

GERNOT WILHELM

## Reconstructing the phonology of dead languages

### *Abstract*

*This paper is concerned with the phonology of dead languages. On the basis of correlations between written and acoustic signs, some possibilities of historical reconstruction are examined. The focus of our considerations is on the phonology of Ancient Near Eastern languages written in cuneiform. The adoption of a given writing system to a hitherto unwritten language requires certain modifications of that system. The analysis of such modifications allows us to establish phonemes which were not part of the original inventory of signs. It is to be stated, however, that in the case of Akkadian a complete phonology could only be established on the basis of comparison with closely related languages.*

“Dead” languages are written languages, the corresponding sign-systems of which – spoken languages – are no longer in use. The description of a “dead” language cannot automatically choose the phonological system as its lowest level. Since the sign-system to be described is constituted by graphemes and not by signs, the reconstruction of the oral sign-systems of any level depends on the determination of the linguistic level of the script (cf. the contribution of W. Haas in this volume). If the written message matches speech only on the level of a whole utterance, there is no way at all to draw any conclusions about the linguistic structure. The opposite extreme, the one-to-one correspondence between graphemes and phonemes, which allows application of linguistic descriptive patterns without prior investigation, is very rare, and – at least in modern times – it is influenced by linguistic considerations (Vachek 1973: 21 sq.). Most writing systems, however, combine phonological and morphological information.

Since the grammar of “dead” languages cannot be reconstructed with the aid of a competent speaker, but only by analysis of written messages, the in-

vestigation of writing systems from the point of view of correspondences between graphemes (and grapheme combinations) and lingual signs (phonographic, morphographic, logographic) is a prerequisite.

One might argue that the grammar of dead languages could disregard the reconstruction of phonology, because decoding written messages does not require the ability to read the text in a phonetically correct way or to segment the text on the phonological level, as is proven by exclusive reading knowledge of foreign languages (Artymovyč 1932). In this case the reader has a command of information about linguistic phenomena of all structural levels beyond that of phonology, about which he may have only vague ideas. One might assume that in a similar way the description of the morphology of dead languages could be based on the notation of recurrent meaningful grapheme sequences.

This comparison, however, is not fully adequate. Reading knowledge is attained on the basis of existing grammars which are based on a background of comprehensive linguistic data, whereas the student of "dead" languages has to derive the linguistic structure of a language only from the texts at his disposal (leaving aside the possibility of reaching conclusions from comparative linguistic material). As long as the relations between script and the different levels of language are not classified, a grammar of a "dead" language will only be correct and complete to the extent of how close the script comes to the principle of pure phonography. Under- or over-differentiation of the grapheme inventory as compared with the phonological system correlates with a deficit of phonological and morphological insight, unless its phonological or morphological significance is determined. Consequently, the reconstruction of the phonological system, on the basic level with the most limited inventory of signs, is an indispensable objective of the study of dead languages.

A language is conditioned by its phonological system, but the phonological system can only be deduced from the language itself, as is evident from the technique of minimal pairing. It follows that the reconstruction of the phonology of a "dead" language cannot depend exclusively on a study of the script employed for writing messages in that language. Additional linguistic data are needed, especially semantic data. In the course of the history of the great decipherments of ancient scripts and the subsequent reconstruction of the respective languages, these data were provided by bilingual or quasi-bilingual inscriptions, the latter being texts with numerous recurrent elements out of a corpus well defined by content, e.g. a diplomatic correspondence between certain rulers on identical or similar subjects. Loan words and names may serve the same purpose. The approaches to the reconstruction of the phonological system of several Ancient Near Eastern languages, which will be subject to further examination in this paper, show methodological differences

which depend on whether a language is closely related to a group of well-known and at least partially still spoken languages or whether it is isolated.

A language of this latter group is Sumerian, the oldest known language of the accusative-ergative type (oral communication by K. Heger, Heidelberg, and, independently, P. Michailovski, Philadelphia), which was spoken in Southern Mesopotamia during the 3rd millennium B.C. and became extinct no later than the beginning of the 2nd millennium B.C. Another virtually isolated Ancient Near Eastern language is Hurrian, an ergative language which recently received some attention from linguists because there is evidence for the rare anti-passive construction (Thiel 1975: 200, 204; Anderson 1976: 17). Hurrian is related to the poorly attested Uartian which was spoken in Eastern Anatolia in the first half of the 1st millennium B.C.. Diakonoff (1971: 157–171; 1978) has put forward arguments in favor of a relationship with North Caucasian languages. Hurrian became extinct at the end of the 2nd millennium B.C., except in a few remote areas in the Kurdish mountains, where it may have survived for another 500 years, finally to be superseded by Kurdish.

Akkadian, on the other hand, is a language belonging to the closely inter-related Semitic group. It was spoken in Mesopotamia beginning in the 3rd millennium B.C., when it underwent strong Sumerian influence, and survived until the end of the 1st millennium B.C., gradually being replaced by Aramaic.

All these languages were written with cuneiform writing, the earliest script coming into existence in Persia and Southern Mesopotamia around the turn of the 4th millennium. In the course of time, this writing system changed considerably. Since the primary purpose of the script was not to represent human speech but to serve as a device for recording economic data, the significant potential of the oldest cuneiform system was rather limited. In the terminology of W. Haas (1976) this system would be called "pleremic" with both "motivated" and "arbitrary" graphemes. It is widely accepted that cuneiform writing was originally designed to write the Sumerian language, though it must be admitted that evidence for this assumption is still very scant. Various reasons such as the necessity of writing names (Gelb 1963) and especially the impact of borrowing the script in order to write other languages (Haas 1976: 202–204) led to the most important achievement of ancient writing, the insertion of syllabic signs into the logographic system. Cuneiform writing continued to be a mixed system of logographic and syllabic signs until its very end in the 1st century A.D. It is noteworthy that there were nearly pure syllabic cuneiform systems in use during the 2nd millennium B.C. (e.g. Old Assyrian, Hurrian), but apparently they were not perceived as a breakthrough in communicational development. It is generally assumed that the strong esoteric traditions of scribalism interfered with the ideal of a pure

syllabic writing that is easy to learn, but it might very well be that a mixed system of logographic and phonographic signs in a given cultural environment better fulfilled the need to "speak quickly and distinctly to the eyes, so that the proper idea can be mobilized without any difficulty" (Frinta 1909, cited and commented by Vachek 1973: 13).

The phonological system of a "dead language" affiliated with a still spoken group of languages such as Akkadian is usually reconstructed on the basis of comparisons (Diakonoff 1980). Rules of correspondences are established which serve for attributing readings to cuneiform sign in addition to those readings reached in the primary decipherment. But the reconstructed Akkadian phonological system is not at all unequivocally represented by cuneiform signs. According to *communis opinio*, it took the Akkadians about a millennium to assimilate the borrowed writing system into their own language. It was not before the 14th century B.C. that the basic phonemic distinctions of the Akkadian phonological system (voiced, unvoiced, "emphatic") were at least partially rendered in writing.

The most ancient Akkadian syllabary used the signs for stops and sibilants without any discrimination of voicedness, unvoicedness, and "emphasis". Though there were many homophone signs in Sumerian, the Akkadians apparently felt no need to attribute new phonetic values to them in order to achieve a better correlation between phonemes and graphemes. They used, e.g., the two signs later spelled /gi/ and /ki/ indiscriminately for phoneme sequences which we define, because of etymological considerations, as /gi/, /ki/, or /qi/.

It was Gelb (1961: 33) who offered the explanation that the Sumerian phonological system did not share the opposition 'voiced' versus 'unvoiced' but the opposition 'aspirated' versus 'unaspirated'. Since the latter does not exist in Akkadian, the Akkadians, according to Gelb, used the Sumerian signs for aspirated and unaspirated consonants indiscriminately for their voiced, unvoiced, and "emphatic" consonants.

This explanation tries to keep in line with the once established Akkadian phonological system implying the "triadic" groups (voiced, unvoiced, "emphatic"), which are a characteristic of the alleged Proto-Semitic consonantal system (Moscati 1964: 24). Here the limits of the comparative method are clearly visible. The phenomena could easily be interpreted in a different way. One could argue, e.g., that Proto-Semitic had only two sets of stops (and fricatives?) which were not distinguished according to sonority but, e.g., to intensity ('tense' versus 'lax'). In the framework of such a hypothesis, the opposition 'voiced' versus 'unvoiced' would have been inserted into the system at a later time. This would have to be described as a process of phonemization of primarily allophonic features, since the phonemic opposition 'tense' versus

'lax' is often combined with non-phonemic differences of sonority. The emergence of the opposition 'voiced' versus 'unvoiced' would cause the tense consonants to change their phonetic realization and to become velarized, pharyngalized, or even glottalized as in Ethiopic. There are many data which could be used in favor of such a model, but it is beyond the scope of this paper to elaborate on this point. It has to be stated, however, that the postulated change would have taken place between the Old Akkadian and the Old Babylonian period, i.e., at about 2000 B.C., and it might be assumed that the language of the Amorites who settled in Mesopotamia at that time played a role as catalyst (Krecher 1969: 161 fn. 7).

The attempt to describe the phonology on the basis of comparative considerations only yields satisfactory results when there is corroboration from the writing system, as is the case for the younger stages of Akkadian. This method cannot be applied, of course, to isolated languages such as Sumerian or Hurrian. In reconstructing the phonological systems of these languages, we start from the phonetic values which have been attributed to the syllabic cuneiform signs on the basis of the language suitable for comparison with well-known languages, in this case Akkadian. It is evident that the chance of establishing correct definitions of sign-values employed in writing phonologically "unknown" languages depends on the degree of reliability of the values fixed for the "known" ones. Another point which has to be taken into account is the direction of borrowing. The Akkadians borrowed the Sumerian writing system, whereas they conveyed their own system to the Hurrians, which means that the Hurrian syllabary, as opposed to that of Sumerian, was somehow developed from the Akkadian. In order to reconstruct Sumerian phonology, we have to examine the way the Akkadians borrowed Sumerian writing. In many cases this does not yield results at all, because the Akkadians did not restrict themselves to adopting the syllabograms used in Sumerian or to employing Sumerian logograms as syllabograms by divorcing them from their semantic content; they also defined new syllabograms on the basis of the Akkadian correspondence of Sumerian logograms. The cuneiform sign, e.g., which we read /á/ meaning "arm" in a Sumerian context, is used as a syllabogram with the value /id/ in Akkadian, because "arm" is *idum* in Akkadian. A further difficulty is the limited number of Sumerian syllabograms, which are basically restricted to writing bound morphemes, whereas the lexemes are written logographically. Only a few rather late Sumerian texts are written syllabically throughout. In reading Sumerian logograms we depend on the phonetic renderings which the scholarly work of Akkadian scribes of the 2nd and 1st millennia B.C. handed down to us. These phonetic renderings, however, are based on the younger Akkadian phonology, not the Sumerian one. The recent discoveries at Ebla, which yielded Sumerian syllabic texts from a

very early period, will certainly contribute to our understanding of Sumerian phonology, but nevertheless some scepticism is indicated regarding the chance to reach comprehensive and unequivocal results.

The situation of Hurrian is somewhat different. Hurrian texts are written virtually exclusively by syllabograms. The orthography of the most important Hurrian document, the so-called "Mittani-letter" giving nearly 500 lines of text, is very consistent. The syllabary of this text ultimately goes back to the Old Akkadian syllabary, though there is some later Babylonian influence, too. We may assume that this Mittani syllabary has been in use to represent the Hurrian language for quite a long time, during which it apparently underwent some adjustments by Hurrian scribes. The discrepancies between the Akkadian forerunner and the Mittani syllabary itself are supposed to correlate to differences in the phonology of the two languages which the scribes felt to be essential to render in the script.

The careful notation of such regular deviations may yield clues for the reconstruction of the Hurrian phonology, as will be shown by the following examples.

The Old Akkadian syllabary used indiscriminately the signs later spelled /ku/ or /gu/ for any velar stop plus /u/. The syllabary of the Mittani-letter employs both signs, but here ⟨ku⟩ and ⟨gu⟩ are not interchangeable as they are in Old Akkadian. Apparently, what were allographs in Old Akkadian, have been defined as graphemically opposed in Hurrian. The same phenomenon occurs in the Babylonian syllabary, where the two originally interchangeable signs are fixed to represent the unvoiced as opposed to the voiced velar stop plus vowel /u/. Evidently, the Babylonian scribes found it necessary to introduce the category of voicedness into the inherited sign inventory to which this category was originally alien. In Hurrian, the two signs have been newly defined in a different way, which can be analyzed by paying attention to graphemes combined with the two signs in question. In Hurrian orthography, the vowel of an open syllable is very often repeated by signs which are the only alphabetic element in cuneiform writing and which only represent vowels. The Akkadian syllabary has two signs for the vowel /u/, the use of which differs according to period and place. In the Hurrian syllabary they represent different vowels which can be shown to fall into the phonetic range of [u] and [o]. If the vowel of the sign KU is repeated, it is consistently U<sub>1</sub> (/o/), whereas the vowel of GU is iterated as U<sub>2</sub> (/u/). So we may say that regardless of what the exact quality of the consonant was, the allographs KU and GU have been defined in the Hurrian writing system as velar stop plus /o/ versus velar stop plus /u/. We may conclude that, deviating from Akkadian, Hurrian had two back rounded vowel phonemes.

A parallel case is the pair of signs KI and GI. In the Old Akkadian syllabary they are allographs for the phoneme sequence velar stop plus /i/. In the Babylonian syllabary they are distinguished according to voicedness of the consonant; in the Hurrian syllabary they differ in vowel quality: KI represents velar stop plus /i/, whereas GI represents velar stop plus /e/. This differentiation leads to the conclusion that Hurrian had two front, unrounded vowels in the phonetic range of [e] and [i]. It is true that the phonemic distinction between /e/ and /i/ also existed in Akkadian. But Akkadian /ē/ is historically derived from /ā/ or /ī/ and in some positions the phonemic opposition /ī/ : /ē/ is neutralized. This may be the reason why the Akkadian syllabary never reached a consistent opposition between signs containing i and signs containing e.

The writing system of the Mittani-letter consequently distinguishes five vowels: a, e, i, o, u, whereas the original Akkadian system represents the three vowels a, i, u and, in addition to that, rather imperfectly, e.

There may be even a further indicator for more variation of the vowel system. As mentioned before, the vowel of a syllabic sign already ending in a vowel may be repeated by a vowel sign ("plene-writing"). In the Babylonian writing system, this pattern indicates vowel length, which is phonemic in Akkadian. In Hurrian orthography, plene-writing may serve the purpose of indicating the quality instead of quantity of the vowel of the preceding CV-sign. The sign NI, e.g., may be read /ni/ or /ne/, and it is only by addition of the vowel-signs I or E that the reading becomes unambiguous. But in contradiction to this explanation, there are many plene-writings which apparently have a different meaning, e.g., the sequence ŠE-E. ŠE alone can only be read /še/, not /ši/, because there is a different sign ŠI. In addition to that, there are many plene-writings in A, though all syllabograms containing a are unambiguous. Presumably plene-writings represent another phonetic phenomenon, which very likely has phonemic status, because Hurrian-speaking scribes found that it required connotation. This may be vowel length, as it is in the Babylonian system, but scholars disagree about this point (cf. the latest discussion by Thiel 1975: 99 sqq.). In any case, the plene-writings may lead to the necessity of doubling the minimal vowel system of five vowels.

Hurrian texts have not only been written by Hurrian but also by Semitic and Hittite scribes, who wrote down Hurrian rituals and incantations which were readily adopted beyond the borders of the Hurrian realm. These texts, as well as single Hurrian words and names showing up in Akkadian and Ugartic texts, are extremely helpful for analyzing the Hurrian phonology. The foreign scribes wrote down what they heard in terms of their own phonological system. Thus, it is very likely that their texts do not care for oppositions alien to Semitic. But, on the other hand, they represent Hurrian allo-

phones as long as they more or less coincide with Semitic phonological oppositions. Texts of this kind can be regarded as imperfect phonetic transcriptions, which may yield important results when matched with basically phonemically written texts of Hurrian scribes. Hurrian texts written in the Ugaritic alphabetic script are particularly valuable, because this writing system has a much more extended inventory of unambiguous consonantal signs than the syllabic cuneiform system.

It has been shown that Semitic scribes distinguished voiced and unvoiced stops and fricatives in their transcriptions of Hurrian texts. Hurrian scribes, on the other hand, employed signs for voiced and unvoiced consonants without any phonetically or phonemically relevant distinction ("Hurro-Akkadian syllabary") or they used a reduced system of signs without such variation ("Mittani-Hurrian syllabary"). By means of texts written by Semitic scribes, positional rules for voicedness can be established which may be described in the following way: Stops and fricatives are voiced in final position and in contact with *m*, *n*, *r*, *l*; they are unvoiced in all other positions except intervocally, where they are either voiced or unvoiced.

These data could be interpreted in the following way: Hurrian has a phonemic distinction between voiced and unvoiced stops and fricatives, but this opposition is neutralized in all positions except the intervocalic. This is basically the approach of the first comprehensive Hurrian grammar (Speiser 1940/41). The objection must be raised, however, that in the case of the foregoing interpretation it seems strange that the Hurrian syllabary does not make use of the possibilities of the Babylonian system to choose different signs for voiced as opposed to unvoiced consonants. One might argue that the tradition of the Old Akkadian syllabary, which had no distinction of sonority, was strong enough to prevent innovations deriving from the younger Babylonian system. But this would at best explain the Mittani-Hurrian syllabary, whereas the chaotic interchangeability of signs for voiced and voiceless stops in groups of texts from environments strongly influenced by Babylonian scribal traditions points to the fact that the distinction of sonority was non-phonemic in Hurrian. Another interpretation is supported by the observation that the orthography of the Mittani-letter gives double consonants, where Semitic scribes use voiceless ones, and single ones corresponding to voiced consonants, both in intervocalic position. Several scholars (Bush 1964, Diakonoff 1971) postulate phonemic consonantal length, which according to them only occurs in intervocalic position. Thiel (1975), however, posits a phonemic distinction of intensity. According to Thiel, tense and lax consonants do not only appear in intervocalic, but also in initial position. Their phonetic realization depends on their position within what he defines as an expiration-group, in such a way that the realization of a tense consonant

in one position might be phonetically identical with the realization of a lax one in another position.

But why are tense consonants in intervocalic position represented in writing by geminated consonants? Thiel thinks that in this position, consonantal length is a non-phonemic characteristic. This explanation takes for granted that reduplication of consonants in script represents double or long consonants in speech. This, however, is only true in the Babylonian writing system. In the Old Akkadian, the Old Assyrian, and to a certain extent even in the Old Babylonian script, geminated consonants usually do not get a different treatment from single consonants. In Old Akkadian, double consonants are sometimes represented by so-called "broken graphics", which means a sequence of signs of the form (-C)VC-VC.

Reduplication of consonants in Old Akkadian writing quite often represents the combination consonant plus open juncture or glottal stop. If we assume that the Mittani-Hurrian orthography maintained this practice, we are allowed to draw the conclusion that the formally reduplicated intervocalic consonants of the Mittani-letter are not only unvoiced, but that they are also glottalized. The latter characteristic might be the allophonic realization of tense consonants in a certain position. It should be noted, however, that phonemic glottalization has been postulated for Urartian and that it is a common feature in Caucasian languages.

There is a phenomenon, however, which interferes with the results reached so far. In different Hurrian and Hurro-Akkadian groups of texts, double consonants correspond to homorganic nasals plus voiced consonants. In Hurro-Akkadian texts, *pağrošše*, e.g., alternates with *pağronze*, etc., the Akkadian name of the Euphrates, Purattum, appears in the form Purandi, the Akkadian verbal form *inaddin* becomes *inandin*. It is hardly possible that the phonetic realization of tense consonants as unvoiced and glottalized alternates with that of voiced, pre-nasalized consonants. The aforementioned study by Thiel sketches some possible patterns of explanation, but unfortunately they cannot be substantiated with the material at hand.

We have gone into some detail to illustrate the problems of phonological reconstruction of dead languages. It must be stated that, despite some results achieved in particular areas, it has not been possible to reconstruct comprehensively the phonology of any Ancient Near Eastern language except that of (younger) Akkadian, which is closely related to other Semitic languages. The fact that we nevertheless do understand texts written in most of these languages, perfectly or at least rather well, is caused by the restrictions which are put on written messages by function and tradition, and by the property of written characters not only to be "symbols of symbols", but to acquire to a varying extent "the status of signs of the first order" (Vachek 1973: 37).

## References

- Anderson, Stephen  
1976 "On the notation of subject in ergative languages." In Charles N. Li, ed., *Subject and Topic*. New York, San Francisco, London: Academic Press, pp. 1–23.
- Artymovyč, Agenor  
1932 "Fremdwort und Schrift." In *Charisteria Guilelmo Mathesio quinquagenario . . . oblata*. Praga, sumtibvs "Pražsky linguistický Kroužek" (Cercle linguistique de Prague).
- Bush, Frederic W.  
1964 *A Grammar of the Hurrian Language*. Ph.D. dissertation, Brandeis University. Ann Arbor: University Microfilms 64–12, 852.
- Diakonoff, Igor M.  
1971 *Hurrisch und Urartäisch*. Münchener Studien zur Sprachwissenschaft, Beiheft 6, N.F. München: Kitzinger.  
1978 "Hurrito-urartskij i vostočnokavkazskie jazyki." *Drevnij vostok* 3: 25–38 (English summary p. 260).  
1980 "Towards the pronunciation of a dead language: Akkadian." *Assyriological Miscellanies* 1: 7–12.
- Gelb, Ignace J.  
1961 *Old Akkadian Writing and Grammar*. (Materials for the Assyrian Dictionary 2). 2nd printing. Chicago: University of Chicago Press.  
1963 *A Study of Writing*. 2nd printing. Chicago: University of Chicago.
- Haas, William  
1976 "Writing: the basic options." In W. Haas, ed., *Writing without Letters* (Mont Follink series 4). Manchester: Manchester University Press: Rowman and Littlefield, pp. 131–208.
- Krecher, Joachim  
1969 "Verschlußlaut und Betonung im Sumerischen." In W. Röllig, ed., *lišān mithurti. Festschrift Wolfram Freiherr von Soden*. (Alter Orient und Altes Testament 1) Kevelaer: Butzon & Bercker; Neukirchen-Vluyn: Neukirchner Verlag.
- Moscatti, Sabatino, et al.  
1964 *An Introduction to the Comparative Grammar of the Semitic Languages. Phonology and Morphology*. Wiesbaden: Harrassowitz.
- Speiser, Ephraim A.  
1940/41 *Introduction to Hurrian*. (Annual of the American Schools of Oriental Research 20). New Haven: Pub. by the American schools of Oriental research under the Jane Nies publication fund.
- Thiel, Hans-Jochen (undated)  
1975 "Phonematik und grammatische Struktur des Hurrischen." In W. Haas, ed., *Das hurritologische Archiv . . . des Altorientalischen Seminars der Freien Universität Berlin*. Berlin: 98–239.
- Vachek, Josef  
1973 *Written Language. General Problems and Problems of English*. (Janua Linguarum, Series Critica 14). The Hague/Paris: Mouton.