old Akkadian. For an affricate realization of the sibilants see § 1.3.5.

1.4. Phonological change

1.4.1. Historical changes affecting individual phonemes

The correspondences which have been noted above for laryngeals and pharyngeals (§ 1.3.4), sibilants (§ 1.3.5), and vowels (§ 1.3.6) are the most significant in terms of a presumed derivation from a common proto-form. Amorite and Old Akkadian are, in different ways, relatively close to the posited proto-forms.

Amorite appears to be the most archaic. It preserves (1) the laryngeals and pharyngeals, presumably in their differentiated form; (2) *ð*; and (3) a restricted vocalism with only *i, a, u*. The major innovations in terms of the inventory are the change of **ṯ* to *š*, and of *š* and *ś* to *s*. The former is in common with later Akkadian and with other Semitic languages, while the latter seems to be peculiar to Amorite.

Old Akkadian occupies an intermediate position. It is more archaic than Amorite only in its preservation of *ṯ*, while the other sibilants appear already in the same form as in later Akkadian. Both laryngeals appear as *'*, as in later Akkadian. The pharyngeals appear to have merged in a common consonant, for the quality of which we have no indication in the writing, but which we assume to be *ʿ*.

By the beginning of the second millennium, Akkadian has undergone radical changes, in particular the reduction of Old Akkadian *'* and *ʿ* to *'*, and