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## Special Nahuatl Writing Issue

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## Regional Scribal Traditions: Methodological Implications for the Decipherment of Nahuatl Writing<sup>1</sup>

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### Abstract

After more than a century of research, Nahuatl writing is not yet completely deciphered. One reason is that scholars have imposed an artificial neglect of certain hieroglyphic texts. An important group of documents, including the Codex Santa María Asunción and the Memorial de los Indios de Tepetlaoztoc, has traditionally been taken to be unrepresentative of the Precolumbian writing system. Since these documents exhibit a more frequent use of phonetic compounds than others like the Codex Mendoza or the Matrícula de Tributos, they have been considered to be influenced by the alphabetic writing system brought by the Spanish. In this paper, I justify the full use of this group of documents, arguing that the higher frequency of phoneticism is not a consequence of Spanish influence, but rather an idiosyncratic characteristic of the Tetzcoacan scribal school. The scribes of Tetzcoacan in many cases favored more phonetically transparent spellings, but they used exactly the same spelling rules and orthographic conventions as the scribes belonging to the other contemporary schools.

There is an analogy here with neighboring Maya writing, where the differences between regional scribal schools have never been interpreted as evidence for the existence of different writing systems. Thus, for example, during the Terminal Classic the scribes of Chichen Itza favored a more frequent use of syllabic signs in glyphic

compounds. This peculiarity, rather than being looked upon as problematical or as evidence that the inscriptions of the site somehow do not relate directly to the rest of the corpus of Classic inscriptions, has been exploited in the successful decipherment of several signs.

For a methodologically more correct approach to Nahuatl writing, it is important to incorporate the documents of the Tetzcoacan school into the corpus of Nahuatl hieroglyphic texts, using them in the process of decipherment. Only when we consider the script as a whole and the corpus in its totality will we be able to complete the decipherment and systematization of Nahuatl writing.

### Introduction

In the middle of the nineteenth century, the French scholar Joseph Marius Alexis Aubin (1849) published an important work on the writing system of the Nahuatl language. Employing examples derived principally from a mid-sixteenth century document, the Codex Vergara, Aubin proposed the identification of more than a hundred glyphs and their corresponding readings. Glyphic compounds identified by Aubin, such as *itz-co-atl* for *Itzcoatl*,

<sup>1</sup> A version of this work was presented at the 5th World Archaeological Congress, Washington, D.C., June 22, 2003, in the symposium "Written History and Geography in Central Mexico: Codices, Lienzos, and Mapas Linked to the Ground," organized by Lloyd Anderson.

*te-o-cal-tlan* for Teocaltitlan, and *mo-cuauh-zo-ma* for the personal name *Mocuauhzoma*, led him to suggest that the Nahuatl writing system was basically “*une écriture syllabique*”—that is, a syllabic writing system.

Aubin’s contributions, however, met with fierce opposition in the scientific community. Despite the clear significance of his examples, critics of his method questioned the extent to which they could be said to be representative. As first noted by Selser (in Nicholson 1973:29), Aubin had for the most part used examples proceeding from a very limited region, the zone of Tepetlaoztoc, a dependency of Tetzoco. Other documents containing highly phonetic compositions, such as the Codex Santa María Asunción or the Memorial de los Indios de Tepetlaoztoc, derived from the same locale. The clearly marked phoneticism associated with documents from the area of Tepetlaoztoc contrasted notably with examples of Nahuatl writing from other areas, such as Tenochtitlan and Tlatelolco. Mexica documents, such as the Matrícula de Tributos, the Codex Mendoza, or the Codex Boturini—considered to be the only faithful representations of the traditional writing system, with little or no Spanish influence—differed from the examples of the Tepetlaoztoc group in various respects. In point of fact, there are no examples of completely syllabic compounds in these manuscripts, as distinct from those presented by Aubin. On the contrary, what one finds is an overwhelming use of logograms. Apart from a few examples of phonetic complements, phoneticism is found most frequently in the use of rebus in logograms (where the sound value of the logogram is used to evoke the same sound with a different meaning): *-tlan(tli)* “teeth,” for *-tlān* “place of, beside,” *nāhua* “speak” for *-nāhuac* “beside, together with,” or *pān(tli)* “flag” for *-pan* “on, upon.”

An analysis of the few Prehispanic monuments that survive, principally the *cuauhxicalli* of Tizoc (carved, presumably, between 1481 and 1486), confirms what can be observed in the Matrícula de Tributos, the Codex Mendoza, and the Codex Boturini: the scant utilization of phonetic signs in the Prehispanic era. Later codices from the same region of Mexico, more acculturated to Spanish influence in their pictorial representation, such as the Codex Azcatitlan, the Codex Osuna, the Codex Telleriano-Remensis, or the Codex Cozcatzin, present a similar scarcity of phonetic examples, seemingly reinforcing the thesis that phoneticism was little developed in the original writing system. When a given text, such as the Codex of Tlatelolco or the Codex Mexicanus, shows an increase in phonetic signs, this is usually associated with the transliteration of Spanish names, which cannot, as such, reflect the traditional writing system. Thus the development of phoneticism might have been due to the initiative of indigenous

scribes, who modified their original system in order to adapt it to these new cases, making it more phonetic. Alternatively (or in addition), the indigenous scribes may have been influenced by the completely phonetic writing system of the Spanish and tried to bring their traditional system closer to it. The greater phoneticism present in the documents of the Tepetlaoztoc group utilized by Aubin would undoubtedly have resulted from the idiosyncracies of the region’s scribes, especially as influenced by the phonetic writing of the Spanish.

In an important article on the extent of phoneticism in Nahuatl writing, Nicholson (1973) considered these questions. Although Nicholson himself accepted the prevailing thesis that Prehispanic writing was basically logographic with a barely developed phoneticism—even employing the term “*semasiographic*” coined by Gelb (1963) in a very influential book of that time—he insisted on three crucial points: first, that phoneticism was not, perhaps, so limited in Prehispanic times as had come to be considered; second, that one needed to explore the possibility that Tetzocan documents might also reflect traditional Nahuatl writing; and third, that it was necessary to rise above the circular reasoning that attributed the apparent increase in phoneticism to the direct or indirect influence of the Spanish:

The explanation of the special case of the Tepetlaoztoc group is admittedly particularly difficult, but I do not think that the frequency of the “*écriture syllabique*” in the formation of the name and place signs of these documents is *necessarily* merely the result of post-Conquest developments, although it may well be. ... While it is clear that many students, such as Aubin, Pipart, Brinton, and Whorf, undoubtedly exaggerated the extent of pre-Hispanic phoneticism, some modern students may have gone too far in the other direction, almost mechanically invoking “Spanish influence” to account for any marked phonetic usage in post-Conquest pictorials. Some of this may have represented a continuation of genuine pre-Hispanic practice. In any case, I suggest we keep our minds open concerning this possibility, pending further studies and, hopefully, the discovery of fresh data. (Nicholson 1973:35-36)

Unfortunately, Nicholson’s suggestions were not properly taken up in the following years, and to this day assumptions about the nature of Nahuatl writing are not very different from those of the Seventies: (1) The written testimonies of the Mexica are the most representative of the Prehispanic writing system; (2) documents that show a greater frequency of phoneticism do not represent the traditional indigenous system but rather a modified one, having been influenced as much by the alphabetic writing of the Spanish as by the novel necessities of transliterating foreign names; (3) Nahuatl

writing is basically logographic, with an incipient or undeveloped phoneticism, restricted to the utilization of rebus for logograms and a limited repertory of signs used in phonetic mode, without integration into a true conventional syllabary (see Prem 1992; Lockhart 1992:327-330; Boone 2000:31-38; León-Portilla 2003:41). Only Lockhart took up the doubts of Nicholson, and thus, although he deemed it impossible to resolve at present “whether the widespread phoneticity of post-conquest pictorial script is primarily a continuation of the preconquest tradition or is primarily an adaptation caused directly or indirectly by the Spaniards and their phonetic alphabet” (1992:333), he added:

My own provisional, speculative conclusion is that pictorial phoneticism expanded in the postconquest period, but that the method already existed for use when needed; we have too little preconquest material to be able to tell much from the apparent absence of some trait. In preconquest times, however, since nearly all proper names consisted of readily intelligible roots, there must have been little occasion for a pure phoneticism that would use the sound value of a depicted root regardless of its meaning; even non-Nahuatl Mesoamerican names were translatable into familiar concepts and roots. Not so Spanish names, which seemed to consist of a series of nonsense syllables crying out for purely phonetic transcription. Thus it would have been primarily the opaqueness of the new subject material that caused one aspect of the indigenous system to be more practiced, not Spanish encouragement or conscious imitation bringing on an entirely new writing principle. (ibid:333)

In the present work—as a complement to another on the Nahuatl writing system (Lacadena n.d.)—I am going to renew the discussion of the Tetzcoacan documents and propose that they are perfectly representative examples of a traditional, indigenous writing system. I am going to argue that the difference observable between, for example, the *Matrícula de Tributos* and the *Codex Mendoza* on the one hand, and the *Codex Santa María Asunción* and the *Memorial de los Indios de Tepetlaoztoc* on the other, is not a contrast between Prehispanic and postconquest writing systems, nor between traditional and acculturated documents influenced by the Spanish alphabet. Rather, the system of writing is the same in all the documents, with the differences between them always falling within the bounds of Nahuatl writing. I am going to argue that there existed distinctive regional manifestations of the same system of Nahuatl writing, and that it is to these distinct traditions that the differences must be attributed. I am going to suggest that, indeed, the writing of the Nahuatl tradition was strongly conservative and that it was *not* influenced in its functioning by the Latin

writing used by the Spanish. And, finally, I am going to highlight the negative consequences to the decipherment of Nahuatl writing by the artificial limitation of the hieroglyphic corpus.

### **The case against the documents of the Tepetlaoztoc group and the school of Tetzcoaco**

One of the reasons put forward to explain the greater presence of phonetic signs in documents like the *Codex Vergara*, the *Codex Santa María Asunción*, and the *Memorial de los Indios de Tepetlaoztoc* has to do with the circumstances of their creation, in the context of censuses and land registries ordered by the Spanish colonial authorities, or documents presented as proofs in judicial proceedings. Following this reasoning, the indigenous scribes would have favored more phonetically transparent compositions and even invented new forms of written expression in order to facilitate their reading by the Spanish functionaries; or else the latter would have compelled the scribes to make a more transparent system. As the indigenous writing system would have been forcefully interfered with by this exceptional context, it should not be taken as a representative example of that writing system.

However, in spite of the repetition of this argument, it is necessary to offer a serious criticism: in the first place, the Spanish were never, in fact, the addressees of the indigenous glyphs. In general, the Spanish were not aware of the autochthonous writing system, which they did not understand.<sup>2</sup> The procedure followed was that a native versed in the traditional writing—sometimes the scribe himself—read the glyphs and explained the content of the document, with the object of translating it into the Latin alphabet, thereby giving rise to the mode of glosses. The Spanish functionaries did not read the indigenous glyphs, but rather the associated glosses. There was no motive, therefore, to favor more phonetically transparent compositions or substantially modify the indigenous writing system, since both the

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<sup>2</sup> The marked iconicity of the Nahuatl signs always disconcerted the Spanish; the logosyllabic character of the script, with logograms and phonetic syllabic signs, and procedures like rebus and phonetic complementation, were radically different from any other writing system known to the Spanish of the sixteenth century. These more familiar systems were scripts with apparently arbitrary signs—it had been over two and a half millenia since the loss of the initial iconic character of the Proto-Sinaitic signs still preserved to a large extent in the Phoenician alphabet—and of alphabetic type (e.g., Latin, Greek, Arab, Hebrew). The functioning of other non-alphabetic writing like Chinese or Japanese was not well known until much later, and other writing systems, like Egyptian and Iberian—the latter a mixed syllabic-alphabetic system—while known in the sixteenth century, were not deciphered until the beginnings of the nineteenth and twentieth.

scribe and the lector were versed in the same system. In the second place, one would have expected an increase in phoneticism in other indigenous documents generated in similar circumstances. Yet the Codex Osuna, of Tenochtitlan, and the Codex Cozcatzin, of Tlatelolco—two documents created in order to be presented as proofs in judicial proceedings—are not especially phonetic, nor do they exhibit a writing practice that differs from other documents of historical or economic character originating in these same cities (such as the two known Prehispanic *cuauhxicalli*, the Matrícula de Tributos, or the Codices Mendoza, Boturini, Telleriano-Remensis, or Azcatitlan). And on the contrary, census documents and land registries like the Codex Vergara and the Codex Santa María Asunción, or judicial proofs like the Memorial de los Indios de Tepetlaoztoc, are not especially distinctive in their written expression from other documents of historical content from their region, like the Codex Xolotl, of Tetzaco, or the Codex en Cruz, possibly of Chiautla-Tepetlaoztoc (Dibble 1981:59), an *altepetl* dependent on Tetzaco—all of which exhibit a greater utilization of phonetic signs.

As the surviving written testimonies of the area of Tetzaco are somewhat later than those of the Tenochtitlan-Tlatelolco group, the greater or lesser presence of phoneticism has been associated with the difference in time. The lesser phoneticism was held to represent the older, Prehispanic system, while the greater represents a later, Colonial stage. The reasons for the evolution toward a more phonetic system were to be sought in the writing brought by the Spanish conquistadors, the character of which was clearly phonetic and would have stimulated the indigenous scribes, either directly or indirectly, to make a more phonetic use of their own. Once again we must raise serious objections to this argument.

The proposition that greater antiquity equals lesser phoneticism (while lesser antiquity equates to greater phoneticism), does not function in the absolute. Two written testimonies separated by more than a hundred years, the stone *cuauhxicalli* of Tizoc, carved between 1481-1486, and Mexican Manuscript No. 40 of the French National Library (Medina 1998), from around 1597, share the same style of writing, with the same scant use of phoneticism. Thus in both the *cuauhxicalli* of Tizoc and Mexican Manuscript No. 40 we find glyphic compounds basically composed of logograms, normally one or two—**KOA**,<sup>3</sup> *Kōa[titlān]* <gloss: cohuatitlan> (6r), **AKAL**, *Ākal[wa'kān]* <gloss: acalhuacan> (6r), **WIXACH**, *Wixach[titlān]*<sup>4</sup> <gloss: huixachtitlan> (7v), **KAL**, *Kal[imayān]*<sup>5</sup> <gloss: calimayan tlaca> (13r), **MATLA**, *Mātla[tzinco]* <gloss: matlazinca> (13r), **TZON-PAN**, *Tzompān[ko]* <gloss: tzonpanco> (6r), **WITZ-KOL**, *Witzkōl[tepetl]* <gloss: huizcoltepetl> (6r),

**TOL-PETLA**, *Tōlpetla[k]* <gloss: tolpetlac> (6r), **E'EKA-TEPE**, *E'ēkatepē[k]* <gloss: yecatepec> (6r), **XAL-TOKA**, *Xāltokā[n]* <gloss: xaltoca> (6r), **IKPA-TEPE**, *Ikpatēpē[k]* <gloss: icpatepeca> (13r); combinations of logogram plus phonetic sign—**TOL-a**, *Tōl[l]ā[n]* <gloss: tolan><sup>6</sup> (5v), **a-XAYAKA**, *Āxāyaka[tl]* <gloss: axayacatzin> (13r), **XOCHI-tla**, *Xōchitlā[n]* <gloss: xochitlan> (13r); instances of rebus—**XIW**,<sup>7</sup> *Xiw[itl]* “year” <gloss: xihuitl molpia> (7v); and infrequent use of phonetic complementation—**a-ASKAPOTZAL**, *Āskapōtzal[ko]* <gloss: azcapotzalco>, **TLEMA**<sup>8</sup>-**ma**, *Tlemā[ko]* <gloss: tlemaco> (5v) (Figure 1). Despite the crudeness of the drawing and the evident disintegration of the ancient tradition, in scribal terms Mexican Manuscript No. 40, composed around 1597, is closer to the *cuauhxicalli* of Tizoc of 1481-1486 than all of the Tetzaco documents, however much nearer in time. In the same way, what is possibly the oldest surviving Tetzaco document, the Codex Xolotl, is closer to any of the documents of the Tepetlaoztoc group than to any other Prehispanic written testimony of the Tenochtitlan-Tlatelolco school, to which it should in principle be most closely related.

In fact, what these distinctive tendencies have in common is provenance. The greater or lesser phoneticism of the documents is not distributed by theme (historical versus cadastral or judicial, for example), the more ancient versus the more modern, or as the assumption would have it, the pure Prehispanic versus the corrupt Colonial; but rather they are distrib-

<sup>3</sup> I have adopted the following conventions: in transcription, the reading value of logograms will be written in capital letters, with phonetic signs in lowercase, following a standardized alphabet (a, e, i, o, ā, ē, ī, ō, ch, k, k', l, m, n, p, s, t, tl, tz, w, x, y, '); the transcribed signs of a glyphic compound will be separated by hyphens; the transliterations will be written in italics; square brackets will indicate reconstructed phonemes; the glosses, if any, associated with glyphic compounds will be indicated between bent brackets following the original orthography (see Lacadena n.d.); the sources will be indicated between parentheses, noting the document and the page or position. The following abbreviations will be employed: CCRZ= Codex en Cruz; CMDZ= Codex Mendoza; CMEX= Codex Mexicanus; CSMA= Codex Santa María Asunción; CTIZ= *Cuauhxicalli* of Tizoc; CTLA= Codex Tlatelolco; CVRG= Codex Vergara; CXOL= Codex Xolotl; MITE= Memorial de los Indios de Tepetlaoztoc; MM40= Mexican Manuscript No. 40 of the French National Library.

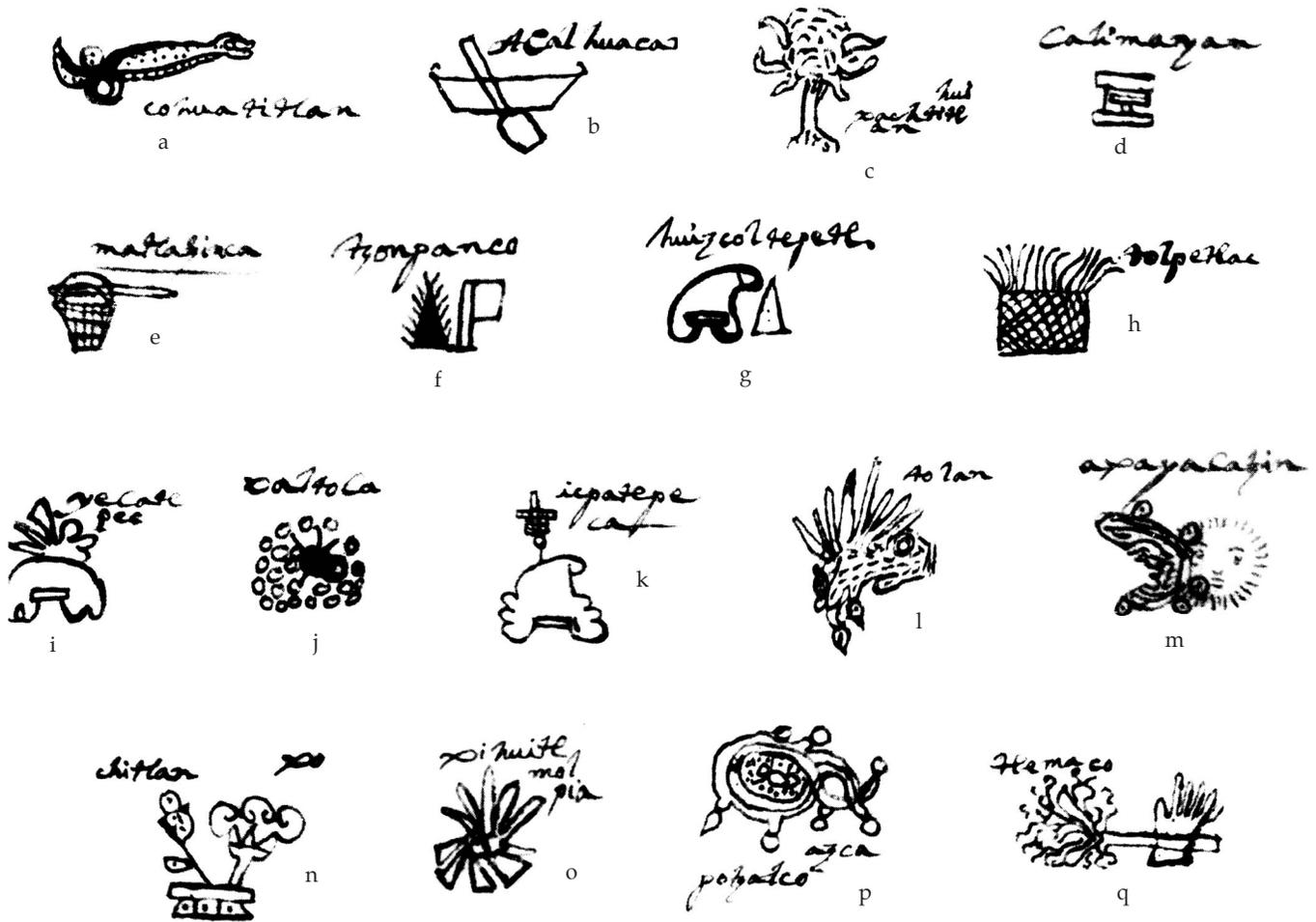
<sup>4</sup> Vowel length uncertain in the segment /wixach/.

<sup>5</sup> Vowel length uncertain in the segment /kal/.

<sup>6</sup> Associated with the same glyphic compound are two other glosses: <Tolla>—crossed out—and <tulla>.

<sup>7</sup> The text refers to *xihuitl* “year”—the context is the celebration of *xihuitl molpia*—but the *tlacuilo* (scribe) has used the logogram **XIW** “grass.”

<sup>8</sup> The logogram **TLEMA** represents a handheld brazier or censer, *tlemaitl* in Nahuatl (Siméon 1992:703), possibly *tlemā-itl*. An older version of the same appears in the Codex Osuna, without phonetic complements.



**Figure 1.** Glyphic compounds in Mexican Manuscript No. 40 of the French National Library. Examples of writing with logograms: (a) KOA, *Kōal[titlān]* <gloss: cohuaitlan> (6r); (b) AKAL, *Äkal[wa'kān]* <gloss: acalhuacan> (6r); (c) WIXACH, *Wixach[titlān]* <gloss: huixachtitlan> (7v); (d) KAL, *Kall[imayān]* <gloss: calimayan> (13r); (e) MATLA, *Mätla[tzinco]* <gloss: matlazinca> (13r); (f) TZON-PAN, *Tzompān[ko]* <gloss: tzonpanco> (6r); (g) WITZ-KOL, *Witzköl[tepetl]* <gloss: huizcoltepetl> (6r); (h) TOL-PETLA, *Tölpetla[k]* <gloss: tolpetlac> (6r); (i) E'EKA-TEPE, *E'ekatepē[k]* <gloss: yecatepec> (6r); (j) XAL-TOKA, *Xältokā[n]* <gloss: xaltoca> (6r); (k) IKPA-TEPE, *Ikpatepē[k]* <gloss: icpatepeca> (13r). Examples of combination of logograms and phonetic signs: (l) TOL-a, *Töl[l]ā[n]* <gloss: tolan> (5v); (m) a-XAYAKA, *Äxāyaka[tl]* <gloss: axayacatzin> (13r); (n) XOCHI-tla, *Xochitlā[n]* <gloss: xochitlan> (13r). Example of rebus: (o) XIW, *Xiwl[iti]* "year" <gloss: xihuitl molpia> (7v). Examples of phonetic complementation: (p) a-ASKAPOTZAL, *Askapötzall[ko]* <gloss: azcapotzalco> (7v); (q) TLEMA-ma, *Tlemā[ko]* <gloss: tlemaco> (5v) (all after Medina 1998).

uted by geopolitical regions. Comparatively speaking, the written documents that exhibit lesser phoneticism—the *cuauhxicalli* of Tizoc and Motecuzoma I, the Matrícula de Tributos, the Codex Mendoza, the Codex Boturini, the Codex Azcatitlan, the Codex Osuna, the Codex Cozcatzin, Mexican Manuscript No. 40, the Codex García Granados (this last dating to the second half of the seventeenth century)—pertain to the ancient *altepetl* of Tenochtitlan and Tlatelolco, while those that exhibit greater phoneticism—such as the Codex Xolotl, the Codex de Xicotepec, the Codex en Cruz, the Codex Vergara, the Codex Santa María Asunción, and the Memorial de los Indios de Tepetlaoztoc—have

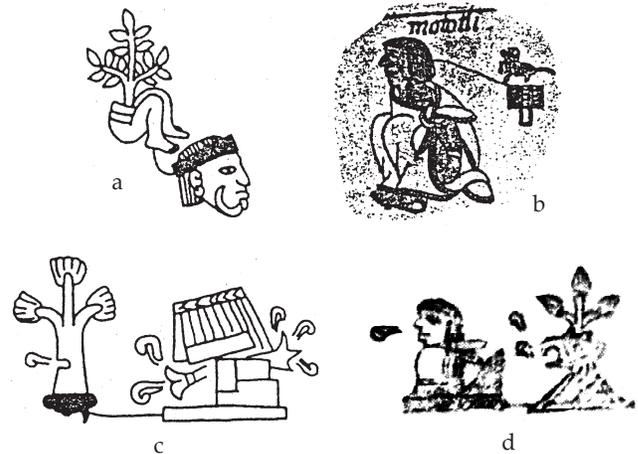
in common their relationship to the ancient *altepetl* of Tetzco. The documents of Tenochtitlan and Tlatelolco on the one hand, and of Tetzco on the other, represent two distinct written traditions of Nahuatl writing, two scribal schools of markedly different personality.

#### Nahuatl writing in the school of Tetzco

Accepting that the greater phoneticism present in the documents of the Tetzcoan group is due neither to the peculiarity of their theme nor to their temporality, but rather to their belonging to a particular school of scribes, we must now ask ourselves if the type of

writing developed by the scribes of that school reflects traditional Nahuatl writing, in the same way that it is reflected in the Prehispanic documents of the Tenochtitlan-Tlatelolco group. To answer this question we must scrutinize the features that defined Nahuatl writing as a system in those unquestioned documents of the Tenochtitlan-Tlatelolco school, and determine to what degree each of these were shared—or not shared—by the school of Tetzaco. The comparison needs to be exhaustive, reviewing the sign repertory of the system (classes of signs, function, reading value), the scribal resources utilized (rebus, phonetic complementation), the conventions of transliteration and transcription, the rules of composition, and the themes of the writing.

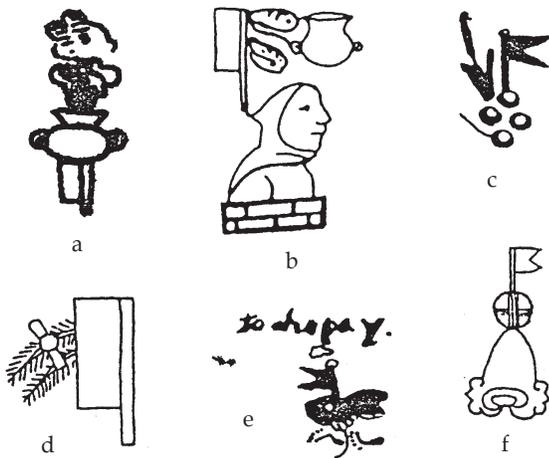
With respect to the signary, we can affirm that the scribes of Tetzaco and of Tenochtitlan used the same repertory of signs. That signary contained logograms and phonograms.<sup>9</sup> In both schools, the reading value of a logogram is that of the word which it represents in composition<sup>10</sup> and phonetic signs have an open V and CV structure, making up a true syllabary (see Lacadena n.d.). While the scope of the present work precludes the presentation of evidence corresponding to each of the signs that make up the Nahuatl syllabary, we can test these assertions against any given sign of the known system in both groups, whether logograms—for example, **AKA** “reed,” **AKOL** “shoulder, arm,” **ASKAPOTZAL** “anthill,” **WEXO** “willow, wicker,” **TEPE** “hill,” **TLATEL** “mound,” **KAL** “house,” **TLATO** “speak,” **TEMO** “descend,” **CHIMAL** “shield,” **WILO**



**Figure 3.** Examples of rebus in the Mexican-Tlatelolcan and Tetzocan schools: (a) **WEXO-TZIN**, *Wexōtzin[kol]*, <gloss: huexotzincatl> (CMDZ 42r) (after Berdan and Anawalt 1997); (b) **mo-MOTO-TZIN**, *Mōto'tzin* <gloss: Mototli> (MITE 6r) (after Valle 1993); (c) **K^AW-NAWA**, *K^awnāwa[k]* <gloss: cuauhnahuac. pu<sup>o</sup>> (CMDZ 2v) (after Berdan and Anawalt 1997); (d) **k^a?K^AW-NAWA**, *K^awnāwa[k]* (CXOL 6) (after Dibble 1996).

“dove,” **MASA** “deer,” **XAL** “sand,” **XIW** “turquoise”; or phonetic signs—for example, the water sign **a**, the bean sign **e**, the road sign **o**, the hand sign **ma**, the maguey sign **me**, the arrow sign **mi**, the banner sign **pa**, the cut-arrow sign **pi**, the teeth sign **tla**, the drum sign **we**. All these signs—and others of the repertory—have the same reading value and the same function as logograms or phonetic signs in both schools.

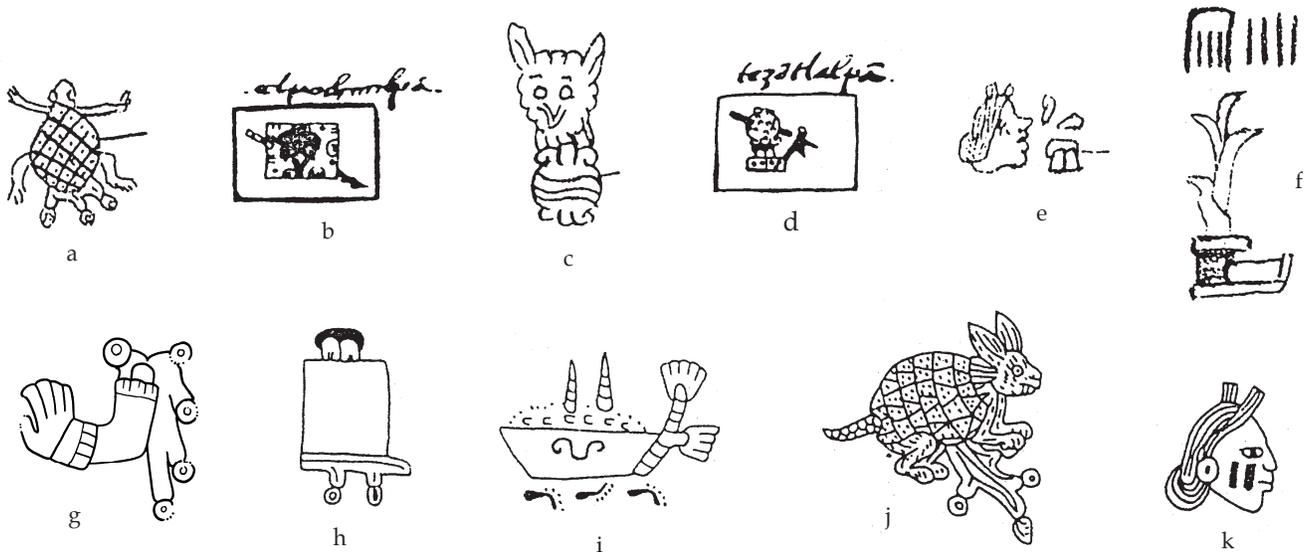
Even when the scribes were faced with the necessity of transcribing Spanish names, the two schools used the same phonetic signs and the same system. For example, the banner sign **pa** is used to indicate the sequences /fa/, /fra/, and /ba/, as in **pa**, **pa(i)** “fray, friar” (CTLA), **pa-si-ko**, *pa[n]si[s]ko* “Francisco” (CMEX 23-24), or **pa-TOL**, *pa[k]tol* “factor, agent” (MITE 27v,



**Figure 2.** The banner sign **pa** in documents of the Mexican-Tlatelolcan and Tetzocan schools: (a) **pa**, *pa(i)* “fray” (CTLA) (after Barlow 1989); (b) **pa-si-ko**, *pa[n]si[s]ko* “Francisco” (CMEX 23-24) (after Galarza 1979); (c) **pa-TOL**, *pa[k]tol* “factor” (MITE 27v) (after Valle 1993); (d) **pa-PAPA**, *Papa[n]tla* <gloss: papantla.pu<sup>o</sup>> (CMDZ 52r) (after Berdan and Anawalt 1997); (e) **TOCH-pa-PA(DN)**, *Tōch[il]pāin* <gloss: tochipay> (MITE 4a) (after Valle 1993); (f) **IKPA-pa-TEPE**, *Ikpatēpē[k]* “Icpatepec” (CCRZ Trecena 9) (after Dibble 1981).

<sup>9</sup> Over time, the tradition of Nahuatl writing studies has developed a complex typology of signs: pictograms, ideograms, logograms, logograms of semantic motivation, logograms of phonetic motivation, sound reinforcers. This typology, which can serve for other purposes, such as in some cases classifying signs by their graphic origin, however is *not* operative in what relates to the classification of signs by their *function* within the writing system, which is what concerns us here. In logosyllabic writing systems, the basic distinction of those signs which have a phonological reading value (semantic determinatives and auxiliary signs do not have a phonological value and perform other functions) is between logograms—signs which correspond to words of the language and have meaning—and phonograms—signs which correspond to phonemes of the language and lack meaning (see Lacadena n.d.). The category of *pictogram*, for example, does not fulfil a function distinct from that of logograms within writing systems.

<sup>10</sup> For example, **SIWA** “woman,” not \***SIWATL**; **AKA** “reed,” not \***AKATL**; **SITLAL** “star,” not \***SITLALIN**).



**Figure 4.** Examples of phonetic complementation in the Mexican-Tlatelolcan and Tetzocan schools: (a) **a-AYO** *āyō-tl* “tortoise” (CSMA 3v) (after Williams 1997); (b) **mi-MIL** *mīl-li* “milpa” (MITE 5r) (after Valle 1993); (c) **te-TEKOLO** *tecolō-tl* “owl” (CSMA 2v) (after Williams 1997); (d) **tla-TLAL** *tlāl-li* “land” (MITE 4v) (after Valle 1993); (e) **tla-TLATO** *tlah̄to[ā]* “speak” (CSMA 40v); (f) **AKA-ka** *āca-tl* “reed” (CSMA 17v) (e-f, after Williams 1997); (g) **a-AKOL** *ahcol-li* “shoulder” (CTIZ j) (after Zender, this issue Fig. 4a); (h) **a-AMA** *āma-tl* “paper, amate” (CMDZ 23r); (i) **o-OK** *ok-tli* “pulque” (CMDZ 23r); (j) **a-AYOTOCH** *āyōtōch-tli* “armadillo” (CMDZ 51r); (k) **SIWA-wa**, *cihuā-tl* “woman” (CMDZ 38r) (h-k, after Berdan and Anawalt 1997).

32v, 40r, 41v) (Figure 2a-c). And this is because the banner sign has the same reading value in both schools and performs the same function within the system, as the syllabic sign **pa**. This can be tested in the examples of phonetic complementation in which the banner sign—and no other—complements logograms beginning or ending with /pa/, as in **pa-PAPA**, *Papa[ntla']*<sup>11</sup> <gloss: papan̄tla.pu> (CMDZ 52r), **TOCH-pa-PA(IN)**, *Toch[i]pāin* <gloss: tochipāy> (MITE 4a), or **IKPA-pa-TEPE**, *Īkpatepē[k]* “Icpatepec” (CCRZ Trecena 9) (Figure 2d-f).

With regard to script resources, the scribes of both schools employed the rebus procedure (certainly an important resource, though less so than commonly supposed). For example, as has been recognized for some time, the logogram **TZIN** “bottom, anus” is documented for the diminutive or reverential ending *-tzin*, or **NAWA** “speak” for the toponymic suffix *-nāwa[k]* “near,” as in **WEXO-TZIN**, *Wexōtzin[ko]*, “Huexotzinco” (CMDZ 42r), **mo-MOTO-TZIN**, *Mōto'tzin* <gloss: Mototli> (MITE 6r), **K<sup>w</sup>AW-NAWA**, *K<sup>w</sup>awnāwa[k]* <gloss: cuauh̄nahuac.pu> (CMDZ 2v), **k<sup>w</sup>a?-K<sup>w</sup>AW-NAWA**, *K<sup>w</sup>awnāwa[k]* “Cuernavaca” (CXOL 6)<sup>12</sup> (Figure 3).

In the use of phonetic complementation, the scribes of the Tetzocan school operated in the same manner as the scribes of Tenochtitlan-Tlatelolco. The examples of phonetic complementation of logograms which we find in the documents of the Tetzocan school,

for example, **a-AYO** *āyō-tl* “tortoise” (CSMA 3v), **mi-MIL** *mīl-li* “milpa” (MITE 5r), **te-TEKOLO** *tecolō-tl* “owl” (CSMA 2v), **tla-TLAL** *tlāl-li* “land” (MITE 4v), **tla-TLATO** *tlah̄to[ā]* “speak” (CSMA 40v), or **AKA-ka** *āca-tl* “reed” (CSMA 17v) are completely equivalent to the examples of phonetic complementation documented in the *cuauh̄xicalli* of Tizoc, the Matrícula de Tributos, or the Codex Mendoza, as **a-AKOL** *ahcol-li* “shoulder” (CTIZ j), **a-AMA** *āma-tl* “paper, amate” (CMDZ 23r), **o-OK** *ok-tli* “pulque” (CMDZ 23r), **a-AYOTOCH** *āyōtōch-in/tli* “armadillo” (CMDZ 51r), or **SIWA-wa**, *cihuā-tl* “woman” (CMDZ 38r) (Figure 4).

In addition to the repertory of signs and the scribal resources of rebus and phonetic complementation, all the documents of both groups of schools share the same conventions of transliteration and transcription: words can be written with logograms alone: **MATLA**, *Matla[tzinko]* (CTIZ a), **XIKIPIL**, *Xikipil[ko]* (CCRZ 6); with combinations of logograms: **OSELO-TEPE**, *Ōselōtepe[k]* (CMDZ 52r), **MIX-KOA**, *Mixkōā[tl]* (CSMA 3r); phonetic signs: **xo-mi**, *Xomil[mitl]*<sup>13</sup> <gloss: xomimitl> (CMDZ 2r), **pi-a**, *Pia[stlān]*<sup>14</sup> <gloss: piaztlān.pu> (CMDZ 15v), **ko-pi**, *Ko[ko]pi[n]*<sup>15</sup> “Cocopin” (CCRZ Trecena 3), **te-mi**, *Tēmi* (MITE 5r); or combinations of logograms and phonetic

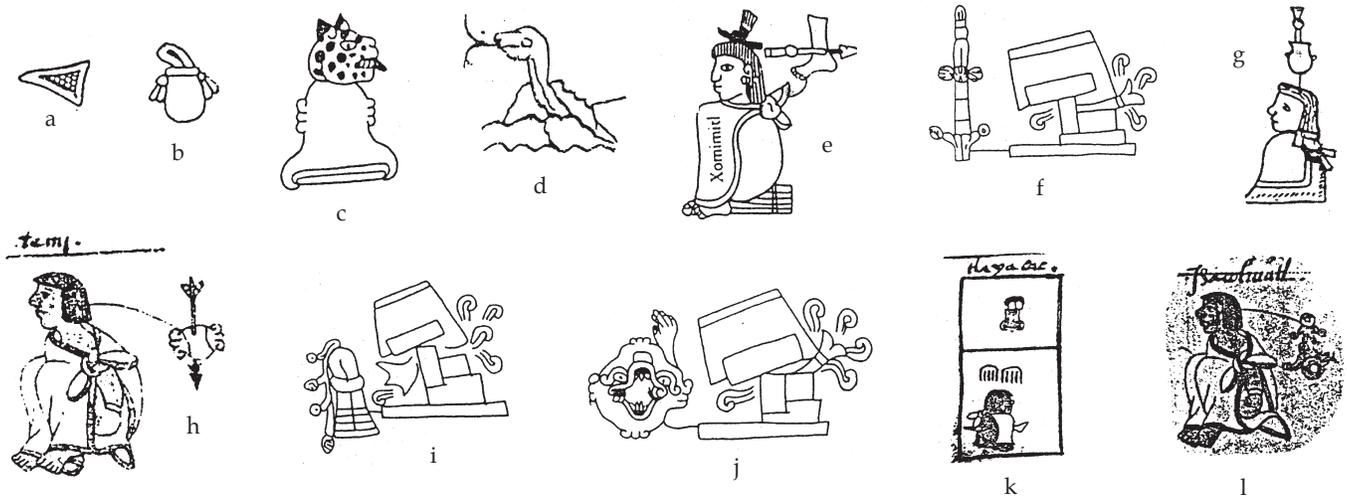
<sup>11</sup> Vowel length uncertain in the segment /papa/.

<sup>12</sup> For this identification I follow Dibble (1996).

<sup>13</sup> Vowel length uncertain.

<sup>14</sup> Vowel length uncertain in the segment /pia/.

<sup>15</sup> Vowel length uncertain.



**Figure 5.** Examples of glyphic compositions of the Mexican-Tlatelolcan and Tetzcoacan schools: (a) **MATLA**, *Mātlaltzinko* (CTIZ a) (after Seler, in Nicholson 1973:Figure 1); (b) **XIKIPIL**, *Xikipill[ko]* (CCRZ 6) (after Dibble 1981); (c) **OSELO-TEPE**, *Ōselōtepe[k]* (CMDZ 52r) (after Berdan and Anawalt 1997); (d) **MIX-KOA**, *Mixkōā[tl]* (CSMA 3r) (after Williams 1997); (e) **xo-mi**, *Xomim[mitl]* <gloss: xomimittl> (CMDZ 2r); (f) **pi-a**, *Pia[stlan]* (CMDZ 15v) (e-f, after Berdan and Anawalt 1997); (g) **ko-pi**, *Kolkolpi[n]* “Cocopin” (CCRZ Treceña 3) (after Dibble 1981); (h) **te-mi**, *Tēmi* (MITE 5r) (after Valle 1993); (i) **a-MAXTLA**, *Āmaxtlā[n]* <gloss: amaxtlan.pu<sup>o</sup>> (CMDZ 13r); (j) **OSTO-ma**, *Ōstōmā[n]* <gloss: ostoman.pu<sup>o</sup>> (CMDZ 10v) (i-j, after Berdan and Anawalt 1997); (k) **tla-YAKA**, *Tlayaka[k]* <gloss: tlayacac> (MITE 4v); (l) **IX-a-KOA**, *Īxākōā[tl]* <gloss: Ysacohuatl> (MITE 6r) (k-l, after Valle 1993).

signs, either in concatenated sequences: **a-MAXTLA**, *Āmaxtlā[n]* <gloss: amaxtlan.pu<sup>o</sup>> (CMDZ 13r), **OSTO-ma**, *Ōstōmā[n]* <gloss: ostoman.pu<sup>o</sup>> (CMDZ 10v), **tla-YAKA**, *Tlayaka[k]* <gloss: tlayacac> (MITE 4v), **IX-a-KOA**, *Īxākōā[tl]* <gloss: Ysacohuatl> (MITE 6r) (Figure 5), or in phonetic complementation, as we saw above.

Another convention shared by both schools is that the signs in a compound do not have to transcribe contiguous phonemes, although they always have to represent the first V or CV syllable of the transliteration of the word (**TEPE-wa**, *Tepe[xa]wa[lko]*<sup>16</sup> <gloss: tepexahualco.pu<sup>o</sup>> (CMDZ 36r), **a-chi-me**, *Achi[to]me[tl]*<sup>17</sup> <gloss: achitometl> (CXOL 3). A final, very important convention shared by both schools—and which differentiates Nahuatl writing from other logosyllabic systems of its group, such as Mycenaean Linear B or Maya—is that they do not use CV syllables to represent consonants only, either as the first member of a consonant cluster or the last consonant of a word. This affects phonetic complementation, which cannot be used on logograms ending in a consonant. The same repertory of abbreviations is attested in both groups, such as syncope (**TLATEL-ko** for *Tlatel[ol]ko*), suspension (**pi-a** for *Pia[stlan]*), and combinations of both (**ko-pi** for *Kolkolpi[n]*).

The *tlacuiloque* (scribes) of both schools arranged signs in a glyphic block in the form of an emblem,

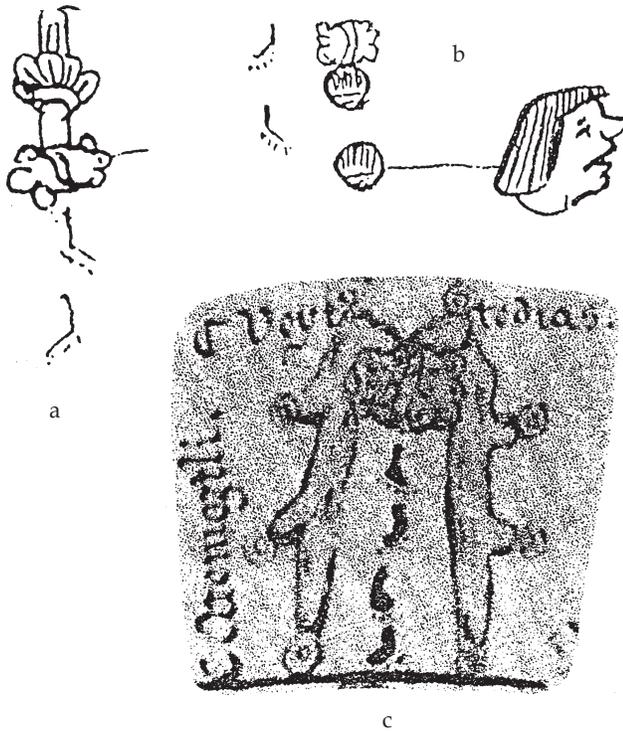
without a fixed reading order, though favoring a direction of reading from right to left and bottom to top. Both schools permitted infixation of signs in composition. Finally, both schools used writing for the same specialized themes: proper names, personal names, theonyms, toponyms, and calendric and arithmetical expressions, with representation of numerals and the object counted.

If we take heed of all the observed features that define and describe Nahuatl writing as a system, we can demonstrate that there is not a single feature that is not shared by the scribes of both schools. The *tlacuiloque* of the Tenochtitlan-Tlatelolco and the Tetzcoacan schools utilized the same writing system, without a single variation that pertains to the typology of the system (a logosyllabic one), the sign repertory (reading value and function), the available scribal resources such as rebus and phonetic complementation, the conventions of transliteration and transcription, the composition of signs in glyphic blocks, and the specialization of writing in certain themes. The Tetzcoacan system, therefore, was *also* representative of Nahuatl writing, in the same way as the written documents of the Mexica.

The differences that can be observed between the two schools stem from the *frequency* of utilization of phonograms, which results as the case may be in the rendering of compositions more or less transparent phonetically. The *tlacuiloque* of the Tetzcoacan school more habitually employ phonetic complementation, which is only occasional in the Tenochtitlan-Tlatelolco

<sup>16</sup> The precise rendering of this toponym is uncertain.

<sup>17</sup> Vowel length uncertain.



**Figure 6.** The compound **te-TEMO** in two documents of the Tetzcoacan school: (a) **CHALCHIW-te-TEMO**, *Chalchiwtemō[k]* <gloss: chalchiuhtemoc> (CSMA 33r); (b) **IWI-te-TEMO**, *I'wi[l]temō[k]* <gloss: hihuiltemoc> (CSMA 72r) (a-b, after Williams 1997); (c) **a-te-TEMO**, *Ātemō[stli]* <gloss: atemoztli./Veyn/te dias> in the Rueda de Bobán (after Robertson 1994:Fig 51).

school; similarly, the scribes of the Tetzcoacan school more habitually transcribe locative expressions in a fuller form, indicating, for example, the locative suffix *-co* in place names with the syllable **ko**. This is a highly characteristic feature of this school. Thus, where the *cuauhxicalli* of Tizoc and the Codices Mendoza, Cozcatzin, Osuna, Telleriano-Remensis, Boturini, and Azcatitlan, for example, present the forms

<b>TLATEL</b>	<i>Tlatel[olko]</i> <sup>18</sup>	"Tlatelolco"
<b>TETZKO</b>	<i>Tetzko'[ko]</i>	"Tetzco"
<b>CHAL</b>	<i>Chāl[ko]</i>	"Chalco"
<b>te-KAL</b>	<i>Tekal[ko]</i>	"Tecalco,"

the documents of the Tetzcoacan group, like the Codex Xolotl, the Codex en Cruz, the Codex Santa María Asunción or the Memorial de los Indios de Tepetlaoztoc, *in addition to* the same series of simple logograms **TLATEL**, **TETZKO**, **CHAL**, and **KAL**, present others with phonetic complements or added phonetic signs:

<b>tla-TLATEL / tla-TLATEL-ko</b>	<i>Tlatel[ol]ko</i>
<b>TETZKO-ko / te-TETZKO-ko</b>	<i>Tetzko'ko</i>
<b>CHAL-ko</b>	<i>Chālko</i>
<b>te-KAL-ko</b>	<i>Tekalko.</i>

Similarly, in other cases where the Mexica documents present the forms

<b>KOA</b>	"serpent"
<b>TEO</b>	"god"
<b>MIX</b>	"cloud"
<b>TEMO</b>	"descend"
<b>TLATEL</b>	"mound,"

the Tetzcoacan documents present, *in addition to* these same forms **KOA**, **TEO**, **MIX**, **TEMO**, and **TLATEL**, others like

<b>ko-KOA / ko-a</b>	"serpent"
<b>TEO-o / te-o / te</b>	"god"
<b>mi-MIX / mi</b>	"cloud"
<b>te-TEMO</b>	"descend"
<b>tla-TLATEL</b>	"mound."

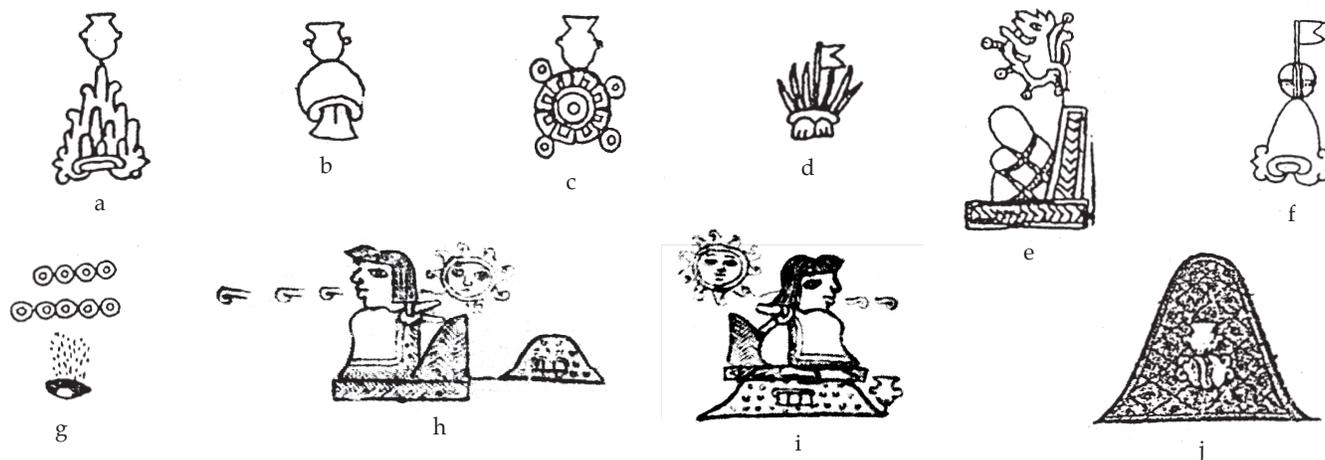
The favoring of transparent phonetic compositions affects the entire group of Tetzcoacan documents, not only those of the Tepetlaoztoc group, such that we must consider it a general feature of the school. Thus, for example, the phonetic complementation of the logogram **TEMO** "to lower" as **te-TEMO**, using both allographs of the syllable **te**, the stone sign and the lips sign, attested in the Codex Santa María Asunción in names like **CHALCHIW-te-TEMO**, *Chalchiwtemō[k]* <gloss: chalchiuhtemoc> (CSMA 33r) or **IWI-te-TEMO**, *I'wi[l]temō[k]* <gloss: hihuiltemoc> (CSMA 72r), is perfectly consistent with other written documents of the Tetzcoacan group, like the Rueda de Bobán, where the month Atemoztli is written as **a-te-TEMO**, *Ātemō[stli]* <gloss: atemoztli./Veyn/te dias>, likewise exhibiting phonetic complementation with **te** (Figure 6).

The Codex en Cruz, a document of historical content, with no suspicion of inspiration by the Spanish authorities (the medium, format, and treatment of the theme are clearly indigenous and not designed to contain glosses), also exhibits a style of writing very similar to that of the Codex Santa María Asunción or the Memorial de los Indios de Tepetlaoztoc. In the Codex en Cruz,<sup>19</sup> for example, of the sixteen times that the toponym Tetzcoaco is written, only one is in the form **TETZKO**, *Tetzko'[ko]*, as compared to fifteen which exhibit **TETZKO-ko**, *Tetzko'ko*; Tlatelolco, mentioned three times in the document, is always **tla-TLATEL-ko**, *Tlatel[ol]ko*; Chalco, mentioned once, is **CHAL-ko**, *Chālko*; Tlacopan, probably mentioned once, appears written as **tla-TLAKO-pa**, *Tlakōpa[n]*. On the other hand, the use of phonetic complementation, in addition to the two examples already noted of **tla-TLATEL-ko** and **tla-TLAKO-pa**, is present in the manuscript in examples like **a-AWITZO**, *Āwitzo[tli]*,<sup>20</sup> **IKPA-pa-TEPE**,

<sup>18</sup> Vowel length uncertain in the segment /tlatel/

<sup>19</sup> The following identification of places is based on Dibble's (1981) study of this codex.

<sup>20</sup> Vowel length uncertain in the segment /witzotl/



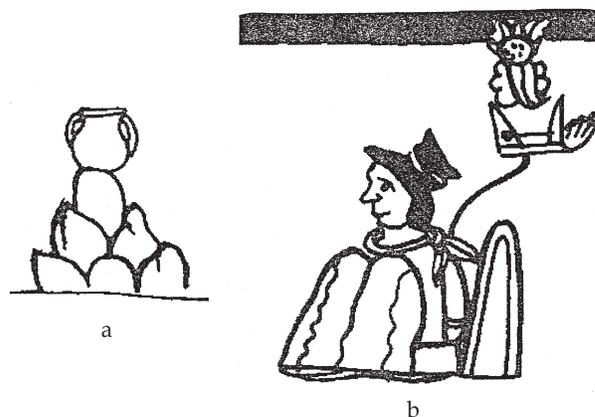
**Figure 7.** Examples of glyphic compounds in the Codex en Cruz and the Codex Xolotl: (a) **TETZKO-ko**, *Tetzko'ko*; (b) **tla-TLATEL-ko**, *Tlatel[ol]ko*; (c) **CHAL-ko**, *Chalko*; (d) **tla-TLAKO-pa**, *Tlakopa[n]*; (e) **a-AWITZO**, *Awitzo[tl]*; (f) **IKPA-pa-TEPE**, *Ikpatēp[ki]*; (g) **e-E'EKA**, *e'eka[tl]* (a-g, after Dibble 1981); (h) **tla-TLATEL**, *Tlatel[ol]ko* (CXOL 8); (i) **tla-TLATEL-ko**, *Tlatel[ol]ko* (CXOL 6); (j) **te-TETZKO-ko**, *Tetzko'ko* (CXOL 2, 3) (h-j, after Dibble 1996).

*Ikpatēp[ki]*, and **e-E'EKA**, *e'eka[tl]*. These forms in the Codex en Cruz, created in the middle of the sixteenth century (Dibble 1981:60), are perfectly consistent with those present in the oldest document of the group, the Codex Xolotl, which presents these same compounds, such as **tla-TLATEL** (CXOL 8) and **tla-TLATEL-ko** (CXOL 6, 7) for Tlatelolco, in addition to others more phonetic, like the writing of Tetzco as **te-TETZKO-ko** (CXOL 2, 3), with initial phonetic complementation in **te** (Figure 7).

Another document pertaining to the same Tetzcoan tradition, found recently in the city of Cuaxicala (Stresser-Péan 1995), presents these same scribal characteristics. The Codex Xicotepec deals with the local history of Xicotepec and Tetzco, with some mentions of Tenochtitlan. As in other documents of the Tetzcoan group, we find in the Codex Xicotepec a predilection for phonetically transparent compositions: on the four occasions in which the city of Tetzco is mentioned in the document it is as **TETZKO-ko**, *Tetzko'ko*, as is habitual in other documents of the same school. Moreover, on the three occasions in which the Mexica *tlahtoani* Motecuzoma II is mentioned in the text, a phonetic sign **ma** has been united to the glyphic compound by the scribe (Figure 8), in a form similar to that in which the scribe of the Codex Vergara wrote the name Mocuauhzoma, as **mo-K<sup>W</sup>AW-so-ma** (CVRG 49v). The Codex Xicotepec cannot be considered in any way a document prepared for the Spanish authorities—nor a late document, being possibly of the 1530s—but rather a local historical one. As Stresser-Péan noted, “the Codex Xicotepec was not painted to satisfy the curiosity or the administrative necessities of the Spanish. It is evidently a manuscript created by the natives in order to preserve, for their own heritage, the memory of their

indigenous traditions. It can, in this respect, be compared with the Codex Xolotl or the Codex en Cruz” (1995:175, author’s translation). The Codex Xicotepec, a document that certainly was composed by local *tlacuiloque* different from those who took part in the creation of the other documents of the group, is a magnificent example of the geographic extent of the scribal style of the Tetzcoan school within the boundaries of the Nahuatl-speaking region.

I wish to stress a very important point: the differences between these two schools were limited to those elements of the system which allowed for scribal discretion. The scribes of the Tetzcoan school could not, without departing from the limits which defined Nahuatl writing as such, utilize, for example, the same signs with an alternative reading value, or use differing conventions of transcription or transliteration—for



**Figure 8.** Examples of glyphic compounds in the Codex Xicotepec: (a) **TETZKO-ko** (after Stresser-Péan 1995:Section 19); (b) **TEK<sup>W</sup>-ma** (ibid.:Section 21).

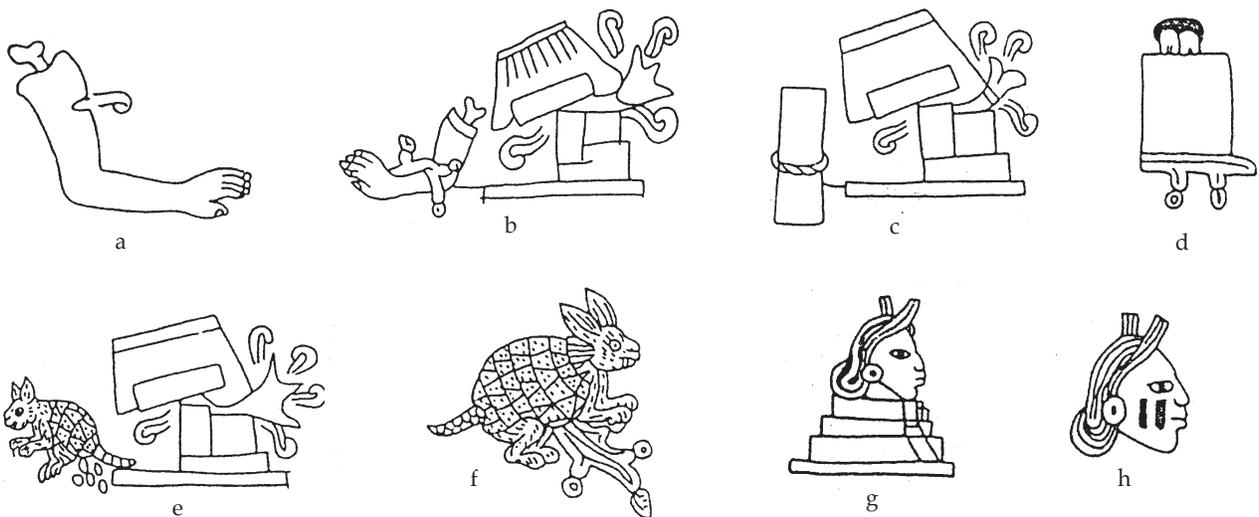


**Figure 9.** Examples of glyphic variation in the Codex Santa María Asunción: (a) **MIX-KOA**, *Mixkōā[tl]* (CSMA 3r); (b) **a-AKOL-MIS**, *Ākōlmis[tlī]* (CSMA 10r); (c) **mi-MIX-ko-a**, *Mixkōā[tl]* (CSMA 11r); (d) **mi-ko-a**, *Mi[x]kōā[tl]* (CSMA 17v); (e) **a-AKOL-mi-MIS**, *Ākōlmis[tlī]* (CSMA 2r) (a-e, after Williams 1997).

instance, give a CV sign the value C(V), or fail to transcribe in abbreviated forms the first syllable of the word. Nor could they arrange the signs in a unique manner on the written medium. But the rebus procedure, phonetic complementation, or the substitution of phonetic signs for logograms—which is precisely where the differences can be discerned—are *optional*, not obligatory, resources of the system, at the discretion of the scribes. Thus, in the Codex Santa María Asunción, we find less phoneticism in some cases, such as **MIX-KOA** (CSMA 3r) or **a-AKOL-MIS** (CSMA 10r), together with more in others, such as **mi-MIX-ko-a** (CSMA 11r, 20v, 29r), **mi-ko-a** (CSMA 17v), or **a-AKOL-mi-MIS** (CSMA 2r) (Figure 9). For example, *tecolō·tl* “owl” normally appears with phonetic complementation in the Codex Santa María Asunción, as **te-TEKOLO** (CSMA 2v, 8r, 20r, 28r, 56r, 56r, 69r, 69r), as compared to only two occasions without phonetic complementation, as **TEKOLO** (CSMA 10v, 47r). On the other hand, *ōcēlō·tl* “jaguar” and *mazā·tl* “deer” *never* appear with phonetic complements, being written simply as **OSELO** (CSMA 4r, 12v, 21v, 22r, 52r, 63r, 76v) and **MASA** (CSMA 6r,

14v, 24r, 26r, 55r, 80r). The scribes of the Codex Santa María Asunción considered it advisable to complement the logogram **TEKOLO**—which possibly could be confused with **CHICH** (see CSMA 71r)—but they did not deem it necessary to complement the logograms **OSELO** and **MASA**, possibly because they were easier to identify (diagnostic spots for the jaguar and antlers for the deer). This discretion in managing the optional resources of the system is also found in the Codex Mendoza, where the same logogram appears in some cases with, and in others without, phonetic complementation: **AKOL** (CMDZ 17v) / **a-AKOL** (CMDZ 3v), **AMA** (CMDZ 16r) / **a-AMA** (CMDZ 23r), **AYOTOCH** (CMDZ 13v) / **a-AYOTOCH** (CMDZ 51r), **SIWA** (CMDZ 52r) / **SIWA-wa** (CMDZ 38r) (Figure 10). It should be stressed that in all these examples from the Codex Mendoza, it was the same scribe who opted to use a phonetic complement in some cases but not in others.<sup>21</sup>

<sup>21</sup> J. José Batalla, personal communication, February 2003; see Batalla in press.



**Figure 10.** Examples of glyphic variation in the Codex Mendoza: (a) **AKOL** in CMDZ 17v; (b) **a-AKOL** in CMDZ 3v; (c) **AMA** in CMDZ 16r; (d) **a-AMA** in CMDZ 23r; (e) **AYOTOCH** in CMDZ 13v; (f) **a-AYOTOCH** in CMDZ 51r; (g) **SIWA** in CMDZ 52r; (h) **SIWA-wa** in CMDZ 38r (a-h, after Berdan and Anawalt 1997).

## The schools of Tenochtitlan-Tlatelolco and Tetzcoco

The *Tenochtitlan-Tlatelolco school* was centered in the Central Mexican *altepetl* of Tenochtitlan-Tlatelolco and possibly extended throughout its area of direct political influence in a manner yet to be determined. *Tenochtitlan-Tlatelolco* is only a label of convenience. We do not know of the Tlatelolco school in Prehispanic times, and the first examples we have are from the Colonial era. Nevertheless, the written documents of Tenochtitlan and those of Tlatelolco present the same scribal characteristics. Writing from this school represents the majority of that known for the Prehispanic period, providing the names of the rulers of Tenochtitlan (Ahuizotl, Tizoc, Motecuzoma I, Motecuzoma II, Axayacatl) and including the important texts of the *cuauhxicalli* of Tizoc and Motecuzoma I. Other writings pertaining to this group are, for example, the Matrícula de Tributos (also Prehispanic) and the Codices Mendoza, Boturini, Azcatitlan, Osuna, Tlatelolco, Telleriano-Remensis, and Mexicanus, as well as Mexican Manuscript No. 40.

Leaving aside questions of composition and color in the pictorial component of these documents (see Robertson 1994), from a scribal point of view we find the following features: in all these documents the ratio of logograms to phonetic signs clearly favors the former. This leads to a marked degree of abbreviation, such as **TLATEL** for *Tlatel[olko]*. Abbreviation of the *-co* ending of place names is particularly characteristic of this school: **CHAL**, *Chāl[ko]*, **TETZKO**, *Tetzko[ko]*, **TLATEL**, *Tlatel[olko]*, **te-KAL**, *Tekal[ko]*. This contrasts notably with the explicit use of other locative suffixes, such as **-tla**, *-tlā[n]* “in,” **-NAWA**, *-nāwā[k]* “near,” **-IKPA**, *-ikpa[k]* “on,” or **-pa**, *-pa[n]* **-PA(I)N**, *-pan* “on.” The almost systematic omission of **-ko** in the Tenochtitlan-Tlatelolco school could point to it being an intentional act of differentiation.

Comparatively speaking, the *tlacuiloque* of this tradition made little use of phonetic complementation. However, this resource is present and well attested, and it is documented as much in Prehispanic texts as in the last written documents of this group: **AKOL/a-AKOL**, **AYOTOCH/a-AYOTOCH**, **AMA/a-AMA**, **ASKAPOTZAL/a-ASKAPOTZAL**, **a-AWITZO**, **TEO/te-TEO**, **TEKPA/te-TEKPA**, **TIS/ti?-TIS**, **TEPE/te-TEPE**, **PA(I)N/pa-PA(I)N**, **pa-PAPA**, **AWEWE-we**, **SIWA/SIWA-wa**, **MIL/mi-MIL**, **OK/o-OK**, **TLEMA/TLEMA-ma**. Entirely phonetic compositions are not frequent, but they are not absent in the record: **te/ti?-so**, *Teso[k]/Tiso[k]*<sup>22</sup> “Tizoc,” **te-ma**, *Te[ka]ma* <tecama>, **xo-mi**, *Xomi[mitl]* <xomimitl>.

This tradition is consistent from our first evidence of Prehispanic writing down through the seventeenth century. With regard to the features enumerated here, there is no difference between the writing of the *cuauhxicalli* of Tizoc or Motecuzoma I, from the second half of the fifteenth century, or the Matrícula de Tributos, of the second decade of the sixteenth, and the two documents of the first generation of the Colonial era (the Codices Mendoza and Boturini), or those of the second (the Codices Azcatitlan, Osuna, and Tlatelolco, all more acculturated in their pictorial component), or the latest examples (the Codex Mexicanus, Mexican Manuscript No. 40, and the Codex García Granados). This implies an uninterrupted continuity in the training of *tlacuiloque* in the core of this tradition.

The *Tetzcoco school*, for its part, developed in the dependencies of this Prehispanic *altepetl*. From the point of view of scribal attributes, the school of Tetzcoco is the obverse of that of Tenochtitlan-Tlatelolco. Locative suffixes are customarily indicated in the majority of cases, including the locative *-co*, as in **TETZKO-ko**, *Tetzko'ko*, **CHAL-ko**, *Chālko*, **tla-TLATEL-ko**, *Tlatel[ol]ko*, **te-KAL-ko**, *Tekalko*, in contrast with the school of Tenochtitlan-Tlatelolco. While logograms are not at all absent, in that they continue to form the basis of glyphic compositions, the scribes of this school tend to favor phonetic transparency, with a more balanced relationship of logograms and phonetic signs and a more frequent use of phonetic complementation, offering (on occasion in the same document) complete series of phonetic complementations and substitutions: **MIX-KOA/mi-MIX-ko-a/mi-ko-a**, **AKA/a-AKA/AKA-ka**, **E'EKA/e-E'EKA**, **MALINAL/ma-MALINAL**, **MIS/mi-MIS**, **MISKI/mi-MISKI**, **MIL/mi-MIL**, **MOTO/mo-MOTO**, **NAW/na-NAW**, **NEMI/ne-NEMI**, **PA(I)N/pa-PA(I)N**, **TEKOLO/te-TEKOLO**, **TEMO/te-TEMO**, **TEPE/te-TEPE**, **TESKA/te-TESKA**, **TEO/TEO-o/te-TEO/te-o**, **TLATO/tla-TLATO**, **TLAKOCH/tla-TLAKOCH**, **TLAKO/tla-TLAKO/tla-ko-TLAKO**, **TLAKA/tla-TLAKA**, **TLAL/tla-TLAL**, **XIKO/XIKO-ko/XIKO-ko-o**, **KOL/ko-KOL**.

The only difference that can be discerned in the use of the signary is a preference for certain allographs or graphic variants of signs. For example, to write *e'ēca·tl* “wind,” the scribes of the Tenochtitlan-Tlatelolco school preferred the variant of the head of the wind god Ehecatl, while the scribes of the Tetzcocan school preferred the figurative logogram **E'EKA** “air, wind”—on many occasions complemented with the syllable **e** (**e-E'EKA**), as it appears in the Codex en Cruz, the Codex Santa María Asunción, and the Memorial de los Indios de Tepetlaoztoc. Similarly, while both schools indiscriminately employ the two allographs of the syl-

<sup>22</sup> Vowel length uncertain.

lable **te**, the stone sign and the lips sign, the scribes of Tenochtitlan-Tlatelolco seem to prefer the stone sign for phonetic complementation, while those of the school of Tetzco appear to incline in favor of the lips sign. In only one case, apparently, did the two schools use a different sign, in the **wa** section of the syllabary, for reasons that may be explicable (Lacadena 2008, this issue). The fact that these differences are well established in the two schools indicates a certain temporal depth, deriving in all likelihood from Prehispanic times.

While we unfortunately lack records equivalent to the *cuauhxicalli* of Tizoc and Motecuzoma I of the Mexica school that would permit us to test what we have asserted here on Prehispanic monuments, the Tetzcoan tradition is also consistent from its initial appearance, the first-generation documents of the Colonial era (the Codex Xolotl, the Mapa Tlotzin, the Mapa Quinatzin, the Codex Xicotepec), and continues through those of the second generation (the Codex en Cruz, the Rueda de Bobán, the Codex Santa María Asunción, the Codex Vergara, the Memorial de los Indios de Tepetlaoztoc), which similarly suggests an uninterrupted continuity in the training of *tlacuiloque* in this tradition.

The scribal styles of Tetzco and Tenochtitlan-Tlatelolco are of highly distinctive personality. It is interesting to find the glyph for Tetzco written in the migration section of the Codex Telleriano-Remensis, of the Tenochtitlan-Tlatelolco school, as **TETZKO-ko-ko**, *Tetzko'ko*, presenting not just the final toponymic suffix *-ko* characteristic of the school, but also a first **ko** sign acting as a phonetic complement on the presumed logogram **TETZKO**. Robertson (1994:115) notes that this part of the codex bears strong influences of the school of Tetzco in the way in which it presents the sequence of events, which would explain the characteristics of the glyphic composition. It is also interesting that the Tira de Tepechpan, from the place of the same name (a political dependency of Tetzco), presents on the other hand very few examples of phoneticism, which could be explained by its showing stylistic influences of the Tenochtitlan-Tlatelolco school, as suggested by Nicholson (1973:Note 35).

One must not forget that there may have existed other traditions, other schools of scribes, possibly also centered in the capitals which held political power in the region, such as Tlaxcalla, Huexotzinco, or Cuauhtinchan. The Tepanec tradition, centered in Azcapotzalco, unfortunately lost, must have been in its time one of the principal writing traditions of the area. These other schools, yet to be studied in a comparative manner, will reveal their greater or lesser affinity with those discussed here, as well as their idiosyncracies in the choice of certain graphic variants or the utilization of given resources of the system.

### The supposed influence of Spanish alphabetic writing on the Nahuatl writing system

The possible influence of Spanish writing on the indigenous system has been another of the arguments put forward—really the *main* argument—against the use of documents of the Tepetlaoztoc group in the decipherment of Nahuatl writing. In fact, this argument has not only called into question the documents of this group and those of the Tetzcoan tradition as representative examples of the indigenous writing system, but it has questioned all Nahuatl writing created after 1521, the greater part of the corpus. Even authors favorable to the presence of phoneticism in Nahuatl writing (see Dibble 1971) have cited Spanish influence in order to justify its presence in certain postconquest documents. For this reason, I am going to deal with this subject more extensively, applying the analysis and conclusions not only to the Tetzcoan group but to all the written testimonies of the Nahuatl glyphic corpus.

### The Nahuatl writing system at the arrival of the Spanish

Elsewhere (see Lacadena n.d), I present a more complete discussion of the features of Nahuatl writing that will be touched upon here, so I will not repeat them in detail. All are characteristic of Nahuatl as a writing system, and they are present in all documents regardless of provenience. Of course—and this is what interests us here—they are present in the written testimonies not suspected of Spanish influence and considered to be examples of Prehispanic Nahuatl writing: the *cuauhxicalli* of Tizoc and Motecuzoma I, the Matrícula de Tributos, the Codex Mendoza, and the Codex Xolotl.

With regard to the typology of signs, resources utilized, and conventions of orthography, Nahuatl writing displays the following features:

(1) Use of a signary composed of logograms and phonograms, where the logograms have the value of the word which they transliterate in composition and carry meaning—such as **AMA**, *āma-tl* “paper, *amate*,” **TEPE**, *tepē-tl* “hill,” **K<sup>w</sup>AW**, *k<sup>w</sup>aw-itl* “tree,” **TESKA**, *tēska-tl* “mirror,” **TLATEL**, *tlatel-lī*<sup>23</sup> “mound”—while the phonograms comprise a conventional syllabary of open structure (signs with V and CV value)—such as **a**, **o**, **ko**, **ma**, **pa**, **te**, **tla**, **wa**, **we**, and others (for illustrations, see the Nahuatl syllabary, this issue p. 23).

(2) Use of logograms in rebus, for their reading value and not for their primary meaning, such as **NAWA** “to speak” for the locative suffix *-nāwa[k]* “next to, together with” or **PA(I)N** “to cross, to move” for the locative suffix *-pan* “in, on.”

<sup>23</sup> Vowel length uncertain.

(3) Optional recourse to the use of phonograms as phonetic complements to logograms: **AKOL/a-AKOL**, **AMA/a-AMA**, **AYOTOCH/a-AYOTOCH**, **PA(I)N/pa-PA(I)N**, **OK/o-OK**, **SIWA/SIWA-wa**.

(4) For orthographic conventions of transliteration, we can point to the following features: the signs convey their integral reading value, except in the case of phonetic complements where, following the rules of this scribal resource, they do not indicate the duplication of the repeated phoneme; given the structure of the phonetic signary, with signs of V and CV type, there is no recourse to the use of CV syllabic signs to represent only the consonant value C(V) in view of the conflict in the representation of the first consonant in consonant clusters as well as in final position; this also applies to phonetic complementation, where phonograms in complementation always give their value to the reading as V or CV, without the possibility of phonetic complementation to final consonants of logograms; the phonemes indicated by the signs of a compound do not have to be contiguous—**TEPE-wa**, *Tepe[xa]wa[lko]*,<sup>24</sup> **a-chi-me**, *Achi[to]me[tl]*<sup>25</sup>—but always have to represent at least the first syllable of the word—**we**, *We[tzin]*,<sup>26</sup> **me**, *Me[xi'ko]*, **TLATEL**, *Tlatel[olko]*. Forms of abbreviation were by means of syncope, suspension, and the combination of both.

(5) Disposition of signs in glyph blocks in the form of an emblem, with various possible reading orders, although favoring a direction of reading from right to left and bottom to top.

(6) Specialization in theme, limited to proper names (anthroponyms, toponyms, and theonyms) and calendric/arithmetical expressions, indicated by number and counted object.

The first three features (1-3) identify Prehispanic Nahuatl writing as logosyllabic or hieroglyphic, and situate it typologically with Sumerian, Akkadian, Egyptian, Luwian hieroglyphs, Linear B, and Maya. The final three features (4-6) identify Nahuatl writing in particular, distinguishing it from other logosyllabic/hieroglyphic systems.

### The Nahuatl writing system after the arrival of the Spanish

To be able to speak in terms of the influence of Spanish Latinate writing on this system, we need to affirm that all, some, or at least one of these features experienced some significant change after the Conquest, and that this change was due to the adoption of one of the scribal features belonging to the new writing. But we will see that *not one* of these features characteristic of Nahuatl writing experienced a change, whereby we must conclude categorically that there was *no* Spanish

influence on the indigenous writing system. Only in the formal aspect of some signs can any influence be perceived, with some adopting new conventions in their representation (a European purse in place of the indigenous *xiquipilli* for 8000, a Castilian banner in place of the indigenous standard); also, the scribal medium now incorporated new materials like European paper and the format of a book sewn on one edge. But Nahuatl writing preserved its character as a logosyllabic system until the end, maintaining all its defining peculiarities:

(1) Examples of Nahuatl writing from the sixteenth and seventeenth centuries continue to maintain a basic distinction between logograms and phonograms, which is to say, between signs which transliterate words with meaning and signs which transliterate the phonemes of language. New logograms are only introduced to represent new realities (logograms for “horse,” “crown,” “sword,” special logograms for saints<sup>27</sup>)—and this cannot be attributed to the influence of the Spanish per se, in that these specific signs did not exist in their writing system. The repertory of phonograms was not modified, maintaining its open syllabic structure with signs of V and CV value; new signs were not introduced, nor were signs modified in their reading value to represent consonantal alphabetic phonemes—as noted by Lockhart (1992:333), this is a feature that one might have expected the influence of the Spanish writing system to have produced. Nor were new signs introduced to represent Spanish sounds missing in Nahuatl—/b, d, f, g, r/. To translate these sounds for Nahuatl tongues, existing signs were utilized, maintaining their original reading value: the syllables **pV** or **wV** for /b\_/, **pV** for /f\_/, **kV** for /g\_/, and **tV** for /d\_/, as in **a-to te-TOSA**, *A[n]to[nio] te [Men]tosa* “Antonio de Mendoza” (CTLA), **to-mi-ko**, *Tomi[n]ko* “Domingo” (CMEX 23-24), or **OLO-IX-wa-ka**, *Oloix Waka* <gloss: Luys Vaca> (MITE 43r).

(2) The rebus procedure continued to be a productive resource. It was now also employed in the transliteration of Spanish names, on occasion with other phonetic signs added, such as **SOL**, *Soll[ita]* “Zorita,” **me-TOSA**, *Me[n]tosa* “Mendoza,” **TZON**, *Tzom[alaka]* “Zumárraga,” **KAL-a**, *Kala* “Clara,” **KAL-e**, *Kale[ko]* “Gallego.”

(3) Phonetic complementation continued to be attested as an optional resource at the disposition of the scribes for clarification of the reading of logograms. Late documents of the Tenochtitlan-Tlatelolco school,

<sup>24</sup> Vowel length uncertain.

<sup>25</sup> Vowel length uncertain.

<sup>26</sup> Vowel length uncertain.

<sup>27</sup> See the excellent work of Galarza (1979).

like Mexican Manuscript No. 40 (from the end of the sixteenth century), display the vitality of this resource, as can be seen in examples like **a-ASKAPOTZAL**, *Āskapōtzal[ko]* <gloss: Azcapotzalco> (MM40 7v) or **TLEMA-ma**, *Tlemā[ko]* <gloss: tlemaco> (MM40 5v). Phonetic complementation was applied as well to the transliteration of Spanish names when a logogram was involved in the glyphic composition, as in **mi-MIK-e**, *Mike[l]* <gloss: miguel diaz> (MITE 11v), where we note the simultaneous use of the traditional resources of rebus and phonetic complementation.

(4) The conventions of transliteration and transcription were maintained without change. Except in the case of phonetic complementation, as prescribed by the rules that governed that resource, all the signs in the transliteration gave their complete value to the reading. CV syllabic signs were never used to represent only their value as C(V) consonants. The phonemes transliterated by the respective signs of a composition did not have to be contiguous, but the first syllable of a word had to be represented—the exception being certain Spanish names beginning with phonemes not existing in Nahuatl, which could be omitted: **IX-to**, *Ixtolpal* “Cristóbal,” **IX-e-i**, *Ixei* or *Ixlollei* “Visorrey, Viceroy.” As for the repertory of forms of abbreviation, these were maintained, with attestation of syncope, suspension, and the combination of both; these forms of abbreviation were applied both to traditional Nahuatl names and new Spanish ones. In this sense, the writing of the Spanish names **me-TOSA**, *Me[n]tosa* “Mendoza,” **XIW-WA-a**, *Xiwa[n]* “Juan,” or **a-to**, *A[n]to[nio]* “Antonio,” is identical to the writing of the Nahuatl names **TOCH-pa-PAIN**, *Tōch[i]pāin* “Tochipayn,” **we**, *Wel[tzin]* “Huetzin,” **te-ma**, *Te[ka]ma[n]* <Tecamâ>, or **ko-pi**, *Ko[ko]pi[n]* “Cocopin.”

(5) Nahuatl writing continued to maintain the arrangement of signs in a glyphic block in the form of an emblem. This is one of the features in which the influence of Latin writing could easily have been most strongly felt. Latin writing, which displays a canonical arrangement of the signs on the scribal medium in horizontal lines executed from left to right and top to bottom, did not come to affect the indigenous system. The indigenous glyphs continued to occupy the same space on the scribal medium. Even the reading order within the glyphic block was left unaltered (where again innovation to the original system of multiple reading orders might have been expected). The arrangement of signs in an emblem was also applied to Spanish names.

(6) The indigenous writing maintained its specialization in the transliteration of proper names, of person and of place, theonyms, and calendric and arithmeti-

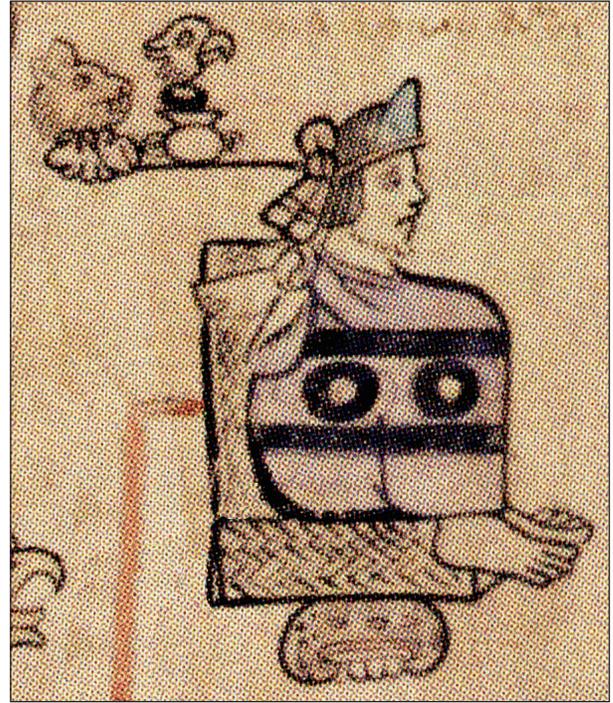


Figure 11. The governor Don Diego de Mendoza as **to-e-ko-te-TOSA** and the name of Tlatelolco as **TLATEL** (after Valle 2008:70).

cal expressions, with representation of numerals and the object counted. This contrasts markedly with Latin writing, employed in all fields of linguistic expression. There is no evidence that at any moment the *tlacuiloque* intended to generate texts in the Spanish manner.<sup>28</sup>

If the indigenous *tlacuiloque* are to be seen to have been stimulated to a more frequent utilization of phonetic signs by the influence of an alphabetic writing system, one would have expected this behavior to be more randomly spread, independent of the scribal school (apparently by chance only the scribes of Tetzaco succumbed to the influence, and not those of Tenochtitlan-Tlatelolco). And it should have been independent as well of the content being transliterated, and yet it is not. For example, the Codex Tlatelolco, composed around 1560, a document very influenced in its pictorial component by the representational conventions of the Spanish—perspective in the depiction of architectural elements, shading in the figures, poses in the European manner (Robertson 1994:165)—shows an elevated use of phonetic signs only in the transliteration of Spanish names, where it is more difficult to use

<sup>28</sup> The pictographic *catecismos testerianos* were works produced by, or on behalf of, the Spanish missionaries for purposes of converting the natives, and do not represent the indigenous system of traditional writing.

traditional logograms in rebus. But indigenous names continue to be written according to custom, without any perceptible increase of phonetic signs. Thus, the indigenous governor of Tlatelolco, who adopted the Spanish name of “Don Diego de Mendoza” and who appears seated in the traditional manner on top of the toponym of Tlatelolco, shows his Spanish name as **to-e-ko-te-TOSA**, *To[n] Eko te [Men]tosa*—or perhaps *To[n] [Ti]eko te [Men]tosa*—written with five signs, of which four are syllabic. But at the same time the toponym below is shown in the traditional manner with the logogram **TLATEL**, *Tlatel[olko]*, without phonetic complements and without the indication of the *-co* ending of the locative suffix, in the manner of the Tenochtitlan-Tlatelolco school (Figure 11). In fact, the toponym of Tlatelolco written as **TLATEL**, and others present in the document, such as **KOL**, *Koll[wa'kân]* “Colhuacan” and **WEXO-TZIN**, *Wexōtzin[ko]* “Huexotzinco,” appear in exactly the same form as they did during the Prehispanic era in the same school. The scribe of the Codex Tlatelolco never felt impelled to write the name of his city with anything more than the logogram **TLATEL**, as he always would have done in his scribal school.

Therefore (and this is an important point), we must not even take the more phonetic transliterations of Spanish names as an example of influence or modification of the system, but rather as a testament to the vitality and efficacy of Nahuatl writing, which applied its own resources to a new situation. The Maya scribe of the Dresden Codex who used glyphic sequences composed entirely of syllabic signs—infrequent in personal names even in Maya writing—to write the foreign Nahua names Tlahuizcalpantecuhli, Xiuhtecuhli, and Cactonal as **ta-wi-si-ka-la**, **xi-wi-te**, and **ka-ka-tu-na-la** (see Whittaker 1986; Taube and Bade 1991; Grube, in Schele and Grube 1997) was not changing his writing system, but simply applying the possibilities which it offered to a new necessity. Similarly, the Nahua *tlacuiloque* were applying the possibilities offered by their writing system to a new challenge—but without modifying it in any way. All of the signs used by the *tlacuilo* of the Codex Tlatelolco already existed in the repertory of Nahuatl signs, with the same function and reading value. The readings of Spanish names like **KAL-e**, *Kale[ko]* <gallego> in the Codex Osuna, or **mi-MIK-e**, *Mikel[l]* <miguel diaz> and **OLO-IX-wa-ka**, *Oloix Waka* <luys vaca> in the Memorial de los Indios de Tepetlaoztoc, or the interesting series identified by Galarza (1979) in the Codex Mexicanus—**to-mi-ko**, *Tomil[n]ko* “Domingo,” **pa-si-ko**, *Pa[n]si[s]ko* “Francisco,” **ko-me**, *Ko[s]me* “Cosme”—are perfectly valid examples of the indigenous writing system, in the same way

that the transliterations of Greek and Roman names on late Egyptian monuments—**ptolmês**, “Ptolemy,” **alksantrs** “Alexander,” **antêkns** “Antigonus,” **kêsr/ksrs** “Caesar,” **tomtêns** “Domitian”—continued to be perfectly valid examples of Egyptian writing (and precisely the origin of its decipherment, as seems to have been forgotten).

In fact, taking heed of the continuity of the features which I have previously enumerated, and in direct contrast to what has come to be affirmed, if we want to define in any manner the system of Nahuatl writing in the sixteenth and seventeenth centuries, it is as a consummately *conservative* writing system. Even if, given the very limited progress in the decipherment of the writings that came before Nahuatl in the region, we can only speculate about their possibly logosyllabic character, the other features—arrangement of signs in an emblem, and writing specialized by theme—can be recognized in the Epiclassic writings of the area, as in Cacaxtla, Xochicalco, or Teotenango, and even going back to Teotihuacan of the Classic Period, the ultimate source of the physiognomy which the writings of all of western Mesoamerica would come to manifest for more than fifteen centuries. This strong conservatism (which, after all, is characteristic of writing systems) would be maintained up until the last examples of traditional Nahuatl writing. Just as Egyptian hieroglyphic in late times coexisted first with the Greek alphabet and then with the Latin and only died out with the disintegration of the old Egyptian culture in the Roman Late Imperium, Nahuatl writing coexisted with Spanish Latinate and would gradually disappear during the sixteenth and seventeenth centuries, but not owing to a presumed inferiority or in the face of a hypothetical inability to compete with the new alphabetical writing, but as a consequence of the progressive disintegration of the cultural universe that sustained it.

### The incorporation of Tetzcoacan documents in the Nahuatl glyphic corpus: Implications for decipherment

The writings of the Tenochtitlan-Tlatelolco tradition have always been considered the most representative of the Nahuatl system. The descriptions of this system have been largely based on the writings of this group, more specifically on one of these, the Codex Mendoza. The undeniable expressive beauty of this codex, with the certain line of its strokes, vivid colors, comprehensive subject matter, abundant examples, and similarly abundant glosses in Latin characters, has made it the quintessential document for the study and exemplification of Nahuatl writing. Studies which have sought to analyze and exemplify the writing system, its signs

and scribal resources, have used this manuscript exclusively or nearly so (see Manrique 1989; Prem 1992; Galarza 1979b, 1996).

However, as we have seen throughout this work, the documents of the Tenochtitlan-Tlatelolco tradition are not uniquely representative of the Nahuatl writing system. They are not even the *most* representative, if this term implies the minimization or underestimation of the other equally important scribal traditions of Central Mexico. In spite of their undeniable importance, the isolated use that has been made of the written testimonies of the Mexica and specifically the Codex Mendoza in the exemplification of the functioning of Nahuatl writing has come to present a mutilated and distorted image of the system, in that at times certain phenomena and scribal resources have been underestimated, while others, on the contrary, have been overinflated, contributing to the misunderstandings which are still maintained in this field regarding the character and function of the signs, the scribal resources, the orthographic conventions, and even the very categorization of the system and its situation within the general typology of writing.

From the excellent book on the history of decipherment by Maurice Pope (1999) we can infer the three conditions necessary for the successful decipherment of a writing system. These conditions are the knowledge of the language transcribed in the texts, the existence of a sufficient corpus of writings, and a point of departure, normally a biscript or bilingual text, or else a semantically controlled context—for example, identification in the texts of known anthroponyms or toponyms. In the case of Egyptian hieroglyphic writing, the three elements were present: through Coptic admittance was gained to the ancient Egyptian language; the corpus of texts was made up of thousands; and there were available, moreover, several biscripts, of which the Rosetta stone is the best known. For the decipherment of Maya writing, the three requirements were also at hand: access to the language of the inscriptions could be gained through Colonial lexicons and grammars as well as the modern Mayan languages of the Lowlands; a sufficient corpus of some thousands of texts was known; and a point of departure was available in the “alphabet” of Landa and numerous semantically controlled contexts, such as the names of the months, or texts associated with scenes in the Postclassic codices.

Theoretically, the decipherment of Nahuatl writing can count on the same three requirements: the language, Nahuatl, is well known; the corpus of texts is sufficient, being made up of an ample collection of writings which together add up to several thousand glyphic compounds; there exist as well numerous bis-

cripts comprised of abundant glosses in Latin characters associated with glyphic compounds, as well as numerous semantically controlled contexts (the majority transliterate anthroponyms and toponyms, which can often be checked against ethnohistorical sources). However, despite the presence of these requirements, 150 years after the start of the Nahuatl decipherment by Aubin, the system is still not understood in full. Proof of this can be seen in the frequent mischaracterizations of Nahuatl writing as *semi-writing* (Manrique 1989), *imperfect writing* (Prem 1992), *symbolic-phonetic-grammatical-expressive writing* (Galarza 1996), and *writing in the broad sense* (Boone 2000). None of these labels is employed in describing the typology of other writing systems. All, including (let us not forget) Maya, are purely termed logosyllabic/hieroglyphic, syllabic, mixed alphabetic-syllabic, or alphabetic. The general posture which has been adopted in the field of Nahuatl writing studies with respect to variations between the different written testimonies and consideration of an important group of documents as spurious or not representative of the system (and here we have to include not only the Tetzcoacan documents but also the latest ones like the Codex Mexicanus) has led to the practical exclusion of a relevant part of the corpus of texts susceptible to analysis. On the other hand, the tendency of the specialists of the discipline to center their investigations on one or some few documents of the total has impeded the study of Nahuatl writing from achieving a necessary perspective. Both factors have conspired to artificially limit the otherwise sufficient corpus of texts available for decipherment, bringing it about that only partial results have been attained in the comprehension of the functioning of this system of writing.

We can extract interesting theoretical applications and methodologies for the decipherment of Nahuatl writing from the successful decipherment of Maya in recent decades (see Coe 1992; Houston 2000). It is perhaps with total justice that Nicholson (1973:1) wrote at the beginning of the seventies of the last century that Nahuatl was the best known of indigenous Mesoamerican writings—at that time Maya epigraphers found themselves immersed in a fierce debate over the extent and nature of phoneticism in their writing—but now, thirty years after Nicholson’s article, the situation has changed radically. Maya writing has been deciphered almost in its entirety, while specialists still debate the extent and nature of Nahuatl phoneticism. Maya epigraphers have the advantage of considering their corpus as a whole, independent of medium and time period. Neither the long texts of Palenque (the Temple of Inscriptions alone contains as many glyph blocks as the Codex Mendoza) nor the thousands of glyphs

of the Postclassic Maya codices would have sufficed for decipherment if Maya epigraphy had been based on these alone. Experience has demonstrated that, on occasion, the key combination which guaranteed the decipherment of a phonetic sign, or the example of phonetic complementation or complete syllabic substitution that provided the evidence for the reading of a logogram, could be found only in a secondary or minor text. Whereas in alphabetic writing the majority or even the entirety of the signs of the respective alphabet can appear even in a short text, in logosyllabic writing, with substantially more extensive sign repertoires than alphabetic, there is a high probability of signs not being represented in any given text or document, no matter how long it might be. For example, the Madrid Codex, the longest Maya hieroglyphic manuscript, with almost three thousand glyph blocks (five times more than the Codex Mendoza), does not contain all the logograms and phonograms of the Maya signary. To take an example, and dealing only with phonograms, the syllables **be**, **cho**, **ha**, **he**, **ho**, **hu**, **k'e**, **pu**, **t'u**, **wo**, **xi**, **xo**, **ye**, **me** and **tz'e**, do not appear in the entire manuscript. The appearance of some of these syllables is rare even in the corpus of thousands of texts from the Classic Period.

For this same reason, given the character of Nahuatl writing—logosyllabic, with an extensive signary—the Codex Mendoza does not contain all the signs of the writing system. Many of those that do appear do so only a single time; others repeatedly occupy the same position. The Codex Mendoza does not provide all of the contexts in which a sign can appear: if a logogram, in its primary function or in rebus, with or without phonetic complements; if a phonogram, representing a sequence of phonemes in a composition, or as a phonetic complement to a logogram. And it is precisely these different contexts which are required to correctly establish the reading value and function of a sign. To restrict, therefore, the search for information to a solitary document—including one with the characteristics of the Codex Mendoza—or a reduced group of written testimonies that show the same characteristics, means condemning the study of this writing to failure at the very outset and obtaining results of limited scope—which is just what has occurred.

It is precisely the variations within the system and the multiple cross-references that are most informative for detecting behaviors like phonetic complementation and phonetic substitution, which are the basis for the decipherment of a writing system of this kind. Taking the illustrative case of Maya writing, in Chichen Itza the name of the Maya deity *K'awiil* is written on at least fourteen occasions: six as **K'AWIL-la**, two as **K'AWIL-**

**wi-la**, one as **k'a-K'AWIL-la**, and five as **k'a-wi-la**. The word *otoot* "house" appears written at least twenty-four times: three as **yo-OTOT-ti**, sixteen as **(y)o-to-ti**, once as **yo-TOT**, and four as **yo-TOT-ti** (this last manner of writing "house" in rebus with the logogram **TOT**, a type of bird, is peculiar to Chichen Itza). These proportions are not typical of the corpus of Maya glyphs; in truth, it is just the opposite, in that outside of Chichen Itza, in the rest of the Maya cities, the name of the same deity *K'awiil* appears written in the majority of cases as **K'AWIL** or as **K'AWIL-la**, rarely as **K'AWIL-wi-la** and never, as far as I know, as **k'a-wi-la**. As regards *otoot*, it is mostly written as **yo-OTOT** or **yo-OTOT-ti**, very rarely as **yo-to-ti** (most frequently in northern Yucatan). We could say the same about the word *k'ahk'* "fire," written in the majority of cases at Chichen Itza as **k'a-k'a** and less frequently as **K'AHK'**, **K'AHK'-k'a**, or **k'a-K'AHK'**, as distinct from the rest of the Maya Lowlands, where the proportion is exactly the reverse. At the same time, the canonical disposition of signs in glyph blocks is subverted at Chichen Itza, where the scribes do not always respect the limits of the words by making them coincide with the separation between glyph blocks, instead running them together on many occasions.

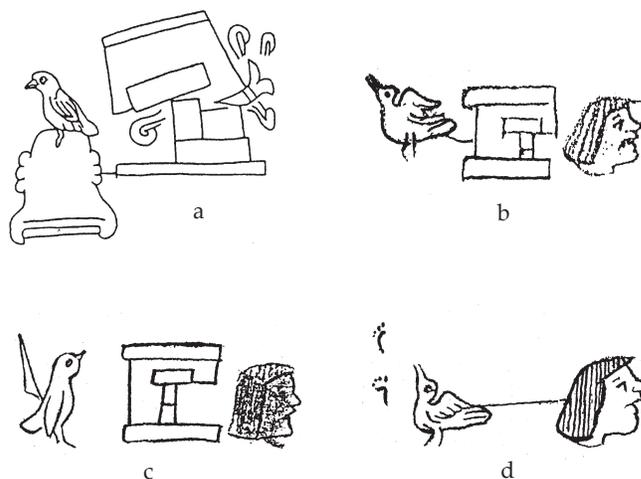
This particular, and of course *more phonetic*, way of writing at Chichen Itza was carried out entirely within the realm of Maya hieroglyphics, utilizing at all times the same repertory of signs, the same rules of transcription, and the same scribal resources. The texts of Chichen Itza, therefore, are to be understood as the testimony of a regional school of scribes of marked personality—who favored compositions of greater phonetic transparency—a school of which we have scant notice during a brief period of time centered on the second half of the ninth century AD. If, as has been done with the corpus of Tetzcoco, the texts of Chichen Itza had been questioned as spurious and unrepresentative of Maya writing, information of consummate value would have been lost, and quite possibly the evidence for reading several signs of the writing system would have been spurned. It was precisely the substitutions at Chichen Itza in which the name of the deity *K'awiil* and the words for "house" and "fire," in addition to appearing in their statistically more common forms, are written phonetically—as **k'a-wi-la**, **(y)o-to-ti**, and **k'a-k'a**—that offered in due course the final evidence for the reading of their respective logograms **K'AWIL**, **OTOT**, and **K'AHK'**, contributing the definitive proof for their decipherment (for *K'awiil* and *otoot*, see Stuart 1987; for *k'ahk'*, see Kelley 1962).

Throughout this work we have seen how the differences between the Nahuatl writing traditions consist-

ed in a greater or lesser use of resources like phonetic complementation or phonetic substitution, and not that the scribes of one tradition or the other utilized a different list of logograms, a different repertory of phonetic signs, a different catalog of scribal resources, or different conventions of orthographic transliteration—in short, a different writing system. We have been able to prove that the *tlacuiloque* of the different schools always operated within the margins of a single system of Nahuatl writing. We have observed as well that both the general and the defining characteristics of the system were maintained unaltered over time, and there is no evidence of external influence. If my argument is correct and there was no difference in the type of writing employed in the different written testimonies, then it is methodologically appropriate to use *whichever* written testimony contains Nahuatl writing, regardless of its provenance or time period, in order to study and describe the functioning of the system. The implications are very important. The recovery of a complete corpus of written testimonies in Nahuatl, with the inclusion of the different traditions, principally those documents of the Tetzocan school but also others—the schools of Huexotzinco, Tlaxcalla, and Cuauhtinchan—multiplies exponentially the examples susceptible to study. Thus, the study of scribal resources, like rebus or phonetic complementation, has available to it a greater number of examples for its categorization, characterization, and location within the rules of the system, and we can finally make use of a sufficient number of cross-references in order to observe the behavior of the same sign in different contexts and positions, thereby obtaining its reading value and function in the system as a logogram or a phonetic sign. Only thus can the available corpus of Nahuatl written testimonies definitely be said to qualify as *sufficient*.

### Considering the entire corpus of Nahuatl writing

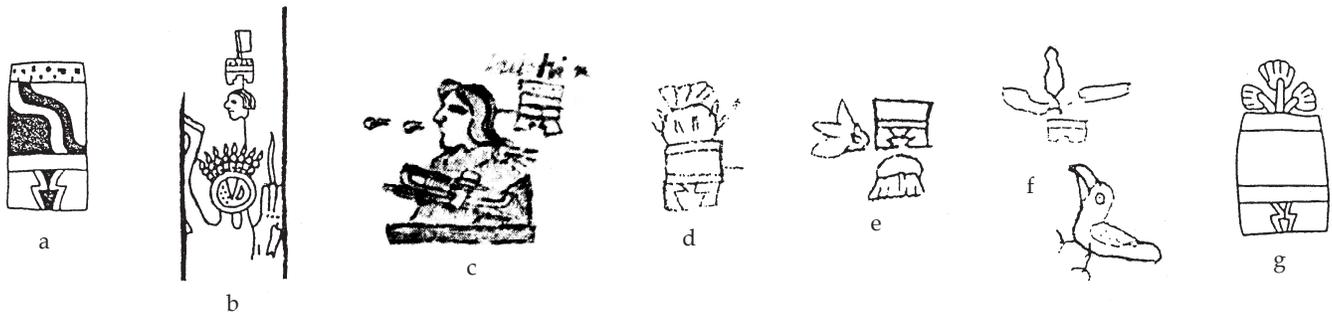
The decipherment of Nahuatl writing is still a work in progress. While we can gain access to the correct content of many glyphic compounds with the aid of the associated glosses, established bases for systematization are still lacking. The pending work depends on the identification of the repertory of signs, their reading values and functions, the identification and explication of the mechanisms that govern the scribal resources, and the orthographic conventions employed in Nahuatl writing. For that it is essential to adopt the methodology of decipherment that has been employed successfully (and has been amply confirmed) with other writing systems of the Old World and New. In the case of Nahuatl we have the invaluable aid of glosses to establish a first association between signs and sequences



**Figure 12.** The logogram **WILO** “dove”: (a) **WILO-TEPE**, *Wilōtepe[k]* <gloss: huilotepec.pu<sup>o</sup>> (CMDZ 15v) (after Berdan and Anawalt 1997); (b) **WILO**, *Wilō[tl]* <gloss: huilotl> (CSMA 48v); (c) **wi-WILO**, *Wilō[tl]* <gloss: huilotl> (CSMA 5r); (d) **WILO-o**, *Wilō[tl]* <gloss: huilotl> (CSMA 58v) (b-d, after Williams 1997).

of phonemes. Moreover, the highly iconic character of the signs permits the justification in many cases of the ostensible association between a sign and its reading value. But we must complete the analysis. To take one case, we can all agree that the hand sign always corresponds to /ma/ sequences in the glosses, such that this may be its reading. And we can all agree as well that there exists a direct relationship between the reading value /ma/ and the fact that in Nahuatl “hand” is *mā-itl*, as correctly observed by Aubin (1849:36). But there still remains the crucial question of establishing the *function* of the hand sign within the system; that is to say, whether the hand sign is the logogram **MA** “hand” or the phonetic syllable **ma**. To read the glosses and identify the objects of the physical world to which the graphic signs refer does not mean that we have finished the work of decipherment, no more so than reading the Greek inscription of the Rosetta stone and gaining access to the content of its glyphic texts signifies that we have read Egyptian writing. Only with the help of the entire corpus can we truly understand the functioning of Nahuatl writing, systematize it, and finish the work of decipherment begun one hundred and fifty years ago by Aubin.

I am going to present two examples of the decipherment of signs, a logogram and a phonetic syllable. The examples were chosen to be paradigmatic, first, of the method which I have followed and which I propose that my colleagues follow (see Lacadena n.d), and second, because both cases illustrate the necessity of working with the corpus of Nahuatl texts in its entirety.



**Figure 13.** The drum sign: (a) **TE-WEWE**, *Tewēwē[k]* <gloss: tehuehuēc.pu<sup>o</sup>> (CMDZ 28r) (after Berdan and Anawalt 1997); (b) Tlachahuepan (CCRZ Trecena 8) (after Dibble 1981); (c) Huetzin (CXOL 3) (after Dibble 1996); (d) <nochhuēt> (CSMA 6v); (e) <tlahuel> (CSMA 42r); (f) <tohuexiuh> (CSMA 50r) (d-f, after Williams 1997); (g) **AWEWE-we**, *Awēwē[pan]* <gloss: ahuehuepan.pu<sup>o</sup>> (CMDZ 24v) (after Berdan and Anawalt 1997).

### The logogram **WILO** “dove”

To take an example of how we can establish the reading of a sign using cross-evidences provided by the corpus of Nahuatl texts, we begin the discussion with a logogram, **WILO** “dove.” It appears on one occasion in the Codex Mendoza in a compound whose associated gloss is <huilotepec.pu<sup>o</sup>> (CMDZ 15v) (Figure 12a). Given that the compound is composed of two signs, the second of which is the hill sign **TEPE**, we can reasonably conclude (and scholars have in fact concluded) that the first sign, a type of bird, must correspond in some manner with the /huilo/ sequence of the gloss (Barlow and MacAfee 1982:21). In fact, there exists an entry in Nahuatl, *huilō-tl* “dove,” which is appropriate for the type of bird portrayed. In accord, therefore, with the indications provided by the associated Latin gloss and the iconographic identification, **WILO** “dove” is quite probably the reading of the bird sign in the glyphic compound. However, the Latin gloss and the iconographic identification are only two of the three possible proofs that we can use when it comes to establishing the secure reading of a logogram. What proof do we really have that there was a sign with the value **WILO** “dove”? To the first two indications we must add script-internal evidence (the most important of the three) consisting in the documentation of examples where the logogram is complemented phonetically in initial and/or final position, or has been completely substituted for by phonetic signs. We are looking for evidence of phonetic signs associated with the logogram, or for its complete transliteration by means of phonetic signs, independent of its iconographic identification (which could be incorrect) and the gloss (which also could be mistaken). In this case, if we limit ourselves to the isolated example of **WILO** in the Codex Mendoza, we cannot find the answer to the question. However, outside of this document are the proofs that we seek, because we encounter examples of the same logogram associated with glosses which transcribe the sequence /wilo/. In the Codex Santa

María Asunción, of the school of Tetzaco, we find this logogram on nine occasions also associated with the gloss <huilotl>, a personal name: in three of the nine occasions, the presumed logogram **WILO** “dove” appears without phonetic complements, as in the Codex Mendoza; in the six remaining occasions, happily, it appears three times with initial phonetic complementation in **wi**, and three times with final complementation in **o**:

**WILO** *Wilō[tl]* <gloss: huilotl> (CSMA 48v; 51r; 62r)

**wi-WILO** *Wilō[tl]* <gloss: huilotl> (CSMA 5r; 13v; 23r)

**WILO-o** *Wilō[tl]* <gloss: huilotl> (CSMA 58v, 71v, 75r),

which permits us to verify that **WILO**, “dove,” is the *secure* reading of the logogram (Figure 12b-d).<sup>29</sup>

<sup>29</sup> A brief note on the syllable **wi** that I am discussing: the examples of this sign have in common the presence of a sequence of /wi/ phonemes in the associated glosses, as in *Huihuaxtzin* (CXOL 1, *vid.* Dibble 1981:27), <oquihui> (CSMA 5r, 5v, 13v, 14r, 23r, 14v), <mahuiz> (CVRG 38v), or <huilo> (CSMA 5r; 13v; 23r). As Aubin (1849:34, Note 3) has previously noted, the sign represents a digging stick, *uictli* “spade, hoe” in Nahuatl (Siméon 1992:754), whereby we can establish a primary association between /wi/ and the Nahuatl name of the object which it represents. The value in the compound *uictli* is *uic-*, but there isn’t a single example of the sign transliterating the phoneme sequence /wik/, only /wi/, nor does it signify a “digging stick.” This behavior suggests therefore that we should not think in terms of a logogram **WIK** but rather a syllable **wi**. The confirmation that it is a phonetic sign, the syllable **wi**, comes from the fact that it works as a phonetic complement in **ma-wi-WITZ**, *Mawitz* (vowel length uncertain) <gloss: mahuiz> (CVRG 38v) and **wi-WILO**, in the aforementioned examples from the Codex Santa María Asunción. As regards the well known road sign **o** (Aubin 1849:34), we need not discuss its derivation in order to confirm its function as a phonetic complement in compounds like **o-OK** (CMDZ 23r), **XIKO-ko-o**, *Xiko’* <gloss: xico> (CSMA 56v), and also, of course, this **WILO-o** which we are discussing. We can affirm yet again that the scribes of both the Tenochtitlan-Tlatelolco and Tetzaco schools made use of the same phonetic sign, the road sign **o**, in order to complement logograms beginning or ending with /o/. The digging-stick sign **wi** does not appear in the Codex Mendoza, nor does any other sign serve its function (see the Nahuatl syllabary, this issue p. 23).

### The syllable *we*

In the Codex Mendoza appears a sign recognized for some time now as the *huēhuētl* “upright drum.” The glyphic compound consists of a sign for a drum with stone markings (Figure 13a). The associated gloss is <tehuehuc.pu<sup>o</sup>>. Given the meaning of this toponym, “place of the drum or *huēhuētl* of stone,” and given the clear recognition of the part of the compound that represents the sequence /te/ “stone,” we might conclude that the drum sign is a logogram with the value **WEWE**; in this fashion:

**TE**<sup>30</sup>-**WEWE** *Tewēwē[k]* <gloss: tehuehuc.pu<sup>o</sup>>  
(CMDZ 28r).

The same **WEWE** value appears to obtain in the Codex Osuna, where we find a glyphic compound with the same drum sign, associated with the gloss <huehuetocan / çe encomendero>, and in the Codex Xolotl, where it would form part of the name Huehuētlilpic (Dibble 1996:110).

This same drum sign appears again in the Codex Xolotl and in other Nahuatl documents, like the Mapa Tlotzin, the Codex en Cruz, and the Codex Santa María Asunción. The examples in which it appears are associated directly or indirectly with names like Tlacahuepan<sup>31</sup> (CCRZ Trecena 8), Huetzin<sup>32</sup> (CXOL 3), <nochhuētl> (CSMA 6v, 15v, 25r), <tlahuel> (CSMA 42r, 44v, 46v), or <tohuexiuh> (CSMA 50r, 61r, 74r) (Figure 13b-f). However, in these cases, when we proceed to the transcription and transliteration of the glyphic compounds, a value for the drum sign as **WEWE** does not work, given that in none of the examples cited would the hypothetical sequences \***TLAKA-WEWE-pa**, \***WEWE**, \***NOCH-WEWE**, \***tla-WEWE-EL**, or \***to-WEWE-XIW** correspond to the readings Tlacahuepan, Huetzin, <nochhuētl>, <tlahuel>, or <tohuexiuh> (one of the characteristics of logograms in that they always maintain their integral reading value in transliteration, even when functioning in rebus).<sup>33</sup> The value of **WEWE** for the drum sign in these cases is therefore impossible.

All of these examples share the phoneme sequence /we/. To allot the drum sign a reading value of /we/ in place of /wewe/ would solve the problem. Therefore we can hypothesize that in addition to a logographic value of **WEWE** “drum, *huēhuētl*”—or even instead of it—the drum sign has a second value as a phonetic syllable **we**. It cannot be a logogram **WE** because this has no meaning, a defining feature of logograms. The only way to be certain conclusively that the drum sign is a phonetic syllable with the value **we** is to identify an example where it acts as a phonetic complement to some logogram beginning or ending in /we/, given that

only phonograms can act as phonetic complements, this being one of their functions in writing systems. In this case, the conclusive proof which we require can be found in the Matrícula de Tributos and the Codex Mendoza, where a second example in which the drum sign occurs shows it united with the sign of a tree (Figure 13g). The gloss associated with the glyphic compound is <ahuehuepan.pu<sup>o</sup>>. The tree sign possibly has the value **AWEWE** (Barlow and MacAfee 1982:10) *ahuēhuē-tl* “cypress, *ahuehuete*” (Karttunen 1992:8; Siméon 1992:46), and the drum sign, with the /we/ value suggested by the Tetzcoacan documents and confirmed by these Mexica collocations, is the phonetic syllable **we** acting as a final phonetic complement on the logogram<sup>34</sup> in this fashion:

**AWEWE-we** *Āwēwē[pan]* <gloss: ahuehuepan.pu<sup>o</sup>>  
(CMDZ 24v)

and, therefore, in the cited Tetzcoacan examples,

**TLAKA-we-pa**, *Tlākawepa[n]* “Tlacahuepan”  
(CCRZ Trecena 8)

**we**, *We[tzin]* “Huetzin” (CXOL 3)

**NOCH-we**, *Nōchwē[tl]* <gloss: nochhuētl>  
(CSMA 6v, 15v, 25r)

**tla-we-EL**, *Tlawēl* <gloss: tlahuel>  
(CSMA 42r, 44v, 46v)

**to-we-XIW**, *Towexiw*<sup>35</sup> <gloss: tohuexiuh>  
(CSMA 50r, 61r, 74r).

Possibly the scribe of the Codex Mendoza felt it necessary to phonetically complement the logogram **AWEWE** given that—as distinct from other logograms of names of trees written in the document (**AWAKA** “avocado,” **WAX** “*guaje*, gourd,” **WEXO** “*huejote*, willow, **TZAPO** “*zapote*, sapodilla”), which are clearly individualized—nothing identifies it clearly as a cypress or *ahuehuete*; instead, it is similar to the generic form of the tree sign **K<sup>w</sup>AW** / **k<sup>w</sup>a?**, with which it may otherwise have been confused.

<sup>30</sup> The stone-glyph is a polyvalent sign with the value of a logogram **TE** “stone” and phonogram **te**. In this case it may possibly function as a logogram, and I transcribe it as such.

<sup>31</sup> For the identification of this character I follow Dibble (1981:32).

<sup>32</sup> For the identification of this character I follow Dibble (1981:49).

<sup>33</sup> For example, the logogram **WILO** “dove” discussed earlier, even were it to function as a rebus, would maintain its complete reading value as **WILO** in transliteration, and could not be used for /wi/ or /wil/ alone.

<sup>34</sup> For a discussion of CV phonetic signs originating in words of C<sub>1</sub>V<sub>1</sub>C<sub>1</sub>V<sub>1</sub>- structure—*nene-tl* → **ne**, *tōtō-tl* → **to**, *huahuan(a)* → **wa**, *huēhuē-tl* → **we**—see Lacadena n.d.

<sup>35</sup> Vowel length uncertain.

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# A Nahuatl Syllabary

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This syllabary of Nahuatl signs first appeared in "Longitud Vocálica y Glotalización en la Escritura Náhuatl," by Alfonso Lacadena and Søren Wichmann, a paper presented at the Primer Simposio Europeo sobre Códices del Centro de México, October 28-30, 2004, Universidad Complutense de Madrid, available online at <http://email.eva.mpg.de/~wichmann/longitud2.pdf>.

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# One Hundred and Fifty Years of Nahuatl Decipherment

Marc Zender

Peabody Museum of Archaeology and Ethnology, Harvard University

*Why do we stand now almost at the same point as in 1850?*

—Daniel Garrison Brinton (1886:356)

Although written over a century ago, Brinton's lament on the meager results obtained in Nahuatl decipherment since the groundbreaking work of Joseph Marius Alexis Aubin is still relevant today. Aubin's monumental *Mémoires sur la peinture didactique et l'écriture figurative des anciens Mexicains*, first published in 1849, included the lexical identification of over a hundred Nahuatl signs, the recognition of alternating logographic and phonetic spellings of the same names (see below), and a detailed study of the glyphic compounds in the Codex Vergara, the Mapa Tlotzin, and the Mapa Quinatzin. It remains even today a critical reference for those interested in Acolhua history, for Aubin reproduces numerous examples of glyph compounds from the Codex Vergara (otherwise unpublished) and also includes five color plates comprising the whole of the remarkable Mapa Tlotzin (Figures 1 and 10) and two thirds of the Mapa Quinatzin.

Perhaps this edifice seemed too imposing to add to, or perhaps Brinton (1886:356) was correct that scholars of his era simply lacked sufficient training in the Nahuatl language or were not sufficiently familiar with "the forms, the methods, and the variations" of Nahuatl writing to build constructively on Aubin's foundation. But whatever the reason, Aubin's insights remained to be systematized into a concrete account of script typology and scribal practice, much less considered in the light of other hieroglyphic writing systems. Thus, it was with some justification that Brinton (1886:347) wrote: "[I]t must frankly be confessed that the results obtained ... have been inadequate and unsatisfactory. We have not yet passed the threshold of investigation."

Yet Brinton concluded his discussion on a positive note, citing the recent discovery of 'determinative' or 'complementary' signs in Nahuatl writing by Zelia Nuttall (1888, reprinted in this issue).<sup>1</sup> In brief, Nuttall had recognized that certain phonetic signs served to complement or disambiguate the reading of associated logographs (e.g., **a-AKOL** for *āhcōl-li* "shoulder, upper arm" and **te-TEMO** for *temō* "to descend").<sup>2</sup> This pattern is well known in other hieroglyphic scripts, and is usually referred to as 'phonetic complementation' (Gelb 1963:104-105). Although incorrect on a few points of detail, Nuttall's article was nonetheless the first inkling of a method by which native sign categories

such as logographs (**AKOL**, **TEMO**) and phonetic signs (**a**, **te**) could be discerned. Had someone with a background in comparative writing systems and some knowledge of the Classical Nahuatl language followed up on Nuttall's discovery, Nahuatl hieroglyphic writing may well have been deciphered half a century or more before the Maya script.

It is only now, on the eve of the sixteenth decade since Aubin's *Mémoires*, that the necessary work of systematization has at last begun. With the publication of this issue of *The PARI Journal*, Alfonso Lacadena presents the results of more than a decade of systematic investigation into Nahuatl writing. Drawing on his intimate experience with Maya decipherment, as well as a background in comparative writing systems and the Nahuatl language, Lacadena assesses the bewildering list of Nahuatl sign types proposed during the past hundred years—pictographs, ideographs, semasiographs, determinatives, and so on—and concludes that there are really only two types of sign to contend with in this system: logographs and phonetic signs. Logographs (word signs) carry both sound and meaning, and take the form of lexical roots in the language (e.g., **KOA**, "snake," most familiar in its dictionary form *cōā-tl*). They evidently do not convey any information about vowel length or glottalization which, given its importance to the language, must therefore have been supplied by the knowledgeable reader (Lacadena and Wichmann 2004). Phonetic signs convey sound only; they are CV (consonant + vowel) or V (vowel only) in shape, and include a number of well-known signs such as **a**, **pa**, **me**, **te**, **o**, and **ko**. (For illustrations of these signs as well as a complete list of deciphered syllables, see Lacadena's Nahuatl syllabary, this issue.) As with phonetic signs in Maya writing, they can either appear in groups to 'spell' words (e.g., **ko-a** > *kōā[tl]*) or they can be employed as phonetic complements to logographs (e.g., **ko-KOA** > *kōā[tl]*), disambiguating or otherwise reinforcing their reading.

<sup>1</sup> Brinton and Nuttall were both presenters at the August 1886 Meeting of the American Association for the Advancement of Science in Buffalo, New York. Thus, just as Brinton was lamenting the lack of progress in Nahuatl decipherment, Nuttall was taking the first steps beyond Aubin.

<sup>2</sup> As Nuttall acknowledges, Manuel Orozco y Berra (1880:1:5) had made the same observation for **te-TEMO** several years earlier. Yet he deduced no additional examples, and Nuttall was the first to comprehend the radical significance of phonetic complements for further decipherment.



Figure 1. Opening portion of the Mapa Tlotzin depicting the Chichimec origins and descent of the Acolhua dynasty of Tetzoco. In the foreground, three couples—Xolotl (12), his son Nopaltzin (14), his grandson Tlotzin (16), and their wives (13, 15, and 17, respectively)—travel through a landscape replete with deer, snakes, and cacti. In addition to their name glyphs, a full figure toponym of Tzinacanoztoc (1), glyphic **TZINAKAN-OSTO**, *tzinakanōstō[k]*, “within the bat cave,” identifies the birthplace of the famous Acolhua *tlahtoani* Ixtlilxochitl (lithograph by B. Schmidt, after Aubin 1885:Plate 1).

The evidence for these assertions is abundant and indisputable, and Lacadena provides numerous illustrative examples in his two articles in this issue (Lacadena 2008a, 2008b). Here I wish only to call attention to Aubin's (1885:32-33) very early example of the substitution of syllabic **ko-a** for logographic **KOA** in the name Itzcoatl (*itz·cōā·tl*), "Obsidian Snake," in the Codex Vergara (Figure 2, a-b). More recently, Lacadena shows the same principle at work in several names in the Codex Santa María de Asunción:

5-KOA ~ 5-**ko-a**, *māk<sup>w</sup>ilkōā[tl]*, "Five Snake"  
(Figure 2c-d)

ITZ-KOA ~ ITZ-**ko-a**, *itzkōā[tl]*, "Obsidian Snake"  
(Figure 2e-f)

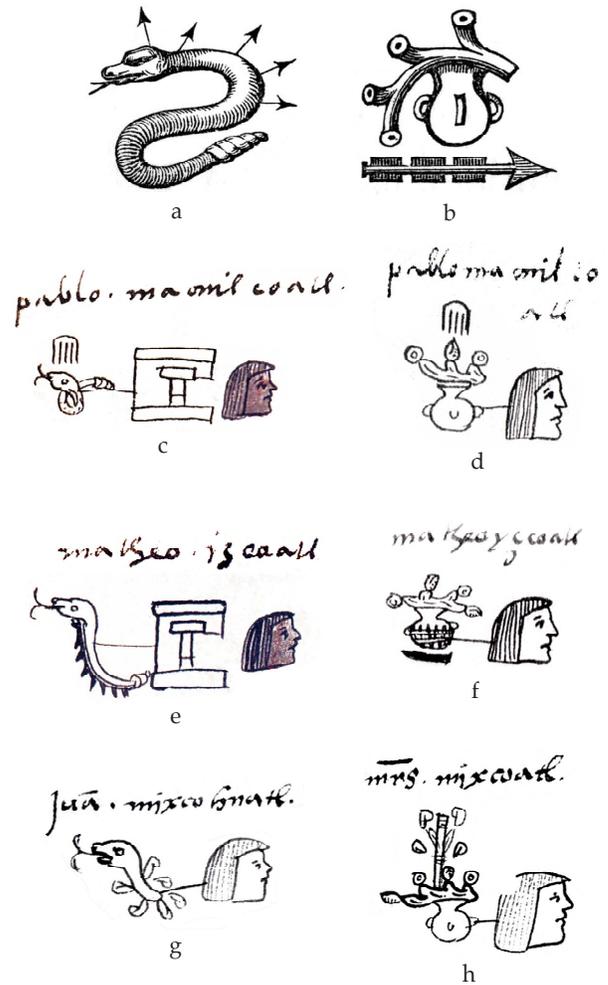
MIX-KOA ~ **mi-MIX-ko-a**, *mixkōā[tl]*, "Cloud Snake"  
(Figure 2g-h).

These substitutions occur in controlled contexts, associated with clear Nahuatl glosses in Roman script, and there can hardly be any other explanation but that **ko-a** (employing phonetic signs exclusively) and **KOA** (employing just the logograph) were equally acceptable spellings of this word (see also Thouvenot 1998:83-84). Yet to these interesting examples of substitution, we can also add an example of phonetic complementation:

**ko-KOA**, *Kōā[nān]*, "Snake Protector" (Figure 3).<sup>3</sup>

Here, only one *ko-* segment appears in the gloss, so the **ko** sign in the hieroglyphic spelling must play the role of a redundant phonetic complement, disambiguating the reading of an associated logograph. Thus, the entire paradigm of spellings involving logographs and phonetic signs can be seen in the examples collected above: **KOA/ko-KOA/ko-a** > *kōā[tl]* "snake." The similarity to Maya hieroglyphic spellings such as **KAN/ka-KAN/ka-nu** > *kān* "snake," could hardly be more striking.

Nor are such examples strictly confined to documents like the Codex Vergara and the Codex Santa María de Asunción. Phonetic complementation is abundantly documented, and present in the earliest

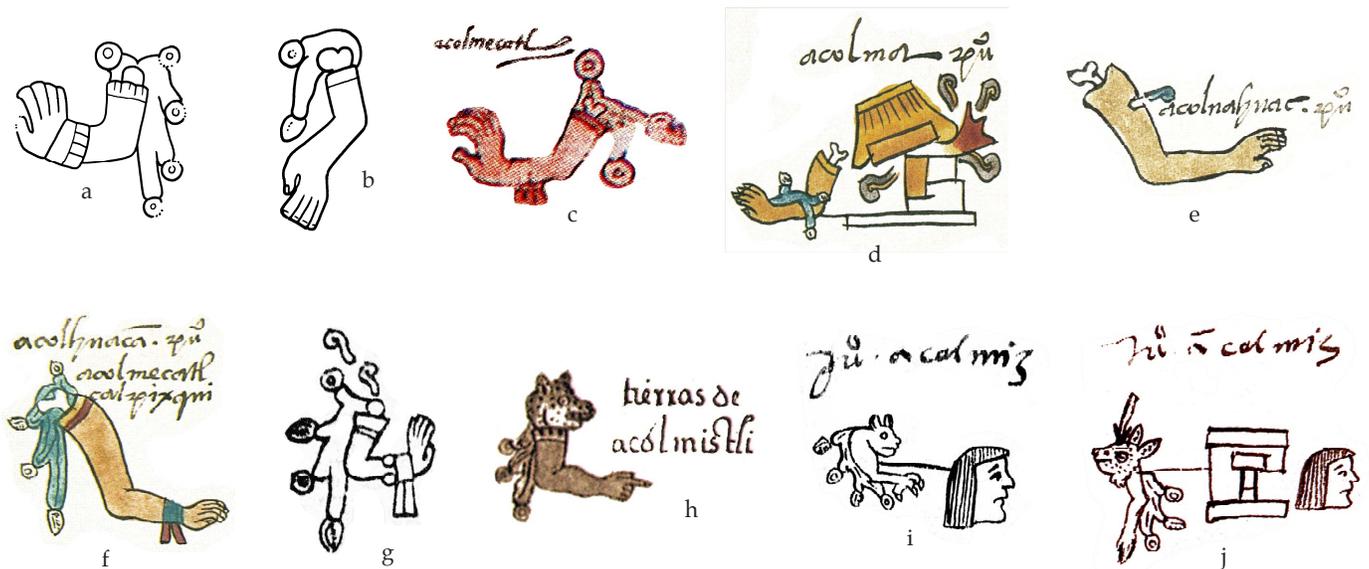


**Figure 2.** Logographic and phonetic spellings of Nahuatl *kōā[tl]* "snake": (a) ITZ-KOA, *itzkōā[tl]*, Obsidian Snake (after Aubin 1885:32); (b) ITZ-ko-a, *itzkōā[tl]*, Obsidian Snake (after Aubin 1885:33); (c) 5-KOA, *māk<sup>w</sup>ilkōā[tl]*, <gloss: pablo.macuilcoatl> (CSMA 1v); (d) 5-ko-a, *māk<sup>w</sup>ilkōā[tl]*, <gloss: pablo macuilcoatl> (CSMA 9v); (e) ITZ-KOA, *itzkōā[tl]*, <gloss: matheo yzcoatl> (CSMA 2v); (f) ITZ-ko-a, *itzkōā[tl]*, <gloss: matheo yçcoatl> (CSMA 19v); (g) MIX-KOA, *mixkōā[tl]*, <gloss: juā.mixcohuatl> (CSMA 30v); (h) **mi-MIX-ko-a**, *mixkōā[tl]*, <gloss: mrs.mixcoatl> (CSMA 29r) (c-h, after Williams and Harvey 1997).



**Figure 3.** Phonetic complementation: **ko-KOA**, *Kōā[nān]*, or **ko-KOANAN**, *Kōānān*, "snake protector" <gloss: p<sup>o</sup>.cohuānā> (CSMA 65v) (after Williams and Harvey 1997).

<sup>3</sup> This kind of abbreviation (i.e., **ko-KOA** for *kōā[nān]*) would not be at all uncommon, but given that the hieroglyph depicts three snakes instead of one (the norm for the logograph **KOA**), and that *nān-tli* can mean "protector" in addition to "mother" (Karttunen 1992:160), I suggest that this image of three snakes inside a large pot may represent the complex logograph **KOANAN** "snake holder (lit. snake protector)." As is well known, the Aztecs kept snakes in baskets and jars. That said, the scribe seems to have gone out of his way to make the pot resemble the **ko** syllable when presumably any lidded vessel would have sufficed. I therefore prefer to see this as a deliberate **ko-KOANAN** spelling, where the **ko** syllable acts as an initial phonetic complement to **KOANAN**.



**Figure 4.** Examples of the logogram AKOL with and without phonetic complementation: (a) a-AKOL, *ahkōl[mān]* or *ahkōl[wahkān]* (Tizoc stone); (b) a-AKOL, *ahkōl[mān]* or *ahkōl[wahkān]* (Motecuhzoma I stone); (c) a-AKOL, *ahkōl[mēkatl]*, <gloss: acolmecatl> (MTRB 5); (d) a-AKOL, *ahkōl[mān]*, <gloss: acolman.pu°> (CMDZ 3v); (e) AKOL-NAWA, *ahkōlnāwa[k]*, <gloss: acolnahuac.pu°> (CMDZ 17v); (f) a-AKOL, *ahkōl[wahkān]* or *ahkōl[mēkatl]*, <gloss: acolhuacā.p° acolmecatl calpixqui> (CMDZ 21v); (g) a-AKOL-NAWA, *ahkōlnāwa[k]* (Codex Boturini 16); (h) a-AKOL-MIS, *ahkōlmis[tli]*, <gloss: tierras de acolmistli> (CCOZ 5v) (after Valero 1994); (i) a-AKOL-MIS, *ahkōlmis*, <gloss: ju°.acolmiz> (CSMA 10r); (j) a-AKOL-mi-MIS, *ahkōlmis*, <gloss: ju°.acolmiz> (CSMA 2r) (i-j, after Williams and Harvey 1997).

examples of Nahuatl writing. For example, the aforementioned logograph AKOL (from *ahcōl-li* “shoulder, upper arm”) appears with a prefixed *a-* on both the Tizoc stone and the Motecuhzoma I stone (Figure 4, a-b), both demonstrably Precolumbian. Whether these refer to Huitzilihuitl’s conquest of Acolman or Itzcoatl’s conquest of Acolhuacan cannot yet be

determined,<sup>4</sup> but either identification requires that *a-* provide a redundant reinforcement of the AKOL logograph (Nuttall 1888; Dibble 1971:328; Nicholson 1973:4-5). This spelling is very conservative, appearing not only in the Matrícula de Tributos (Figure 4c) and the Codex Mendoza (Figure 4d, f), but continuing to be attested into much later documents, including the Codex Boturini (Figure 4g), the Codex Cozcatzin (Figure 4h), the Codex Santa María de Asunción (Figure 4i-j), and others too numerous to list here. Only in one example in the Codex Mendoza (Figure 4e) does it appear without its customary *a-* prefix, establishing that this is indeed a redundant phonetic complement in all of the other cases. It is important to note that the reduction of ambiguity was entirely a script-internal feature. That is, while prefixation in *a-* did indeed serve to clarify that the bent arm logograph was to be identified as AKOL—and not the similar arm signs MA, WA, or YO (see Lacadena 2008b)—it nonetheless left open whether the glyphs were meant to be transliterated as *ahkōl[mān]*, *ahkōl[mēkatl]*, *ahkōl[nāwak]*, *ahkōl[wahkān]*, or perhaps still other unattested abbreviations (Lacadena and Wichmann 2004). Context and a knowledgeable reader were obviously of great importance to the proper interpretation of Nahuatl glyphic spellings.

Perhaps surprisingly, considering that over a hun-

<sup>4</sup> I have elsewhere (Zender 2006) registered my disagreement with the traditional view that Tizoc claimed all the conquests depicted on this eponymous stone as his own (cf. Marcus 1992: 368-371; Smith 2003:51, 297, Note 21). Of the fifteen pictorial scenes of captive taking, only *one* is explicitly identified by hieroglyphic caption as Tizoc: the scene involving the capture of the patron god of the Matlatzincans (glyphic MATLA, *mātla[tzinka]*) (Umberger 1998; Wicke 1976). According to both the Codex Mexicanus (folio 71) and Chimalpahin (1965:107-110), the Matlatzincans rose in rebellion during Tizoc’s reign, and both the Codex Mendoza (folio 12r) and Chimalpahin (ibid.) record his success in quelling this revolt (cf. Berdan and Anawalt 1992:21). I believe that all of the other conquests on the stone were intended to represent the military exploits of Tizoc’s predecessors. Although unnamed, their various conquests (e.g., Motecuhzoma I’s conquests of Cuextlaxtlan and Quauhtochco, Axayacatl’s 1473 conquest of Tlatelolco) would have been sufficiently well known at the time to not require captioning. Indeed, the recently discovered Motecuhzoma I stone conveys substantially the same list of conquests (though obviously omitting Matlatzinco and Tlatelolco, since these had not yet taken place) without naming a single one of the victors.

dred years of study have hitherto failed to systematically account for these patterns, Lacadena (2008a) is able to demonstrate that *both* logographs and phonetic signs are present in our earliest examples of Precolumbian Nahuatl writing, and that they were conserved in this capacity until the system vanished in the early seventeenth century. Importantly, what has long been taken as a pronounced separation between a predominantly ideographic Precolumbian system and a later, Spanish-influenced phoneticism (e.g., Seler 1902-1923:1:269; Dibble 1971) in fact now appears to be the result of erroneously associating two contemporary but nonetheless divergent traditions of Nahuatl writing with different time periods. The Acolhua school of Tetzoco and its surrounding region employed a relatively greater number of full phonetic spellings and phonetic complementation, whereas the Mexica school of Tenochtitlan-Tlatelolco favored logographic spellings, even though both employed the same canonical sign values and combinatorial principles (Lacadena 2008a). In sum, whenever and wherever it was written, Nahuatl hieroglyphic writing was a mixed logosyllabic system, structurally akin to Maya, Hieroglyphic Luwian and modern Japanese. Further, notwithstanding claims to the contrary (Boone 1994, 2000:28-33, 2004), Nahuatl writing was demonstrably *not* an ideographic or semasiographic system.<sup>5</sup> Rather, it qualifies as full writing even by the narrowest of phonocentric definitions (Gelb 1963:11; Hill 1967:93-95; DeFrancis 1989:57-58; Coe 1999:13-45).

### Early Notices of Phoneticism

Although modern scholarship has only now recognized the logosyllabic nature of Nahuatl writing, it is important to point out that Spanish chroniclers were often less in the dark about the nature of indigenous writing systems than is commonly supposed. I have argued elsewhere that early accounts of Maya writing can be illuminating from the standpoint of both script typology and mechanics (Zender 1999:35-37). For this

<sup>5</sup> Note that I follow Nicholson (1973:2-3, Note 5) and Prem (1992:53) in distinguishing between hieroglyphic writing (used to write place names, personal names, numbers, and calendrical glyphs) and narrative pictography (i.e., art and iconography) whereas Boone consistently merges the two. Thus, when she writes that "Aztec writing is semasiographic in that it conveys meaning directly to the reader without usually having to form words" (2000:31) she is speaking solely about narrative pictography, not the hieroglyphic writing system proper. It is therefore only to Aztec art that her terms "writing without words" (Boone 1994) and, more recently, "non-writing" (Boone 2004:314) can be said to apply. Nahuatl hieroglyphic writing clearly incorporates both words (logographs) and sounds (phonetic signs).

reason, it may be worthwhile to revisit some of the earliest descriptions of Nahuatl writing.

In Book VI, Chapter 235 of his monumental *Apologética historia*, completed in 1555, Fray Bernardino de Las Casas makes the following important observations regarding the indigenous Mexican writing system:

It happens at times that some [Indians] forget some words or details of what is preached to them of the Christian doctrine, and as they do not know how to read our writing, they rather ingeniously write all the doctrine with their figures and characters, putting down the figure which corresponds in voice and sound to our word. Thus, when we would say *amen*, they paint one [figure] like a spring, and then a maguey, which in their language resembles *amen*, because they call it *ametl*, and so for all the rest. I have seen a great part of the Christian doctrine written in their figures and images, and they read it by means of these as I read a letter in our writing. This is an ingenious invention by no means unworthy of admiration. (Las Casas 1909:618, author's translation)

The sign Las Casas refers to as being "like a spring" was surely the syllable **a**, derived from Nahuatl *ā-tl* "water," and among the first Nahuatl signs to be deciphered (Aubin 1885:33, no.1). Similarly, Nahuatl *me-tl* "maguey" was the origin of the syllable **me**, also first documented by Aubin (1885:36, no.48). Although no example of Las Casas's **a-me** spelling survives, it is not at all difficult to imagine what it would have looked like (Figure 5). Indeed, very similar spellings of the name of the Viceroy of Mexico, Antonio de Mendoza, are known from a number of Colonial era Nahuatl codices (Figure 6a-c, Figure 8). Here, **me-TOSA** (where the logograph **TOSA**, derived from Nahuatl *toza-n* "gopher," is used as a rebus for its sound value alone) provides the surname *Me[n]tosa* in a manner not only graphically reminiscent of Las Casas' fugitive **a-me** > *ame[n]* spelling (in that they both include the **me** phonetic sign) but involving an identical syllable-final abbreviation of *n*. As Lockhart (1992:577, Note 12) notes, these substitutions and omissions are readily accounted for. Nahuatl lacked a *d*, and scribes therefore typically substituted *t* for it. Similarly, scribes often omitted syllable-final *n* in Nahuatl texts employing the Roman script. In light of Lacadena's logosyllabic hypothesis, then, there is nothing at all unusual about either Las Casas's **a-me** example or the **me-TOSA** spellings of Antonio de Mendoza's surname.

Yet perhaps the most well known example of this kind of spelling comes from early attempts on behalf of Nahuatl scribes to phonetically render the paternoster,



Figure 5. Reconstruction of Las Casas' a-me spelling of *ame[n]*.

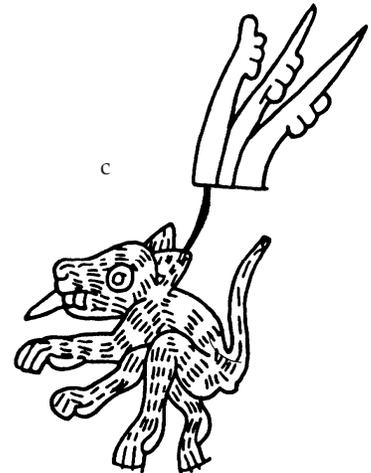


Figure 6. Hieroglyphic spellings of the name of Viceroy Antonio de Mendoza: (a) **me-TOSA**, *me[n]toza* (Aubin 48v); (b) **me-TOSA**, *me[n]toza* (Tira de Tepechpan 17); (c) **me-TOSA**, *me[n]toza* (Telleriano-Remensis 46r) (drawings by John Montgomery).

or Lord's Prayer in the indigenous system. Although first observed by Gerónimo de Mendieta in his late sixteenth-century *Historia eclesiástica indiana* (Mendieta 1945:2:91-92), a more ample quotation and discussion appears in Juan de Torquemada's *Monarquía Indiana*:

Others sought a different way ... and this was: employ those words in the language which conform to or resemble in some way the pronunciation of the Latin, placing on paper, in their order, not written words formed by letters but rather their meaning, because they do not have letters but pictures, and thus they make themselves understood by use of these characters. This will be easy to understand by example. Their word which most resembles the pronunciation of *pater* is *pantli*, which means 'banner' ... so to remember the word *pater*, they put down banner and say *pater*. For the second, *noster*, the word with the most similar pronunciation is *nochtli*, which is their name for what we call prickly pear cactus fruit, and in Spain Indian fig. So, in order to remember the word *noster*, they paint a prickly pear cactus fruit after the banner ... and in this way they continue until they finish their prayer. (Torquemada 1944:3:101-102, author's translation)

Unfortunately neither Mendieta nor Torquemada provide an illustration of this paternoster, but the resourceful Aubin (1885:29-30) reported finding a fragmentary example in the "Metropolitan Library of Mexico" which he reproduced in a somewhat stylized form in his classic *Mémoires* (Figure 7). Although organized horizontally rather than in the more typical vertical format of Nahuatl writing, such conventions are not unknown elsewhere (e.g., the Codex Xolotl), and the attested sign values are more than equal to the task of rendering the Latin *pater noster*. As recognized by Aubin (1885:30), the signs can be transcribed as **pa-te NOCH-te** and transliterated *pate[r] nocte[r]*. Considering the absence

of an indigenous /r/, the only real discrepancy between the Latin target and the Nahuatl signs is the representation of Latin /s/ by <ch>. One way to account for this is to note that the sixteenth-century Spanish retroflex or apical [ʃ] was frequently represented by <x> (which it closely resembled in pronunciation) in the orthography of Colonial Nahuatl scribes (Lockhart 2001:118-121), and <x> could in turn be replaced by <ch> on various occasions (ibid, p.112). Another possibility is that the prickly pear cactus sign may have carried the syllabic value **no** in addition to its well known logographic value **NOCH** (Aubin 1885:37, no.61). This value could have originated by acrophony from either *noch-tli* "prickly pear cactus fruit" or *nohpal-li* "prickly pear cactus" (Karttunen 1992:172-173). If so, and the suggestion would need to be demonstrated by some usage of the sign as a phonetic complement, then perhaps Aubin's example might be better read as **pa-te no-te** > *pate[r] no[s]te[r]*, with syllable-final abbreviation of *s* in *noster* rather than the substitution of <ch> for this sound. However we explain the finer points of this spelling, the correspondence of Torquemada's account and the fragmentary paternoster uncovered by Aubin is remarkable. Indeed, Aubin saw them as nothing less than "la véritable clef de l'écriture mexicaine" (the true key to Mexican writing) (Aubin 1885:25).

Particularly in its formulation by Aubin, the paternoster has become something of a *cause célèbre* in discussions of Nahuatl writing, being frequently referenced on both sides of a long-standing debate regard-



Figure 7. Aubin's paternoster (after Aubin 1885:30).



Figure 8. This page from the *Codex Telleriano-Remensis* (folio 46r) opens with the death of Pedro de Alvarado (glyphic TONA, *tōna[tiw]*, “sun”) during the Mixton uprising of 1541. The lower scene depicts Viceroy Antonio de Mendoza (me-TOSA, *me[n]tosa*) storming the moated fortress at Nochistlan (NOCH, *noch[ixtlan]*, “before the prickly pear cactus”) the following year. After Quiñones Keber 1995.

ing the nature and extent of phoneticism in the indigenous system.<sup>6</sup> In discussing this example alongside the *amen* of Las Casas, and taking particular note of the suggestions of indigenous practice implicit in both accounts, Edward B. Tylor (1964:95-96 [1865]) made a rather positive appraisal, contending that “there is no sufficient reason to make us doubt that this purely phonetic writing was of native Mexican origin, and after the Spanish Conquest they turned it to account in a new and curious way” (i.e., to write foreign words).

Yet the perspective of Philipp Valentini (1880:71-75), writing only fifteen years later, could not have been more different. He argued that this Colonial-era illustration of the phonetic usage of Nahuatl and Maya writing was a purely Spanish invention; that it “represents nothing else than one of the various attempts made by the Spanish missionaries to teach their...pupils how to write the prayers, or any other text, phonetically by means of symbols” (ibid.:75). As discussed in some detail by Michael Coe (1999:119-120), Valentini’s pronouncements effectively stalled the productive use of Diego De Landa’s manuscript as an explanation of Maya hieroglyphs for several decades. Yet their deleterious effect on the decipherment of Nahuatl writing was far worse.

Thus, although otherwise a sensitive student of Nahuatl writing interested in parallels with other hieroglyphic systems, Zelia Nuttall seems to have fully accepted Valentini’s view of the paternoster as an invention of the Spanish rather than an indication of the resourcefulness of the indigenous system:

When the first Spanish missionaries who reached Mexico found themselves confronted by the barrier of language and wished to teach the native converts the Lord’s Prayer in Latin, they adopted the method of picture writing employed by the aborigines. By painting a banner = *pantli*, a stone = *tetl*, a cactus = *nochtli* and another stone = *tetl*, they conveyed the words Pa-te-noch-te, which, approximately, represented paternoster ... The fact that Spaniards, possessing our mode of writing, should have found picture-writing the most effective means of teaching primitive people speaking an alien tongue has always appeared to me as most instructive and suggestive. (Nuttall 1901:534-535, Note 1)

Similarly, in his important early comparison of Maya

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<sup>6</sup> Some might add ‘out of all proportion to its value.’ This example certainly crops up with monotonous regularity in introductory works on writing, frequently with the most ludicrous typographical errors (e.g., Coulmas 1991:32, Figure 2.9; Sassoon and Gaur 1997:33). In these works can be found such nonpareil gems as *\*pami-tel*, flag, and *\*noc-tli*, fig date. Yet the humor fades on reflection: such books are often the first (or only) resort for much of the reading public. I read such a book when I was seventeen, and quickly moved on to Maya writing as a result.

and Nahuatl writing, Alfred M. Tozzer contended that:

The Spaniards were the ones to realize the importance of the syllabary and it is undoubtedly owing to their influence that certain signs are found used in later manuscripts to express certain syllables absolutely for their phonetic value and entirely divorced from the signification of the signs as pictures. ... The Lord’s Prayer is usually given as an example of this kind of writing. A flag, *pantli*, suggests *pa*. A picture of a stone, *tetl*, highly conventionalized, stood for *ter*, making *Pater*. A prickly pear, *nochtli*, the fig of the *castus opuntia*, was used for recalling the syllable *nos* and another stone, *tetl*, the *ter*, making *noster*. (Tozzer 1911:95-96)

Considering the same example, J. Eric S. Thompson noted that:

In crediting this invention to the Indians, [Las Casas] gives, as always, the benefit of the doubt to the Indian when praise is due. Probably the credit should be shared by Indian and Spaniard, for the friars without much doubt built on Indian foundations. ... This form of rebus writing—for example, *pater noster* was written as a flag (*pantli*), a stone (*tetl*, for there is no *r* in nahuatl), a prickly pear (*nochtli*) and again a stone (*tetl*)—is ... relatively rare in pre-Spanish documents, [but] proliferated when it was taken over and expanded by friars to spread Christianity. A glyph came then to represent, not a complete syllable, as was the pre-Columbian ideal, but only the opening consonant and vowel. (Thompson 1959:353-354)

Examples could easily be multiplied, but it is nevertheless clear that many scholars followed Valentini in seeing the paternoster and other examples of phonetic writing from the Colonial era as heavily Spanish-influenced, if not outright inventions by missionaries. Yet a more balanced view was present as well, and had a number of eloquent proponents. Most noteworthy in this respect was H. B. Nicholson, who considered the historical accounts of Las Casas, Mendieta, and Torquemada—and the **a-me** and **pa-te-NOCH-te** spellings—in tandem with numerous examples of the writing of Spanish surnames in early colonial documents, concluding that:

Although this phenomenon is essentially relevant to early colonial transculturative processes, its significance for our purposes lies in its supplying of further evidence—if this were needed—that the basic principle of phonetic usage of graphemes was indeed well established in the indigenous writing system. Some of the more perceptive missionaries became aware of this and merely exploited it to facilitate their proselytization program. (Nicholson 1973:19-20)

If the implications of Nicholson's assessment had been properly followed up, the Nahuatl writing system may well have been deciphered at least twenty-five years ago.<sup>7</sup> Yet Valentini still hung on in some quarters, and to Brinton's perceptive suggestions—i.e., that a lack of familiarity with the Nahuatl language and with writing systems more generally had stalled decipherment—we can now add the unproven but nonetheless influential view that the Spanish had themselves innovated the phoneticism seen so abundantly in documents of the Tetzcoacan school. The irony that Thompson had supported his erroneous view of Maya writing with an appeal to precisely this assumption of Spanish influence in De Landa's manuscript should be lost on no one.

### The Canonical Forms of Nahuatl Signs

An additional arena of confusion has been the basic forms of Nahuatl logographs and phonetic syllables. As can be seen from the quotations in the preceding section, Nahuatl nouns are often cited in their 'dictionary' forms (e.g., *ā-tl*, *cal-li*, *pān-tli*), which explicitly include the singular absolutive suffix (*-tli* and its predictable allomorphs, *-tl* and *-li*). This is in fact standard practice in studies of Nahuatl writing, particularly in compilations and discussions of glyphic examples culled from various documents (e.g., Barlow and MacAfee 1949; Clark 1938, vol. 2; Berdan and Anawalt 1992; Dibble 1940; McGowan and Van Nice 1979; Orozco y Berra 1880, vol. 1; Peñafiel 1885). Some of these catalogs specifically contrast the dictionary form (e.g., *ā-tl*, "water"), sometimes termed the 'Nahuatl name' (*nombre en Nahuatl*), with a word's 'value in composition' (*valor en la composición*) or the form it takes when compounded with other elements (e.g., *ācal-li*, "canoe" [lit. water-house]), in which *ā-tl* appears without the absolutive suffix. Others make the distinction less formally, but nonetheless usually set the absolutive suffixes of Nahuatl words in parentheses—e.g., *a(tl)*, *cal(li)*, *pan(tli)*—thereby highlighting both their presumed integrity to the form and their wont to disappear in compounds. Thus, in discussing one of the most phonetic compounds in the Codex Vergara, Nicholson (1973:27) follows this latter practice, and reads the name Mocuauhzoama (**mo-K<sup>w</sup>AW-so-ma**) as Mo(ntli)-cuauh(tli)-zo-ma(itl). More tellingly, in their recent study of the Codex Mendoza, Frances Berdan and Patricia Anawalt argue that "[a]bsolutive suffixes

of nouns (*-tli* or *-tli*) and some verbal endings (such as *-a*) are in parentheses; linguistically, these endings drop off when combined with other elements. For instance, *Coatepec* derives from *coatl + tepetl + c'*" (1992:163).

But these practices are misguided, and their widespread adoption has led to a number of misapprehensions and misrepresentations of Nahuatl writing and of the language it represents. To begin with, this special treatment of the absolutive implies that it is somehow more basic or canonical than other forms, and that signs derived from a Nahuatl noun might be expected to incorporate the absolutive in some way. It is precisely for this reason that Thompson (1959:354) assumed that the syllabic usage of signs like **a**, **me**, and **te**—derived from *ā-tl*, *me-tl*, and *te-tl*—were some kind of Spanish-influenced abbreviation of the full form of Nahuatl words, his "pre-Columbian ideal," a process of erosion eventually leaving behind only an "opening consonant and vowel" (see also Dibble 1971:331). In point of fact, the syllabic values given above do not represent abbreviations at all, but rather represent *the actual lexical roots involved*. It is therefore misleading to label *ā-tl* as the "Nahuatl name" for this word, and incorrect to specify *ā-tl* (with suffix) as the source of the **a** syllable or to argue that "this ending drops off when combined with other elements" (to paraphrase Berdan and Anawalt 1992:163). The lexical root (and ultimate source of the **a** syllable) is *ā* itself, as can readily be seen when several different contexts are compared:

*ā-tl*  
WATER-abs  
"(it is) water"

*n-ā-uh*  
1.s.poss-WATER-rel  
"(it is) my water"

*ā-cal-li*  
WATER=HOUSE-abs  
"(it is) a canoe"

*n-ā-cal-Ø*  
1.s.poss-WATER=HOUSE-rel  
"(it is) my canoe"

*ā-l-tepē-tl*  
WATER-abs-MOUNTAIN-abs  
"(it is) a people, nation, king" (lit. "[it is] water, mountains")

Note that *ā* is the only element shared by all five contexts—unpossessed noun, possessed noun, unpossessed compound noun, possessed compound noun, and diphrastric kenning (*difrasismo*)—and therefore emerges as the only viable candidate for a basic or canonical form of the word. That is, it is simply not the case that *ā-tl* represents the basic word, with the *-tl* suffix replaced by *-uh* when possessed, or "dropped off"

<sup>7</sup> Nicholson in fact provided an explicit challenge in this regard, writing that "a truly comprehensive description and analysis of the late pre-Hispanic Central Mexican writing system, utilizing all available data, has yet to be published" (1973:3). Now at last, thirty years later, we finally have that study (Lacadena 2008a, this issue).

when compounded with other nouns. Rather, *ā* is itself the basic form, with *-tl* added when the form is grammatically unpossessed and *-uh* when it is possessed.<sup>8</sup> In compound nouns, only the rightmost (head) noun is suffixed for dispossession or possession, since one suffix will suffice for the entire gestalt. Finally, in the diphthastic kenning, neither term is possessed or compounded, so both receive their own absolute suffixes.<sup>9</sup>

It is for these reasons—coupled with evidence stemming from full phonetic spellings and redundant phonetic complementation—that Lacadena transcribes Nahuatl logographs with their root values (minus glottal stops and vowel length), such as **AKOL**, **KOA**, **K<sup>w</sup>AW**, **MIX**, **NOCH**, **TEMO**, and **TOSA** (Lacadena 2008a, 2008b) and transcribes Nahuatl phonetic signs with values often identical to the lexical roots from which they originate (**a**, **e**, **me**, **mi**, **te**<sub>1</sub>) but not always (**o**, **ka**<sub>1</sub>, **ko**, **mo**, **pa**, **te**<sub>2</sub>, **wa**<sub>1</sub>, **wa**<sub>2</sub>), since occasionally they do indeed represent acrophonic derivations from more complex roots (e.g., **pa** < *pān-tli*, “flag”) (Lacadena 2008a:6-7). The citation of Nahuatl signs by their actual values (instead of by their presumed lexical sources) is precisely how Aubin organized the sign list in his famous *Mémoires* (Figure 9), and this should once again become the default practice in studies of Nahuatl writing.

The fact that absolute suffixes play no part in the canonical values of Nahuatl logographs is not surprising inasmuch as the same is true of Maya writing (Zender 2004). That Maya phonetic signs were also derived acrophonically is of course well known. Yet there are also important differences between the two systems. While Maya writing did occasionally ‘spell out’ the absolute suffix using phonetic signs, it seems on present evidence that the absolute suffix was never

explicitly indicated in any Nahuatl hieroglyph. This seems to reflect a more general distinction between the two systems, in that Maya possessive suffixes, verbal inflections, and toponymical suffixes were also typically written, while Nahuatl writing omits these niceties beyond the occasional indications of the ‘toponymical suffixes’ *-co* (but never post-vocalic *-c*), *-pan*, and *-tlān*. As Lacadena and Wichmann (2004) have elsewhere demonstrated, this distinction also obtains in the writing of glottal stops and long vowels which, although critical to both of the underlying languages, were recorded in Maya but not Nahuatl writing. Thus, Nahuatl hieroglyphic writing emerges as a system in which a much greater degree of linguistic abbreviation was tolerated. Indeed, in this respect it rather closely resembles the abbreviation conventions documented for syllabic spellings in Mycenaean Linear B (Chadwick 1958:74-76).

### The Long-Delayed Decipherment

Having reviewed the earliest notices of Nahuatl writing, and the nature of some of the major debates that have riven the field, we may perhaps revisit once again Brinton’s question at the opening of this paper: Why do we stand now almost at the same point as in 1850? Or, to contextualize slightly, why was the essential nature of Nahuatl writing as a logosyllabic system not recognized until the present? The question is a complex one, and would seem to involve numerous variables.

One useful insight stems from a consideration of what it was that made Aubin’s early and productive grasp of the nature of the system possible. There can be no question that it was his almost exclusive usage of documents from the Tetzoco tradition (such as the Codex Vergara), with their idiosyncratically elevated levels of phoneticism, which allowed him to make the progress he did with the otherwise limited number of materials at his disposal (Nicholson 1973:34-35). Indeed, as Nicholson observes, these documents exhibit “the most intensive, systematic phonetic usage of graphemes in the entire corpus of Western Mesoamerican native tradition pictorials” (ibid: 26). In turn, as Lacadena (2008a) demonstrates, the neglect of this important tradition as “late” and “Spanish-influenced” has therefore frustrated attempts to review and systematize Nahuatl writing throughout the whole of the hundred and fifty years following Aubin.

Motivating this neglect of numerous key documents was the pervasive assumption that all Mesoamerican scripts were essentially ideographic, and that phonetic writing only appeared with the arrival of the Spanish. Indeed, up to and including Nicholson’s influential article on *Phoneticism in the Central Mexican Writing System* (1973), there was still a great deal of debate regarding whether Precolumbian Maya writing

<sup>8</sup> It is precisely because Nahuatl nouns always require *some* marking that all lexicographers since Fray Alonso de Molina (1970 [1571]) have chosen the absolute (unpossessed) stem as the standard citation form. This is entirely reasonable. What is unfortunate is that many scholars have been misled by this practice into seeing the dictionary forms as basic. A less misleading Nahuatl lexicon would list unadorned roots such as *ā* “water,” *pān* “flag,” and *cal* “house.” In another part of the work, a grammar would couple these roots with their predictable suffixes.

<sup>9</sup> Misunderstandings of the nature and significance of the absolute suffix are sufficiently pervasive that even well known diphthastic terms like *ā-l-tepē-tl*—glossed “*pueblo*, *rey* (people, nation, king)” by Fray Alonso de Molina (1970:2:4)—can be misrepresented. This form is *not* a compound noun meaning “water-filled mountain” (cf. Aguilar et al. 2005:70-71, Figure 72). Rather, forms such as *in ā-l in tepē-tl* “a people,” *n-ā-uh no-tepē* “my people” and *ā-huah tepē-huah* “a citizen” (cf. Karttunen 1992:9, 230; Lockhart 1992:14, 2001:167) tell us that the otherwise inexplicable medial *-l* in *ā-l-tepē-tl* is itself a partially worn-down absolute. A true noun compound, such as the aforementioned *ā-cal-li* “canoe,” would have no internal absolute.

ET L'ÉCRITURE FIGURATIVE DES ANCIENS MEXICAINS.

[19]	<i>Col, çul, zol, zul</i> , de <i>zol-lin</i> ou <i>zulin</i> « sorte de caille, colin ». Ex. <i>Zoltepec</i> (cod. Xolotl, fol. 4) . . . . .	
[20]	<i>Cha, chan, chantli (tchantli)</i> « maison, demeure ». . . . .	
[20 bis]	<i>Chal. Chalco</i> (Lorenzana, pl. XXI; Kingsborough, pl. XLIII) et <i>Chalcatl</i> ( <i>Hist. de Quauhtinchan</i> [Bott., § I, n° 1]). Voir dans Molina : <i>Tenchalli</i> « menton », <i>Camachalli</i> « mâchoire inférieure », <i>Camachaloa</i> « ouvrir la bouche », etc. . . . .	 
[21]	<i>Chi, chian (tchi, tchia)</i> « graine oléagineuse » ( <i>Hernandi Opera</i> , Matriti, 1780, indice <sup>(1)</sup> ). . . . .	 
[21 bis]	<i>Chi</i> , de <i>chichi</i> « chien ». . . . .	
[22]	<i>Chi</i> , de <i>chichil</i> « poumons, mamelle »; <i>chichi</i> « teter <sup>(2)</sup> ». <i>Chimal</i> (cod. Verg., fol. 45, 52) . . . . .	
[22 bis]	<i>Chich, chichtli</i> « chouette, sifflet » (M.). . . . .	 
[23]	<i>Chil, chilli</i> « piment ». . . . .	
[24]	<i>Ca, can</i> , racine de <i>camil</i> « bouche » et de <i>canli</i> « joue »; <i>nocan</i> « ma bouche » (Car. Paredes, p. 107) . . . . .	
[25]	<i>Ca, cac</i> , pour <i>cac-tli</i> « sandale, soulier »; pour <i>cal</i> dans <i>Ayaquical</i> (cod. Verg., fol. 39, 43, 50, 56) . . . . .	
[26]	<i>Cal, cal-li</i> « maison, case, caisse ». . . . .	
[27]	<i>Cax, cax-til</i> (pron. <i>cach, cachil</i> ) « vase, écuelle ». . . . .	
[28]	<i>Que, quen</i> , racine de <i>quentli (kentli)</i> « vêtement, pièce d'étoffe attachée par devant ». <i>Quempol</i> (cod. Valeriano, fol. 7 [Bott., § XXI, n° 7]).	
[29]	<i>Quech, quechtili (ketchili)</i> « col, gorge » (« cuello ó pescueço », M.), ou pour <i>quechol</i> . . . . .	  
[30]	<i>Quil, quil-til</i> « herbe comestible » (M.); <i>noquil</i> pour <i>no-quilitl</i> (Car. Paredes, fol. 107) . . . . .	 
[31]	<i>Co, con</i> racine de <i>comil</i> « vase en terre » (« olla ó barril de barro », M.); <i>nocon</i> , pour <i>no-comil</i> « mon vase » (Car. Paredes, fol. 107) . . . . .	
[32]	<i>Col, coltic</i> « chose courbe », etc. (« cosa tuerta ó torcida », M.). « Hiéroglyphe phonétique de <i>Colhuacan</i> » (Humboldt, <i>Vues des Cordillères</i> , in-8°, t. II, p. 117) . . . . .	
[33]	<i>Coz, coztli? coztic, cozauhqui</i> « jaune », pour <i>toztli</i> « plumes jaunes d'un grand prix et nom de l'oiseau qui les porte <sup>(3)</sup> ». Voir [84] . . . . .	 

<sup>(1)</sup> Codex Vergara, fol. 2, 7, 13, 14, 15, 17, 21, 24, 45.      rappellent quelquefois *chichitic* « chose tachée » (« manchada ó manzillada » M.).  
<sup>(2)</sup> « *Chichil*, saliva o bofes » (M.). Des points ou taches      <sup>(3)</sup> *Cozulan* (cod. Cozcatzin, pl. . .).

Figure 9. This page from Aubin's *Mémoires* shows part of his early sign list, illustrating his method of organizing signs by their inherent values rather than solely by the Nahuatl words from which they were derived. Some of Aubin's proposals (such as a phonetic *cha* derived from *chān-tli*, "home" [20]) are no longer thought to be correct, but others (*chi* [21], *ka*<sub>1</sub> [24], *ka*<sub>2</sub> [25], and *ko* [31]) have stood the test of time, and can be seen in Lacadena's Nahuatl syllabary (this issue). After Aubin 1885:35.



Lith. par B. Schmidt.

MAPPE TLOTZIN

Imprimerie Nationale.

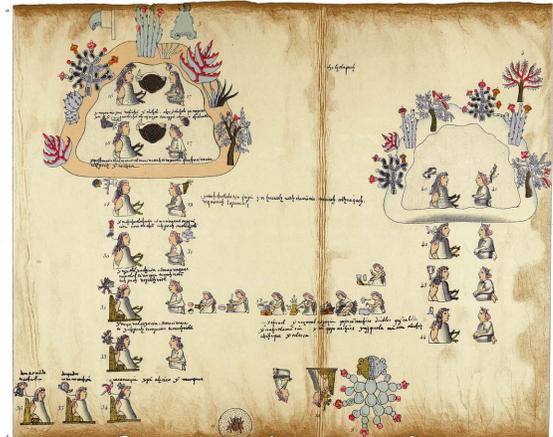
III.



Lith. par B. Schmidt.

MAPPE TLOTZIN.

Imprimerie Nationale.



Lith. par B. Schmidt.

MAPPE TLOTZIN.

Imprimerie Nationale.

Figure 10. The three color plates in which Joseph Marius Alexis Aubin reproduced the Mapa Tlotzin in his *Mémoires sur la peinture didactique et l'écriture figurative des anciens Mexicains*. Lithographs by B. Schmidt, after Aubin 1885: Plate III (top), Plate I (bottom left), and Plate II (bottom right).

included any phoneticism at all. This is why Nicholson concludes his paper with the hope that:

If this phonetic principle was indeed operative to some extent in the late pre-Hispanic Central Mexican system, which is usually considered to have been genetically related to—if much less developed and sophisticated than—the Lowland Maya system, it would appear to strengthen the case for some degree of phoneticism, in the sense of sub-morphemic word formation, in the latter script. (Nicholson 1973:36)

Knowing today that the Maya script has always been phonetic, with an ample syllabary and hundreds of formalized logographs, can we not now reverse Nicholson's formulation? That is, even though scholars no longer consider these scripts "genetically related," we nonetheless have ample evidence that literate communities were in contact throughout Mesoamerica since at least Early Classic times (Taube 2000:1, 51). We also know that Maya writing had contact with the Nahuatl language by at least the Late Postclassic period (Taube and Bade 1991; Whittaker 1987). In sum, the chance that Nahuatl scribes were entirely unaware of the nature of Maya writing seems slim at best. In any event, and all apart from the extent to which Maya writing may have influenced Nahuatl, we now know that concerns about the extent of Precolumbian phoneticism were not only misplaced but ultimately distracting and counterproductive to the real task at hand: investigating the actual behavior of signs in the Nahuatl writing system with full recourse to all of the data at hand.

Brinton identified another confounding factor in his observation that many students of his era simply lacked sufficient knowledge of the Nahuatl language to comprehend how it would be represented in hieroglyphic writing (see also Galarza 1978). As discussed above, the long-standing expectation that the absolute form of nouns was to be considered primary—and that signs in the Nahuatl system could be held to reproduce absolute forms—has been an obstacle to deeper understanding. Here, Lacadena's familiarity with Maya writing, and a broader background in other logosyllabic systems, has allowed him to avoid this obstacle. In his insistence on documenting examples of phonetic complementation (or complete phonetic substitution) of logographs before declaring the sign's value resolved he is following long-standing practices

in Maya decipherment. Finally, as discussed above, the occasional confusion of narrative pictography with hieroglyphic writing has not only encouraged the development of non-phonetic definitions of writing (Boone 1994) but has served as an additional distraction from the essential work of categorizing Nahuatl signs and systematizing the rules of hieroglyphic orthography.

Overall, particularly when presented with the sheer volume of specialized studies of Nahuatl writing since 1850, it is hard to escape the observation that it was a general assumption that Nahuatl writing was already in fact "deciphered" which stalled further efforts towards the goal of explaining it in the light of other writing systems in Mesoamerica and the Old World.<sup>10</sup> That is, whereas earlier scholars such as Aubin, Brinton, and Nuttall actively sought to discover *how* Nahuatl writing worked, many later efforts seem to have concentrated on cataloging and encapsulating a system that was generally assumed to have been deciphered already. Because of this, I suspect that in some camps Lacadena's discussion may even now fail to be properly recognized as the breakthrough that it represents. But do not be fooled. Where once scholars spoke of a predominantly pictographic mode of communication among the Precolumbian Aztecs, the field must now come to grips with Alfonso Lacadena's Nahuatl logosyllabary.

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<sup>10</sup> Consider the following quotation: "The Mesoamerican (partial) writing system which is best known and understood is that which was functioning in Central Mexico at the time of the Conquest ... [M]odern scholarship has more or less satisfactorily determined the basic structural principles of the late pre-Hispanic Central Mexican writing system" (Nicholson 1973:2).

## One Hundred and Fifty Years of Nahuatl Decipherment

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# The $wa_1$ and $wa_2$ Phonetic Signs and the Logogram for WA in Nahuatl Writing

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In this paper I propose decipherments of three signs in Nahuatl writing that are related in their reading values and on occasion appear in the same glyphic compounds. The three signs have the reading value /wa/ in transliteration: two of the signs appear as phonetic **wa**—herein labeled  $wa_1$  and  $wa_2$ —and the third as the logogram **WA**.<sup>1</sup> In this work I continue to apply the methodology that I have proposed for the study of Nahuatl writing (Lacadena, n.d. and this issue), which I feel is necessary, on the one hand, for the work of review and systematization of the readings proposed and compiled over the last 150 years—since the groundbreaking work of Aubin (1849)—and on the other, for the proposed decipherment of new signs.

## The $wa_1$ phonogram

The sign for  $wa_1$  consists of two short parallel strokes, black in color (Figure 1a). Lacking any identifying number in a catalogue of Nahuatl signs, I refer to it from here on in this work as the double-stroke sign.

The double-stroke sign clearly occurs in three places in the Codex Mendoza, forming part of the glyphic compounds related to the following three glosses: <çihuatlan.pu<sup>o</sup>> (CMDZ 38r),<sup>2</sup> <acalhuacan.pu<sup>o</sup>> (CMDZ 17v), and <tepexahualco.pu<sup>o</sup>> (CMDZ 36r) (Figure 1b-d). To these three compounds we can add a fourth example, glossed as <xicalhuacan.pu<sup>o</sup>> (CMDZ 29r) (Figure 1e). This last compound is problematical because what appears to be the double-stroke sign infixed in the logogram **XIKAL** “jícara, gourd bowl”

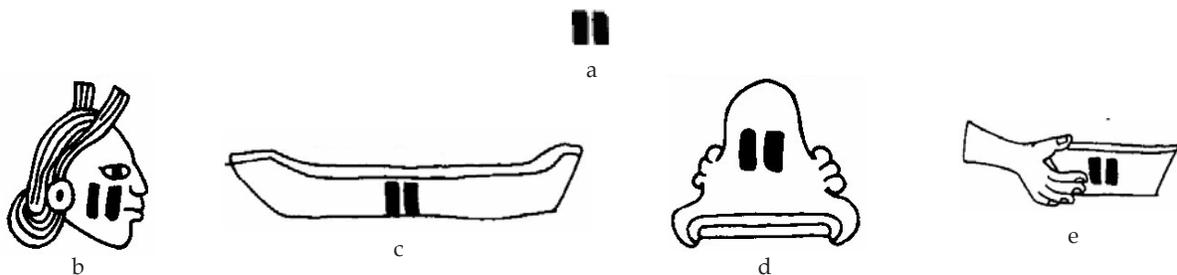
might not be a distinct sign, but rather a graphic element belonging to the design of the **XIKAL** logogram, as in other occurrences in the Codex Mendoza—in glyphic compounds glossed as <xicaltepec.pu<sup>o</sup>> (CMDZ 33r and 46r)—which show the two strokes, apparently as part of the sign in which it is infixed.

Limiting ourselves for the moment to the analysis of the three primary examples mentioned, we can see that in addition to the presence of the double-stroke sign, the three also have in common the presence of the alphabetic sequence *hua* in the associated glosses: <çihuatlan.pu<sup>o</sup>>, <acalhuacan.pu<sup>o</sup>>, and <tepexahualco.pu<sup>o</sup>>. From these correspondences we can formulate, as a working hypothesis, that the double-stroke sign in the glyphic sequences is in some manner related to the phoneme /wa/ in the glosses and that this may be specifically its spoken value, functioning either as a **WA** logogram or as a **wa** phonogram.

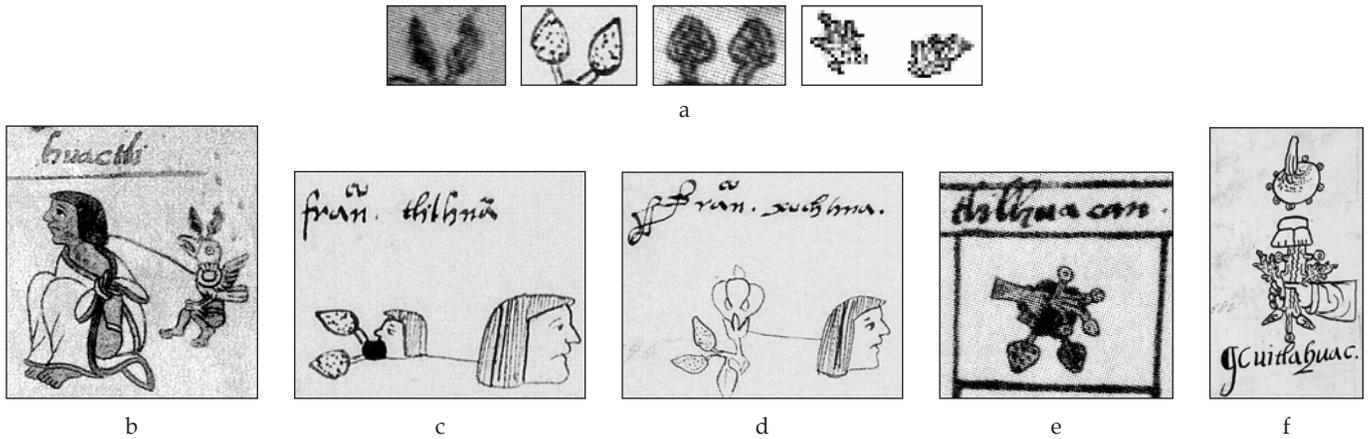
Previously, Manrique (1989:166, Figure 7b) referred briefly to this sign in his section on “geometric signs,” correctly referring to it as a “signo para - hua” (sign for - hua) in the compound glyphs for Xicalhuacan and Acalhuacan in the Codex Mendoza, but by assigning it

<sup>1</sup> For a description of the transcription and transliteration conventions used in this work, see Lacadena 2008 (this issue).

<sup>2</sup> I use the following abbreviations: CMDZ= Codex Mendoza; CSMA= Codex Santa María Asunción; CTLA= Codex Tlatelolco; MITE= Memorial de los Indios de Tepetlaoztoc. The examples cited come from the following editions: CMDZ, Berdan and Anawalt 1997; CSMA, Williams 1997; CTLA, Barlow 1989 and Valle 1994; MITE, Valle 1993.



**Figure 1.** The double-stroke sign in Nahuatl writing: (a) standardized form of double-stroke sign; (b) <çihuatlan.pu<sup>o</sup>> (CMDZ 38r); (c) <acalhuacan.pu<sup>o</sup>> (CMDZ 17v); (d) <tepexahualco.pu<sup>o</sup>> (CMDZ 36r); (e) <xicalhuacan.pu<sup>o</sup>> (CMDZ 29r). (b-e after Berdan and Anawalt 1997.)



**Figure 2.** The leaves sign in Nahuatl writing: (a) graphic variants of the leaves sign; (b) <huactli> (MITE 6v); (c) <fran<sup>co</sup>. tihimā> (CSMA 27v); (d) <fran<sup>co</sup>. xuchhua> (CSMA 29v); (e) <tlilhuacan> (MITE 4v); (f) <cuitlahuac> (CSMA 76r) (b and e, after Valle 1993; c, d, and f, after Williams 1997).

the meaning “owner, possessor,” he gave it the role of a logogram. While I completely agree with Manrique that the sign gives the value /wa/ to the compounds in which it occurs (although with the previously mentioned reservations in the case of <xicaltepec.pu<sup>o</sup>>), I refrain, nevertheless, from attaching the translation to it. It is doubtful that, in the examples of <çihuatlan.pu<sup>o</sup>> and <tepexahualco.pu<sup>o</sup>>, the double-stroke sign functions as a logogram with the meaning “owner, possessor” or even as a rebus. In the first of these two cases, in order for the double-stroke sign to be a **WA** logogram (including a rebus function), the sequence would be **SIWA-WA**, giving /siwawa/ in the transliteration, which seems improbable. The gloss <çihuatlan> is a completely reasonable reading of this compound glyph, corresponding to a place well known in the province of Cihuatlan—its capital, in fact—for which numerous ethnohistorical sources provide the name (see Berdan and Anawalt 1992:83-84).

The key to identifying the logographic or phonetic character of the double-stroke sign and its function in the writing system is found precisely in this example, the toponym glossed as <çihuatlan.pu<sup>o</sup>> (Figure 1b).<sup>3</sup> Given that the associated sign is the logogram **SIWA** “woman,” the double-stroke sign with the presumed value /wa/ can have no other value in the compound than that of a final phonetic complement to the logogram. This relationship between the logogram **SIWA** (the sign complemented) and the double-stroke sign (the sign that complements) points to the latter as a phonogram or phonetic sign, because it is phonograms or phonetic signs that perform this function in the writ-

ing system (Lacadena, this issue). In light of this evidence, I suggest that the double-stroke sign is in fact a phonogram with the value **wa**. In this case:

**SIWA-wa**, *Siwa[tlan]*<sup>4</sup> <gloss:çihuatlan.pu<sup>o</sup>>  
(CMDZ 38r).

Following this, the other examples from the Codex Mendoza (Figure 1c-d) can be transcribed and transliterated as follows:

**AKAL-wa**, *Ākalwa'[kān]*<sup>5</sup> <gloss:acalhuacan.pu<sup>o</sup>>  
(CMDZ 17v)

**TEPE-wa**, *Tepe[xa]wa[lko]*<sup>6</sup> <gloss:tepexahualco.pu<sup>o</sup>>  
(CMDZ 36r).

We will return to the problematical example mentioned earlier, glossed <xicalhuacan.pu<sup>o</sup>> (CMDZ 29r), as it first requires an explication of the reading value

<sup>3</sup> The double-stroke sign does not form part of the logogram **SIWA** “woman,” as demonstrated by two other cases in the Codex Mendoza where it appears without the double-stroke sign: **SIWA-KOA**, *Siwākōā[tl]* (CMDZ 2v) and **SIWA-TEOPAN**, *Siwāteōpan* <gloss: çihuateopan.pu<sup>o</sup>> (CMNZ 52r).

<sup>4</sup> See Karttunen for the vowel quality of *siwā-tl* “woman” (1992:35) and *-tlān* “place of . . .” (ibid.:282-283).

<sup>5</sup> See Karttunen for the vowel quality of *ākal-li* “boat” (1992:1), *-wa'* “possessor suffix” (ibid.:80), and *-kān* “at some place” (ibid.:24).

<sup>6</sup> The etymology of this toponym is unclear. Macazaga (1979:148) gives it as Tepexauhualco, for which there is no indication of vowel quality. According to the Matrícula de Tributos and the Codex Mendoza, Tepexahualco is found in the province of Tlachco, but it has not been located geographically (Berdan and Anawalt 1992:76). The glyphic sequence **TEPE-wa** also corresponds to toponyms like *Tēpewa'[kān]* and *Wa[C]tēpe[k]*, where C is an uncertain consonant.

and function of the grasping-hand sign, which I address in the third part of this paper.

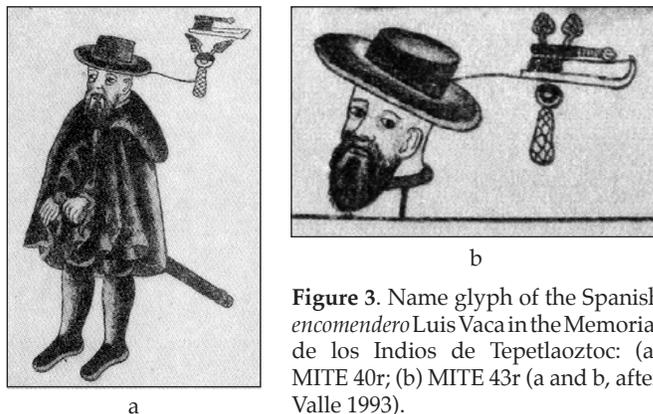
The graphic origin of the double-stroke sign may derive from the verb *huahuan(a)* “to scratch, scrape something, to incise lines on something / to scratch or make lines on the ground, mark lines on paper, trace or draw something” (Karttunen 1992:80; David Stuart, personal communication, November 1997). Like other Nahuatl phonetic signs, it may have been derived acrophonically, that is, from the initial sound of *huahuan(a)*.

### The *wa*<sub>2</sub> phonogram

Graphically, the *wa*<sub>2</sub> sign represents two small leaves with short stems. They are normally lanceolate, occasionally toothed, and their interiors are marked with dots. In the Memorial de los Indios de Tepetlaoztoc they are green. The graphic variation of this sign is wide (Figure 2a). Lacking, as in the previous case, a catalogue number to identify it, I refer to this sign as the leaves sign.

As we have seen with the double-stroke sign, the leaves sign is also involved in glyphic compositions whose associated glosses have in common the alphabetic sequence *hua*, as in <*huactli*> (MITE 6v), <*fran*<sup>co</sup>. *tlihuā*> (CSMA 27v), <*Fran*<sup>co</sup>. *xuchhua*> (CSMA 29v), <*tlihuacan*> (MITE 4v), and <*cuitlahuac*> (CSMA 76r) (Figure 2b-f). Since the element shared by all five glyphic compositions is the leaves sign, and the shared alphabetic sequence in all the glosses is *hua*, we can propose the hypothesis that the leaves sign carries the reading value /*wa*/, be it logographic or phonetic.

One of the glyphic compounds mentioned in the Memorial de los Indios de Tepetlaoztoc provides the first indication of the character and function of the leaves sign in the writing system (Figure 2b). Three signs appear in the compound: the leaves sign, a sign representing a bird, and the buttocks sign **TZIN**. The associated gloss is <*huactli*>. *Uactli* is attested in lexical sources of colonial Nahuatl as “bird from whose song omens were derived” (Siméon 1992:740, author’s translation). Karttunen gives the entry *huactzin* as “a large bird with a distinctive call known in Spanish as *pájaro vaquero* (*Herpetotheres cochinnans*) ... *huaco*” (1992:80).<sup>7</sup> To begin with, there is no reason to suppose that the bird <*huactli*> designated by the gloss is anything other than the one depicted, since it is different graphically from other logograms for birds in the Nahuatl sign list.<sup>8</sup> In addition, the circle or collar under the bird’s head should serve as an additional diagnostic.<sup>9</sup> Consider-



**Figure 3.** Name glyph of the Spanish *encomendero* Luis Vaca in the Memorial de los Indios de Tepetlaoztoc: (a) MITE 40r; (b) MITE 43r (a and b, after Valle 1993).

ing that the leaves sign ought to provide the sound sequence /*wa*/, the only way to explain its presence in the glyphic compound is as an initial phonetic complement to a logogram **WAK** “laughing falcon” (*wak-tli*). Given, then, that the leaves sign is acting as a phonetic complement, we are able to assign its character and function in the writing system as a phonogram with the value *wa* (and furthermore, *wa*<sub>2</sub>, in order to distinguish it from its allograph, the double-stroke sign *wa*<sub>1</sub>). Therefore, the example we are discussing would be:

**wa**<sub>2</sub>-**WAK-TZIN**, *Waktzin*<sup>10</sup> <gloss: *huactli*> (MITE 6v).<sup>11</sup>

Reading the leaves sign as a *wa*<sub>2</sub> phonogram is very productive and is confirmed in other compounds, for example (Figure 2c, d):

**TLIL-wa**<sub>2</sub>, *Tlitwa*’ <gloss: *fran*<sup>co</sup>. *tlihuā*> (CSMA 27v)<sup>12</sup>

**XOCHI-wa**<sub>2</sub>, *Xochiwa*’ <gloss: *Fran*<sup>co</sup>. *xuchhua*> (CSMA 29v)<sup>13</sup>

(we will look at example 2e and f below where we be-

<sup>7</sup> The species name is actually *Herpetotheres cachinnans*, the laughing falcon.

<sup>8</sup> For example: **ASTA** “heron,” **CHICH** “eagle,” **KECHOL** “flamingo,” **KETZAL** “quetzal,” **KOSKAK**<sup>AW</sup> “turkey vulture,” **K<sup>AW</sup>** “eagle,” **SOL** “quail,” **TEKOLO** “owl,” **TLO** “hawk,” **WEXOLO** “turkey,” **WITZIL** “hummingbird,” and **WILO** “dove.”

<sup>9</sup> “The *huactli* is similar in appearance to the turkey vulture [literally, collared eagle]” (Sahagún in Garibay 1989:267, author’s translation).

<sup>10</sup> See Karttunen for the vowel quality of *wak-tli* “falcon” (1992:80) and *-tzin* “diminutive, honorific” (ibid.:314).

<sup>11</sup> The gloss <*huactli*> has obviously omitted the suffix *-tzin*, present as **TZIN** in the transcription. The transliteration *Waktzin*, offered here, corresponds to the glyphic compound.

<sup>12</sup> See Karttunen (1992:308) for the vowel quality of *tli-li* “black ink.”

<sup>13</sup> See Karttunen (1992:329) for the vowel quality of *xochi-tl* “flower.”

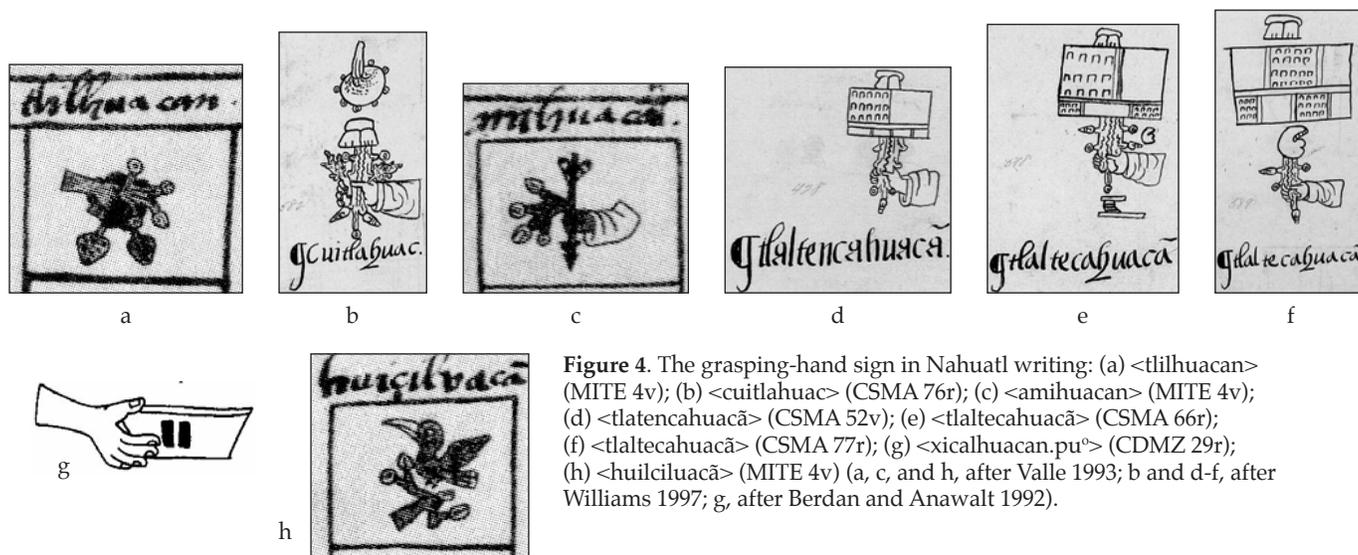


Figure 4. The grasping-hand sign in Nahuatl writing: (a) <tilhuacan> (MITE 4v); (b) <cuitlahuac> (CSMA 76r); (c) <amihuacan> (MITE 4v); (d) <tlatencahuacā> (CSMA 52v); (e) <tlattecahuacā> (CSMA 66r); (f) <tlattecahuacā> (CSMA 77r); (g) <xicalhuacan.pu> (CDMZ 29r); (h) <huilcilaucā> (MITE 4v) (a, c, and h, after Valle 1993; b and d-f, after Williams 1997; g, after Berdan and Anawalt 1992).

gin the analysis of the grasping-hand sign).

The leaves sign also occurs in another very interesting case, the glyphic transliteration of the name of the Spanish *encomendero* Luis Vaca, written on two occasions in the Memorial de los Indios de Tepetlaoztoc (40r and 43r) (Figure 3a, b) as:

OLO-IX-wa<sub>2</sub>-ka, *Oloix Waka*<sup>14</sup> <gloss: luys vaca>  
(MITE 43r).<sup>15</sup>

Although in these cases the alphabetic sequence of the corresponding gloss is not *hua* but *va*, we find the result of transcribing the glyphs wa<sub>2</sub>-ka, *Waka*, is the Nahuatlization of the Spanish surname “Vaca.” The Spanish phoneme /b/, absent in Nahuatl, is represented by means of /p/ or /w/ in medial position (*p* and *hu*, respectively, in alphabetic signs) and, in some cases /w/ is used for /b/ (*b/v*) in initial position (Lockhart 2001:119). Specifically, the Spanish word “vaca(s)” is attested as *huacax*—/wakaš/—in alphabetic texts in sixteenth century Nahuatl (*ibid.*). The use of wa<sub>2</sub> to represent the alphabetic sequence *va* /ba/ of the Spanish surname “Vaca” is therefore correct, and works well with all the conventions that are documented for the Nahuatlization of Castillian phonemes, providing a new context in which the reading of the leaves sign as a wa phonogram is productive.

The origin of the phonetic sign wa<sub>2</sub>—representing two plant leaves—is probably explained by acrophonic derivation from *huāuh-tli* “amaranth” (Karttunen 1992:82), cf. “*uauhquilitl*, amaranth, savory, greens that are eaten boiled...reverential *uauhtli*” (Siméon 1992:744, author’s translation) and “(h)*uauhtli*, sprout of amaranth *uauhquilitl*, which the Mexicans did not

eat except in time of great hunger, since they preferred maize” (*ibid.*:745, author’s translation).<sup>16</sup>

### The WA logogram

The sign whose reading value and function I propose next belongs to a complex group of graphically related signs, consisting of a human hand (alone, with forearm, or with a complete arm) performing actions or remaining static. Although the signs belonging to this group present a high level of standardization that normally distinguishes them, on occasion they can be confused and graphically merged, making their identification difficult. The sign we are focusing on differentiates itself from the other signs of the group in that it consists of a hand with a forearm. This distinguishes it, for example, from the hand sign, the phonogram **ma**, which consists (normally) of a hand by itself, and from the logogram **AKOL** “shoulder” (and possibly,

<sup>14</sup> The representation of vowel length of Spanish loans in Nahuatl is unclear; therefore I have not represented it on the indigenous terms that gave rise to the signs.

<sup>15</sup> Regarding the compound glyph on folio 40r, Valle says “This person’s name glyph, to the right of his head, presents all the elements that make up the name: *ólotl* (*olo*), maize ear, *ixtelotlotli* (*ix*) eye = *oloix* for Luis; *uauhtli* (*uauh*), and *cactli* (*cac*) sandal = *uaucac* for Vaca” (Valle 1993:66, author’s translation). Regarding the glyphic compound on folio 43r, he says “The personal name of Luis Vaca, previously described, presents the same four graphic elements corresponding to the syllables of the following words: *ólotl*, maize ear; (*ix*)*telotlotli*, eye, to make up Luis and *huactli* [*sic*] and *cactli*, cow. In this case a variant order of syllables is presented, but they are the same elements with equal phonetic values” (*ibid.*:71, author’s translation).

<sup>16</sup> Valle (1993:66) has also identified the object represented by the sign as *huāuh-tli*.

from the logogram **MA** “hunt, capture”), which shows a complete arm bent at the elbow.<sup>17</sup> The particular graphic characteristic that distinguishes the sign that we are about to discuss from the hand sign **ma**, from the shoulder sign **AKOL**, and from the presumed logogram **MA** is that the hand is grasping other signs in the glyph block (Figure 4). For this distinguishing trait—and lacking, as in the previous cases, an identifying catalogue number—I will refer to it as the grasping-hand sign. The sign shows European influence in some of its appearances, with the representation of clothing covering the forearm.

As with the **wa**<sub>1</sub> and **wa**<sub>2</sub> phonograms discussed above, the grasping-hand sign is also present in glyphic compounds whose associated glosses carry the alphabetic sequence *hua*: <tlilhuacan> (MITE 4v), <cuitlahuac> (CSMA 76r), <amihuacan> (MITE 4v), <tlaltencahuacā> (CSMA 52v), <tlaltecahuacā> (CSMA 66r, 77r), and the already mentioned <xicalhuacan> (CMDZ 29r) (Figure 4a-g). In one case it is associated with the alphabetic sequence *ua*: <huiçiluacā> (MITE 4v) (Figure 4h).<sup>18</sup> Clearly, the sign is associated with the phoneme /wa/, but we have to establish the nature of the sign and determine if it is a logogram or a phonogram. To do so, as in the previous cases, we analyze the behavior of the sign in order to infer its function in the system.

Various indicators suggest that the grasping-hand sign is a logogram. On occasion, it is accompanied by the phonograms **wa**<sub>2</sub>, **a**, and perhaps **wa**<sub>1</sub>. In the case of <tlilhuacan> from the Memorial de los Indios de Tepetlaoztoc (Figure 4a) and <cuitlahuac> from the Codex Santa María Asunción (Figure 4b), the **wa**<sub>2</sub> phonogram is present, showing that the grasping-hand sign cannot be a second phonogram, because the presence of two **wa** signs in the transcription ought to provide two /wa/ sequences in the transliteration as well, and there are no indications of this in any of the examples; we find only one /wa/ sequence transcribed. The only possible explanation for /wa/ appearing doubled in the transcription but singly in the transliteration is that the grasping-hand sign is a logogram for **WA**, and that the **wa**<sub>2</sub> phonogram acts as a phonetic complement. Being a phonetic complement to a logogram, it is not read in the transcription, thus giving us **-wa-WA-**, *\_wa\_* (in the same way as: **tlā-TLAL-**, *tlāl*; **wi-WILO**, *wilō*; or **ko-KOL**, *kōl*). The reading of the grasping-hand sign as **WA** permits us to consider that the water sign **a** that normally accompanies it is a final phonetic complement: **-WA-a**, *\_wa\_*. Absence of the phonograms **wa** and **a** in some appearances of **WA** confirms their roles as optional phonetic complements.

Considering, then, that the grasping-hand sign is a logogram with the value **WA**, we are in a position to

transcribe and transliterate the examples in which it occurs (Figure 4a-g):

- TLIL-wa<sub>2</sub>-WA-a**, *Tlilwa'[kān]* <gloss: tlilhuacan> (MITE, 4v)<sup>19</sup>  
**K<sup>w</sup>ITLA-tla-wa<sub>2</sub>-WA-a**, *K<sup>w</sup>itlawā[k]* <gloss: cuitlahuac> (CSMA 76r)  
**a-mi-WA**, *Āmiwa[kān]* <gloss: amihuacan> (MITE 4v)<sup>20</sup>  
**tlā-TLAL-WA-a**, *Tlāl[tēka]wa'[kān]* <gloss: tlaltencahuacā> (CSMA 52v)<sup>21</sup>  
**tlā-TLAL-te-ka-WA-a**, *Tlātēkawa'[kān]* <gloss: tlaltecahuacā> (CSMA 66r)<sup>22</sup>  
**tlā-TLAL-te-WA-a**, *Tlātē[ka]wa'[kān]* <gloss: tlaltecahuacā> (CSMA 77r)  
**WITZIL-WA-a**, *Witzilwa'[kān]* <gloss: huiçiluacā> (MITE 4v).

It is now time to return to the example glossed as <xicalhuacan.pu<sup>o</sup>> in the Codex Mendoza—reproduced again in Figure 4g—that I classified as problematic (see above), leaving the explanation pending until after the analysis of the grasping-hand sign. Simply applying the values **XIKAL** and **WA** to the gourd bowl and grasping-hand signs we obtain the quite satisfactory reading of

- (a) **XIKAL-WA** *Xikalwa'[kān]* <gloss: xicalhuacan.pu<sup>o</sup>> (CMDZ 29r),<sup>23</sup>

which offers yet another example of the productivity of the **WA** reading for the logogram. But I want to suggest that in this case perhaps the two infix strokes in the **XIKAL** logogram—as appear in the examples glossed

<sup>17</sup> *Mā* vt; pret: *māh* “to hunt, catch something, to take captives” (Karttunen 1992:126).

<sup>18</sup> The forms *hua* and *ua* are evidently variants in colonial alphabetic writing of the phoneme sequence /wa/.

<sup>19</sup> See Karttunen (1992:308) for the vowel quality of *tlil-li* “black ink, soot.”

<sup>20</sup> Although the initial /a/ of the gloss <amihuacan> is not evident in the edition of the Memorial de los Indios de Tepetlaoztoc that I have worked with (see Valle 1993:147 and 4v), I have followed the paleography given by the author and his analysis of the toponym based on the verb *ām(i)* “to go hunting” (Karttunen 1992:10).

<sup>21</sup> See Karttunen for the vowel quality of *tlāl-li* “earth, land, property” (1992:275) and *tēka* “to stretch oneself out, to lie down, to settle; to stretch something out, to spread something on a flat surface” (ibid.:215).

<sup>22</sup> The sandal sign **ka** is quite separated from the lips sign **te**, appearing below the sequence **-WA-a**, such that it might be well to consider another transliteration and transcription, **tlā-TLAL-te-WA-a-ka**, *Tlātē[ka]wa'kā[n]*, which would still correspond to the gloss <tlaltecahuacā> of the example. This alternative would certainly be interesting, in that the scribe would be partially representing the locative suffix *-kan*.

<sup>23</sup> See Karttunen for the vowel quality of *xikal-li* “gourd vessel” (1992:323) and Siméon for *xicalli* “gourd, type of wooden vessel that serves for drinking <xicara>” (1992:764, author’s translation).

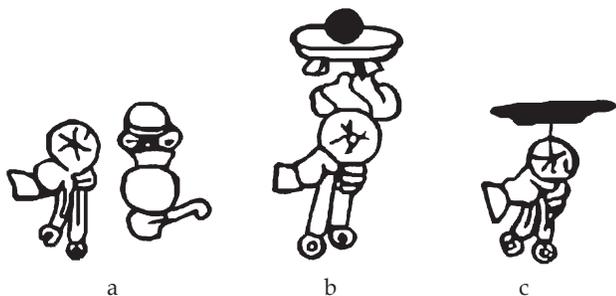


Figure 5. Name glyph of Juan in the Codex Tlatelolco: (a) Barlow 1989:Plate 2p; (b) Barlow 1989:Plate 2q; (c) Barlow 1989:Plate 4dd.

as <xicaltepec.pu<sup>o</sup>> (CMDZ 33r and 46r)—may not be graphic elements of the sign but the same double-stroke sign wa<sub>1</sub> present in the compositions that we have already seen of AKAL-wa<sub>1</sub>, TEPE-wa<sub>1</sub>, and SIWA-wa<sub>1</sub> (Figure 1a-b, d). It could be acting in this case as a phonetic complement to the WA logogram. The alternative of (a) XIKAL-WA could be, then,

- (b) XIKAL-wa<sub>1</sub>-WA, *Xikalwa*′[kān] <gloss: xicalhuacan.pu<sup>o</sup>> (CMDZ 29r).

In addition to the internal scribal indicators suggested by its behavior in the writing, we can also see that the WA grasping-hand sign carries meaning in addition to sound, a feature characteristic of this type of sign. The meaning of WA is very possibly -wa′, a nominal suffix that indicates “possessor” (Launey 1992:99-100; Lockhart 2001:70-71).<sup>24</sup> In fact, we can show that in many of the occasions in which the WA logogram appears, the transcribed sequence /wa/ fills this function if we morphologically analyze the constituent elements: *Xikalwa*′kān, *xikal-wa*′-kān “place of the possessors of gourd vessels”; *Tlilwa*′kān, *tlil-wa*′-kān “place of the possessors of soot/ink”; *Tlāltekawa*′kān, *tlāl-tēka-wa*′-kān “place of the possessors of parceled land”;<sup>25</sup> *Witzilwa*′kān, *Witzil-wa*′-kān “place of the possessors of hummingbirds.”<sup>26</sup> Allowing for this proposal, that wa′ “possessor” is the meaning of the WA logogram, we can then try to suggest the graphic origin of the sign, an ingenious symbolic indication of said “possession” by means of a representation of a hand grasping or seizing objects (usually, by convention, the water sign a).

The proposed reading of the grasping-hand sign as the WA logogram casts new light on a glyphic compound that has not been as well understood as others. I refer to a composition that appears repeated on five occasions in the Codex Tlatelolco—in the years corresponding to 1554 and 1555, Láminas V and VI<sup>27</sup>—which, according to the associated glosses in at least two of the cases, corresponds to the Spanish name “Juan” (Barlow 1989:343-344; Valle 1994:68, 72) (Figure

5). In these glyphic compositions we find three signs: the logogram XIW “turquoise,” the grasping-hand logogram WA under discussion here, and the water sign, the phonogram a.

Originally Barlow—who was the first to connect the name Juan of the associated glosses with the sequences of glyphs just enumerated—described the glyphic compound as “a hand that clasps a turquoise from which falls drops of water . . . which is the indigenous method of writing Xu-an (*Xihuitl*, turquoise, *ana*, to take, with the water as determinative *a*)” (Barlow 1989:343 and Plate 2p-q, author’s translation). On another occurrence of the compound in the codex, Barlow changes his definition to “the turquoise and hand that squeezes (“Xuan”)” (ibid.:344 and Plate 4dd, author’s translation). Both interpretations present problems. In the first place, the logogram “turquoise” always has the reading value XIW and in no context possesses the value /xu/; and in the second place, the grasping-hand sign does not have the value /an/ or /ana/ in any other context. Barlow is correct in seeing the water sign a as a phonetic complement to the grasping-hand sign, but its value is surely WA not AN(A).

In his recent study of the Codex Tlatelolco, Valle (1994) also comments on the glyphic collocations corresponding to the name “Juan.” In the first example of Lámina V, in his analysis of the glyphic composition of the name “Juan” (ibid.:68), he correctly identifies the

<sup>24</sup> The suffix appears written with distinct forms in the sources: -huâ (Launey 1992:99-100), -hua(h) (Lockhart 2001:70-71), -huah (Karttunen 1992:80). Its most common form in the colonial alphabet is -hua. It is clear that the suffix is /wa′/ with a final glottal stop. I do not reproduce a glottal stop in the WA logogram, since it is apparently not represented in the writing (Lockhart 1992:579, Note 18; Lacadena n.d.; Lacadena and Wichman 2004).

<sup>25</sup> In his discussion of the glyphic compounds Cuitlahuac and Tlattecahuacā in the Codex Santa María Asunción, Williams (1997:40-41) suggested correctly that “the grasping hand perhaps shows ‘possession’ to depict the sound hua.”

<sup>26</sup> If the reading a-mi-WA, *Amiwa*′[kān], inspired by the gloss <amihuacan> (MITE 4v), is correct, its analysis could possibly be *ami-wa*′-kān “place of hunting.” In that case, the suffix would not be -wa′ “possessor,” but -wa, possibly the passive/impersonal suffix found in the sources as -hua (Launey 1992:135-136, 138-139; Lockhart 2001:76-77), which apparently represents the short /a/ vowel. If that were so, use of the grasping-hand sign would be in rebus fashion. In any case, if we consider that the gloss <amihuacan> is incorrect in indicating the initial /a/, being in reality <mihuacan>, an alternative reading of the glyphic compound could be mi-WA-a, *Miwa*′[kān], *mī-wa*′-kān “place of the possessors of arrows” (*mī-tl* “arrow, dart,” Karttunen 1992:149), where -wa′, ending in a glottal stop, would be the “possessor” suffix, constituting yet another example where the WA logogram functions with added meaning.

<sup>27</sup> I follow Valle (1994:55) in the assigning of the dates 1554 and 1555 to these sections and the denomination of the láminas. They correspond to the years 1559-1560 of Barlow (1989).

three signs making up the glyph block—the turquoise sign, the grasping-hand sign, and the water sign—and, also correctly, assigns reading values to the turquoise and water signs as “*xiu*” (XIW) and “*a*” (a) respectively, but he does not suggest a reading value for the hand.<sup>28</sup> On the next occasion, he refers to the presence of the same elements, saying of the grasping hand, “a hand that is not read” (ibid., author’s translation).<sup>29</sup>

If we apply to the signs the confirmed readings of XIW for the turquoise sign, a for the water sign, and WA for the grasping-hand sign as I have proposed here based on the suggested evidence, the transliteration of these examples would result in

XIW-WA-a, *Xiwa[n]* “Juan” <gloss: Juan>  
(CTLA 1554, 1555),

where the logograms XIW and WA are functioning in rebus fashion, not for their respective meanings of “turquoise” and “possessor” but for the reading values /xiw/ and /wa/ that they give to the compound; and a is acting as a final phonetic complement to the WA logogram, a phenomenon already seen in other glyph compositions. Although phonologically the form *Xiwan* might seem somewhat unusual for the Spanish name *Juan*, this is only a superficial impression. In reality, XIW-WA-a, *Xiwa[n]* is the precise glyphic transcription of *Xihuan*, the Nahuatlized form of Juan attested in the alphabetic documents in Nahuatl (see Lockhart 1992:341, Table 8.3). Most importantly for our present purposes, it also offers a new context where the grasping-hand sign has the reading value WA as I have proposed.

### Additional comments

The decipherment of the grasping-hand sign as the logogram WA, -*wa*’ “possessor,” permits one to increase the number of examples where the signs *wa*<sub>1</sub> and *wa*<sub>2</sub> act as phonetic complements, thus reinforcing their respective decipherments as phonograms. Thus, to the example of SIWA-*wa*<sub>1</sub> in the Codex Mendoza which we used to establish the character of the *wa*<sub>1</sub> phonogram, it is possible to add XIKAL-*wa*<sub>1</sub>-WA from the same codex, if this is an acceptable reading. Likewise, and with greater certainty, to the example of *wa*<sub>2</sub>-WAK-TZIN of the Memorial de los Indios de Tepetlaoztoc which we used to establish the character of the *wa*<sub>2</sub> phonogram, we can now also add those of TLIL-*wa*<sub>2</sub>-WA-a, of the

<sup>28</sup> “In the personal name of the next friar is distinguished a group of three components, a hand that holds up the water glyph and over that the circle of the year; *xihuitl*, *atl* (turquoise, water), *Xiu*, *a*, for Juan” (Valle 1994:68, author’s translation).

<sup>29</sup> “The personal name of the last friar is composed of two groups over a horizontal plane; the first to the left corresponds to Juan, with the same components as the previous one: *xihuitl*, *atl* and a hand that is not read” (Valle 1994:68, author’s translation).

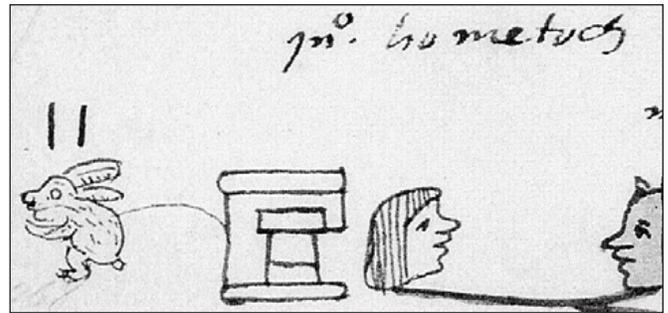


Figure 6. The logogram OME “two” written with two vertical strokes: <ju°.hometoch> (CSMA 32v) (after Williams 1997).

same document, and of K<sup>W</sup>ITLA-tla-*wa*<sub>2</sub>-WA-a, of the Codex Santa María Asunción. And although it was not necessary to prove the character of the water sign a—well established since Aubin (1849:33)—these new contexts corroborate its functionality and correct identification as a phonogram that phonetically complements the WA logogram: K<sup>W</sup>ITLA-tla-*wa*<sub>2</sub>-WA-a, TLIL-*wa*<sub>2</sub>-WA-a, WITZIL-WA-a, and XIW-WA-a.

It is interesting to observe that even though the WA logogram appears in documents belonging to both the Tenochtitlan-Tlatelolco school (the Codices Mendoza and Tlatelolco) and the school of Tetzcocho (the Memorial de los Indios de Tepetlaoztoc and the Codex Santa María Asunción), there seems to be a different distribution for the double-stroke sign *wa*<sub>1</sub>, which is restricted apparently to the school of Tenochtitlan-Tlatelolco, and the leaves sign *wa*<sub>2</sub>, which is restricted apparently to the Tetzcocho school. This phenomenon is certainly exceptional in the system of Nahuatl writing, in which signs and writing conventions were generally shared by all the scribal schools (Lacadena, this issue) and allographs are not common.

The use of two distinct signs with the same reading value in the schools of Tenochtitlan-Tlatelolco and Tetzcocho can nevertheless be explained. In the former, numerical logograms for quantities from one to nineteen are always expressed as dots. This applies to the counts of the days of the calendar, the months, the years, and other counted objects. In the Tetzcocho school, however, two systems of numerical logograms were employed at the same time: one of points, as in Tenochtitlan-Tlatelolco, and the other of vertical strokes. The double-stroke sign *wa*<sub>1</sub> attested in Tenochtitlan-Tlatelolco, if used in Tetzcocho documents, could be confused with the logogram OME “two” (*ōme*) written in that school with two vertical strokes, as in the example OME-TOCH, *Ōme Tōch[tli]* <gloss: ju°. hometoch> (CSMA, 32v) (Figure 6). The use of the leaves sign *wa*<sub>2</sub> by the scribes of the Tetzcocho school, instead of the double-stroke sign *wa*<sub>1</sub> of Tenochtitlan-Tlatelolco, may have served to resolve this potential confusion.

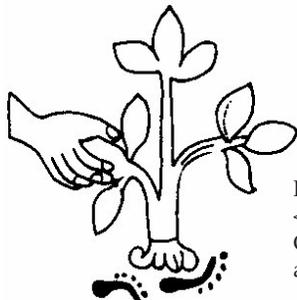


Figure 7. The compound <xomeyocan.pu<sup>o</sup>> in the Codex Mendoza (after Berdan and Anawalt 1992:29r).

A second series of correspondences between glyph forms and glosses suggests that the grasping-hand sign is a polyvalent logogram; that is, a sign with more than one reading value. Polyvalence is well attested in other writing systems of the world, and is also present in Nahuatl writing.<sup>30</sup> Possible phonetic complementation of the grasping-hand sign by *o*, in association with glosses containing the sequences *yo/yu* instead of *hua/ua/va*, constitutes an interesting indication that the grasping-hand sign had a second reading value, possibly **YO**, also logographic, corresponding to the suffix *-yo'*.<sup>31</sup> Like *-wa'*, *-yo'* also indicates “possession” (with the sense in toponymic expressions of “covered with”).<sup>32</sup> Although some of the glosses presenting *yo/yu* are possibly incorrect (in various examples of the appearance of the grasping-hand sign logogram it is complemented by *a*, not by *o*), there exist sufficiently consistent cases to consider this possibility. An interesting example that supports this suggestion is the toponym glossed as <xomeyocan.pu<sup>o</sup>> in the Codex Mendoza (Figure 7), composed of three signs: the logogram **XOME** “elder,” the grasping-hand sign, and the phonogram *o*.<sup>33</sup> The transliteration and transcription of the glyphic compound—I suggest—should be

**XOME-YO-o**, *Xōmēyo'* [kān]<sup>34</sup> <gloss:xomeyocan.pu<sup>o</sup>> (CMDZ 29r).

A more complete analysis of this presumed second value of the grasping-hand logogram is best left for a future work.

<sup>30</sup> For example, the land sign, is a logogram with the values of **TLAL** “land” and **MIL** “maize field,” whose polyvalence is resolved on many occasions by means of phonetic complementation, as in **tla-TLAL** and **mi-MIL**.

<sup>31</sup> In the sources it appears as *-yo* (Launey 1992:100-101), *-yoh* (Karttunen 1992:340), *-yo(h)* (Lockhart 2001:70); *-yo/yu* in colonial alphabetic script. The suffix is /yo' /, with final glottal stop.

<sup>32</sup> “It can be said with certain validity that *-yo* constructions mean ‘possessor of,’ but only in a restricted sense; they almost always mean that the subject of the noun is literally or figuratively covered with what the noun refers to” (Lockhart 2001:72). See also Launey (1992:100-101).

<sup>33</sup> In the version of this compound in the Matrícula de Tributos (Castillo 1997:Lámina 9) the phonogram *o* is apparently absent.

<sup>34</sup> See Karttunen (1992:330) for the vowel quality of *xōmē-tl* “elder tree / saúco.”

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# On the Complementary Signs of the Mexican Graphic System

Zelia Nuttall

## Editor's note

*This short essay appeared as an appendix to Nuttall's 1888 publication, Standard or Head-dress? An Historical Essay on a Relic of Ancient Mexico, Archaeological and Ethnological Papers of the Peabody Museum, Harvard University 1(1):49-52. Its precocious recognition of a feature of the Nahuatl writing system—as well as the underlying assumption of the existence of Nahuatl writing—amply justifies its republication here. The orthographic conventions and typographical errors of the original (including superscript text, somewhat inconsistent quotation marks, italics, and equal signs) have been reproduced as faithfully as possible.*

IN a preliminary note made by me in August, 1886, I made the statement that "I had discovered certain determinative signs that render a misinterpretation of the Nahuatl picture-writings impossible.<sup>1</sup> In this announcement I adopted, in connection with certain signs, the adjective "determinative" on account of its current meaning "having power to determine." I did not realize at the time that by so doing I became liable to misconstruction, as the constant use in Egyptian hieroglyphs of the appellation "determinative signs" with a restricted sense has identified this term with a single specific significance. Moreover, the term "determinative" has been employed by such prominent writers on the Mexican graphic system as Orozco y Berra, Señor José Vigil, Señor Antonio Peñafiel, and others, with differentiations of meaning removed from that I wished to express.

In connection with the attempted decipherment in the foregoing essay I am afforded a welcome opportunity of making a brief but more explicit statement, accompanied by a few illustrations, of the character of the Mexican signs whose systematic occurrence and incalculable value when presented with new decipherments as a proof of their correctness I believe I am the

first to observe upon. It is far from my intention to place undue importance upon this discovery. Future years of research and close application and the coöperation of fellow students can alone test and reveal its true value. At the same time the mere recognition of even the restricted occurrence of these signs and of their systematic employment and possible value marks some advance in what often seems a hopeless direction.

It is due to valuable information kindly communicated to me by the eminent philologist and Egyptologist, Dr. Carl Abel, that I have been able to ascertain, by comparison, the equivalency of the signs in question with what are termed in Egyptian hieroglyphy "complementary signs" or complements: German; Ergänzung, Ergänzungszeichen: French; complément, complément phonétique.<sup>2</sup>

It is obvious that the Mexican complementary signs,

<sup>1</sup>Preliminary note of an analysis of the Mexican Codices and Graven Inscriptions. Proceedings of the American Association for the Advancement of Science. vol. xxxv, Buffalo Meeting, August, 1886.

<sup>2</sup>I am indebted to the same high authority for the following facts relating to the Egyptian compléments.

"The phonetic addition was discovered but erroneously regarded as forming part of the original system of writing by Champollion. Rosellini, Lepsius and Seyffert having defined the purely ideographic nature of the original hiéroglyphs, Rougé in his Introduction à l'Étude des Ecritures et de la langue Egyptienne (1869) was probably the first, or at least one of the first, who applied the term complément. Birch's Grammar in Bunsen's Egypt (1867) does not yet contain the term.

Complements of this nature occur in the earliest as well as in the latest records known; the earliest records contain the entire hieroglyphical system perfectly developed in this, as well as in nearly every other respect.

The addition of phonetic to syllabic signs must have arisen from fear of misinterpretation. Syllabic signs giving the sound of their respective words admitted of various pronunciation in a language with few ideas and many words for every idea. When therefore, from original ideograph they became purely syllabic and figured as mere syllables in the rendering of other words disconnected with the things they represent, the desirability of a phonetic complement must have obtruded itself at once. Many syllabic hieroglyphs continued polyphonus to the end of the chapter just as in cuneiform."

like the Egyptian, must have arisen from the endeavor to avoid misinterpretation and their existence proves perhaps the attainment of a higher stage of development in the Aztec graphic system than has been hitherto admitted. The Mexican complement differs from the Egyptian inasmuch as the latter "is never a syllable but always a single letter, a circumstance sufficiently accounted for by the original brevity of Egyptian words." The characteristics of the Nahuatl language explain equally the reason why the Mexican complement may be either a single vowel, a monosyllable or dissyllable.

In selecting illustrative examples I have taken pains to choose only hieroglyphs of well-known signification from familiar and accessible sources. Although these hieroglyphs have been repeatedly analyzed and deciphered and the presence in one instance noted of what will be shown to deserve the name of complementary signs, it seems that the extent to which these were employed and their great value, if adopted as a test of the accuracy of new decipherments, have been entirely disregarded. The accepted meaning of [Figure 1, 10a-b] is that each expresses the name of a tribe=Acolhua, or of the province=Acolhuacan. In both hieroglyphs an arm and hand are painted, which might express either *Maitl*=arm in general, also hand, or *acolli*=shoulder. Above the arm the conventional sign for water,=*atl*, is painted, yielding in composition the phonetic value *a* which is also the first syllable of the word *acolli*. The sign of water is in this case the complement; it indicates that not *maitl* but *acolli* is meant to be expressed by the painted arm, and duplicates thus the first syllable=<sup>a</sup>*acolli*.

A similar use of water is made in the hieroglyph for *Apanecatl* already alluded to in the preceding essay [Figure 1, 8]. In it is represented that which I believe to have been shown to be a head-dress=*apanecatl*, above=<sup>pan</sup>, water=<sup>apan</sup>*apanecatl*. In the Mexican graphic system there are familiar instances of a single word being expressed by a different set of signs conveying the same sounds. In the manuscript History of

Mexico, dated 1576 (thus fifty-five years after the Conquest) we find above the figure of the second historical personage, a hieroglyph [Figure 1, 14] consisting of *pantli*=banner, *pan*=above, *a*=water=<sup>apan</sup>*apan*, as shown by the annotation=*apane* written next to this hieroglyph in the manuscript; the name is but incompletely expressed in this case.

An interesting example is furnished by a hieroglyph representing the month *Atemoztli* of the Mexican calendar [Figure 1, 12]. It contains a divided, elongated representation of water between which footsteps are painted. Such footsteps were constantly employed to express a multitude of meanings, according to the position in which they were placed.<sup>3</sup> The necessity for an indication as to which of many words the footsteps were, in this case, to convey is evident and this indication was furnished by the native scribe who added the complement *a stone*=*tetl*=*te* which gives the first syllable of the verb *temo*, to descend, in the name <sup>te</sup>*atemoztli*. A parallel example to this is given by Señor Orozco y Berra as No. 251, page 5<sup>a</sup> of his atlas, and in the accompanying text he moreover states, "In order to make the reading evident the sign *tetl* accompanies the footsteps and gives the initial syllable (of *temoc*)."<sup>4</sup>

Recognizing as he did the presence and even the purpose of the sign *tetl* in one instance, it seems strange that this thoughtful writer, whose work on Ancient Mexico is a fund of valuable information, overlooked the recurrence and general value of such signs, not only as affording, when present, a guarantee for the correctness of new interpretations, but also as marking a step of the development of the Mexican graphic system.

It is an interesting and significant fact that but 366 years ago the Mexicans in their elaboration of a method of writing had attained, but not yet perfected, a system of complementary signs such as was in finished use in Egypt over 6000 years ago.

<sup>3</sup> See Orozco y Berra, *Historia*, vol. I, chapter V, on the *Escritura jeroglifica*.

<sup>4</sup> *Op. cit.*, vol. I, p. 475.



**Figure 1.** Plate II to Nuttall 1888 (see editor's note for full citation): (1) Group of warriors showing method of carrying banners. Atlas Duran, part I, pl. 30. (2) Standard of the net. Mendoza Collection, part III, pl. 68. (3) Common form of banner. Mendoza Collection, part III, pl. 68. (4) Military equipment, consisting of dress and unmounted banner "river of gold." The small flag represents the numeral 20 and is placed here in order to show the usual way it was used. Cortès, Historia ed. Lorenzana. (5) Standard. Mendoza Collection, part III, pl. 60. (6) Standard with framework affording means of attachment. Mendoza Collection, part II, pl. 48. (7) Mexican warrior, from oil-painting in the Bilimek Collection, Vienna, after Hochstetter. (8) Figure with Hieroglyph representing the word Apanecatli, from MSS. of Boturini Collection (Kingsborough, vol. I). (9) Head with Hieroglyph, from Mendoza Collection, part I, pl. 17. (10a) Hieroglyph. Mendoza Collection, part I, pl. 22. (10b) Hieroglyph. Codex Osuna. (11) Group from original Mexican MSS. Bilimek Collection, Vienna Museum. (12) Hieroglyph of month Atemoztli. Atlas Orozco y Berra, pl. 18. (13a, b) Fans. Mendoza Collection, part III, pl. 69. (14) Hieroglyph from a MSS. History of Mexico written in 1576.