

Yet Another “Decipherment” of the Isthmian Writing₂ System

Or: Why Justeson and Kaufman’s “Epi-Olmec decipherment” is structurally *not* unique. Or: Why *no* “decipherment” of a morpho-phonographic writing₂ system that does not fulfill the $q_W \ll 0.1$ condition can ever be structurally unique

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„Ja, jävet dat?“

Helene Brotzki, geb. Müllers

** 16.06.1931 in Tönisvorst, † 02.07.2016 in Hüserheide*

ABSTRACT The $q_W \ll 0.1$ condition hypothesis is formulated as an estimating quick test for the feasibility of a structurally unique and therefore uncontroversial decipherment of a given morpho-phonographic writing₂ system. In order to support this hypothesis it is shown that – beside the “Epi-Olmec decipherment” by Justeson and Kaufman (1993) based on pre-*proto-Zoquean* and despite the claim of the same authors that the data does not fit a Mayan language model – it is also possible to consistently “identify” the language behind the Isthmian writing₂ texts as *proto-Huastecan*. The conclusion is thus that there is no *epigraphic* evidence for the *Mixe-Zoque* hypothesis (i. e. that the Olmecs and/or the so-called Epi-Olmecs spoke a *Mixe-Zoquean* language).

After giving a general introduction into the field, the main treatise has a bipartite structure: Chapter 2 is the overriding part and deals with the above-mentioned topics, while the appendix – actually a separate paper (and as such it will be presented) – contains the “decipherment” of the Isthmian writing₂ system based on the “*Huastecan hypothesis*” presented as a what-if study (*videlicet* what if the author were unaware of the arguments discussed in ch. 2).

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1. The Isthmian writing₂ system: An introduction

More than one century after the publication of the enigmatic Tuxtla Statuette by Holmes (1907), more than three decades after the astounding discovery of the magnificent La Mojarra Stela 1 (Winfield Capitaine 1988), almost twenty years after the Feldspar Mask (“Teotihuacan-style mask”), the last new-found object bearing an Isthmian writing₂ text,¹ has come to light (Houston and Coe 2003), a quarter of a century after the study of Isthmian writing₂ has witnessed a “decipherment” (Justeson and Kaufman 1993) and its rebuttal a decade later (Houston and Coe 2003), it seems that the debate on the decipherment of that scarcely attested system, which was and is known by manifold names such as “Tuxtla script” (Méluzin 1992), “La Mojarra Script” (Anderson 1993; Macri and Stark 1993), “epi-Olmec hieroglyphic writing” (Kaufman and Justeson 2001; Mora-Marín 2010), or “Isthmian writing/script” (Houston and Coe 2003; Velásquez García 2008; Macri 2017d),² has reached an impasse. While Justeson and Kaufman appear to be unperturbed by Houston and Coe’s criticism and still propagate their “decipherment” as if it were accepted within the scientific community (e. g. in Kaufman and Justeson 2008), many scholars remain skeptic – albeit there seem to be researchers that consider the correctness of the “epi-Olmec decipherment” (at least regarding some signs) and the interpretation of the sign distribution as reflecting a Mixe-Zoquean grammatical structure as (very) probable.³ The conclusion that the va-

¹A thorough elaboration of the definition of writing₂ as *a writing₁ system that correlates with a specific language* (so-called “writing in the proper sense” or “true writing”) and therefore as a subsystem of writing₁, defined as *a sign system whose set of signs consists of graphic signs* (“writing in the broad sense”), can be found in Vonk (in press) as well as all other definitions of terms ([graphic] sign, sign system, iconography, notation) used in the present paper. The distinction between these two concepts of what writing is and what not is for one thing for analytic reasons, but for another thing a consequence of the fact that a reconceptualization of our notions on “writing” is in my opinion necessary and that the resulting definitions of writing_{1/2} are much more appropriate especially with respect to Mesoamerican writing₁ systems.

²The designations that are based on the geographical distribution of the writing₂ system are to be recommended for obvious reasons.

³“My impression is that [...] John Justeson and Terrence Kaufman have succeeded in demonstrating that the script can be regarded as a Mixe-Zoquean language, i.e. the orthographic and grammatical patterns that account for the use of the most frequent and contextually constrained signs clearly point to Mixe-Zoquean as the grammar of the texts.” (Mora-Marín 2010:13). “La idea de que los textos istmeños se encuentran en una lengua mixe-zoqueana es hoy más que probable. Sabemos que se trata de un sistema logosilábico gracias a su número de signos. Incluso contamos con un pequeño grupo de propuestas de desciframiento

lidity of “epi-Olmec decipherment” is “unlikely” (Houston and Coe 2003:159) or (at least partially) “very probable” (Velásquez García 2008:664; Mora-Marín 2010:13) do of course not prove anything, they are just opinions (although certainly well-pondered ones). What is needed instead, is a clear *verification* or a *falsification*.

The problem with the paper by Houston and Coe is that – although working precisely in the right direction – they missed to indisputably demonstrate the actual problem with the writing₂ system in question: the uniqueness issue that leads to the *corpus* issue (or equivalent: $q_W \ll 0.1$ issue; ch. 2). If they had made more clear this crucial aspect, conclusions such as “the epi-Olmec decipherment fits (at least partially), so it very likely is correct (at least in principle)” (as in the above mentioned works by Mora-Marín and Velásquez García) would have been revealed as invalid from the beginning. The *corpus* issue simply dictates that we are unable to answer the question whether a “decipherment” is correct or not – even if the “decipherment” seems to be convincing (or not, depending on the respective researcher’s position). Any scholarly assessment à la “probably correct” or “probably not correct” is entirely irrelevant – it is the *corpus* (and not an academic) that will give us the answer once it is large enough.

We hence have to put the debate beyond this deadlocked situation of contrary academic appraisals, which – hopefully – can be accomplished with the present work. After a brief introduction into the *corpus* of inscriptions and their geographical and temporal distribution, a slightly more detailed summary of the research history on Isthmian writing₂ is given, before treating the main theses of the author: the *corpus* issue and the $q_W \ll 0.1$ hypothesis (ch. 2). In order to corroborate the latter hypothesis, the author has spared no efforts and worked out “yet another ‘decipherment’ of the Isthmian writing₂ system” based on a Huastecan language model, which is finally presented in the appendix.

1.1. *Corpus* of inscriptions

1.1.1. The Tuxtla Statuette

The first Isthmian writing₂ text came to light in the year 1902 when a nephrite figurine has been accidentally unearthed by a plow in a *milpa* in the district San Andrés Tuxtla (Fig. 1.1a; Holmes 1907). The surface of the statuette, which stands 16.5 cm high, bears an inscription of a fairly iconic and hitherto unknown writing₂ system on all four sides (Fig. 1.1b), which seems to be initialized by a long count date including a date of the 365-day solar calendar and a date of the 260-day ritual calendar. With its text, which roughly⁴ consists of 65 signs (excluding numerals and calendar signs) arranged in nine vertical columns, it was the object

basadas en el principio de sustitución [footnote: Como por ejemplo los silabogramas **ki**, **ma** y **si**, que según Justeson y Kaufman operan sistemáticamente en al menos tres contextos independientes cada uno.” (Velásquez García 2008:664).

⁴Sign counts depend on the scholar’s opinion on which signs can be considered as elementary.

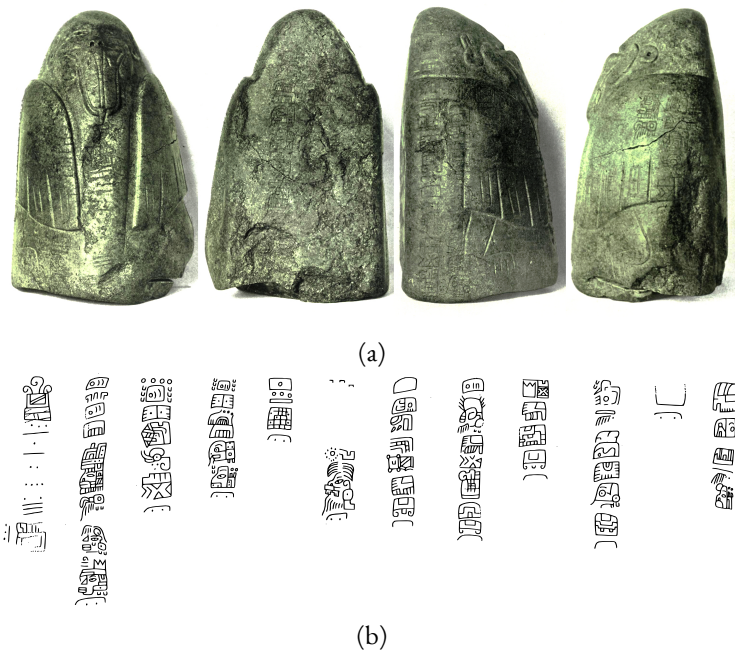


Figure 1.1.: (a) The Tuxtla Statuette (Holmes 1907); (b) Inscription (after Méluzin 1992:Fig. 1).

with the longest known Isthmian inscription until the discovery of the La Mojarra Stela in 1986.

Of course, at this time the designation “Isthmian inscription” did not exist for it first had to be clarified whether it constitutes an own writing₂ system, whether it is a specimen of Maya writing₂, or whether it is even a forgery rather than an authentic Mesoamerican work. Holmes (1907), who first published the Tuxtla Statuette, collocated assessments of several contemporary scholars regarding these questions. While some of these researchers immediately recognized the general similarity with the Maya writing₂ system, others remained skeptical and emphasized the differences. However, studying the long count date on the front of the figurine, which evidently comes with the bar-and-dot number notation, it became clear that the missing numeral of the preceding sign compound corresponds to the expected “0” of a regular 365-day solar calendar date (which should be *o k'ank'in* in Yucatec, the “seating” of the month), and that the numeral “8” in front of an eroded sign within a cartouche ensuing the long count date corresponds to the expected numeral “8” of a day from the 260-day ritual calendar (which should be *8 kab'an*), which pointed to a general equivalence to the Maya calendar system. If one furthermore assumes that the correlation to European calendar systems is based on the same correlation constant as assumed

for the Maya calendar system, then the date on the Tuxtla Statuette would correspond to the Gregorian date March 14, 162 CE.⁵

The statuette itself shows the face of a certain bird, which mostly has been identified as a duck or a boat-billed heron. It might be that it is in fact related to the Mesoamerican wind deity (K. Taube according to Houston and Coe 2003). Whether it directly shows this (or a related) being, or rather a priest impersonating that being can of course not be decided. Likewise, it cannot be decided conclusively whether the inscription has been carved right after the manufacturing of the statuette, or whether it has been placed considerably later.

1.1.2. The El Sitio Celt

Several scholars such as Méluzin (1992) and Anderson (1993) consider the short text on a jadeite celt known as El Sitio Celt (Fig. 1.2) also an instance of Isthmian writing₂. Just as the Tuxtla Statuette, it was found by chance in a milpa, in this case, however, near El Sitio, San Marcos, Guatemala (Méluzin 1992:284) – far away from the region that today is assumed as being the actual area of distribution of the Isthmian writing₂ system (see below, Fig. 1.10).

The clearly Olmecoid iconography presumably showing a maize deity on the front of the celt (note the corn cob) might indicate that it is one of the oldest examples of an Isthmian inscription (roughly from the late Formative) – at least provided the text has been placed at the time of the celt's production. The ten signs in the vertical column on the back of the celt indeed show some similarities to known Isthmian texts (in fact, there seems to be a parallel to the text on the Tuxtla Statuette; cf. ch. A.2.1, Fig. A.21), but the fact that the signs seem to be more rounded in comparison to all other Isthmian inscriptions might indicate that this specimen is indeed considerably older than other Isthmian texts, meaning that the El Sitio Celt might show sign shapes from a phase before the signs of Isthmian writing₂ got their characteristic rather angular shape.

Because of its Olmecoid style it is unlikely that the celt originates from the region it has been found – it might have arrived in this region, for instance, due to trade links. The answer to the question when exactly the inscription has been placed, i. e. before or after the celt's arrival in the region of El Sitio, Guatemala, thus has severe consequences to the interpretation of the origin of the writing₂ system. In particular, if one assumes that the Isthmian writing₂ inscription has been placed after its arrival, one would have a scenario in which the original area of distribution of Isthmian writing₂ must have been considerably farther to the south-east.

⁵For all dates given in this work and calculated from long counts, I have used the correlation constant 584285. European dates are given according to the Gregorian calendar. Note that it is unknown whether the Mayan correlation constant, which itself is uncertain due to the “correlation problem” (Kelley and Milone 2011), also applies for the Isthmian system – the Gregorian dates are thus only approximations.

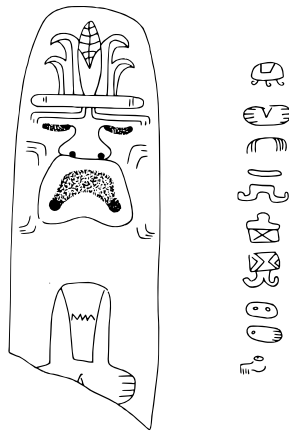


Figure 1.2.: El Sitio Celt (after Méluzin 1992:Fig. 2).

1.1.3. Inscriptions from Chiapa de Corzo

Another presumably very old instances of Isthmian writing₂ has been found on a sherd at Chiapa de Corzo, a major ceremonial center in the Central Depression of Chiapas. This site, which was occupied already in the early Formative, is known for its affinity with the Olmec style from La Venta (Macri 2017e). The sherd in question, the Chiapa de Corzo Sherd (Fig. 1.3b), has been found in the early sixties of the last century in a fill by archaeologists of the New World Archaeological Foundation, and is believed to be a product of the Formative – either of the Francesca-Guanacaste phases (sometime between 400 BCE and 1 CE), or (less likely) the Horcones phase (1–200 CE; Macri 2017e). The inscription consists of at least eleven signs of which a sign appearing twice was known already at this time from the Tuxtla Statuette (MS20). Unfortunately, the text seems to be only a remnant of a longer text that covered either the original pot or a larger sherd (perhaps a sherd later reused as a carrier of writing₂ comparable to Egyptian ostraca?). In either case, since the context is lost, this text is barely useful for any deciphering attempt.

Another remarkable object has been recovered by the same team of archaeologists: a wall-panel, which is known by the misleading name “Chiapa de Corzo Stela 2” (Fig. 1.3a). Bearing solely an incomplete date from the Isthmian calendar system, its significance lays in the fact that the incomplete long count date can be reconstructed from the accompanying day of the 260-day calendar (*6 ben* in Yucatec) as being [7.16.]3.2.13. This corresponds to December 8, 36 BC – the currently earliest of the few preserved cycle seven dates.

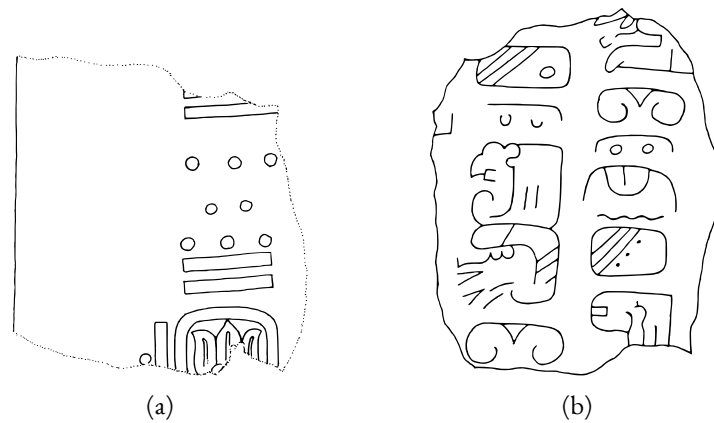


Figure 1.3.: Inscriptions from Chiapa de Corzo: (a) Chiapa de Corzo “Stela” 2 (after Méluzin 1992); (b) Chiapa de Corzo Sherd (after Méluzin 1992:Fig. 3).

1.1.4. Tres Zapotes Stela C

A slightly younger cycle seven date has been discovered by Stirling (1943) on the back of the so-called Tres Zapotes Stela C. At the time of its discovery, only the lower half (now at the Museo Nacional de Antropología) was known, so the long count date had to be reconstructed from the accompanying date of the 260-day calendar. That it is indeed a cycle seven date was finally confirmed after – just a few meters away from the finding place of the lower half – the upper half of the stela came to light (now at the site museum in the town of Tres Zapotes; Pérez de Lara and Justeson 2006). The date 7.16.6.16.18 corresponds to September 3, 32 BC – less than four years after the date on the Chiapa de Corzo “Stela” 2.

Although it is evident that the inscription on the back of the stela originally consisted of at least ten non-calendrical signs, the stela is useless for any deciphering attempt since the majority of the signs in question are too eroded to identify.

1.1.5. La Mojarra Stela 1

Winfield Capitaine in 1988 reported the discovery of a spectacular stela bearing an Isthmian inscription of an exceptional length recovered in an area where otherwise only a group of earthen mounds has been found (Fig. 1.5; Winfield Capitaine 1988). Unearthed already in 1986 close to the banks of the Acula River in a swampy alluvial plain almost halfway between the sites of Tres Zapotes and Cerro de las Mesas, the large object (max. height: 2.34 m; max. width: 1.42 m) weighing about four tons was found in a depth of roughly two meters. As most of the stelae and monuments at San Lorenzo, La Venta, Tres Zapotes, and Cerro de las Mesas, it is carved of basalt, which was quarried in the Tuxtla mountains

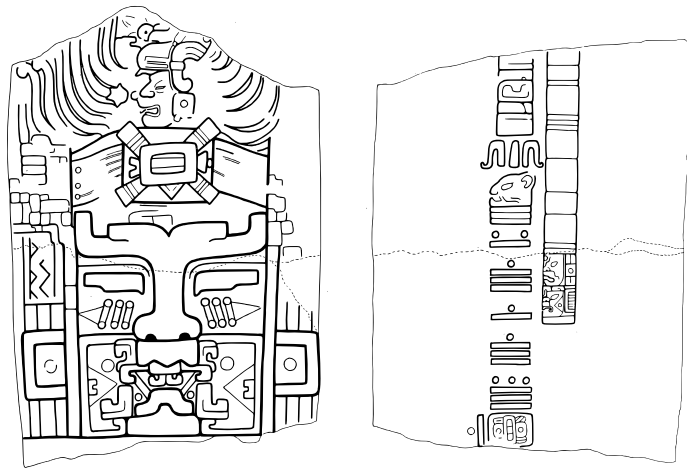


Figure 1.4.: Tres Zapotes Stela C (left: front; right: back; after C. Pool 2000).

(Barthel and von Winning 1991:43). It is quite conceivable to assume that the finding place of the stela was not the actual installation site – Barthel and von Winning (1991:47) even speculated that the inscription might have been carved at some unknown place after the stone has been quarried in the Tuxtla mountains, but got lost in the swampy soil during the transportation to its actual destination.

Be that as it may, the La Mojarra Stela, which is now held at Xalapa’s Museo de Antropología, astonished the scientific community for it consists of two texts of a hitherto unparalleled length accompanied by a large iconographic depiction of a figure that is believed to represent a local ruler. Both texts come with a calendar date:

- 8.5.3.3.5 ≙ May 21, 143 CE (left text)
- 8.5.16.9.7 ≙ July 13, 156 CE (right text)

The latter date is usually considered as corresponding to the date of its planned installation.

Excluding numerals and the calendrical passages, the left text block above the depiction of the presumed ruler consists of about 75 signs, whereas the main text on the right consists of roughly 350 signs. Later, another text column has been found on the side of the stela consisting of 30 signs (Justeson and Kaufman 1997). Obviously, the length of the inscription led to the conviction among some scholars that now a decipherment can be attempted as the number of papers on this topic increased considerably after the discovery of the La Mojarra Stela (in particular Méluzin 1992 and 1995; Barthel and von Winning 1989 and 1991; Anderson 1993; Justeson and Kaufman 1993). As with the discovery of this stela the number of known distinct signs ran up to roughly 160, it became likely that Isthmian writing₂ is a morpho-phonographic writing₂ system.



Figure 1.5.: La Mojarra Stela 1 (after Winfield Capitaine 1988).

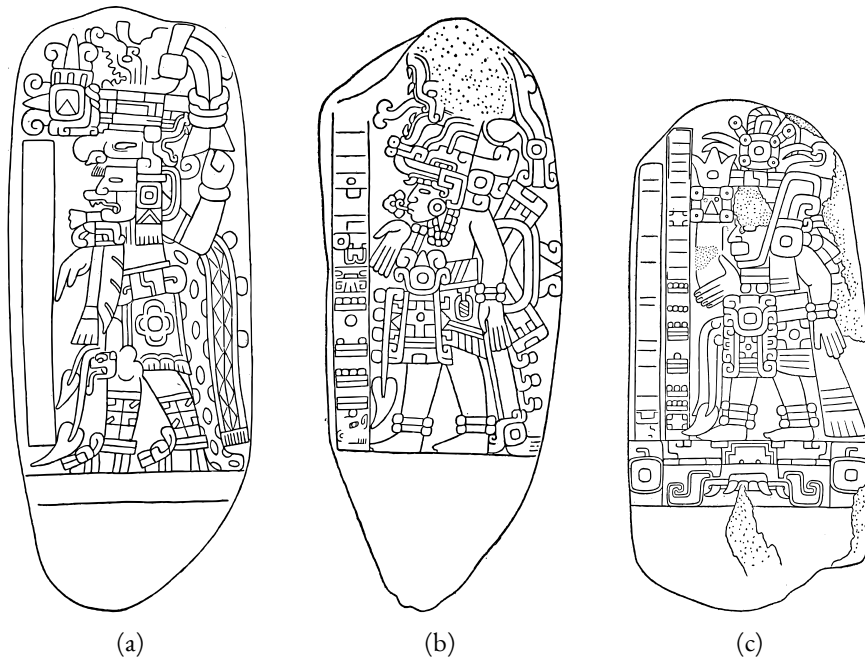


Figure 1.6.: Inscriptions from Cerro de las Mesas: (a) Stela 5 (b) Stela 6 (c) Stela 8 (after Stirling 1943).

1.1.6. Stelae from Cerro de las Mesas

Further stelae that can be regarded as part of the *corpus* of Isthmian writing₂ have been published by Stirling (1943), but due to the fact that his drawings are rather inaccurate omitting in particular any remnants of the writing₂ text columns, these objects have not been recognized as part of the *corpus* for a long time. According to Pérez de Lara and Justeson (2006), who have studied these objects in detail, there are indeed identifiable Isthmian writing₂ signs, but unfortunately no appropriate drawings are available to date.

Among these stelae and monuments (Monument 4 and Stelae 3, 4, 5, 6 and 8), which are now all at the Museo de Antropología de Xalapa, three are of particular interest (Fig. 1.6), because of the long count dates appearing on them:

- 9.4.14.1.4 ≙ August 29, 528 CE (Stela 5)
- 9.1.12.14.10 ≙ April 11, 468 CE (Stela 6)
- 9.4.18.16.8 ≙ June 8, 533 CE (Stela 8)

These dates clearly indicate that – even though the origin of the writing₂ system is found to be in the late Formative period – Isthmian writing₂ is in fact likewise a graphic sign system of the Classic period partially contemporary with the Maya writing₂ system.

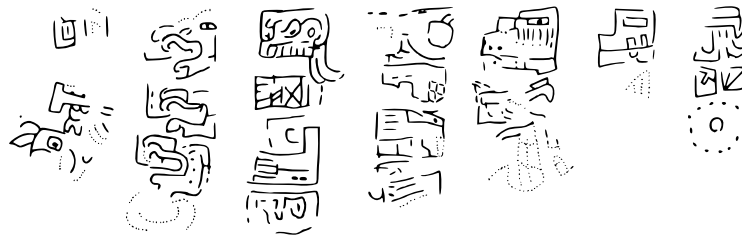


Figure 1.7.: Inscription of the O'Boyle Mask (after Méluzin 1995:Fig. 7).

1.1.7. O'Boyle Mask (Clay Mask)

An inscribed mask made of clay has been added to the *corpus* by Méluzin (1995) and is now known by the name “O'Boyle Mask”. Being a part of a private collection and being of unknown provenience, the inscription consists of at least twenty signs. While some of these signs are clearly identifiable and known from other Isthmian inscriptions, others are indistinct and almost illegible. Because of the large uncertainties regarding these signs, the inscription is at present useless for any serious deciphering attempt.

1.1.8. Feldspar Mask (Teotihuacan-style mask)

Another mask, which is likewise unprovenanced, has become prominent in the debate on the correctness of Justeson and Kaufman's decipherment (Fig. 1.8). Published by Houston and Coe (2003) including a drawing of its inscription (a new drawing has been provided by Macri 2016), it is the last object bearing an Isthmian text that has been discovered so far. The mask made of feldspar appears in a noticeable Teotihuacan-style (which presumably dates it in the 5th/6th century CE; Houston and Coe 2003:157).

Consisting of at least 80 non-calendrical and non-numeral signs, it constitutes the second largest Isthmian text of the whole *corpus*. As at the time of its discovery the “epi-Olmec decipherment” has been published already, the inscription at first sight could be a perfect testing inscription for this proposed decipherment, but since it also came with about 25 hitherto unknown signs (which of course was expectable as indicated by Zipf's law; cf. ch. 2), this testing had to come to nothing, because it leaves too many vacancies and uncertainties to decide the (in)correctness of the “decipherment”.⁶

⁶The testing just revealed that the “decipherment” leads to strange phrases about garments and blood drops – two prominent topics in Justeson and Kaufman's “translations” of the other inscriptions. However, this is revealed already by Justeson and Kaufman's work itself (see the quotes in ch. 2.4).

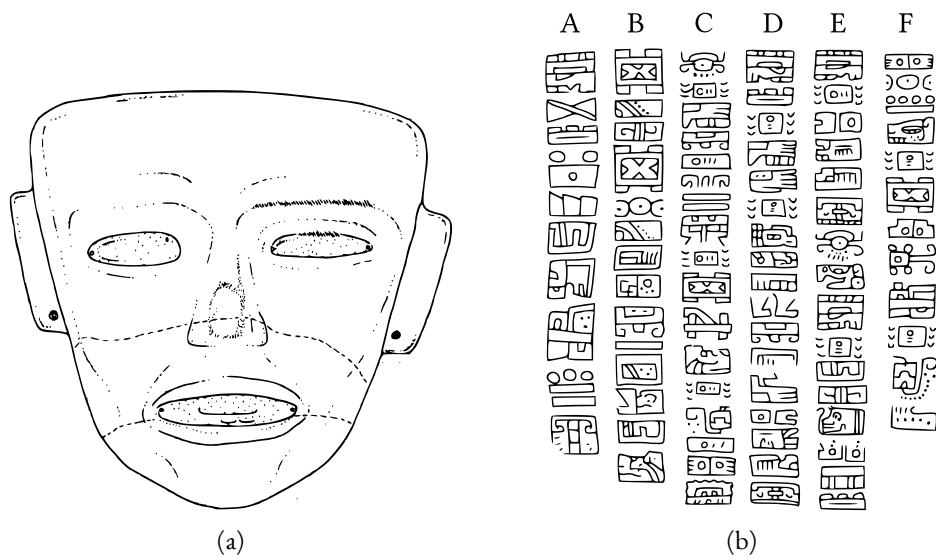


Figure 1.8.: The Feldspar Mask: (a) Front (after Houston and Coe 2003); (b) Inscription (Macri 2016).

1.1.9. Other possible Isthmian inscriptions

There are several other monuments whose inscriptions can be considered as Isthmian in style, although not all come with (legible or illegible) Isthmian writing₂ signs or even a date from the calendar notation. The Alvarado Stela (Museo Nacional de Antropología), for instance, has often been considered another candidate of a stela with Isthmian writing₂. A now illegible text probably appeared right above the hand of the individual that is largely depicted on the stela, which might be of proto-Classic date. It possibly originates in Cerro de la Piedra, Veracruz (J. Urcid according to Pérez de Lara and Justeson 2006).

Other stelae such as the Tepetlaxco Stela, the Chapultepec Stone (both Museo Nacional de Antropología; Pérez de Lara and Justeson 2006), or the “Great Stela” of El Mesón (Fig. 1.9) do not seem to bear any Isthmian writing₂ text, but are more or less clear examples of the Isthmian writing₁ style. These objects at least demonstrate that Isthmian writing₂ texts were not mandatory ingredients of Isthmian writing₁ monumental inscriptions.

1.1.10. Temporal and geographical distribution

Table 1.1 collects the insights on the datings of the relevant inscriptions as discussed in the previous sections arranged in an approximate chronological order. As can be seen from this table, only three objects bear texts long enough for serious decipherment attempts – the writing₂ system can thus be declared a scarcely attested system, even though it seems to have



Figure 1.9.: “Great Stela” of El Mesón (after Barthel and von Winning 1991:Fig. 4).

<i>Object</i>	<i>long count</i>	<i>dating</i>
El Sitio Celt	no	late Formative
Chiapa de Corzo Sherd	no	400 BCE–1 CE
Chiapa de Corzo “Stela” 2	[7.16.].3.2.13	December 8, 36 BCE
Tres Zapotes Stela C	7.16.6.16.18	September 3, 32 BCE
<i>La Mojarre Stela 1</i>	8.5.16.9.7	July 13, 156 CE
<i>Tuxtla-Statuette</i>	8.6.2.4.17	March 14, 162 CE
Cerro de las Mesas Stela 6	9.1.12.14.10	April 11, 468 CE
Cerro de las Mesas Stela 5	9.4.14.1.4	August 29, 528 CE
Cerro de las Mesas Stela 8	9.4.18.16.8	June 8, 533 CE
<i>Feldspar Mask</i>	no	5th/6th century CE
O’Boyle Mask	no	?

Table 1.1.: *Corpus* of Isthmian inscriptions. Bold: clearly identifiable non-calendrical Isthmian writing₂ signs; Italics: texts that are potentially suitable for deciphering attempts.

been used within a time span of up to nine centuries. Judging from the El Sitio Celt and the Chiapa de Corzo Sherd, it furthermore seems that it has been fully developed already in the first centuries of the late Formative, although the uncertainties are sizable due to the open question concerning the relationship between the manufacturing of the respective object and the placing of the inscription (and in the case of the El Sitio Celt, the question concerning its provenience). However, it is evident that the calendar was fully developed in the first century BCE (if our correlation is roughly correct), whereas the first truly long inscriptions seem to occur not until the second century CE, though it is possible that this conclusion is biased from the unfavorable data situation. Of course, it is conceivable (and, considering overall Mesoamerican writing₁ habits, also quite likely) that the writing₂ system has been extensively used also to write₁ books that are now lost.

Because of the fact that the number of inscriptions is small and that some of them are unprovenienced, a conclusive assessment of the temporal distribution of the writing₂ system is currently impossible, which is also true with respect to its geographical distribution, which thus can only be given tentatively and approximately (Fig. 1.10). However, in terms of the current data situation, it seems that the earliest inscriptions originate from Chiapa de Corzo, which at the same time marks the south-eastern border of the geographical distribution. Contrary to that, the latest inscriptions have been unearthed in Cerro de las Mesas, which marks the north-western border of the geographical distribution. It seems therefore that there is a shift towards the north-west with respect to the temporal usage of the system.

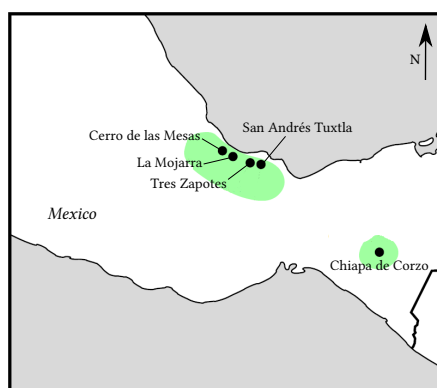


Figure 1.10.: Assumed approximate geographical distribution of Isthmian writing₂ inscriptions.

1.2. Current state of research on Isthmian writing₂ and the contribution of the present study

As stated already, the in-depth study of Isthmian writing₂ only began right after the discovery of the La Mojarra Stela by Winfield Capitaine (1988). A few years after that discovery, the Macri-Stark (MS) sign catalog has been published (Macri and Stark 1993), which – after a revision in order to include the new signs from the Feldspar Mask (Macri 2017a) – seems to become the prevalent sign catalog among scholars.⁷ In this paper, I will likewise refer to the signs by means of their respective MS number, which is in some cases slightly adjusted (see the sign list in the appendix; ch. D).

As has become already apparent in Holmes (1907) in terms of the Tuxtla Statuette, the calendar notation system seems to follow the same arithmetic as the Mayan system, meaning that a given long count date leads to the expected coefficients for the accompanying “haab” and “tzolk’in” date, and – if the iconicity of the respective signs allows for it – the expected “month” or, respectively, day names. This can be seen, for instance, on the Chiapa de Corzo “Stela” 2, on which 6 Reed appears where Mayan *6 ben* is expected, or on the La Mojarra Stela, on which the days 13 Serpent and [?] Deer appear where Mayan *13 chikchan* and *5 manik’* are expected. These congruences have been used by Méluzin (1992) as a sort of “quasi-bilingue” and hence as a starting point for a decipherment.

Another important insight of that time concerns the reading order. While one can already deduce from the calendar notation and from the columnar arrangement of the Tuxtla

⁷Méluzin (1992) has employed her own sign numbering system preceded by the letters TS standing for “Tuxtla script”. The work of Anderson (1993) also comes with an own sign catalog, but the author always makes additional reference to the Macri-Stark number.

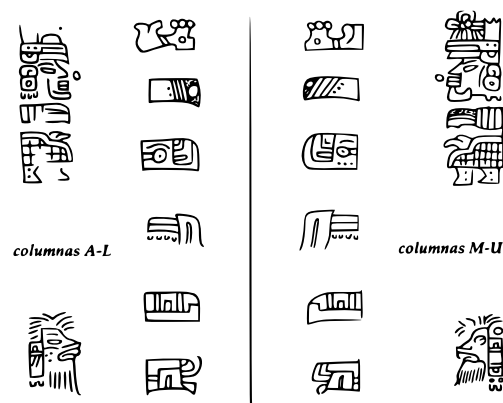


Figure 1.11.: Different orientations of identical signs from the two inscription blocks of the La Mojarra Stela as observed by Winfield Capitaine (1988:Fig. 10).

Statuette's inscription that the reading order is column-wise and within such a column top-to-bottom, the discovery of the La Mojarra Stela finally corroborated this conjecture. As Winfield Capitaine (1988) noted, a sequence of (almost) identical signs appears within one single column in the right text block (R1–8), but splits over two columns in the left text block. Furthermore, the signs are oriented conversely (Fig. 1.11). This does not only confirm the top-to-bottom reading within a column, but also that the signs are arranged in single columns (in contrast to the Mayan double column arrangement), and that the reading order of the columns of the left text is right-to-left, but left-to-right in the right text. The faces of animal- and human-shaped signs thus always look to the beginning of the text (which is, by the way, prevalent also in many other writing₂ systems of the world). This finding is in accordance with the sign ordering on the later-found Feldspar Mask, on which another sign sequence appears bridging two columns (D14–C1) that otherwise appears within one column (E3–7). In this particular inscription, the reading order changes twice: columns A and B are read together left-to-right, then columns D and C are read right-to-left, and finally columns E and F are again read left-to-right (and of course always top-to-bottom within a column), as has been already observed by Houston and Coe (2003).

The set of signs consists of both rather iconic signs depicting more or less recognizable reference objects (animals, parts of humans, natural and cultural objects such as stars or knives), and rather abstract signs whose reference is hardly ascertainable. The number of distinct signs furthermore implies that Isthmian writing₂ is a morpho-phonographic sign system, whose complete set of signs is very probably still not known (see the details in ch. 2). Moreover, certain signs show some (only superficial?) similarity with some signs of the Classic Maya writing₂ system, whereas it has been noted that there is a certain (only superficial?) iconographic affinity to the styles known from sites such as Izapa and Kaminaljuyú

(e. g. Barthel and von Winning 1989).⁸

It can be said that this is all we know with some certainty about this writing₂ system, even though several authors such as Méluzin (1987, 1992 and 1995), Anderson (1993), or Barthel and von Winning (1989 and 1991) spend a lot of energy to gain some insights into the meaning of the texts, and even though there has been the “epi-Olmec decipherment” of the Isthmian writing₂ system by Justeson and Kaufman (1993). I have already commented briefly on this “decipherment” and the subsequent criticism by Houston and Coe (2003) in the introduction, and a large part of chapter 2 will deal with the conclusions that can be drawn from it, so I refrain from commenting the “epi-Olmec decipherment” in detail here.

After there has been a photographic documentation of Isthmian inscriptions by Pérez de Lara and Justeson (2006) and a series of short notes on the system by Macri (2016, 2017b, 2017c, 2017d, 2017e, and 2017f), this study finally adds “yet another ‘decipherment’” based on a Maya language model. It turns out to be very instructive to compare the different approaches and results.

First of all, let us comment on the language models proposed so far. In pioneering works on the system, the affinity to the Classic Maya writing₂ system (and the fact that the study of Mayan epigraphy already was a well-established discipline) caused scholars to interpret the signs based on a Maya language and on concepts known from the Maya culture (e. g. in Méluzin 1992, or Anderson 1993; the latter contrasts results derived from a “Mayan hypothesis” with such ones derived from a “proto-Zoque hypothesis”), although the respective scholars usually assert that this is rather a makeshift as long as the actual correlate language is unknown. The “epi-Olmec decipherment” by Justeson and Kaufman (1993), however, is based on a *reconstructum* they call “pre-*proto-Zoquean*”, a language from the Mixe-Zoque family. The idea that these inscriptions encode a language from this family is related to the conjecture that the archaeological culture known as Olmecs were speaker of a Mixe-Zoque language (the “Mixe-Zoque hypothesis”), which has been proposed by Campbell and Kaufman (1976). Their cultural successors in the “heartland” of the Olmecs, the originators of the Isthmian inscriptions, which undeniably inherited certain traits from the Olmecs, are thus – according to the assumption by Justeson and Kaufman – speakers of a Mixe-Zoque language either. By introducing the name “epi-Olmecs” this alleged linguistic continuity has been manifested also in the name of this successive culture (that is why the term “epi-Olmec” is inappropriate, because this continuity is unproven). Indeed, the geographical distribution of the Mixe-Zoque languages makes a language from this family a reasonable candidate for the correlate language of Isthmian writing₂ (Fig. 1.12a). However, as gets clear by reminding the temporal and geographic distribution of the Isthmian in-

⁸For the Izapa style, see Smith (1984). The archaeological interaction between Izapa and the Isthmian region is well-recorded and discussed in C. A. Pool, Loughlin, and Ortiz Ceballos (2018). See also Strauss (2018) for a recent study of Izapa’s graphical style that also briefly deals with the question concerning the relationship of the Isthmian and the Izapan tradition.

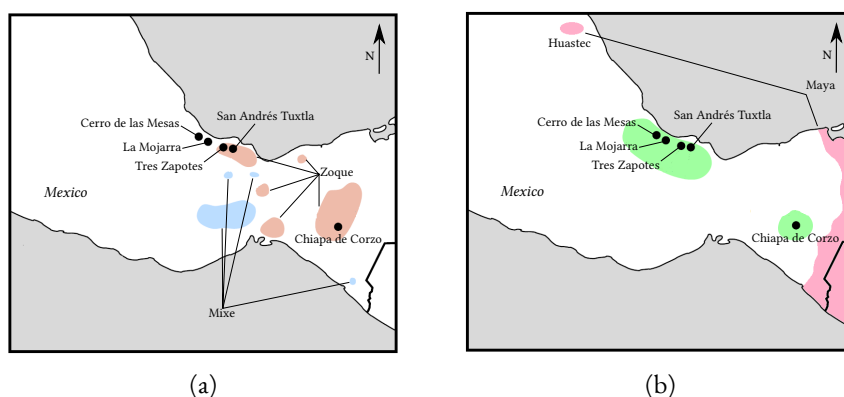


Figure 1.12.: Approximate geographical distribution of (a) Mixe-Zoque languages, and (b) Maya languages (green: distribution of Isthmian writing₂).

scriptions, which implied a shift from south-east to north-west (see previous section), the alternative that the correlate language is a Maya language such as an early form of Huastec is very reasonable, too (Fig. 1.12b). If the origin of the Maya languages is located somewhere south-east to the Isthmus of Tehuantepec, the Huastecs must have passed the Isthmus at some time in history moving farther to the north-west, which is hence in perfect accordance with the observations on the spatio-temporal distribution of the inscriptions. Alternatively, one might assume that Maya speakers also inhabited the Gulf of Mexico before having been displaced both to the south (main Maya language area) and to the north (yielding the Huastec exclave).

Independently from the divergent language identification, the most instructive lesson can be learned from the sign interpretations. Barthel and von Winning, for instance, used a “visual method” (Barthel and von Winning 1991:54) as an approach to “decipher” the signs by comparing signs with such ones known from any other Mesoamerican writing, tradition including such distant systems like the Mixtec writing, system or the one appearing in the Borgia Codices. This led (and had to lead) to such imaginative identifications such as a “Teotihuacan text” (Barthel and von Winning 1991:54–63) and a “Cholula text” (Barthel and von Winning 1991:55,63–65) on the La Mojarra Stela.

While it is obvious that this method produces rather arbitrary “decipherments” that are purely speculative (Fig. 1.13), it is possibly not that obvious that the same is true also with respect to other works such as Anderson (1993), the “epi-Olmec decipherment” of Justeson and Kaufman (1993), or the proto-Huastecan decipherment of this paper. But as it turns out, a comparison of these works demonstrates that there is no other conclusion than that *all* these conjectures on identifications of signs and patterns are rather arbitrary and speculative depending on the respective researcher’s viewpoints, foreknowledge, and – at times –






























Sign	Proposed meaning	Sign	Proposed meaning
	Ending sign of a text segment (cf. Winfield 1988: 16)		Perforation / synonym for conquest B5 O35 P24
	Bearded old man, unkempt wild hair / ancestor R39 T40		Perforated quincunx / conquest Q22
	Bearded man, eyes covered R10 T18 P13		Quincunx / central place with 4 peripheral places N33 Q34 S35 S44
	Male with tied hair bunch / relation with Tikal O9 Q15		Small crown with 3 peaks R24a cf. O9, Q15
	Sun / Day Q4		Axe & rain / paraphernalia of storm god B1 L6
	Sunrise P41 R15 T21		Turtle S29 Carapace S30
	Sunset / West P44 S17		Hafted stone knife / north / cold O10 L2
	Sunrise / daybreak S15 T1		Planet Venus C3 R6 R7
	Earth / Land Q35 G7 K1 L4 etc.		Female skirt with serpent belt & pair of legs / walking O11 Q17 L3
	Moon S21 O23 T3		Garment / substitute for ornate skirt P6 O21 P23
	midday, above N4 C1 D2 etc.		Special garment over walking legs Q13 N35
	Rain / cloudy sky S6 J8 O19 P2		pair of legs / standing N12
	Jade bead P4 S2 S23 etc.		Hand, thumb down with object / solar association P7 R35 S46
			Hand holding object with 2 blackened ends R29 Q5 Q28
			Hand, thumb up S4 D4 U6
			Bundle S48 F3 N22 etc.

Figure 1.13.: Speculative sign interpretations by Barthele and von Winning (1989:Fig. 5).

on what the researcher *wants* to identify. This is evident already concerning the identification of possible “main signs” and affixes (as proposed already by Winfield Capitaine 1988), of “verbs”, or even “probable paragraphs, longer and shorter phrases and sometimes even words” (Anderson 1993:13). The reader should feel encouraged to compare the “identifications” of sentences and words in Anderson (1993), Kaufman and Justeson (2001), and in chapter A of this work. In doing so, the reader will recognize that each researcher arrived at different conclusions on the structure of the texts, so all these findings turn out to be useless as long as no unique decipherment is possible (the researcher in fact invents such structures; see below chapter 2). MS20, the most frequent sign, has been interpreted as general “ending sign” (Méluzin 1987; Winfield Capitaine 1988), more specifically as “word-final” sign (Anderson 1993), as “boundary or punctuation mark” (Macri 2017b), as a CV syllable used as a grammatical morpheme *succeeding* verbs (“independent completive” and “relativizing enclitic”; Justeson and Kaufman 1993), and as a CV syllable occurring in several contexts and functions in this work (*inter alia* as incompletive marker *preceding* verbs).

The problem becomes more apparent in terms of iconic signs. What Barthel and von Winning (1989) interpreted as garment (MS45 in the sign list; see also Fig. 1.13), is interpreted by the author of this study as a pair of hands; while Barthel and von Winning (1989) saw a moon when looking at MS65, Anderson (1993) saw the same celestial object in MS104 and possibly also in MS91; what Justeson and Kaufman (1993) consider a sky, MS136, do I consider a stone; what Barthel and von Winning (1989) found is a “female skirt with serpent belt” (MS119, Fig. 1.13), has often been interpreted as depicting a mountain. Because of its compositional similarity to the *SUN.AT.HORIZON* morphogram of Maya writing₂, sign MS36 has frequently been interpreted as the Isthmian equivalent of that sign, which allegedly depicts the sky above the earth opening for sunset or sunrise (Justeson and Kaufman 1993; Anderson 1993). However, no one has ever asked the obviously question, why there is no sun in this alleged *sunrise/sunset* sign, especially considering that the sun is an essential part of the Mayan sign. Why is it not just as sign showing a stone (stela) getting erected, i. e. still leaning on a supporting wooden construction?

We thus have arrived at a point, which I have called above an impasse, at which we only can add more and more arbitrary identifications of patterns, signs, and languages, at which we can produce more and more hypotheses concerning the writing₂ system, but at which we cannot learn anything from our conjectures (even if they are all well-reasoned), simply because of an issue that cannot be resolved as long as there are not much more inscriptions available: the $qW \ll 0.1$ issue (or: *corpus* issue), which is the subject of the main part of this study.

2. Isthmian writing₂ and the feasibility of its unique decipherment^{*}

2.1. Introduction: Questioning the claims made by Kaufman and Justeson (2008)

In Justeson and Kaufman's treatise on their "epi-Olmec decipherment" in Woodard (2008), there are two sentences that should make the attentive reader sit up and take notice (Kaufman and Justeson 2008:197):

Some professionals who do not know our evidence have expressed doubt about the reliability of the decipherment, but the essentials of the decipherment as it relates to Mije-Sokean linguistic structure are accepted by the leading authorities who do know the evidence (Grube, Kelley, Lounsbury, Mathews, Schele, Urcid). It is not believable that the model presented in this study for the phonological and grammatical structure of the Epi-Olmec language could fit both the comparative Mije-Sokean data and the Epi-Olmec epigraphic data in the detail that it does were it not fundamentally correct (in contrast, no such fit is feasible with a language model based, for example, on Mayan or Oto-Manguean).

Leaving aside the fact that statements like "professionals who do not know our evidence have expressed doubt" and "accepted by the leading authorities who do know the evidence" are quite audacious considering the circumstance that the authors frequently base their arguments on "unpublished manuscripts",¹ it is the following that I will prove wrong in the next chapters:

^{*}This work has been finished in March, 2018. Please note: This essay is written, deliberately in a provocative manner that I nonetheless consider appropriate in the context of the assertions made by Justeson and Kaufman hitherto. I am quite aware that possible future responses on this treatise may be similar in tone.

¹This is quite serious considering that the scientific work in general is grounded on the accessibility to research results and the possibility to check them.

The summit of this strategy has been achieved in the "Zapotec Appendix" in Kaufman and Justeson (2008:230–233) where the authors claimed also the "decipherment" of the Monte Alban writing₂ system. Among the five references of the same authors given in the appended bibliography, four are "unpublished manuscripts", making the claim uncheckable. However, the statement that "The structure of [Monte Alban] texts fits with [...] the structure of Proto-Zapotec(an)" (Kaufman and Justeson 2008:232) is to be

1. The conclusion: If a decipherment attempt based on some language model shows that it “structurally” fits both a proposed (in this case: reconstructed) language \mathcal{L} and the epigraphic data of a given writing₂ system \mathcal{W} , then the decipherment has to be “fundamentally correct”.
2. The assertion: A decipherment of the Isthmian writing₂ system based on another language model is not feasible.

Basically, it would be sufficient to show that the second point is incorrect in order to disprove the first point, since in this case there would be two language models that “structurally” fit the epigraphic data and both competing decipherments cannot be “fundamentally correct” at the same time. Consequently, the conclusion of the first point is valid *if and only if* the decipherment *uniquely* fits the epigraphic data, which I will call the *uniqueness issue* (Fig. 2.1).

Most scholars will agree that a unique decipherment is very likely not feasible in the case of the Isthmian writing₂ system simply because the *corpus* of inscriptions is too small. We may state hence the following hypothesis, which will form the basis of the subsequent study: *only if the corpus of inscriptions exceeds a certain size, the epigraphic data of a writing₂ system can structurally fit a given language model uniquely.* In the next section I will (a) argue that this hypothesis is indeed justified and well founded, which follows from general considerations about typical methodological approaches to decipherment attempts, and (b) reformulate this hypothesis and establish a simple estimation, whether such a unique decipherment is possible or not, resulting in the $q_{\mathcal{W}} \ll 0.1$ condition hypothesis.

2.2. The $q_{\mathcal{W}} \ll 0.1$ condition hypothesis

2.2.1. Reformulating the hypothesis

Let \mathcal{W} be a morpho-phonographic writing₂ system (i. e. we restrict our study to such writing₂ systems that are neither alphabetic, nor purely syllabographic) whose set of signs consists of n_s distinct signs. Further let $n_{s,\text{dist. att.}}$ denote the number of actually attested distinct signs and $n_{s,\text{tot. att.}}$ denote the total number of all attestations of these signs. Then we may introduce the quotient

$$q_{\mathcal{W}} := \frac{n_{s,\text{dist. att.}}}{n_{s,\text{tot. att.}}}. \quad (2.1)$$

$q_{\mathcal{W}}$ is thus a simple measure of the *corpus* size relative to the number of signs in the set of signs of \mathcal{W} : The larger the *corpus* the smaller $q_{\mathcal{W}}$. The inverse of $q_{\mathcal{W}}$ is nothing but the

evaluated the same way as the statement on the Isthmian writing₂ system discussed here, since the situation for the Monte Alban writing₂ system is less favorable than for the Isthmian writing₂ system, and therefore *any* language may fit the limited data of the Monte Alban writing₂ system.

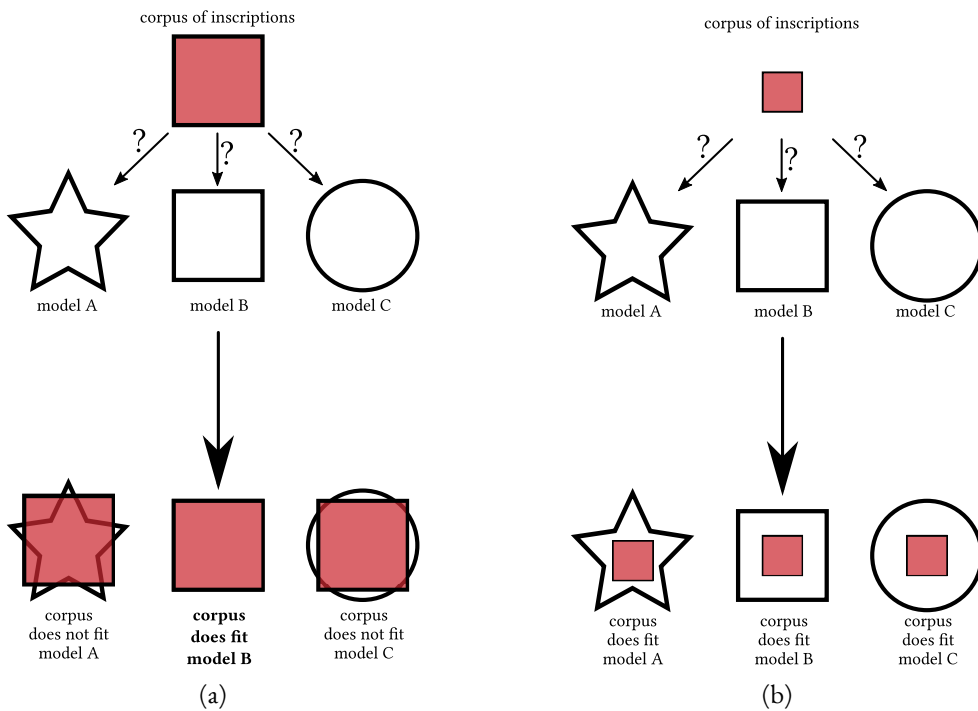


Figure 2.1.: The uniqueness issue. Consider a problem in which one has to figure out the shape of an object by putting it through a hole of the same shape. Problem (a) is uniquely solvable: the object fits through the quadratic hole – and it *only* fits through this hole. Finding this solution, the statement “it fits through the quadratic hole, so the object is quadratic” is valid. Problem (b) is not uniquely solvable: it turns out that the object fits through all three holes. Finding, for instance, the solution that the object fits through the round hole, the statement “it fits through the round hole, so the object is round” is invalid. Even the statement “it fits through the quadratic hole, so the object is quadratic” is invalid. It is indetermined whether the conclusion “the object is quadratic” is correct or not due to the uniqueness issue. Whether such a problem is uniquely solvable or not, can be tested by simply checking if the object also fits through the other holes, or by finding a condition for the unique solvability from the rules of the problem. Here we propose that the $q_W \ll 0.1$ condition can be used in order to estimate whether a decipherment problem can be solved uniquely, meaning the corpus is large enough to uniquely fit a language model A, B, or C (Fig. 2.1a), or not, meaning the corpus is too small thus fitting more than one language model (Fig. 2.1b).

average number of attestations of each sign.

The hypothesis made in the last passage of the foregoing chapter that the *corpus* of a writing₂ system has to exceed a certain size in order to be uniquely decipherable may then be expressed as:

$$\text{if } q_{\mathcal{W}} \leq q_{\text{cr}} \Rightarrow \mathcal{W} \text{ can be deciphered uniquely} \quad (2.2)$$

or equivalently

$$\text{if } q_{\mathcal{W}} > q_{\text{cr}} \Rightarrow \mathcal{W} \text{ can not be deciphered uniquely} \quad (2.3)$$

where q_{cr} denotes the critical value from which a unique decipherment is possible.²

It should be clear that the threshold q_{cr} of unique decipherment possible/impossible depends on various circumstances, e. g. the existence of a bilingue³, the existence of a deciphered cognate writing₂ system, the existence of accompanying iconography or notation system (e. g. the date notation in Isthmian writing₁ known from Maya writing₁), the existence of word/sentence boundary markings (if they are clearly identifiable), the amount of allographs, *et cetera*. Nevertheless, in order to declare a writing₂ system as being uniquely decipherable, the condition (2.2) still has to be fulfilled (unfavorable/favorable circumstances only shift the value of q_{cr}).⁴

Notice the similarity with the corresponding problem in cryptography, i. e. the question of what length a ciphertext has to exceed in order to break the cipher uniquely. This so-called unicity distance can easily be calculated by considering values like the entropy and the

²This condition also defines the opposition decipherment (= unique decipherment) versus “decipherment” (with quotation marks; = arbitrary decipherment) used in this paper.

³The existence of a bilingual/biscriptual document will shift the threshold drastically, but only if the already known/readable text is trustworthy (meaning that it relates/translates the contents of the unknown writing₂ system to a sufficient degree), which is not always the case (as could be shown for the “biscriptual” historical section of the Codex Telleriano-Remensis with respect to the Nahuatl writing₂ system; see Vonk in press).

⁴The language correlated to \mathcal{W} certainly has to be attested elsewhere. This may be directly, for instance in form of descendants of a proto-language or contemporary in another writing₂ system cognate to a deciphered writing₂ system (compare the case of the Luwian language), or indirectly, for instance in the form of loans in other languages. However, I expect that decipherments of writing₂ systems correlated with only indirectly attested languages will remain always vague to some extent.

The Sumerian case is particularly interesting in this context: though the language is extinct and (very likely) linguistically isolated, the coexistence with the Akkadian writing₂ system and the genetic relationship of both systems led to the fact that the language is nevertheless understood today (at least to a certain extent).

Linear A, however, is a problematic case: The postulated Minoan language (phonetically extrapolated from an assumed sign transfer to Linear B without a change of the respective values) cannot be linked to any known language, the contents of the inscriptions are however believed to be understood, so one may declare Linear A as being “partially deciphered”, but as stated above, such decipherments remain vague. For Linear A one finds $q_{\text{LinA}} \approx 0.028$ (based on statistics in Fischer 2003).

redundancy of a given cyphertext and a given writing₂ system (usually an alphabet) respectively. Also the frequency distribution of letters can easily be compared to known alphabets. These values (entropy, redundancy, sign frequency) are indeed surface phenomena of the structure of the writing₂ system. The reason, why we do not have recourse on these results, is that in cryptography the writing₂ systems of the plaintexts are *known* (including the orthography), and it is assumed that there exists a bijective mapping (one-to-one correspondence) between the cyphertext and the plaintext (the “code”). The epigrapher dealing with undeciphered morpho-phonographic writing₂ systems on the other hand cannot draw on such an assumption: a writing₂ system correlated to a certain language is *never* a bijective mapping that maps a certain phoneme/morpheme to one (and only one) grapheme.⁵ Furthermore, the whole “mechanics” of the writing₂ system, the principles of functioning, are completely *unknown* and have to be worked out from the available data which is part of the deciphering process: it is unknown if the system comes with a large number of allo-graphs, if there are polyvalent signs, if there existed a strict orthography or a set of acceptable writings₂ of the same morpheme, if the reading order is strictly linear or broken by certain rules, if other than linguistic information are also encoded (there may be, e. g., semantic indicators/“determinatives”), *et cetera*.

The reader will certainly agree that an exact calculation of q_{cr} with general validity is impossible due to the complexity and diversity of language and writing₂ systems and their interrelation (and due to the dependencies of the threshold mentioned above), but I would like to follow a rather heuristic approach in order to provide a sort of rough quick test, if (2.2) is fulfilled for a certain morpho-phonographic writing₂ system or not.⁶ To achieve this, one has to consider what Justeson and Kaufman called the “structure of the Epi-Olmec language”.

2.2.2. The structure of sign systems

The structure of a sign system is a network of relations which includes a set of distinctive traits and (op)positions (and syntactic rules), and provides the important mechanisms of how meaning and messages are generated. In a writing₂ system \mathcal{W} correlated to some language \mathcal{L} , this network of relations will appear – on the surface – in the form of certain arrangement and distribution rules, certain patterns, that indeed correlate to the corresponding rules in \mathcal{L} (but they are not the same, see above), e. g. on phoneme level in the form of permissible syllable structures or on morpheme level in the form of permissible morpheme

⁵This is reflected in the fact that value of the entropy of a writing₂ system never equals the entropy of the correlate language. Alphabets, for instance, do usually not even come with $n_s = n_p$, the number of phonemes.

⁶Note the analogy to Sorites paradox: Instead of asking how many grains of sand are exactly needed to form a heap, which is not expedient, a possible condition for a heap may be expressed as $n \gg 1$, where n is the number of grains.

combinations (“grammar”) in order to form acceptable sequences. I suppose these surface phenomena of the sign system’s structure were meant by Justeson and Kaufman when stating that the “phonological and grammatical structure of the Epi-Olmec language [fits] the comparative Mije-Sokean data and the Epi-Olmec epigraphic data”.⁷

Now the question arises, how such a “structure” can be ascertained for an ancient undeciphered writing₂ system for which the “mechanics” are unknown, especially if the inscriptions, as usual, do not come with word or sentence boundary markings, i. e. the segmentation of the signs into sign groups and/or sign sequences forming words or clauses is not determined within the written₂ texts.⁸

I claim that the answer to this question is as follows: the undeciphered texts will *never* show the “structure” of its writing₂ system by themselves (not to mention the “structure” of \mathcal{L}), it is not something that can be observed directly, it is something way too abstract for being inducible from a data set coming with too many unknowns. Even though some arrangement patterns or sign distributions may be ascertained, the *meaning* of these patterns, the implications for the “structure”, are indetermined. Unknown texts never unfold the structure of \mathcal{W} *per se*. The method followed in deciphering attempts instead is that one formulates a hypothesis by considering certain observed patterns which may then be verified or falsified – a classical “trial and error” method, which is, following Popper (1973), characteristic for all sciences. This can be done on several structure levels: on pure phonographic level fitting word spellings may be tried to establish, on pure morphographic level fitting distributions of a sign within sequences (i. e. assumed sentences) may be tried to ascertain, on the mixed phonographic-morphographic level phonographic complements of morphograms may be searched, *et cetera*.

The point is: Having established certain hypotheses, the inscriptions *receive* a structure by the hypotheses made by the epigrapher: the hypothesis “sign *s* represents a certain verbal suffix in some language \mathcal{L} ”, for instance, will result in the proposition that the sign(*s*)

⁷“Les linguistes mettent-ils toujours un sens sous le mot *structure* lorsqu’ils parlent de ‘structure d’un langage’?”, we may ask with Pierre Bourdieu, who made a similar statement about sociologists (“Les sociologues mettent-ils toujours un sens sous le mot *structure* lorsqu’ils parlent de ‘structure sociale’?”; Bourdieu 1966:201).

⁸For the Isthmian writing₂ system, MS20 has been proposed as an ending sign, either “word-final” (Anderson 1993) or as a “boundary or punctuation mark [that] may have no syllabic or logographic reading” (Macri 2017b). Interestingly, neither in the “epi-Olmec decipherment” by Justeson and Kaufman (1993) nor in the proto-Huastecan “decipherment” in the appendix, MS20 has been interpreted as such showing that its function is far from being deducible from the distribution patterns it shows without prior assumptions. Even repeated sequences cannot be used in order to identify words or clauses: While a sequence of two separate signs seems to be a “word” but may already constitute a clause (e. g. if both are morphograms standing for nouns in a nominal clause “A is B”), a sequence consisting of five separate signs may be interpreted as a “clause” but may as well be a writing₂ of a single word combining phonographic indication of a morphogram, phonographic complementation of an affix, and semantic indication by means of a determinative (here it again gets clear that such interpretations are based on further assumptions that precede the interpretation).

preceding *s* are verbs in \mathcal{L} (based on the additional hypothesis that the sign ordering in \mathcal{W} is linear). A reverse approach on the contrary is not feasible: a sign in \mathcal{W} cannot be recognized as representing a verb by itself⁹ (and, of course, not a verb in a certain language), so that a sign succeeding such a verb sign cannot be recognized as a verbal suffix. This is meant with the claim that no text provides the “structure” by itself – it is always something attributed.¹⁰

A set of hypotheses will hence result in a certain interpreted “structure” correlated to some language and the statement “the model ‘structurally’ fits both \mathcal{W} and \mathcal{L} ”. Getting tested on additional data, it will then end up with a verification of the hypotheses – or with their falsification. The proposed “structure” may therefore be incorrect even though it may have fit with some partial data set.

⁹This is also true for iconic signs that putatively depict actions or motions for these signs may, for instance, as well be derived phonograms or morphograms denoting the actor.

¹⁰Just compare the analyses of the Isthmian writing₂ system that are available so far (e. g. Barthel and von Winning 1991, Méluzin 1992, Anderson 1993, Justeson and Kaufman 1993, the proto-Huastecan “decipherment” in this study). The comparison of the initial hypotheses (which are sometimes not explicitly declared but implicit) and the resulting – all too often appreciably diverging – interpretations of, for instance, sign functions (“verb”, “affix”, *et cetera*) or word and clause divisions strikingly confirms that the hypotheses precede the interpretations and that a pure “internal analysis” can at most only lead to an ascertainment of some arrangement patterns.

One may argue that a repeated sequence “numeral-day sign” (or: “day sign-numeral”) or “numeral-quantified noun” (or: “quantified noun-numeral”) may give a hint on the structure of the underlying language. But first observe that numerals are not detectable *per se* (this gets clear by considering the interpretation of signs that possibly may notate numerals in several other undeciphered writing₂ systems; in Isthmian writing₂, numerals have been identified based on the hypothesis that the notation of numbers is exactly the same as in Mayan inscriptions). Second, even though a sequence like “some other sign-numeral” may appear repeatedly, the interpretation as “quantified noun-numeral” may be deceptive (compare, e. g. “the year 2000” vs. “2000 years”). However, numerals are strictly speaking notation systems (and not writing₂ systems, even though they commonly enter the writing₂ systems), which is especially true for calendar notations like “numeral-day sign”, and as notation systems, numerals and calendar notations may follow their own arrangement rules independent from spoken language. In German, for instance, a written₂ sentence like “Wir treffen uns um 09.30 Uhr.” (“We meet at half-past nine.”) is commonly articulated as “Wir treffen uns um neun Uhr dreißig.” (lit. “We meet at nine o’clock thirty.”), which shows that notation systems may break linearity with respect to articulated language. In German, this is already true for the notation of numerals like “123” which is articulated as “einhundertdreiundzwanzig” (lit. “one hundred three and twenty”) for the established notation of numbers follow the logic of place-value number notation and not the logic of spoken language. As an example for a Mesoamerican calendar notation that breaks linearity with respect to the correlated language, consider the Mixtec year notation as it appears frequently in the Mixtec codices: There one frequently finds the linear sequence (read the “-” as “attached to”) “eye-‘A/O sign’-year bearer-numeral”, e. g., “eye-‘A/O sign’-reed-1”, which may be transliterated as **nuu-CUIYA-HUIYO-1** but articulated as *nuu cuiya cabuiyo*, i. e. “in the year 1 Reed”.

2.2.3. The problem with too small *corpora*

It is well known that the relative sign frequency distribution of any writing₂ system is not distributed equally, but follows approximately a discrete power law probability distribution known as Zipf's law: Let n_s be the total number of signs of a writing₂ system \mathcal{W} , k their rank (i. e. $k = 1$ corresponds to the most frequent sign, $k = 2$ to the second most frequent sign, etc.). The relative frequency of the k th frequent sign is then approximately given by

$$p(k) = \frac{1}{H_{n_s}} \frac{1}{k} \quad (2.4)$$

where the normalization factor, the harmonic number H_{n_s} , can be approximated by means of the Euler-Mascheroni constant $\gamma \approx 0.577$:

$$H_{n_s} = \sum_{k=1}^{n_s} \frac{1}{k} = \gamma + \ln n_s + \mathcal{O}\left(\frac{1}{n_s}\right) \quad (2.5)$$

$$\approx 0.577 + \ln n_s \quad (2.6)$$

which is a reasonable approximation for our purposes. In a *corpus* consisting of $n_{s,\text{tot.att.}}$ attested signs, the k th frequent sign is therefore expected to occur

$$n_k = n_{s,\text{tot.att.}} p(k) \approx \frac{n_{s,\text{tot.att.}}}{0.577 + \ln n_s} \frac{1}{k} \quad (2.7)$$

times.

Assuming we are dealing with a morpho-phonographic writing₂ system with $n_s = 500$ and a *corpus* consisting of $n_{s,\text{tot.att.}} = 1000$ signs, then the rank-size distribution shown in Figure 2.2 is to be expected from Eq. (2.7). It is not surprising that in such a case of a scarcely attested writing₂ system a large number of signs will not be attested at all, here about 200 signs, which means that the number of attested distinct signs is $n_{s,\text{dist.att.}} = 298$ corresponding to $q_{\mathcal{W}} = 0.298$. Furthermore, 190 signs will be attested only once, another 38 signs only twice.

This has serious consequences for any deciphering attempt (compare Fig. 2.3): Assume we “identify” the two or three most frequent signs as important morphemes of a given language, e. g. a certain expectable pronoun or verbal affix. In principle, these “decipherings” do not have to be confirmed in other contexts – they are our basic hypotheses which attribute a first “structure” to the analyzed texts based on the grammar of the proposed language model.

According to this “structure”, verbs and nouns may be “identified”, the corresponding signs may be “deciphered” as morphograms or phonograms, *et cetera*. Apparently, such a deciphering *ansatz* has to be in accordance with other appearances of the sign in question –

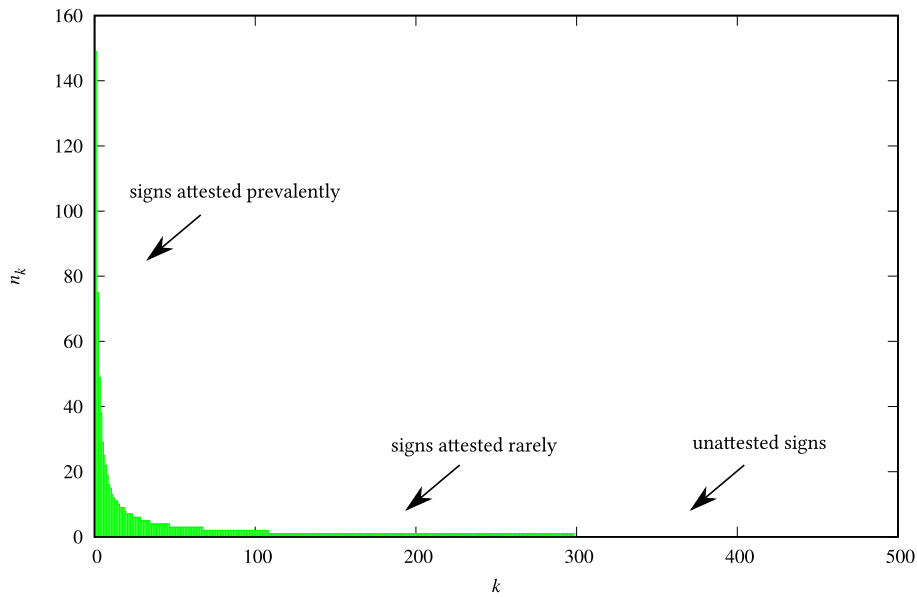


Figure 2.2.: Exemplary rank-size distribution for a hypothetical writing₂ system with small *corpus*.

the proposed reading thus has to be confirmed in various other contexts. While it is possible that an incorrect *ansatz* gets revealed already in the first or second context tested, it is also imaginable that a deciphering *ansatz* works fine in the first few contexts, but in the sixth or seventh context the *ansatz* turns out to be entirely unacceptable. For a sign that is attested only a few times – and as can be seen in Figure 2.2 this is applies to many signs in our toy model – this apparently means that it is well possible that a wrong deciphering *ansatz* may seemingly fit the epigraphic data just because there are too few contexts to filter incorrect readings – for a given “trial” there are not enough contexts for the corresponding “error”.

Moreover (and this is the more serious issue concerning a scarcely attested writing₂ system), even though there might be several different contexts of a given sign, this method will result in a chain of illusive confirmations which finally (sooner or later) will always end up in a context with a *sign that is attested only once or twice* (remember: only about 22.5% of the signs in our toy model are attested more than two times). Obviously such signs are ever-welcome for the epigrapher intending to prevent his (possibly wrong) *ansatz* from getting falsified, since he has the opportunity to attribute any morphographic or phonographic reading to these rarely attested signs in order to make his “decipherment” still fit the proposed language model. A sign attested only once or twice is therefore comparable to a joker within a card game: one may attribute it with any value required in this specific

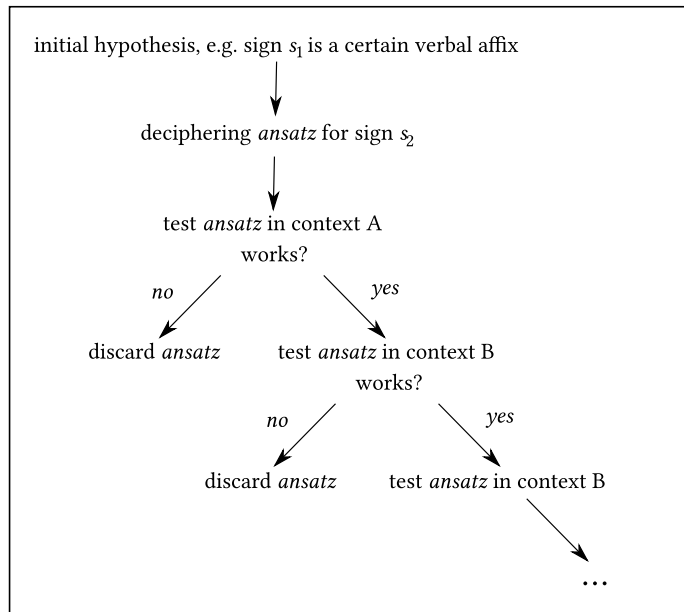


Figure 2.3.: Methodological approach in decipherment attempts.

context to “confirm” the proposed reading of another sign. An epigrapher, who endeavors to “decipher” a scarcely attested writing₂ system but is not aware of these issues, may hence have the deceptive feeling that he/she has made the correct deciphering *ansatz*.

There are also further strategies to prevent a falsification of a “deciphering” attempt: the epigrapher, for instance, always has the option to “adjust” non-fitting attempts by simply considering polyvalence of a sign, or he/she may propose varying spelling rules. A last life-line is, of course, an assumed misspelling by the ancient scribe. Apparently, such readings for rare signs and such additional assumptions are arbitrary and cannot be falsified due to the lacking additional contexts.

The consequence is thus that for scarcely attested morpho-phonographic writing₂ systems as described in this example, it is very likely that the capable scholar will *always* find a language that seemingly fits the rare epigraphic data “structurally”.

2.2.4. Fallacious iconicity

One may ask how the iconicity of signs changes the situation described above, since many well-known ancient morpho-phonographic writing₂ systems indeed show a certain degree of iconicity. First note that the identification of a reference object of a sign via its iconicity, even if it is assumed to be vastly “naturalistic”, has always to be handled with care – at the best this is done by also conducting a careful analysis of a cognate graphic sign, i. e. the

iconography, if such a system is attested.

But let us assume we were able to undoubtedly ascertain the iconic reference object of a couple of signs. Consider, for instance, a recurring sign sequence on the La Mojarra Stela 1 (L2-3, O10-11, Q16-17) for which one may propose that the signs in question depict a knife (MS114), a mountain (MS119) and a pair of feet (MS57). Kaufman and Justeson (2001:2.39) interpreted this sequence as the name of the individual depicted prominently on the La Mojarra Stela (“Harvester Mountain Lord”) by simply considering each sign a morphogram (from which the central sign, the “mountain”, occurs only in this sequence, therefore its reading is arbitrary anyway). Now we may try to “decipher” this sequence by considering a) possible morphographic values of the signs in question (e. g. legs may stand for “foot”, “leg”, “go”, “stand”, etc.) and b) possible traits of the Isthmian writing₂ system that are known also from other ancient morpho-phonographic writing₂ systems, e. g. phonographic indication/complementation, deriving phonograms via the acrophonic principle, considering rebusoid writings₂, assuming semantic indicators, *et cetera*. Unsurprisingly, due to the large number of considerable lexemes and combinations of phonograms and/or morphograms, we readily find reasonable “decipherings” of this sequence without any great effort. Table 2.1 shows a selection of possible “readings” of this sign sequence considering different language models (including some all too absurd language “identifications”)¹¹ and I invite the reader to extend this list of possible “readings”, which is nowhere near exhaustion, in any language he/she is capable of.

It is thus a combinatoric fact that such “decipherings”, which I would like to call *random coincidences*, are always possible. They again can only be detected as random and therefore false if the signs in question are attested numerous times in several other contexts, but as stated above, for scarcely attested writing₂ systems, this chain of confirmation will sooner or later end up in contexts including rarely attested signs, meaning that every “deciphering” attempt remains deceptive, even if iconographic hints may support a certain “reading”.

¹¹For the transliteration/transcription I use the established orthographies of the languages in question.



				
	knife	mountain	pair of feet	
pZ	TUK “to harvest”	KOTZHК “mountain”	KO.YUMI “lord”	<i>tuk(.u?) kotzhk ko.yumi</i> “Harvester Mountain Lord” (personal name written ₂ purely morphographically; Kaufman and Justeson 2001:2.39)
pH	K’UP “to cut”	k’ul < <i>k’uul</i> “mountain”	?a < <i>?akan</i> “foot”	K’UP-?a-k’ul <i>k’up(.) ?a(j)=k’ul</i> “He, Who Cuts Down The Enemy” (personal name; partly written ₂ by means of a rebusoid phonogram; reading order regularly adjusted, see ch. A.2.1)
Na	te < <i>tequi</i> “to cut”	TEPE “mountain”	pan < <i>panoā</i> “to go by, cross over”	TEPE-pan <i>tepēpan</i> “on the hill” (“mountain” written ₂ morphographically and indicated by a phonogram, postposition <i>-pan</i> written ₂ by a rebusoid phonogram)
Gr	το < ἡ τομή “cut, incision”	OP- “mountain”	ος < τὸ ὀστέον “bone, leg”	τὸ ὄρος “the mountain” (Nom. Sg.; “mountain” written ₂ morphographically, article and case written ₂ by means of phonograms)
La	cu < <i>culter</i> “knife”	CUMUL- “heap, pile”	ī < <i>īre</i> “to go”	CUMUL-ī <i>comulī</i> “the heaps” (Nom. Pl.) or “of the heap” (Gen. Sg.; “heap” written ₂ morphographically and indicated by a phonogram, case written ₂ by another phonogram)
Eg	 <i>dw</i> < <i>dw</i> “knife”	 <i>dw</i> < <i>dw</i> “mountain”	 semantic indicator LIFTUP	<i>dwj</i> “to lift up” (note: this sequence may be indeed a reasonable Middle Egyptian writing ₂ of this lexeme)
Co	το < τοκ “knife; razor”	TOOY “mountain”	ore < οτερητε “foot”	TOOY^{ore} TOOT “mountain” (“mountain” written ₂ morphographically and indicated entirely by two CV phonograms, where the latter has a mute vowel as in Mayan writing ₂)
Sp	co < <i>cortar</i> “to cut”	co < <i>colina</i> “hill”	sa < <i>salir</i> “to go (out), leave”	co-sa <i>cosa</i> “thing” (completely written ₂ by means of phonograms)
Ge	schwe < <i>Schwert</i> “sword”	be < <i>Berg</i> “mountain”	STAND “footing, standing upright”	schwe-be-STAND <i>Schwebe(zu)stand</i> “abeyance, limbo” (mixed phonographic-morphographic)

Table 2.1.: Random coincidences using the sequence MS14-MS19-MS57 of the Isthmian writing₂ system and several arbitrary language models as example (pZ = proto-Zoquean, pH = proto-Huastecan, Na = Nahuatl, Gr = Ancient Greek, La = Latin, Eg = Middle Egyptian, Co = Coptic/Sahidic, Sp = Spanish, Ge = German).

2.2.5. Estimation of q_{cr}

We may now estimate the needed *corpus* size. The arguments presented in the previous chapter leave no doubts that a) the number of frequently attested signs have to be increased, and b) the number of “joker” have to be decreased drastically. Studying Zipf’s law it is clear that, for the case of our scarcely attested writing₂ system, an increasing *corpus* size will come indeed with an increasing number of frequently attested signs, but at the same time the number of “joker” will *not* decrease, since more and more signs previously unattested will come to light.¹² So, as a first requirement we have to demand that indeed (almost) all distinct signs of the writing₂ system have to be attested, i. e. $n_s \approx n_{s,dist.att.}$. One may therefore insert the definition of $q_{\mathcal{W}} = \frac{n_{s,dist.att.}}{n_{s,tot.att.}} \approx \frac{n_s}{n_{s,dist.att.}}$ in equation (2.7) yielding

$$n_k \approx \frac{n_s}{q_{\mathcal{W}} (0.577 + \ln n_s)} \frac{1}{k}. \quad (2.8)$$

The requirements a) and b) mentioned above are apparently fulfilled if the least frequent sign is attested appreciably more than once:

$$n_k \stackrel{!}{\gg} 1 \quad \text{for } k = n_s \quad (2.9)$$

Using equation (2.8), this equivalently gives

$$q_{\mathcal{W}} \stackrel{!}{\ll} \frac{1}{0.577 + \ln n_s}. \quad (2.10)$$

Typical values for n_s in the case of morpho-phonographic writing₂ systems range roughly from $n_s = 200$ to $n_s = 1000$ (or even more) which corresponds to $q_{\mathcal{W}} \ll 0.17$ and $q_{\mathcal{W}} \ll 0.13$ respectively. This value may just as well be rounded (considering the degree of approximation followed in this heuristic argumentation, it does not change the overall validity of the hypothesis), giving the $q_{\mathcal{W}} \ll 0.1$ condition hypothesis:

$$\boxed{\text{if } q_{\mathcal{W}} \ll 0.1 \quad \Rightarrow \quad \mathcal{W} \text{ can be deciphered uniquely}} \quad (2.11)$$

2.2.6. Summary

The formulation of the hypothesis was motivated by mathematical considerations. After proposing a deciphering *ansatz*, one attributes a “structure” to the epigraphic data which leads to further decipherment proposals. These have to be confirmed in other contexts resulting in a chain of confirmations, but the number of arbitrary sign group segmenta-

¹²This was indeed the case for Isthmian writing₂ when Houston and Coe (2003) added the Feldspar Mask (Teotihuacan-style Mask) to the *corpus* of inscriptions.

tions and arbitrary sign-meaning identifications increases the fewer each sign is attested, which means that the resourceful scholar will always be able to find a language model fitting to a writing₂ system that does not fulfill (2.11) and therefore various scholars may “decipher” such a writing₂ system multiple times considering different languages. The term “uniquely” in (2.11) was included in order to take this into account and means that more than one consistent decipherments are excluded structurally on the basis of numerous and various attestations of signs and sign groups and that such a unique decipherment can (and usually will) be academically established and accepted as being correct with high certainty.¹³

While the $q_{\mathcal{W}} \ll 0.1$ condition hypothesis cannot be proven directly (but we gave some heuristic arguments), it can nevertheless be tested considering the known deciphered and undeciphered writing₂ systems of the world. Undeniably, the well known examples of deciphered writing₂ systems – e. g. Old Egyptian hieroglyphics or Cuneiform writing₂ (the latter correlated to several languages) – with their huge *corpora* satisfy (2.11). The Mayan writing₂ system has circa 650 distinct signs attested about 2.4 million times¹⁴ corresponding to $q_{\text{Maya}} \approx 0.0003$, and consequently there is no scholar doubting that this writing₂ system correlates uniquely with the so-called Classic Mayan language. Another example is Linear B whose set of signs consists of 90 syllabograms and 160 morphograms which are attested about 80,000 times (Fischer 2003:2, 12) resulting in $q_{\text{LinB}} \approx 0.003 \ll 0.1$ and indeed Linear B is considered as being deciphered as a writing₂ system correlated to Mycenaean Greek. The famous Phaistos Disc writing₂ system by contrast has $n_{\text{s,dist.att.}} = 45$ and $n_{\text{s,tot.att.}} = 242$ (Fischer 2003:4–5) which gives $q_{\text{Phaistos}} \approx 0.19 \not\ll 0.1$ resulting in numerous “decipherments” from which none can be seen as academically accepted.

Note that, even if (2.11) is not fulfilled, the writing₂ system may nevertheless be deciphered correctly – for instance, with the help of a bilingue, because of an excellent analysis, or simply by chance. The condition, however, only predicts that other “decipherments” are structurally also *possible* and that a found consistent “decipherment” consequently does not prove anything.¹⁵

Let me emphasize again that the $q_{\mathcal{W}} \ll 0.1$ condition serves as a rough estimation, a sort of quick test. This is also the reason why I have decided to use this quotient for this estimation, since it is easily calculated from a given data set.

¹³It should be reminded that from an epistemological point of view one can *never* be *sure* that one has found the true (“correct”) decipherment even though all evidences support this hypothesis (see Popper 1973).

¹⁴Based on an estimation by E. Wagner, University of Bonn (see <http://mayawoerterbuch.de/schrifttraeger/>).

¹⁵Strictly speaking, *every* writing₂ system is decipherable, i. e. there exists no undecipherable writing₂ system in the proper sense. If one sticks to the term “undecipherable”, then it should be understood as “not uniquely decipherable”.

2.3. Consequences for Isthmian writing₂ and the Mixe-Zoque hypothesis

The Isthmian writing₂ system is indeed a scarcely attested system:¹⁶ the number of distinct signs attested is $n_{s,\text{dist.att.}} = 163$ while the total number of attested signs is $n_{s,\text{tot.att.}} = 638$ so

$$q_{\text{Isthmian}} \approx 0.26 \not\ll 0.1 \quad (2.12)$$

This $q_{\mathcal{W}}$ -value is even worse as for the Phaistos Disc.

Since these attested signs follow indeed Zipf's law (Fig. 2.4), one can easily estimate that the total number of distinct signs in Isthmian writing₂ will be about 500¹⁷ meaning that – to date – only one third of the total number of distinct signs are indeed attested, so it is to be expected that each newly unearthed object carrying Isthmian writing₂ signs will also come with a certain amount of hitherto unattested signs. This quick estimation also demonstrates that the toy model presented in the last chapter is not that far from reality as it might have seemed.

Taking a closer look at the sign frequency distribution, one recognizes that about 37.4% of the signs are attested only once. Additionally, 9 signs of the signs attested more than once are only attested in one and the same context (e. g. the “star” sign MS₃₁ is attested twice, but both appearances are within an identical sequence; LM: C₁–4 and R₅–8), so a total of 42.9% of the set of attested distinct signs can be considered as “joker” in Isthmian writing₂.

The reader will certainly agree that in the light of such a statistic a unique decipherment of the Isthmian writing₂ system is not possible. About 10 inscriptions of a length comparable to the La Mojarra Stela 1 will be needed *at the minimum* in order to have a fairly stable epigraphic basis for a serious, structurally unique decipherment.

Justeson and Kaufman's decipherment attributed a Mixe-Zoquean “structure” to the texts once they “deciphered” the most frequent signs MS₂₀ as **wɬ** (“independent completive suffix” and “relativizing enclitic”) and MS₃₈ as **?i** (3rd person ergative pronominal prefix). Next, the phonographic “decipherment” of some proposed verbs and nouns were “confirmed” in other contexts (e. g. MS₆₃ **ma** from the assumed sequence **ja-ma jama** “day” in the sequence **maMATZA?tza**), which may be indeed a confirmation of the deciphering approaches, or – more likely – nothing but random coincidences, which will always occur in such limited epigraphic data sets. Finally, these found “decipherings” were completed by assigning arbitrary values to the 42.9% of the signs that are only attested in

¹⁶All numbers given in this section are based on the sign catalog published by Macri (2017a). They are, however, slightly adjusted by differing opinions of which signs are indeed distinct signs and which signs are nothing but stylistic variants of other signs. Numerals and calendar signs were excluded (they belong to the calendar notation system and not to the writing₂ system).

¹⁷Better: 500 ± 100 . Due to the limited statistical basis, this estimation is prone to errors but should (very roughly) be correct.

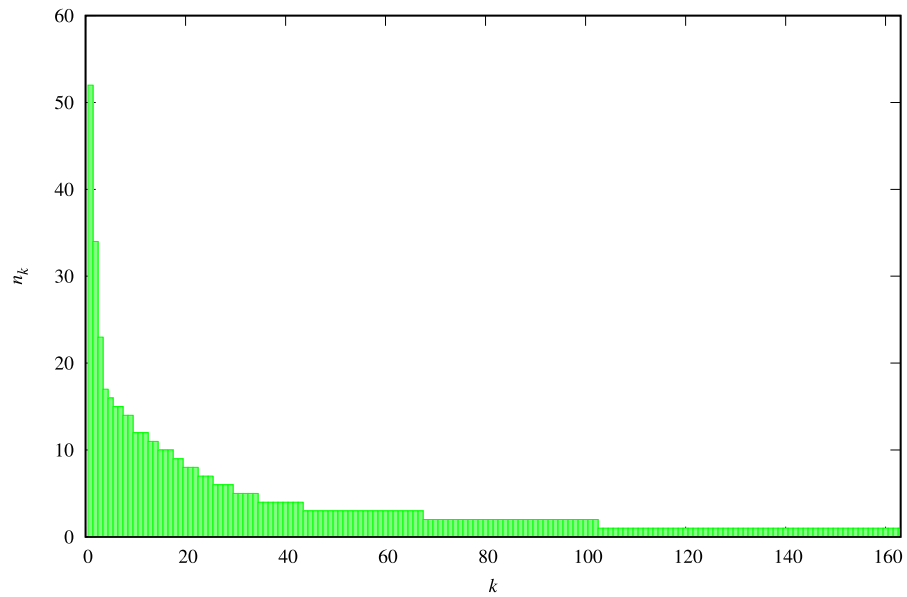


Figure 2.4.: Rank-size distribution for the Isthmian writing₂ system.

one context in order to provide a “coherent” (Justeson and Kaufman 1997), “almost complete translation” (Kaufman and Justeson 2008:196) of the Isthmian texts. In view of the arguments given in this treatise (and in view of the experience I had myself with “deciphering” the Isthmian writing₂ system based on another language model), this must have been a “cakewalk”.

For the Mixe-Zoque hypothesis mainly propagated by Campbell and Kaufman (1976) considering solely linguistic evidences and stating that the Olmecs and/or the so-called epi-Olmecs spoke a Mixe-Zoquean language, we can therefore reasonably argue that there is no reliable *epigraphic* evidence for its validity. The decipherment of the Isthmian writing₂ system based on Mixe-Zoque linguistics praised by Justeson and Kaufman (1993 and 1997) and Kaufman and Justeson (2001 and 2008) is not unique, even though some arguments carried forward self-assuredly and presented as facts by the authors may have blinded some scholar’s eyes (I will imitate this strategy in the appendix). Furthermore, we have to be aware that the Mixe-Zoque hypothesis is first and foremost a *hypothesis* founded on *linguistic* grounds where finally irrefutable *epigraphic* proofs are needed.¹⁸

¹⁸For further aspects of the Mixe-Zoque hypothesis and related topics in Mesoamerican linguistics, see also Kaufman (1976), Wichmann (1999), Wichmann, Beliaev, and Davletshin (2008), Macri (2008) and Kaufman and Justeson (2009).

Apart from the missing epigraphic proof of the Mixe-Zoque hypothesis, there are also other objections that can be lodged against it. The “cacao controversy” between Dakin and Wichmann (2000) and Justeson

2.4. Conclusion: Awaiting some more “La Mojarra stelae”

Before closing this treatise with some final words on the presented theses and the serious consequences, I would like to give a brief insight into Justeson and Kaufman’s “decipherment”. Let us take a look into the translation of the text from the La Mojarra Stela 1 by Kaufman and Justeson (2001:2.36–2.70):¹⁹

[...] Coronated ones hallowed by sprinkling fought against noble and war-leader-type succession-supporters. [...] He [HML] speaks: “My arm is bristling/prickling.” [...] That governor(’s headdress) was a skin-drum (and a) hummingbird. His Macaw.power, his eccentric.flint, and his pectoral stone memento got brandished. [...] Now the priest was he who is a lordly beard-mask (wearer). [...] When Sky Quetzal was ascending for.others/elsewhere

and Kaufman (2007), for instance, can be regarded as a textbook example of how different scholars assess a given data set, i. e. in this case the lexicon of the Mixe-Zoque languages and the Uto-Aztecan languages, showing the interpretative character of comparative linguistics. As a consequence, not all of the Mixe-Zoquean loan words proposed by Campbell and Kaufman (1976) can be regarded as certain and accepted by all linguists.

Also, the argument that “[t]he geographical distribution of Mixe-Zoquean [...] languages corresponds closely to that of the Olmec archaeological sites” (Campbell and Kaufman 1976:80) is a rather weak evidence, since a) this applies also to other languages and b) the areas of settlement may have changed considerably within the roughly 2,000 years that separate the Olmecs from the colonial language attestation in that area. Many examples of such drastic population movements in history are known: compare, for instance, the distribution of Hittite inscriptions and the languages spoken today in Anatolia, or the distribution of Continental Celtic inscriptions and the distribution of Celtic languages today. The language(s) spoken by the Olmecs might also be already extinct (compare the case of the Sumerian language).

Furthermore, Campbell and Kaufman (1976:80) put forward the argument that “the glottochronological time depth of MZ [...] correlates with the first glimmerings of Olmec culture”, which is again also true for other language families. In fact, this is true for *every* language family at some level of genetic unit and at some time in its history, e. g. for proto-Mayan as well as for proto-Bantu or for proto-Germanic. However, most linguists are anyway suspicious of glottochronological calculations. This means that each of the presumed Mixe-Zoque *etyma* may as well stem from later periods as estimated by Campbell and Kaufman (1976).

So, even if we accept that the proposed loan words are indeed original proto-Mixe-Zoquean lexical items that reflect the ecological environment of the Isthmian region and some of the distinct Mesoamerican cultural traits, what could these findings mean? It would certainly mean that Mixe-Zoquean speakers settled for a long time in this region (but we do not know for how long) and that they participated in the Mesoamerican cultural practices, but it does *not necessarily* mean that the Olmecs were speakers of Mixe-Zoquean. This *might* be true, but it might as well be possible that it is due to the geographic distribution of the Mixe-Zoque languages at the Isthmus of Tehuantepec – the “bottleneck” or “hinge” of Mesoamerica – that predominately proto-Mixe-Zoquean *etyma* were borrowed into other Mesoamerican languages (consider, e. g., long-distance trading).

¹⁹In the following two quotes, I have not rendered text markups such as bold face or underlining, which are present in Kaufman and Justeson (2001) but unimportant here.

the ground jointly measured by handspans had been hallowed. [...] His [HML's] power-assuming buttock-cheeks got pierced and covered for others. [...] Now a macaw-lashing/ ?band was supposed to get taken. Earlier, (a) garment/cloth(s) was/were getting folded in plain sight. [...] The aforementioned one [HML] sings a song which is about/of an animal-guise/day(?s length?): "Now my penis-receiver (stauncher) had earlier been a body-covering and a ruler's head-wrap." [...] The hallowed ancestral(?) "x-badge" had had for one year Macaw Monster role/status. When he [the Macaw Monster player/person] placed stones in order he fought against the overthrow(er)(s) of inscribed monuments. As for his [HML's] blood, as it was flowing, he [HML] shouts: "My blood is getting sprinkled for.others/elsewhere." We [the raisers of this stela and their audience] arrow-shot/?dismembered him/-them [the rebel(s)] for him/them. When he [HML's rival] set down bloodily, the macaw-bedecked one [HML or his rival] was an animal-guise-impersonator. "It/He is my bloody thing/one." When he/it [HML's rival(?s wing)] was doing nothing but quiver/flap bloodily, Macaw [HML] was shouting: "It/He is my bloody thing/one." Now, when he stepped (on tip-toe) [...] bloodily, [he said] "I am the sun, a coronated.one/crowned.prince. Then when my overthrown (rival/one)'s wing/shoulder came to rest bloodily, he/it had been quivering/flapping." [...] The stones that he set in order were thus symbols, ancestral(?)-type ones. "What I chopped has been planted and harvested well." An animal-guise appeared divinely in his body.

Or consider the translation of the Tuxtla Statuette (Kaufman and Justeson 2001:2.81):

[...] "Who should go on a trip? I am a deedsman, a beard-mask (wearer), a noble one. Four are your elsewhere (otherworldly) sky(-?face) pillars; Stained (with blood?) is your elsewhere (otherworldly) handspan-measure which is made of turtle(-shell)." [...] The god Longlip₂ was sharing the Macaw.sign-Slantbar cloth things. [...] The ? was sleeping [...] And then a familiar animal got.revealed/appeared [in a vision]. The buzzard animal-guise is/was powerful.

This translation is hardly convincing, because it does not fit into the cultural context and everything we know about Mesoamerica. Even though it might turn out that Justeson and Kaufman's interpretation of the sign distribution patterns as reflecting a Mixe-Zoque grammatical structure is correct, it is nevertheless a barely appropriate overall translation of the texts.

Returning to the issues discussed in the previous chapters, it is clear that it is *not* true simply because the "structure" of the Isthmian writing₂ texts fits the "structure" of the proposed proto-Zoquean language model, the "decipherment" is "fundamentally correct"

and, of course, not “unassailable”²⁰ as Kaufman and Justeson (2008:197) claim. Furthermore, due to the analysis of typical “decipherment” strategies and of the issues encountered when dealing with only scarcely attested writing₂ systems described above (i. e. the non-existence of a possible “error” corresponding to a “trial” leading to no error elimination and therefore not to an improved decipherment or to the rejection of false hypotheses), I am poised to claim that I am able to “decipher” the Isthmian writing₂ system based on (almost) *any* language model, and indeed a consistent “decipherment” leading to coherent translations of some major Isthmian writing₂ texts could be achieved by considering a “Huastecan hypothesis”, i. e. that the so-called epi-Olmecs spoke a Huastecan language. In principle, I could have done that also with an Oto-Manguan (e. g. proto-Zapotecan), a Totonacan, or an Uto-Aztecan language model, but I have chosen proto-Huastecan which I consider much more interesting for its far-reaching implications for the history of the Mexican Gulf Coast.²¹

While the proto-Huastecan reconstruction used in this paper may be faulted from a comparative linguistics point of view, it should be noted that anyhow the identification of a linguistic *reconstructum* (pre-*proto-Zoquean*, *proto-Huastecan*, ...) with a written₂ natural language (the actual language encoded in the Isthmian writing₂ system) can be faulted from a methodological point of view anyway.²² Additionally, the *reconstructum* refers to *spoken* language, which is not equivalent to the *written₂* language. Both mentioned methodological obstacles make it impossible to entirely predict the correct language form (phonology, lexicon, grammar, syntax, ...) at a given space-time configuration, which means in the present case the form of the language of the Isthmian writing₂ system at some time between 300 BCE and 600 CE as a reconstruction from languages attested not until 1500 CE.

Just to avoid misapprehensions: I do not claim that the language identification of the “epi-Olmec decipherment” by Justeson and Kaufman is incorrect and I do not claim that the presented “Huastecan decipherment” is correct, I simply claim that it is impossible to decide whether one of the “decipherments” is correct or not and I claim that the statements of Justeson and Kaufman quoted in the introduction are demonstrably wrong. Maybe it is true that the Olmecs and the “epi-Olmecs” spoke a Mixe-Zoquean language, but it is also conceivable that the Olmecs spoke a Mixe-Zoquean language (or another language, maybe already extinct) and the “epi-Olmecs” were, for instance, speakers of a Mayan language, namely Huastecs, settling in this region for some centuries before passing to the region today known as La Huasteca (see also ch. A.4 for a further discussion). We should, however,

²⁰But it is unassailable in the sense that their “decipherment” cannot be falsified in other contexts.

²¹The various issues related to the Huastec people were discussed in Robertson and Houston (2003 and 2015). See also Kroefges and Schulze (2013) and Faust and Richter (2015).

²²This methodological dilemma is well known in this discipline – the reader not familiar with that problem may be referred to, e. g., Zimmer (1994). Lacadena (2011) discussed successes and failures of the comparative method in the light of the enhanced understanding of the Classic Mayan writing₂ system.

always be aware that although some authorities regard a particular model as being *probable*, we must not misinterpret such statements as predicating anything about the verisimilitude or truthlikeness of this model.²³

These results also demonstrate that occasionally certain academic mechanism fail: how is it possible that such a methodologically flawed research result could be published in the *Science* magazine, one of the leading and prestigious scientific journals worldwide (were there no epigraphers available for the advisory board?), and why are they allowed to propagate their claims repeatedly (as lastly in Woodard 2008) conveying the impression that their “decipherment” is confirmed and accepted within the academic sphere? Because I am very well aware that the arguments presented in detail in the foregoing chapters describe not a great, surprising scientific breakthrough, but were in principle for a long time well known to almost every epigrapher (in a nutshell: a reliable decipherment is based on stable epigraphic ground; see also Houston and Coe 2003). The title and the results of this study can hence be regarded as a well-meant (or warning) advice: anyone who announces “yet another decipherment” of a writing₂ system that has $q_W \ll 0.1$ will arouse suspicion of charlatanry.

It is admittedly tempting to propose phonographic readings also for other scarcely attested Mesoamerican writing₁ systems, for instance the Teotihuacan writing₁ system or the Monte Alban writing₁ system²⁴ – e. g. Whittaker (1992:7–8) or Kaufman and Justeson (2008:230–233) for the Monte Alban Writing₁ system, Whittaker (2012) and Taube (2000:51) for the Teotihuacan writing₁ system –, which is not reprehensible, as long as they are not preached with such a temerity and as long as the respective researchers (and of course also the colleagues confronted with these “decipherments”) are aware of the fact that the scientific advantage of such phonographic readings is appreciably limited: the correctness of these proposals is undecidable and unprovable from the epigraphic data and they may be as well nothing but *random coincidences*. However, fathoming the consequences and implications of phonographic “decipherments” implying the presence of some language group in a certain region may indeed be an inspiring task, which may help to construct different possible models for the history of Mesoamerica, and the embedding of such proposals within a net of evidences is certainly a legitimate approach where irrefutable testaments are rare – but cautiousness is indicated and advisable anyway.

The reader still unconvinced and skeptical about the theses presented in this treatise may now turn to the appendix. In this additional study I will expound the “decipherment” of the Isthmian writing₂ system based on the “Huastecan hypothesis” spreading a meshwork of evidences onto the few preserved Isthmian writing₂ texts that makes it seemingly an unassailable, correct “decipherment” of this still enigmatic writing₂ system.

²³In fact, many theories considered today as being very truthlike were originally considered as being highly *improbable*, see Popper (1973).

²⁴Note that, as long as they are still undeciphered, it is undecided and unascertainable if the Teotihuacan writing₁ system and/or the Monte Alban writing₁ system had indeed writing₂ subsystems.

“Afterword” by Samuel L. Clemens*

This line of hieroglyphs was for fourteen years the despair of all the scholars who labored over the mysteries of the Rosetta stone:



After five years of study Champollion translated it thus:

Therefore let the worship of Epiphanes be maintained in all the temples, this upon pain of death.

That was the twenty-fourth translation that had been furnished by scholars. For a time it stood. But only for a time. Then doubts began to assail it and undermine it, and the scholars resumed their labors. Three years of patient work produced eleven new translations; among them, this, by Grunfeldt, was received with considerable favor:

The horse of Epiphanes shall be maintained at the public expense; this upon pain of death.

But the following rendering, by Gospodin, was received by the learned world with yet greater favor:

The priest shall explain the wisdom of Epiphanes to all these people, and these shall listen with reverence, upon pain of death.

Seven years followed, in which twenty-one fresh and widely varying renderings were scored – none of them quite convincing. But now, at last, came Rawlinson, the youngest of all the scholars, with a translation which was immediately and universally recognized as being the correct version, and his name became famous in a day. So famous, indeed, that even the children were familiar with it; and such a noise did the achievement itself make that not even the noise of the monumental political event of that same year – the flight from Elba – was able to smother it to silence. Rawlinson’s version reads as follows:

Therefore, walk not away from the wisdom of Epiphanes, but turn and follow it; so shall it conduct thee to the temple’s peace, and soften for thee the sorrows of life and the pains of death.

*Whole “afterword” cited after Twain (1973:109).

Addendum: Why La Venta Monument 13 cannot support the Mixe-Zoque hypothesis. A short response to Lacadena (2008)

In Lacadena (2008), the author endeavored to demonstrate that a syntactic analysis of the text on La Venta Monument 13 (Fig. 2.5) gives evidence for the Mixe-Zoque hypothesis, in particular, that the (assumed) linear arrangement of the two first signs in the right sequence – proposed numeral and day sign – and the arrangement of the third sign at the bottom of the right sequence read together with the single footprint on the left – proposed subject and verb – point to Mixe-Zoque syntax (Lacadena 2008:625).²⁵ This proposition is based on a couple of assumptions: a) it is indeed a writing₂ system and in particular the footprint is part of a written₂ sequence, b) this sequence has to be read top-to-bottom and right-to-left,²⁶ and c) the signs represent (following this sequence) numeral-day name-name/title-verb.



Figure 2.5.: La Venta Monument 13, drawing after Méluzin (1995:Fig. 34).

The crucial point is assumption a). While it is apparently true that we are confronted with a writing₁ system, it is not clear if this monument really shows (at least partially) a writing₂ system. The prominently depicted individual is certainly pure iconography and the three signs on the right may perhaps indeed render a day from the 260-day ritual calendar (hence it is a notation system) and a name (but we cannot be sure on that), so this inscription may be comparable to other Mesoamerican writing₁ systems (e. g. Nahuatl writing₁ or Mixtec writing₁) combining iconography, calendar notation and a sign denoting the individual's name (or ethnic affiliation). Lacadena (2008:615), however, assumes additionally that the bird's head and the footprint on the left form a written₂ sequence corresponding to a subject-verb main clause in some correlated language, arguing that he

²⁵Or to Totonacan syntax, but this possibility was discarded by Lacadena for it requires the additional hypothesis of a population movement involving Totonac people (Lacadena 2008:625).

²⁶While the reading order top-to-bottom is assumed without giving a reason, the reading order right-to-left is justified by considering the viewing direction of the third sign depicting the head of a certain bird.

would have expected either numerous footprints or the footprint located closer to the individual's foot if it were part of the iconography. But if we talk about our expectations, we may ask where we would expect the footprint if it really represents a verbal morphogram in a linear sequence with a subject morphogram? If the arrangement of these signs indeed follows the logic of a language, as Lacadena (2008) assumes, then we should rather expect the footprint sign succeeding the bird's head sign, directly below it.

In my opinion, it is more likely that the arrangement of the signs precisely does not follow this logic (i. e. the logic of language), but, on the contrary, follows the logic of iconography, and in this sense we may ask where we would expect a footprint if the originator of the inscription would express iconographically "he arrives"? I expect the footprint in this case being located *behind* the person, as I also expect the footprint in front of the individual, if the originator would have wanted to express "he went away". That the single footprint is not directly located in the close proximity of the individual's feet is, however, not atypical for iconographies lacking perspective.

However that be, I agree with Alfonso Lacadena that the hypotheses are hardly confirmable due to the small *corpus* of Olmec inscriptions (Lacadena 2008:*passim*). The question if this particular inscription is an example of writing₁ consisting solely of iconography (and maybe a calendar notation) or if it is also an early attestation of a writing₂ system, can therefore not be decided, so La Venta Monument 13 cannot be regarded as supporting the Mixe-Zoque hypothesis.

Appendices

A. The proto-Huastecan “decipherment” of the Isthmian writing₂ system^{*}

A.1. Preliminary notes

General abbreviations: The inscribed objects and abbreviations for languages

The objects considered in this study and included into the analysis are given in Table A.1 as well as the abbreviations for these objects used throughout this study. The Chiapa de Corzo sherd (too sparse epigraphic context), the O’Boyle Mask (Clay Mask; poor quality and partly illegible) and the few stelae on which only some calendrical information is preserved are not considered (Chiapa de Corzo “Stela” 2, Tres Zapotes Stela C, Cerro de las Mesas Stelae 5, 6, 8, 15, and Alvarado Stela 1). Columns are labeled with consecutive capital letters in an alphabetic order and thus follow the labeling already established in the literature (Winfield Capitaine 1988; Méluzin 1992; Houston and Coe 2003). Due to a differing opinion of which signs can be seen as forming a sign group or not, sign numbering within a column may differ from those given in other articles (in particular regarding the LM in Winfield Capitaine 1988 and Macri 2017a), which, however, is clarified in chapter B where all translated texts can be found.

All Mayan languages and linguistic genetic units are abbreviated as listed in Kaufman (2003:38–43) – proto-Huastecan will be abbreviated pH.

Transliteration and transcription

In this study, I use the transliteration scheme given in Table A.2. Undetermined vowels are written₂ as a capital V. Reconstructions of corrupted signs are marked by squared brackets []. Signs rearranged by the author due to an assumed accidental metathesis in the inscriptions are given in parentheses ().

^{*}In order to avoid misapprehensions, it must be emphasized that this additional study will be presented echoing the corresponding articles by Justeson and Kaufman, i. e. as if I were not aware of the $q_W \ll 0.1$ issue of Isthmian writing₂, and as if I were convinced that I have unearthed the correct decipherment.

<i>Abbreviation</i>	<i>Object</i>	<i>Dating</i>
ES	El Sitio Celt	late Formative
LM	La Mojarra Stela 1	July 13, 156 CE
TS	Tuxtla Statuette	March 14, 162 CE
FM	Feldspar Mask	5th/6th century CE?

Table A.1.: Objects carrying Isthmian writing₂ texts considered in this study.

<i>Transliteration</i>	<i>Example</i>	<i>Meaning</i>
bold capital	YUT' "to tie sth."	morphogram
bold italic capital	<i>BE.IN.TRANCE</i>	morphogram with proposed meaning but unknown phonetic structure (also for month names when the Yucatec equivalents are given)
bold lowercase	yu	phonogram
A ^B or ^B A	yuYUT'	B serves as a phonographic indicator for A
A-B	YUT'-t'e <i>yut'.e(j)</i>	A followed by B (distinct sign blocks in a sequence) or B serves as a phonographic complement for A
A*B	?a*k'ul	A is conjoint with B

Table A.2.: The transliteration scheme in this study (where A and B can be morphograms or phonograms).

Transcriptions follow general habits established in (Mayan) linguistics (for the representation of the pH phonemes see ch. A.3.1). Suffixes that are indeterminable from the epigraphic data and that cannot be reconstructed from the available linguistic sources are symbolically written₂ by means of a slash /. All other added phonemes/morphemes under-spelled in Isthmian writing₂ are given in parentheses ().

Abbreviations in morphosyntactical analyses

1 = first person singular, 3 = third person singular, ABS = absolutive, ERG = ergative, IS = intransitive suffix, TS = transitive suffix, COM = completive, INC = incompletive, PASS = passive, MP = mediopassive, MID = middle voice, INCH = inchoative, APPL = applicative, CAUS = causative, NLZR = nominalizer, DM = derivational morpheme, DEI = deictic suffix, DEM = demonstrative pronoun, PREP = preposition, NUM = numeral,

MN = month name, DN = day name, LC = long count date.

Notes on vocabulary

Within the running text in chapters A.2 and A.3 I will in general not give the sources for the lexemes reconstructed for pH, since they all can be found in the corresponding *lemmata* in the list of identified lexemes (ch. C) and the sign list (ch. D).

The following works were used as sources for the pH lexicon: the etymological dictionary by Kaufman (2003), the phonological proto-Huastecan reconstruction by Norcliffe (2003), the narratives collected in Kondic (2016), and (partly) Quirós (1711[2013]).

Notes on images

All images (signs and iconography) used in this study are digital redrawings based on the following publications: Isthmian writing₂ signs: Macri (2017a); Mayan writing₂ signs: Tokovine (2013); Sequences from the LM: Winfield Capitaine (1988); Side text of the LM: Justeson and Kaufman (1997); the ES (written₂ text and iconography): Méluzin (1995:Fig. 4); Sequences from the TS: Méluzin (1992:Fig. 1); Sequences from the FM: Macri (2016).

A.2. The signs and the code

A.2.1. Deciphering the Isthmian writing₂ system

In order to undertake a deciphering attempt it makes sense to begin with some general assumptions: The number of attested distinct signs and the resemblance with the Mayan writing₂ systems makes it plausible to assume that Isthmian writing₂ is a mixed morpho-phonographic writing₂ system consisting to a significant extent of morphograms and probably a syllabary comparable to the Classic Mayan syllabary (the syllable structure of proto-Huastecan conforms with common Mayan characteristics). Additionally, one may assume that the texts relate to historical events (certainly in the case of the La Mojarra Stela) or mythical/ritual topics. In the first case one expects completives (and maybe also incompletives), predominantly 3rd person subject markings and probably impersonal constructions (“it has been tied”, “it has been counted”, etc.). In the case of ritual texts, however, one cannot assume that a certain TAM category or person is predominant, it may be anything.

I will now outline the deciphering approaches for some of the most common or noticeable signs and sign sequences of the Isthmian writing₂ based on the reconstructed proto-Huastecan language.

Person	Ergative (“Set A”)	Absolutive (“Set B”)	
Sg.	1	<i>nu-</i>	<i>in-</i>
	2	<i>?a-</i>	<i>?at-</i>
	3	<i>yu-</i>	<i>Ø-</i>
Pl.	1	<i>ka-</i>	<i>wa-</i>
	2	<i>?a-</i>	<i>?ex-</i>
	3	<i>chi-</i>	<i>?eb-</i>

Table A.3.: Personal pronouns in proto-Huastecan (after Robertson 1993).

MS38 and MS39a: ergative pronouns

Beginning with the personal pronouns (Huastecan personal pronouns have been investigated by B. Edmonson 1987 and Robertson 1993), I assume the sets given in Table A.3 for pH. In the case of transitives, the sequence ABS-ERG-VERB is assumed (Robertson 1993:296).

Since the 3rd person absolutive is \emptyset - (denoted 3ABS hereafter), the predominant personal pronoun should be the 3rd person singular ergative *yu-* (denoted 3ERG hereafter; I suggest that the shift pM **r > pH *y took place already). A reasonable candidate may be MS38 which occurs 32 times on the LM. Considering also the sequence U₂₋₅ on the LM that parallels C₁₃₋₁₆ on the FM (Fig. A.1) where MS38 is replaced by MS39 one may make the *ansatz* that both are two consecutive verbal (transitives; \emptyset -*yu/nu*-VERB₁+ \emptyset -*yu/nu*-VERB₂ “I have/he has VERB₁ed and VERB₂ed”) or nominal (possessives; *yu/nu*-NOUN₁+*yu/nu*-NOUN₂ “his/my NOUN₁ and his/my NOUN₂”) phrases: On the LM 3rd person singular ergative *yu-* and on the FM 1st person singular ergative *nu-* (1ERG). Consequently, I propose the phonographic readings **yu** (MS38) and **nu** (MS39) respectively.

Regarding MS39, further analysis revealed that it does not matter whether it is oriented vertically or horizontally and whether it is surrounded by MS141 or not (this is also evident in the parallel sequence in Fig. A.1). Since MS141 is therefore not a sign by itself, I list the combined sign MS39+MS141 as MS39a (the complete form) and the reduced form MS39 as MS39b.

These proposed readings have to be confirmed, but the analysis revealed that MS39a/b appears only as 1ERG pronoun on the TS and the FM with one possible exception: On the LM (N₂₁) it seems that MS39b is infixes in MS51 (Fig. A.2a) which I read **NUP** “to marry so.” (provided by the context), so the infixes sign here serves probably as a phonographic indicator. Compare also the resemblance of MS141 with the Classic Mayan T₁₃₄ which has only a very slightly different reading **no** (Fig. A.2b).

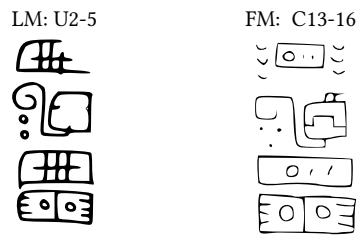


Figure A.1.: Parallel sequence on the LM and the FM.

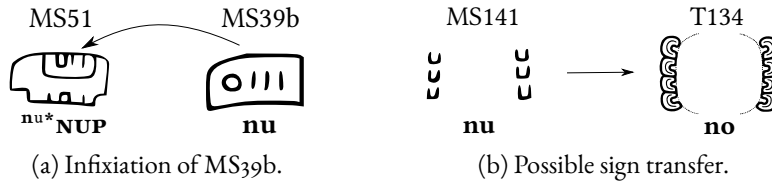


Figure A.2.: Confirming the reading of MS39a/b (including MS141).

Confirming the reading of MS38: MS75, MS101 and MS129

Consider the sign groups MS75b = MS75a+MS129 (Fig. A.3a; LM: D1, P17, S43; TS: F13) and MS38+MS101 (Fig. A.3c and A.3d; LM: H3-4, M5-6, T7-8, V1-2) for which a careful analysis reveals that they are interchangeable. Further, consider also the sign group MS75b+MS101 (Fig. A.3b; LM: S43-44) which can be seen as an intermediate writing₂ of the previously mentioned sign groups. While MS75a, i. e. MS75b without the knotted ribbon, most likely shows the head of a certain serpent for which I have found the reburoid phonographic reading **chan** (< pH **chan* “serpent”), MS75b, i. e. the head of the serpent with the knotted ribbon, most probably has an own morphographic reading for a lexeme beginning with *yu* as the comparison of the sign groups in Figure A.3 demonstrate. These sign groups often appear before calendrical terms (in particular, words for “year”; see below), so I suggest the morphographic reading **YUT**’ “to tie sth.” (the corresponding sentences read commonly something like “XX year(s) has/have been tied”), which also matches iconically with the meaning of the knotted ribbon. MS101 is therefore most likely a syllabogram **t’V**, where V is a vowel still to be determined. Comparisons of sign groups involving MS101 do also reveal that this sign may either be separate or attached to MS103 without changing its meaning (I list the two variants as MS101a and MS101b; MS103 thus seems not to be a sign by itself). The sign groups in Figure A.3 then are pure morphographic (Fig. A.3a), mixed morphographic-phonographic (Fig. A.3b) or pure phonographic (Figs. A.3c and A.3d) renderings of the verbal phrase Ø-*yubt’ej* “it has been tied”.¹

¹The passive and its rendering in Isthmian writing₂ will be analyzed in ch. A.2.3 and A.3.3 respectively.

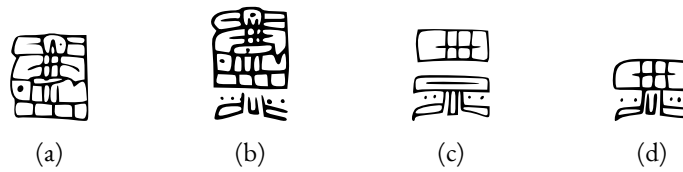


Figure A.3.: Confirming the reading of MS38 and deciphering MS75b and MS101: (a) MS75b **YUT'** (b) MS75b+MS101 **YUT'-t'e** (c) MS38+MS101a **yu-t'e** (d) MS38+MS101b **yu-t'e**.

So the reading of MS38 could be confirmed in another context, but the comparison also reveals the origin of this sign (Fig. A.4), since it is part of the serpent's head MS75a. Additionally, I am convinced that MS202, which appears twice on the FM, is nothing but a later variant of MS38. The reading of MS202 as the 3rd person singular ergative pronoun (in both cases in a possessive construction) perfectly fits in these contexts (FM: B3, E12).

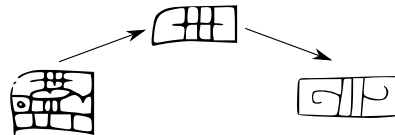


Figure A.4.: Origin of MS38 and variant on the FM (MS202; right).

Before proceeding to the next signs, there is one general feature of the writing₂ system that should be referred to, because it already appeared in this context. Since proto-Huastecan very likely has a set of thematic/status suffixes that attach to verbs depending on whether it is a (root or derived) transitive or (root or derived) intransitive and depending on whether it is in a completive or incompletive state (see ch. A.3.3), one expects that these suffixes are also written₂ phonographically. However, while the vowels are very often written₂ by means of phonographic complements, the associated *auslaut* is commonly suppressed, in particular the semi-vowels /w/ and /y/ and the consonants /ʔ/ and /j/ (but in some cases they are indeed written₂, so their existence is evident). This means that a morphogram standing for a verb carries these suffixes implicitly if it is not complemented. Moreover, since the common Mayan passive, which is also evident in the Isthmian epigraphic data, originally shifted CVC root transitives to CV**h**C structures², the same morphogram may render also the passive of the same verb – the difference will only be the presence/absence of an ergative pronoun, which makes the reading nevertheless unambiguous. This was evident in the reading **YUT'** Ø-*yubt'*(.ej) in Figure A.3a (more on these writing₂ conventions can be found in ch. A.2.3).

²This is the only case I transliterate a /h/ in order to indicate a passive though it may be already deleted; see ch. A.3.3

Determining the full reading of MS101: MS43, MS65, MS68, MS71, MS140 and MS171

Fortunately, there are several different contexts in which MS101a/b is attested and all of the accompanying signs could be deciphered plausibly by considering the overall contexts of these signs. The occurrences include pure phonographic writings₂ (Figs. A.5a and A.5c), phonographic indication (Figs. A.5b and A.5e) and complementation in a verbal phrase (Fig. A.5d). The conclusion is thus that the vowel undetermined hitherto is *e*, the full syllabographic reading therefore is **t'e**. The phonographic readings of MS140 (**je**; Fig. A.5a) and MS171 (**?o**; Fig. A.5c) could also be confirmed in other contexts as well as the morphographic readings of MS43 (**T'ELEJ**; Fig. A.5e), MS65 (**BIIT'**; Fig. A.5b) and MS68 (**WAT'**; Fig. A.5d; see the corresponding *lemmata* in the sign list for further attestations of all these signs).

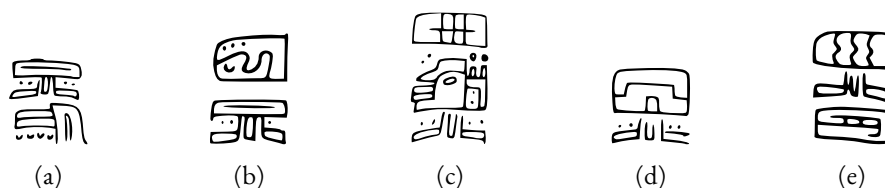


Figure A.5.: Contexts of MS101a/b: (a) **t'e-je** *t'eje?* “(on the) left side” (LM: K4–6) (b) **BIIT't'e** *biit'* “stela” (LM: S27–28, T3–4) (c) **yu-?o-t'e** *yu-?oot'* “his skin” (LM: P27–29) (d) **wat'-t'e** *Ø-wat'.e(y)* “he/she/it passed by” (LM: R32–33, T31–32) (e) **T'ELEJ**^{t'e-le} *t'elej* “boy” (LM: R45–47).

In Figure A.5e one encounters also one of the general writing₂ conventions of Isthmian writing₂: it is possible that a morphogram is indicated by two postposed phonograms (here again leaving the *auslaut* /j/ unconsidered). More examples of this feature will be given below.

The most frequent sign: MS20

Before proceeding to another illuminating context of MS101, it is about time to address the most frequent sign MS20 (Fig. A.6a), for which Macri (2017b) proposed that it may be a clause ending sign, but I prefer another interpretation. It seems that this sign may occur in both positions, preceding and succeeding a verbal expression.³ It seems quite natural to assume for the cases where MS20 precedes a verb that it represents the old Mayan in-

³Indeed this already includes an intuitive notion of which signs (or sign groups) may be verbal expressions. While there are some (more or less) iconic signs that may refer to actions and that are therefore presumably verbs (e. g. MS23 “piercing”, MS59 “lifting”, MS57 “going/standing”, MS114 “cutting”, MS115 “hammering”), the majority of these notions, however, are (more or less) arbitrary.

completive marker.⁴ This marker evolved from pM ***k > *ch > *x* (Robertson 1993:300), but since it is not preserved in modern Huastecan languages, it is – for the moment – not clear which phonological shape it had in proto-Huastecan. This may, however, be extrapolated from (a) the meaning of the sign when succeeding a verb, (b) from possible deriving mechanism of its phonographic value and (c) from other attested contexts of the sign.

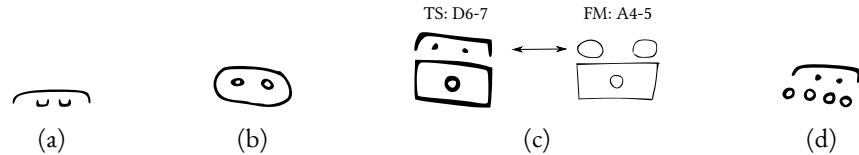


Figure A.6.: (a) MS20a, (b) early variant of MS20a on the ES (compare also Fig. A.21), (c) parallel sequence on the TS and FM, and (d) MS20a as indicator on the TS (C3–4).

Considering point (a), there is indeed a suffix that matches phonologically one of the above mentioned possible incomplete markers: the suffix *-Vx*, which was described as mediopassive from a comparative point of view (Wichmann 2006:287) and as antipassive in modern southern Huastec (Kondic 2011:120). That MS20 may be a marker for mediopassives/antipassives is indeed a very reasonable possibility, since for one thing impersonal constructions are expectable in historical accounts and for another, the attestations of MS20 succeeding a verb demonstrate that the verbs in questions bear no identifiable ergative pronoun, so they most probably come with the 3rd person absolutive (\emptyset -) and are consequently intransitives (in this case intransitivized transitives).

Regarding point (b), observe that MS20 shows two variants (I list the canonical form as MS20a): on the ES two circles within an ellipsoidal frame (MS20b, Fig. A.6b) and on the FM simply two circles (MS20c is therefore a homograph of the numeral 2). They are indeed variants of MS20a which could be detected by comparing two parallel sequences (Figs. A.21 and A.6c) where MS20a is substituted by MS20b and MS20c respectively. This leads to the assumption that the value is derived from the proto-Huastecan word for “two” which is **chab* giving the syllabogram **cha**. Indeed, there is one occurrence of MS20a for which this phonographic value is evident: on the TS (C3–4) a sequence of MS20a and the numeral four reads ^{cha}**chaj** *chaj* “heaven” (Fig. A.6d; a reading as numeral “four” does not make sense in this context so I suggest it is a rebusoid writing₂).

Collecting these evidences (point (c) will be discussed below as a test for the ascertained reading of MS20a), I propose the following scenario for the evolution of MS20a: being

⁴I assume that proto-Huastecan incompletives still follow this paradigm. The modern Huastecan incomplete has been shown to be actually a progressive construction which displaced the old incomplete (Robertson 1993:306–308). This process is certainly more recent (compared to the time span Isthmian writing₂ was in usage).

originally a syllabogram **cha** derived from the numeral **chab* it was frequently used to write also the incomplete marker which was at some time **cb*. Then the incomplete marker shifted to **x* in *spoken* language⁵ but the same sign was still in use to denote the incomplete in *written*₂ texts. With that, the phonographic value of MS20a shifted to **xa** and therefore MS20a became also available for the writing₂ of the mediopassive *-Vx*. That the final and primary value of MS20a was indeed **xa** is further supported by the Classic Maya sign T114 which has the same value (also infixed in the **YAX** sign) – another case of possible sign transfer (Fig. A.7). The sequence on the TS discussed above (Fig. A.6d) hence shows a conservative writing₂ where the old value **cha** is still evident.

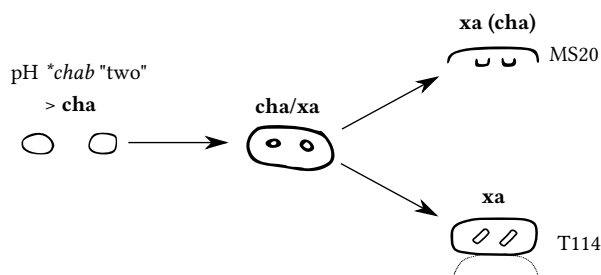


Figure A.7.: Evolution of MS20 and its cognate in the Mayan writing₂ system.

Returning to MS101: Deciphering MS23a/b and MS24

I will now return once more to MS101 which will result in another confirmation of the reading of MS20a as **xa**. Consider the sign MS23a which shows a rectangular frame pierced or stabbed by a spine or needle (Fig. A.8). Assuming the morphographic value **T'EK** (pH **t'ek* “to stab/pierce sth.”) the sequence in figure A.8a can be read **BALAM-?IICH'-T'EK** *balam ?iich' Ø-t'ek(./)* “the Jaguar Moon, he has been pierced” (see also the comments on this sentence in ch. B.2.2).⁶

But what about the sequence in Figure A.8b? Since the beginning is the same and the phonogram following **BALAM-?IICH'** is MS101 **t'e** it is very likely that the same verb *t'ek* is written₂ here, but it is followed by the numeral pH **?ux* “three”. However, Figure A.8c demonstrates that MS23a **T'EK** can be indicated by the postposed sign MS101 which is only possible if the phonogram reads **t'ek** in this context.⁷ This leads to the assumption, that

⁵This shift of the incomplete marker in proto-Huastecan may be caused by foreign (lowland?) influences since apart from that pH **cb* is steadily conserved in modern Huastecan languages.

⁶Here again, the rules for the writing₂ of passives via a single morphogram described above are at work (an ergative pronoun is obviously absent). Suffixes that remain indetermined by the epigraphic data (and that cannot be reconstructed by the linguistic data) are denoted by (./).

⁷The rules for indication are collected in ch. A.2.3. For the present case it suffices to know that if the *an-laut* of a C₁V_aC₂ morphogram is indicated by a C₁V_a syllabogram it is only possible (a) if it is preposed as

MS101 originally may have been a morphogram **T'EK**⁸ with unknown meaning that could be used in rebusoid writings₂ to express phonographically the syllable **t'ek**. Following the acrophonic principle this resulted in the syllabogram **t'e** which was the phonographic value of MS101 proposed above. Consequently, I suggest the reading **T'EK**^{t'ek} for the sign sequence in Figure A.8c.

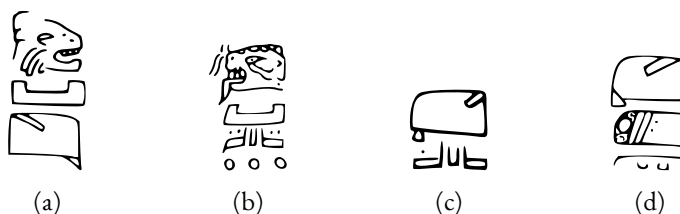


Figure A.8.: Parallel sequences: (a) LM: B3–5 and (b) LM: T15–18; alternative writings₂ involving MS23: (c) LM: O35–36 and (d) LM: P24–26.

Another sequence involving the **T'EK** morphogram MS23 is shown in Figure A.8d. While the initial sign MS23 and the final sign MS20a are already deciphered as **T'EK** and **xa** respectively, the sign written₂ in between – MS124 – could consistently be deciphered as the syllabogram **ku**.⁹ The whole sequence therefore reads **T'EK-ku-xa** *Ø-t'ek.ux* “he/she/it got pierced” – a mediopassive as proposed above!

Now the sequence in Figure A.8b immediately gets clear: both, MS101 and the numeral three, are rebus signs in this context and together read also **t'ek-?ux** *Ø-t'ek.ux*, the whole sentence therefore *balam ?iich' Ø-t'ek.ux* “the Jaguar Moon, it got pierced”.¹⁰ This also demonstrates that the meaning of the *-Vx* suffix is indeed a mediopassive as it interchanges with the common passive in Figure A.8a.¹¹

In one case, MS23 is conflated with another sign, MS24 (Fig. A.9a). MS24 frequently follows MS20 (Fig. A.9b) suggesting that the phonogram **xa** serves as an indicator for MS24

⁸ $C_1V_aC_1V_aC_2$ or (b) if it is postposed together with another syllabogram which also indicates the *auslaut* $C_1V_aC_2C_1V_aC_2(V_x)$, i. e. the whole syllable structure has to be echoed. A writing₂ $C_1V_aC_2C_1V_a$ is therefore not in accordance with the rules. Another way of echoing the whole syllable is by postposing a rebus sign with the (approximately) same structure $C_1V_aC_2$ (which is therefore a phonogram $C_1V_aC_2$) giving the reading $C_1V_aC_2C_1V_aC_2$, which is evident in the case of **T'EK**^{t'ek} in Fig. A.8c.

⁸Or something similar like **T'EEK** or even **T'EYEK** which also would give a rebusoid phonogram **t'ek**, since semi-vowels and vowel length are disregarded in rebus writings₂; compare the case of MS45 described below.

⁹Probably derived from pH **kuwok* “rain” and cognate to Classic Mayan T528 reading **ku/ka** and to the corresponding day sign known as *kawak*; see notes on the signs MS124 and MS125 in the sign list ch. D.

¹⁰In addition, this shows that the numeral “three” in pH was rather **?ux* (as in pCh) than **?ax* (as reconstructed by Norcliffe 2003:192).

¹¹As described below, there is also another suffix, the so-called middle voice (ending in *-Vn*), which has a range of meanings including the mediopassive but also the reflexive (in accordance with current linguistic data; Kondic 2011:124–136).

which therefore should read **x**AC or **xa**C (C being a consonant which still has to be determined). However, this leads to the conclusion that MS24 may be in some contexts a rebus sign for a phonogram **xa**C or even **xa** and I suppose that it is indeed the case for the conflated sign in Figure A.9a. Since the two conflated signs MS23a and MS24 render the verb *t'ek* and the suffix *-Vx* respectively, the remaining intermediate sign **ku** (MS124) has been written₂ preceding the conflated sign group and hence the whole sequence could be read again **T'EK(-ku)*xa**¹² *Ø-t'ek.ux* “he/she/it got pierced”.

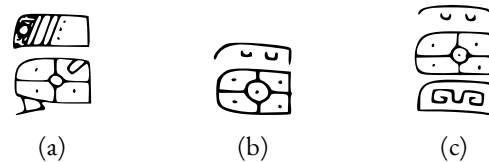


Figure A.9.: Deciphering MS24: (a) LM: Q20–21, (b) LM: N32–33, P39–40, Q47–48 and S35–36, and (c) LM: Q32–34.

The complete value of MS24, i. e. including the *auslaut*, can be found by considering the sequence depicted in Figure A.9c, where also this consonant is indicated. MS44, the “earth maw”, will be deciphered in another paragraph below as the syllabogram **na**, so Figure A.9c gives **^{xa}xan^{na}** *xan* “moreover”, where I have assumed that MS24 is a phonogram used in a rebusoid writing₂.¹³

Measuring time I: MS72, MS63, MS136, MS142–145, MS172, MS174/176, MS179 and MS185

The two long count dates and several sequences including numerals on the LM provide some valuable hints on the meaning of some sign groups. For instance, MS72, which usually accompanies the month names of the 365-day solar year calendar (e. g. in A2 and M9 on the LM) and frequently appears as a single separated sign on the LM, certainly logographically stands for “year”. This is supported by the fact that the two long count dates on the LM are separated by 13 years and a sequence including MS72 in between these two dates comes indeed with the numeral 13 (Fig. A.10a). It is indicated by a sign that also appears (slightly varied) in the same column (I6) which complements the sequence **^{chu}CHUB-be** *Ø-chub.e(y)* “it has come down”, so the phonographic indicator in Figure A.10a reads **be**, making it very probable that the word for “year” written₂ on the LM is pH ***jaab**, so one can assume for MS72 the morphographic reading **JAAB**. Figure A.10a therefore reads **13-JAAB^{be}**.

¹²The parentheses indicate the metathesis of the signs, the * transliterates the conflation.

¹³In principle, it could also be a morphogram **xAN** with the meaning “moreover”, but probably this is actually a morphogram for pH ***xa(a)n** “adobe” used also as rebus sign. However, since attestations for this

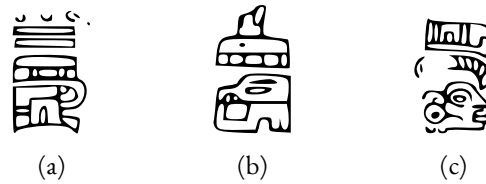


Figure A.10.: Deciphering MS72: (a) LM: I1-3, (b) LM: T10-11 (c) MS63+MS176 (LM: D2-3).

In another sequence on the LM (T10-11; Fig. A.10b) a finger is attached to MS72 which is here indicated by MS169a that could be deciphered as the syllabogram **bi**. The finger likely stands in this case for the numeral **1**, pH **juun* (compare T329 in Mayan writing₂), so the sequence can be read **1*JAAB^{bi} juun jaab** “one year”. In one case the word *jaab* is very likely written₂ phonographically (LM: D2-3; Fig. A.10c). It is following the sign MS75b which was already deciphered as the morphogram **YUT’ Ø-yubt’(ej)** “it has been tied”, so one can make the *ansatz* for the signs in Figure A.10c **ja-bV jaab**. Indeed, MS176, the face in profile, could be confirmed as being a syllabogram **ba**, while the reading **ja** of MS63 will be confirmed in the next paragraph.

As it turns out, there is another word for “year” that can be found in the inscriptions of Isthmian writing₂ which in particular relates to the 360-day “tuun” period known from the Classic Mayan writing₂ system.¹⁴ Comparing all examples given in Figure A.11, the element all sequences have in common is the sign MS136 which appears in Figures A.11b–A.11d as the ear adornment of the depicted individual. What they also share is the hair sign, either as MS144 (Fig. A.11a) or MS145 (Fig. A.11c) or implicitly by showing the individual bearded and/or having a head of hair (this is especially the case for MS179 in Fig. A.11d).

If one assumes that the term in question in proto-Huastecan has the same etymology as the corresponding term *tuun* in Classic Mayan, i. e. GLL+WM **tooj* “stone”, the pH form regularly should be **tuj*¹⁵, so MS172 (Fig. A.11b) is very probably the morphogram **TUJ**. The ear adornment and the sign MS136 could therefore depict a stone, pH **tujub*¹⁶, or in particular: a bound stone/stela (note the stripes) as a symbol for a completed “tuun” period (compare the above given phrase “XX year(s) has/have been tied” including the verb **yut’* “to tie sth.”). Such bound stelea are attested also iconographically, e. g. on the Xoc

assumptions are lacking, it remains speculative for the time being.

¹⁴The term pH **jaab* in the epigraphic data can mean both the 365-day solar year and the 360-day “tuun” period.

¹⁵Modern Huastecan languages have /u/ instead of /o:/ in the corresponding lexemes for “stone” (Norcliffe 2003:188).

¹⁶This term indeed appears on the LM with the meaning “stone” (LM: O18-20). It seems that both terms, pH **tuj* “year” and pH **tujub* “stone”, are distinguished in the inscriptions, even though originally they both simply mean the same (“stone”).

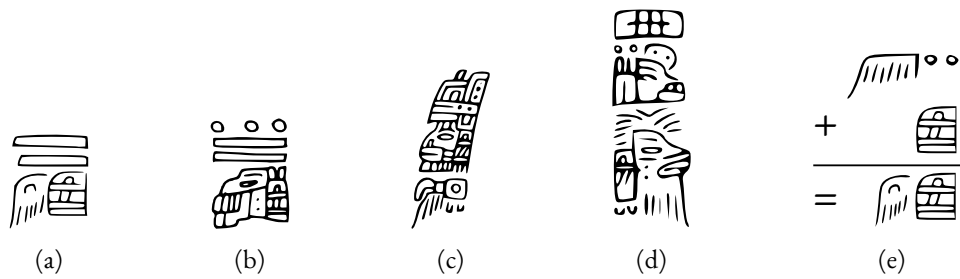


Figure A.11.: The “tuun” period: (a) MS136+MS144 (LM: P21–22), (b) MS172 (LM: T21–22) (c) MS185+MS145 (TS: B5–6) (d) MS179 (bottom; LM: F3–5) (e) origin of the sign group in (a) as MS142/MS143 (top) partly covered by MS136 (bottom).



Figure A.12.: The Xoc relief (after Taube 2004:Fig. 23b).

relief showing a striding figure holding a bound stela with maize ornaments (Fig. A.12).

This sign therefore would also be a morphogram **TUJ** or possibly a syllabogram **tu**. Since the reading of MS136 and the bearded individual MS179 in other contexts fit with the latter proposal (see the sign list for more contexts), I prefer the more general *ansatz* that both signs are solely this syllabogram and not morphograms.¹⁷ If this is correct, the hair sign MS144 in Figure A.11a should provide the *auslaut* /j/, so I propose the reading **ju**. Indeed, pH **jujul* “hair” is a reasonable candidate for the acrophonic origin of this value.

Now the question arises, why the reading order seems to be inverted in Figure A.11a, since the hair MS144 **ju** is depicted on the left and the stone MS136 **tu** is depicted on the right which should give **ju-tu** (the column-wise reading order in this inscription on the

¹⁷In the light of the limited data available, this is only a matter of personal preference.

LM is left-to-right). There are several possible explanations: first, it may be that this combination reflexes the order of the beard and the ear adornment of the bearded individual MS172/179. Second, it may be that the hair **ju** indicates the preceding numeral **10**, pH **lajuj*, and the stone after all is a morphogram **TUJ**. Personally, I prefer the explanation illustrated in Figure A.11e: MS144 is not an independent sign but MS142/143 partly covered by MS136 and whenever such groupings appear in Isthmian writing,² the reading order is not fixed (see ch. A.2.3). In this scenario the signs in Figure A.11a read **10-tu*ju lajuj tuj** “10 years (‘tuun’ periods)”.

I suspect that the same is true for MS145 in Figure A.11c which is again the hair MS142/143 combined with an earring that I also read **tu**. The individual preceding MS145 is again bearded and has the stone ear adornment. Additionally he is wearing the royal headdress (MS79 **?AJATIK** “lord”) so I read this sequence as **YU-?AJATIK.TUJ^{tu*ju}** *yu-?ajatik tuj* “the lord of the year(s) (‘tuun’ period)” (or: **?AJATIK.TUJ^{tu*ju}** *?ajatik tuj* “lord ‘Tuun’”). The bearded individual wearing the *tuj* stone ear adornment therefore may be interpreted as an old man symbolizing the elapsing of time.

The reading **tu** of MS179 could be confirmed in the sequence given in Figure A.11d. The phonographic value of the second sign could be determined as **cho** so the whole sequence reads **yu-cho-tu** *yu-cho-tu* “his seat”. For a confirmation of the reading of MS136, see below.

The earth maw: MS44, MS36 and MS22

Now that MS136 could be identified as a bound stone symbolizing the completion of a “tuun” period, MS36 showing MS136 underpinned on MS44 (Fig. A.13a), which persuasively could be identified as a stylized earth maw related to T23 with the phonographic reading **na** in Mayan writing² (Mora-Marín 2003:217–220). As stated already above, MS44 has the same phonographic value apparently derived from pH **?anam* “earth” – one of the few examples of a non-acrophonic derivation (see ch. A.2.2). On the very early El Sitio Celt (A5), an early variant of this sign indeed has the morphographic value **?ANAM** (see ch. B.1.2).

If both identifications are correct, i. e. MS44 depicts the earth and MS136 shows a bound stone, then MS36 shows a stone getting erected,¹⁸ so it may be a morphogram for a transitive verb “to erect sth.” Indeed, a sequence on the LM (Fig. A.13b) shows the 3ERG pronoun preceding MS36 which means that the sign in between, MS22 showing a circle within a rectangular frame, is most probably a phonographic indicator. This sign is a very frequent morphogram by itself (see Fig. A.13c and above Fig. A.6c) which I read **T’AK** “to complete sth.” (I suspect that the circle conveys iconically the sense of completeness). For instance, the sequence in Figure A.13c can be read as **xa-yu-T’AK-BIIT^{t’e}** *x Ø-yu-t’ak(./) biit’* “he

¹⁸It has been proposed that MS36 relates to the **SUN.AT.HORIZON** morphogram of the Mayan writing² system due to its similar layout, but the sun is apparently missing here and MS136 is obviously not a sky symbol!

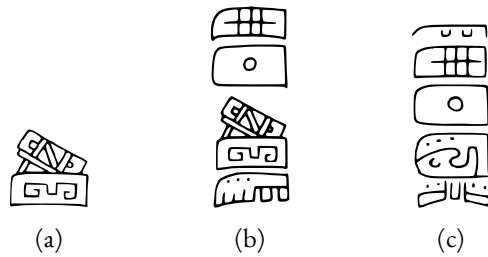


Figure A.13.: Deciphering MS36 and MS22: (a) MS36 (b) LM: S13–16 (c) LM: S24–28

completed the stela”.

However, since it appears in the sequence of Figure A.13b between the 3ERG pronoun and the morphogram for “to erect sth.,” it must be a rebus sign **t’a** or **t’ak**¹⁹ indicating the following sign. Indeed, the verb “to erect sth.” in pH can be reconstructed as **t’ap*, so the sequence in Figure A.13b reads **yu-t’a-t’AP-ba** *Ø-yu-t’ap.ba?* “he caused to erect (a stela)” (for the causative see ch. A.3.3).

Measuring time II: MS122, MS49, MS165 and confirming the reading of MS63 and MS136

I will now return to some additional calendrical terms. As stated above, the two long count dates on the LM are separated by 13 “tuun” periods, but also by 6 “months” (20-day periods) and two days. Again a sign group consisting of the numeral **6** appears in between these two dates (LM: J2–4; Fig. A.14a), so the signs succeeding this numeral very likely render a term for “month”. Since one of these signs, MS122, only appears once in the whole *corpus*, the reading of this sign cannot be determined by extrapolating it from several contexts. The sign following MS122, MS49, is also very rare (it only appears once again in Q42). However, there is a possible rebusoid writing₂ that may fit here: MS122 shows a couple of small circles, maybe balls, clumps or clods. If one considers that these may refer to charcoal, pH **k’alul*, giving the rebusoid phonographic value **k’al**, the term written₂ here may be pH **k’al* “twenty (days)/month” (< pM ***k’aal* “twenty”; for the preserved initial /k’/ see ch. A.3.1), and MS49 therefore a phonographic indicator **IV**. If one again assumes a sign transfer to Classic Mayan T534, the assumption MS49 reads **la** is quite obvious, but also evidently suitable in this context. My proposal for the sequence in Figure A.14a is thus: **6-k’al**^{1a} *lakak k’al* “6 months”.

Obviously, a sequence consisting of a numeral **2** is lacking in the upper left inscription of the LM, so the two days still missing to achieve the second long count date may either be unmentioned or expressed otherwise. However, a sign sequence consisting of MS165

¹⁹This rebusoid value is indeed attested in LM: R42.

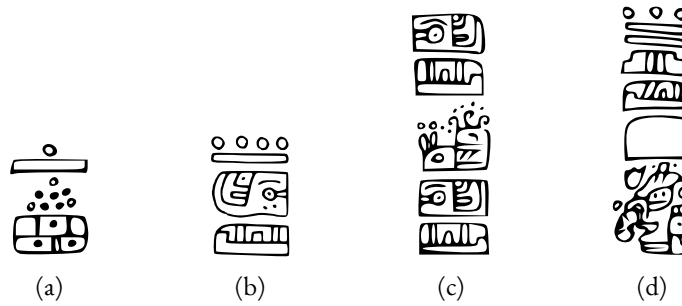


Figure A.14.: (a) 6 “months” (LM: J2–4), (b) 9 days (LM: R11–13), (c) 2 days (LM: G2–6)
(d) 13 days and nights (LM: O1–5).

and MS63 appears twice in the text in the upper left corner of the LM (G2–6; Fig. A.14c). This sequence appears in another context preceded by a numeral (LM: R11–13; Fig. A.14b). If we assume a regular sound shift from pM **q’iiŋ*, pH should have **k’ij’²⁰* and indeed, MS63 has been deciphered above as the syllabogram **ja**. Consequently, MS165 should be the syllabogram **k’i**, the sequence therefore **k’i-ja** *k’ij* “day”.²¹ The reading **k’i** could be confirmed in several contexts, e. g. LM: N28–29 **k’i-bi** *k’ib* “jar”, LM: S9–12 *’i-k’i* **’iK’-xa** and T46–48 **’i-k’i-xa** *Ø-’ik’ix* “he/she/it got brought/carried”.

Naturally the question arises how to interpret the sign group between the two sequences **k’i-ja** in column G on the LM (Fig. A.14c). It consists partly of MS136 which was already deciphered as syllabogram **tu**. The sign attached on top of MS136, MS96, will be deciphered in the next section as the morphogram **’AJ** with the rebusoid reading **’a**. Hence I propose that this sign group renders pH **’at=*, a prepound adjective with the meaning “fellow”, in this case better understood as “following, accompanying”. Maybe the sign in the left half of the sign group is a morphogram for this adjective, so the complete sequence may be read as **k’i-ja-’AJ** **’a-tu-k’i-ja* *k’ij* *’at=k’ij* “a day and the following day”, which then indeed gives the two days we were searching for.

In another sequence (LM: O2–3; Fig. A.14d), MS165 is substituted by MS53, so I assume that this sign also has the phonographic value **k’i**. The succeeding signs MS21 and MS168 in this sequence most likely read **’ak’** (maybe a blank sheet of paper conveying the sense “new”, pH **’aak’*; a corresponding morphographic reading is indeed evident on the TS: F1) and **’AK’B.AAL** “night” (this reading is confirmed in LM: R27 and S39–42), so alto-

²⁰While modern Huastecan languages have a lexeme for day pointing to pH **k’ita*, the term for a festival is *k’ij* still today (Norcliffe 2003:175, 185) – a regular descendant from the pM *etymon* – making it plausible to assume also this more conservative term for the Isthmian writing₂ texts.

²¹That the sequence in Fig. A.14b indeed reads “9 days” could be confirmed by analyzing the whole passage after the decipherment has been conducted. Strikingly, the interpretations of the terms for the “tuun” period and “day” perfectly fit certain astronomical calculations as discussed in the comment on the LM sequence Q40–R22 in ch. B.2.4.

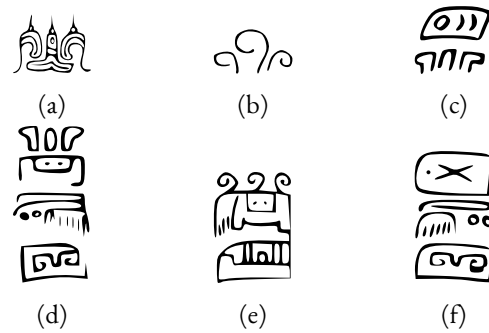


Figure A.15.: Deciphering MS95–98: (a) MS95 (LM: A1 and M8) (b) MS96 (TS: A1) (c) sequence with MS97 on the TS (B1–2) (d) parallel sequence on the LM (J6–K1 and O38–P3) (e) sequence on the LM (P19–20) (f) parallel sequence on the LM (R48–S1 and S31–33).

gether we may translate **13-k'i-ja-[?]ak'?** **YAK'B.AAL** *lajuj-[?]ux k'ij yak'b.aal* “13 days and nights”.

Measuring time III: MS95–98 and MS25, MS93, MS94

After having deciphered already one verb that is often associated with time measuring (pH **yut* “to tie sth.”; see above) another important verb that occurs in this context will be investigated. Figures A.15a and A.15b show two variants of a sign that introduces the date (“haab”²², long count and “tzolk'in”) on the LM (MS95) and the TS (MS96) respectively. Assuming that MS97/98 is also another variant of these signs (MS96–98 are hence reduced forms of the elaborated MS95) the sign is most likely a morphogram for a transitive verb as a sequence on the TS (B1–2, Fig. A.15c; the same sequence appears on the FM: C5–6) implies, for it comes with the IERG pronoun *nu-*. The same verb appears in additional sequences (LM: J6–K1 and O38–P3, Fig. A.15d; LM: P19–20, Fig. A.15e; LM: R48–S1 and S31–33, Fig. A.15f). As many of the involved signs were already deciphered in previous paragraphs the analysis of these sequences may provide a good test of the proposals made hitherto.

First, observe that MS94 (Fig. A.16a and in the middle of the sequence in Fig. A.15e) seems to be MS93b (Fig. A.16d) conflated with MS153 (Fig. A.16b), a skin of an animal with tail. Since this conflated sign substitutes MS93b and the hair sign, MS143, which was deciphered above as **ju**, I propose that MS153 has the same reading. MS93b has a full form MS93a (Fig. A.16c; apparently MS93b+MS100, Fig. A.16e) which already appears on the

²²I use the Classic Mayan terms “haab”, “tuun” and “tzolk'in” (with quotation marks) when referring to the 365-day solar calendar, the 360-day period from the long count, and the 260-day ritual calendar respectively, which should not cause any confusion.

ES (A1). I suggest that it depicts a germinating seed, for which I reconstruct pH **jinaj* “seed”, as the reading **JINAJ** fits very well on the ES (see ch. B.1.2). As a syllabogram it certainly reads **ji** and indicates MS97/98 in Figures A.15d and A.15e. Therefore, the morphographic reading **?AJ** “to count/read sth.” for MS95–98 is very reasonable.

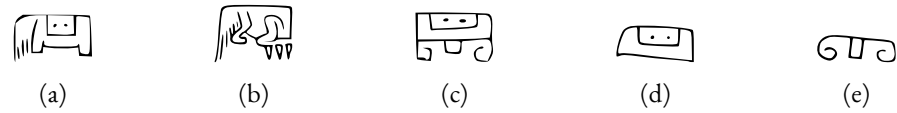


Figure A.16.: (a) MS95 (b) MS153 (c) MS93a (d) MS93b: upper element of MS93a (e) MS100: lower element of MS93a.

Now the analysis of the several sequences in Figure A.15 will be very illuminating regarding the proto-Huastecan morphology and the mechanics of Isthmian writing₂. First, consider the transitive case in Figure A.15c which transliterates **nu-?AJ**. The transitive suffix (completive) is preserved in modern Huastecan languages and should be *.iy*, so the sequence transcribes *Ø-nu-?aj(.iy)* “I have counted/read it”. This is the reason, why MS96 is indicated by MS93b **ji** in Figures A.15d and A.15e for it includes the stem vowel of the suffix of this transitive verb!²³ However, these two sequences show intransitives as an ergative pronoun is clearly missing, but since the following signs were already deciphered above, both sequences can be transcribed straightforwardly as **?AJ^{ji}-ju-na** *Ø-?aj.un* (Fig. A.15d) and **?AJ^{ji}*ju-ja** *Ø-?ahj.uj* respectively. The first is a middle voice and can be translated either as “he/she has counted/read (for him-/herself)” or as “it has been counted/read”²⁴, the latter is a passive and can be translated “it has been counted” (see ch. A.3.3). Strikingly, modern Huastecan languages show the vowel /u/ in intransitivized stems of the lexeme *?aj* (see Kaufman 2003:182), just in accordance with the epigraphic data presented here.

Correspondingly, I propose the reading **?AJ** *?ahj(.uj)* “it has been counted” for MS95/96 that introduces the date and the long count on the LM and the TS (Fig. A.15a and A.15b). For the sequence in Figure A.15f consisting of MS25 instead of MS96/97, I suggest that it also renders alternatively the verb “to count sth.” in the middle voice for this reading fits very well in the instances it occurs. The *ansatz* is hence that MS25 is a syllabogram **?a**, the sequence thus reads **?a-ju-na** *Ø-?aj.un* “it has been counted” (or: “he/she has counted (for him-/herself)”).

Ascertaining writing₂ principles I: MS169b, MS201 and MS214

Many examples of how writing₂ principles may be extrapolated from several alternative writings₂ have already been discussed (e. g. the case of conflation in Fig. A.9a). In this para-

²³ *?aj.iy* can be seen as the transitive stem of the root *?aj*.

²⁴ See Kondic (2011) for the meaning of the middle voice in modern Huastecan languages.

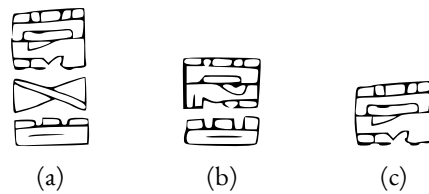


Figure A.17.: Parallel sequences on the FM consisting of MS169b: (a) A1-3 (b) D1-2 (c) E1 and E9.

graph another example will be given, this time from the Feldspar Mask. Consider the sequences A1-3 and D1-2 beginning with MS169b, and the separated appearances of MS169b in E1 and E9 (Fig. A.17). Assuming MS169b is showing a mask (the object this text is actually written₂ on) one may make the *ansatz* that it stands morphographically for **k'o_oj** “mask”, an interpretation that – as it turned out – perfectly fits the entire interpretation of the text on the FM which is referring to the manufacturing and consecration of the same. How are the sequences in Figures A.17a and A.17b to be interpreted? Are the succeeding signs new words or phonographic indicators for the morphogram?

It seems quite natural to assume for a writing₂ system that apparently follows a linear arrangement of the signs parallel to the linearity of the corresponding phonemes in the language (this was evident already in the examples analyzed so far – except for conflated signs; see ch. A.2.3) that, if an *anlaut* is indicated, it is done by a preceding sign, and if the *auslaut* is indicated, it is done by a succeeding sign as it indeed can be found numerously in Isthmian writing₂ – but this is, however, not the case here. Only in Figure A.17b does this principle seem to be at work, so one may assume that MS214, the succeeding sign, reads **jV** as a phonographic indicator. The vowel is not determinable from the appearances of this sign on the FM but I suggest that it is cognate to MS140 on the LM for which I found the reading **je**. With these assumptions, MS201 in the sequence A1-3 (Fig. A.17a) has to be an indicator for the *anlaut* of *k'o_oj*, i. e. the phonogram **k'o**, even though it follows the morphogram it indicates, which means that if the whole CV(V)C structure is indicated, it may also be done by echoing it phonographically. This principle could indeed be observed in several other instances, as well as the opposite arrangement: a CV(V)C morphogram indicated by two preposed CV syllabograms.

The interpretation given here is further supported by the fact that the lexeme *k'o_oj* is written₂ four times in the text on the FM with decreasing clarification of its reading by means of indicators (following the reading order of the separate spells on the FM): at its first appearance in column A it is fully indicated making its reading unambiguously for the recipient who starts reading the (possibly unknown) text. At its second appearance in column D the indication is reduced to the *auslaut*. For the third and fourth appearance in column E the scribe apparently assumed that a further indication is not necessary any-

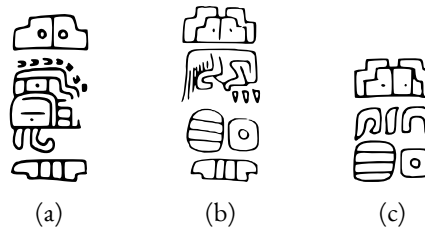


Figure A.18.: Parallel sequence on the LM: (a) O6–8 and Q43–45 (b) N15–18 (c) R20–22.

more – the reading of MS169b in these contexts is clear enough. Considering what MS201 depicts, we find another confirmation of its reading: I suggest that its phonographic reading **k’o** proposed above can be derived from pH **k’ol* “to fold, twist, bend sth.” which is exactly what it depicts.

Ascertaining writing₂ principles II: MS77 and MS60

A very enlightening case of sign substitution could be found on the LM. Sequences O6–8 (= Q43–45), N15–18 and R20–22 (Fig. A.18) all begin with MS54/55 and two of them ending in MS52 which means that the latter sign is optional at least in the parallel sequences including the two circle sign MS60 which I interpret as a rebus sign **k’ol** derived from several words based on the root **k’ol* relating to something round. MS52 is therefore a phonogram **IV**, possibly **lo**. MS54/55 was deciphered in other contexts as syllabogram **ja**.

The interesting part is, however, the one in the middle of the sequence – the part which shows some noticeable alteration: Consider first the sequences in Figures A.18b and A.18c for they both consist of already deciphered signs. They read **ja-ju-k’ol^{lo}** and **ja-?aj-k’ol** respectively. The two alternate readings clearly point to a lexeme *jaj* or *jaaj* (if one assumes that disharmonic spellings may play a role in Isthmian writing₂), in this case very likely the adjective pH **jaaj* “true, real”. The ending is composed of a derivational morpheme *k’* and an inchoative ending, the sequence hence reads *Ø-jaaj.k’ol* “it has become real”. The sign MS77 in the sequence in Figure A.18a – here evidently without the rebus sign **k’ol** and hence without the derivational morpheme *k’* – must therefore be either a logogram **JAAJ**, a rebus sign **jaj** or an allograph for one of the two syllabograms that were found in the parallel sequences.

Personally, I prefer the interpretation that MS77 is a rebus sign showing some sort of architectural structure – a certain building – which may originally have been a morphogram **JAAJ** “house”. The sequence in Figure A.18a could therefore be read ^{ja}**jaj-lo** *Ø-jaaj.ol* which also translates “it has become real” (the semantics of the derivational morpheme which is absent here, is not known exactly; see ch. A.3.3). The example in Figure A.18 thus shows three different spellings of the morpheme *jaaj* – ^{ja}**jaj**, **ja-ju** and **ja-?aj** – demonstrating the flexibility of the writing₂ system (or: demonstrating that there existed no or-

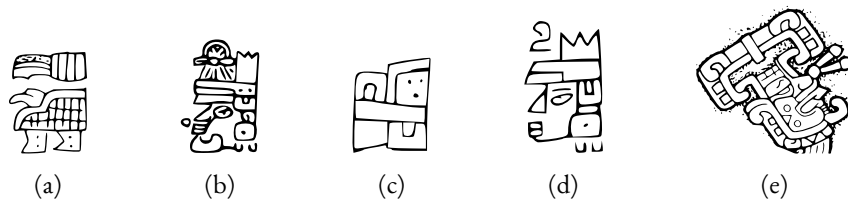


Figure A.19.: (a) The ruler’s name (b) MS182/184 “God X” (c) MS79 **?AJATIK** (d) MS183 **?AJATIK** (e) “God X” from the head dress of the ruler depicted on the LM (drawing after Winfield Capitaine 1988:Fig. 8).

thography) which was, of course, to be expected from other known, comparable morphophonographic writing₂ systems.

Ascertaining writing₂ principles III: The ruler’s name

The ruler’s name (Fig. A.19a) is written₂ three times on the LM: In L₂–3, O₁₀–11 and Q₁₅–16. It is always preceded by the sign MS182/184 showing a head in profile wearing a certain headdress and a prominent lip plug (Fig. A.19b). I do not think that this is the title *?ajatik* “lord” for this usually is written₂ *pars pro toto* by means of the royal headdress morphogram MS79 (Fig. A.19c) or by means of the head variant MS183 wearing the royal headdress (but without lip plug; Fig. A.19d). I rather suppose that the individual with the lip plug is a writing₂ version of the god attached to the head of the ruler largely depicted on the LM (Fig. A.19e; note the large lip plug; the alternative orientation of the lip plug in MS182/184 may be a result of the cubic sign form in Isthmian writing₂), which I – provisionally – would like to call “God X”. The sign MS182/184 preceding the ruler’s name may therefore be a sacred honorary title that relates the ruler to this specific god.

The name of the ruler consists of the knife sign MS114 (for which the logographic value **K’UP** “to cut sth.” will be determined in the next paragraph) and a paired sign consisting of the hill sign MS119 and the feet sign MS57/58. For this is a name, one may assume that **K’UP** is some sort of nominalized agentive noun “he, who cuts (down)” (the corresponding grammatical ending could not be determined from the epigraphic data or from modern linguistic data; I therefore transcribe *k’up.*, although it also may be *?aj=k’up*) so the succeeding sign group very likely is the object to this act, meaning that terms like “mountain” or “leg” do not make sense in this context, so the signs in question are certainly not morphograms here. But there is a lexeme that perfectly fits if one considers these sign phonograms, i. e. if the mountain sign reads **k’ul** (a rebusoid derivation from a hypothetical morphogram **K’UUL** “mountain”) and the feet sign **?a** (< pH * *?akan* “foot, leg”), recalling that sign groups break linearity (i. e. the reading order is not fixed within a sign group; ch. A.2.3), the object may be **?a*k’ul** *?a(j)=k’ul* “enemy” (syllable final /j/ is often

underspelled in Isthmian writing₂).

K'up Aj-K'ul, "He, who cuts down the enemy", is an awesome name for a ruler regarding both, its meaning and its prosodic sounding, which together convey an impression of royal, grim determination – just as the accompanying portrayal on the stela stages him.

Comparing the ending sequences on the LM and the TS

While the previously given examples of parallel sequences especially gave hints on the phonographic writings₂ in the Isthmian system, the one given in this paragraph was chosen in order to demonstrate how the meaning of a text may be ascertained. This will, of course, also include phonographic substitutions of some parts which, however, in this case could only be detected considering the semantics. The passages in question can be found at the very end of the texts on the TS (columns F–I; Fig. A.20 left) and on the LM (column V; Fig. A.20 right) which indeed show some conspicuous parallels.

First, observe that the sign sequence in V1–6 on the LM has a parallel in the text on the upper left of the LM, videlicet in H3–I6. With that, two things can be followed for this sequence: a) the numeral should most probably be **13** and not **12**, since this side text again refers to the reign of ruler K'up Aj-K'ul, and b) the illegible sign in V5 is very likely MS64. The sequence can be translated straightforwardly since most of the signs are already known **yu-t'e 12 [sic] JAAB** ^[chu] **CHUB** Ø-yubt'.e(j) lajuj-[ʔux] jaab Ø-chub(.ey) "1[3] years have been tied, (then) it has come down:" (the last sentence is to be understood in the sense "it happened"). This sentence hence introduces the ending sequence.

The parallels then begin with a sequence consisting of MS105 (on the LM) and MS118 (on the TS) for which I assume that it is only a stylistic variant of MS105. MS105 is commonly grouped together with the hair sign MS142/143 **ju** (as in V8; such groupings break linearity, see ch. A.2.3), but on the TS it is accompanied by two triangles for which I suggest that they are remnants of MS153, the animal skin sign, which also reads **ju** (e. g. on the LM in V13). On the LM, the group MS105+MS142/143 is preceded by the seed sign MS93a **ji**, which certainly is an accidental metathesis (compare LM: O32–33 and Q6–7), so the morpheme written₂ by means of MS105 is totally determined by the hair and the seed sign: it should be *ju(u)j*, and indeed, the logographic reading **JUJ** "book" is a reasonable candidate for MS105 since it depicts something folded. This is also what the verb that follows on the TS, and that can be reconstructed in the corrupted space in V9 on the LM, may express since the morphogram MS113 depicts also something curved, folded. I suggest it reads **PAK** "to fold something". The sequences in the two inscriptions thus read **ʔaak**^{k'i}**ju*** **JUJ-PAK-ko** ʔaak' juuj Ø-pabk.o/ "A new book, it has been folded." (on the TS) and (**ju*** **JUJ**^{ji})-**[PAK]-xa-yu-CHOJ-ju-je** juuj Ø-pak.ax Ø-yu-choj(.iy) juuj "A book, it has got folded. He has given the book". I interpret these sentences as follows: Since the next sentences relate to the completion of the stela/statuette, I assume that their dedication was accompanied by certain rituals where some verses or spells were recited (or maybe

some auguries were foretold from calendrical codices), which is alluded by the phrase “A (new) book has been folded” which may in this case be better understood as “a book has been *unfolded* (in order to read it)”.

Also, the next corrupted sign on the LM can be reconstructed using a parallel from the TS, namely the missing sign in V16, which is certainly the seed sign MS93 as in G2 on the TS. This sequence (actually two main clauses) relate the termination of the work on the stela/statuette and of the aforementioned dedication ritual (regarding the Tuxtla Statuette, this ritual includes some further steps which are spared in this discussion; see ch. B.3.3). The first sign (TS: G1, LM: V15) was deciphered in another context as morphogram **WAT'** and constitutes here already the first main clause: *Ø-wat'(ey)* “It has passed by”. The second sentence (TS: G2–3, LM: V16–18) is a passive on the TS **ji-li** *Ø-jihli/* and a mediopassive on the LM *ji-li-xa*, both meaning “it has been ceased”.

Now, the last sentences should record what was done finally, maybe a note on the act of writing₂ the texts. Following the clause order of the LM, the next clause (V19–20) has no parallel on the TS. It reads **na-?e**, very likely a passive *Ø-nah?.e/* “it has been remembered”. The succeeding sequence (V21–23) once might have been present also on the TS, but it is illegible due to the condition of the statuette. However, at least a part of MS38 and MS20a is still recognizable. I read this sentence which has a parallel in E1–3 on the TS as **tu-yu-xa** *Ø-tuy.ix* “it got fixed/recorded”.

The next sign sequence on the TS (I1–3) is slightly modified on the LM (V24–26) but it can be determined as corresponding to each other because of the two identical constituents MS161 and MS63. While the latter was already deciphered as **ja**, the former did not appear in the examples so far. The same is true for the two signs that substitute each other on the two inscriptions: the knife sign MS114 on the LM and the hand sign MS147/148 on the TS. Assuming one does not know the morphographic reading of the knife sign MS114 (it was given in the previous paragraph without any motivating derivation), one may try to derive its meaning by considering possible values of the other signs MS147/148 and MS161. MS147/148 apparently shows a hand oriented downwards, so one may make the *ansatz* that it stands phonographically for the syllable **k'u/k'o** (< pH **k'ubak/k'obak* “hand”). MS161 can be identified as a stylized grasshopper due to the emphasized hind legs, so it may be a syllabogram **pi** (< pH **pich'ich* “grasshopper”). These two possible syllabograms point to a lexeme *k'o(o)p* or *k'u(u)p*, and indeed, *k'up* “to cut sth.” can be found in the dictionaries – a word that perfectly fits the graphic representation of a knife in MS114! So the two alternative spellings of the same sentence *Ø-k'uhp.ij* “it has been cut” – meaning “it has been carved” – on the LM and the TS are **k'UP-pi-ja** (LM: V24–26) and **k'u-pi-ja** (TS: I1–3), respectively.

On the TS and on the LM follow two different objects: **ju-cho** *juch.o(w)* (TS: I4–5) which I interpret as a word for “inscription” (a nominalization of the verb *juch* “to scratch sth.”), and **PALAJ** (LM: V28; the head sign MS176) “the front” (the side text of the LM

thus reports us the carving of the front text).

The last sign sequence on the LM (V29–30) has again a parallel on the TS, although it appears there a few sentences earlier (H1–2). Its final position on the LM and the ending *.Vx* indicated by MS20a **xa** lets suggest that it may stand for a transitive verb with the meaning “to finish sth.”, so the sequence may translate “it has got finished”. A candidate might be pH **laj*, so MS91 possibly reads **LAJ**.

But there is also another sign preceding this sequence on the LM, videlicet two bars standing for the numeral **10**. Numerals were used in one of the previous paragraphs to ascertain terms for time measuring, but it obviously cannot be applied here. Instead, it was shown already in the cases of the numeral **4** and the numeral **3** that they also were used in rebusoid writings₂ as phonograms **chaj** (to render the word *chaj* “heaven”) and **?ux** (to render the grammatical ending *.ux*) respectively. The intriguing thing that follows from this *ansatz* is that the two bars here may stand for **laj** (< pH **lajuj* “ten”) which then would indicate both, the preceding logogram **PALAJ**^{laj} and the succeeding ^{laj}**LAJ**! One can imagine that the originators of the La Mojarra inscription really enjoyed this beautiful play on words and signs.

Ascertaining language

traits: Parallel sequences on the TS and FM

Before closing this chapter that was included to illustrate the deciphering methods and the achieved interpretations, I will give a last example, which this time may serve as an illustration of how the analysis gave hints on a characteristic of the underlying language. Analyzing the text on the El Sitio Celt, I observed that it showed some similarities with a sequence on the Tuxtla Stuetette (Fig. A.21). This similarity is partly blurred by the fact that the signs on the more ancient ES are stylistically distinct from the corresponding signs on the TS, but the correspondences are still recognizable: the arm sign MS45 shows, for instance, only one

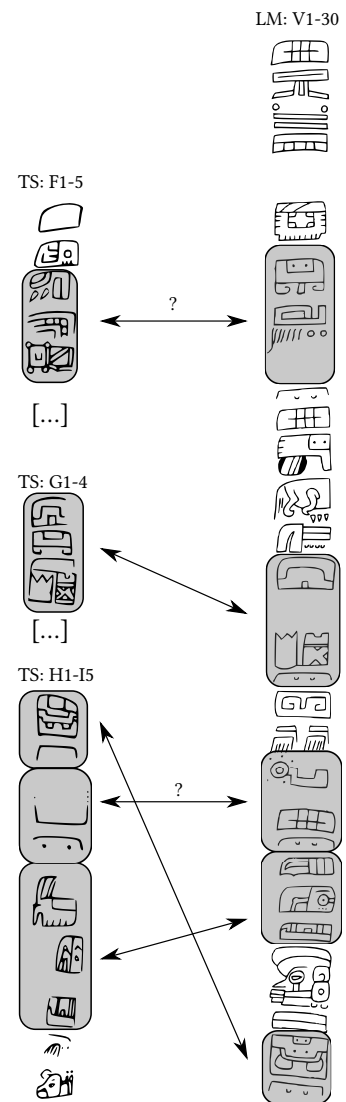


Figure A.20.: Ending sequences of the TS (left) and the LM (right).

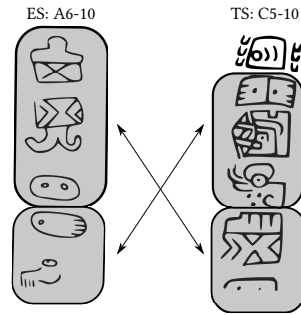


Figure A.21.: Parallel sequence on the TS and ES: V-S sequence (on the ES) inverted to S-V sequence (on the TS).

arm on the ES, while it later usually depicts two arms; the **xa** phonogram MS20 is fully framed on the ES, while on later objects it is only partly framed; the partial face sign MS162 also got altered a bit.

The arm sign could be deciphered from several contexts as the phonogram **ti** (< pH **tiyik* “arm”), occasionally occurring as rebus sign with the reading **tik** (ignoring the glide). The face sign – on the FM plausibly deciphered as morphogram **wal** “face” – here most likely serves as a rebus sign **wal**. These two signs are written₂ together on the ES but separated from each other by MS126 on the TS – the interpretation is thus that, if MS45 and MS162 are indeed rebus signs that have to be read together, this strange looking sign MS126 is a morphogram for a word which is indicated by the two aforementioned signs on the TS. Indeed, there exists a word that may be written₂ by means of these two rebus signs **tik-wal**: pH **tik.w.al* “heat”, a nominalization from pH **tik.aw* “hot”. As a substantive it may also take a possessive pronoun – evidently present on the TS: **nu-tik-TIK.W.AL^{wal}** “my heat”.

The remaining signs, MS27 and MS20, are known from other contexts: MS20 is a phonogram **xa** and MS27 was identified as a phonogram **k’a** in another context. On the TS, these are the only signs unconsidered so far, while on the ES both are preceded by another sign. Remembering the principle ascertained above that the phonetic structure of a CV(V)C morphogram may be echoed by phonograms, one may make the *ansatz* that the initial sign in the sequence on the ES is the morphogram **k’ax** as indicated by MS20 and MS27. Indeed, the lexeme **k’ax* translating “to pass by, cross” perfectly fits the iconic representation of the cross in the initial sign on the ES (this lexeme may also be the origin of the syllabographic value **k’a** of MS27 as it also shows something crossed).

What can be learned for the underlying language from this example? Obviously the word order of verb and subject can be inverted in the language encoded in Isthmian writing₂: Assuming the sequence on the ES *Ø-k’ax.a/ tik.w.al* reflexes the neutral word order, the sentence translates “The heat passed by”. The inversed sentence on the TS may then be considered as a case of focalization *nu-tik.w.al Ø-k’ax.a/* “It is my heat that passed by”. Hence

the example presented here demonstrates that in principle the word order may be altered, but it does indeed not determine which word order is basic or neutral which – in the end – has to be extrapolated from the analysis of the overall data and from the correlation to the proto-Huastecan language model (see ch. A.3.4).

However, it should be noted that for this passage another interpretation is also possible, in particular regarding the arm and partial face signs. From the appearance on the El Sitio Celt and the message the short text on it provides, it is also conceivable that the former is a morphogram **TIYIK** “arm” and the latter – still a rebus sign – stands for **wal* “maize ear”. The sequence may in this case interpreted as a nominal sentence “(my) arm is the maize ear” which would also perfectly fit the interpretation of the ritual content of the El Sitio Celt (see ch. B.1.2 and B.3.4 for details).

A.2.2. The set of signs and sign origin

A straightforward continuation of the method described in the previous chapter led to a proposal for a translation of the inscriptions on the El Sitio Celt, the La Mojarra Stela, the Tuxtla Statuette and the Feldspar Mask (the complete translations can be found in ch. B). Excluding numerals, day and month signs, and leaving stylistic variants of a sign unconsidered, 152 signs²⁵ could be distinguished, from which 63 were used solely as phonograms ($\approx 40.9\%$). 91 signs could be identified as morphograms ($\approx 59.1\%$) from which 22 were also used secondarily as phonograms. This proportion is indeed in accordance with what can be expected for an early morpho-phonographic writing₂ systems.

Morphograms

Many signs show a significant iconicity, while others are abstract so that no reference object could be ascertained. Figure A.22 shows a selection of morphograms for which an iconic origin can be proposed, while figure A.23 shows a selection of morphograms with unidentified reference object. In both cases, the MS catalog number is marked with an + if it is only attested in less than three contexts (as a morphogram or as a secondary rebus sign).

²⁵Each number x given in this section should be understood including an error $\pm 0.1x$ resulting from uncertain classifications and counting errors that cannot be ruled out with certainty.

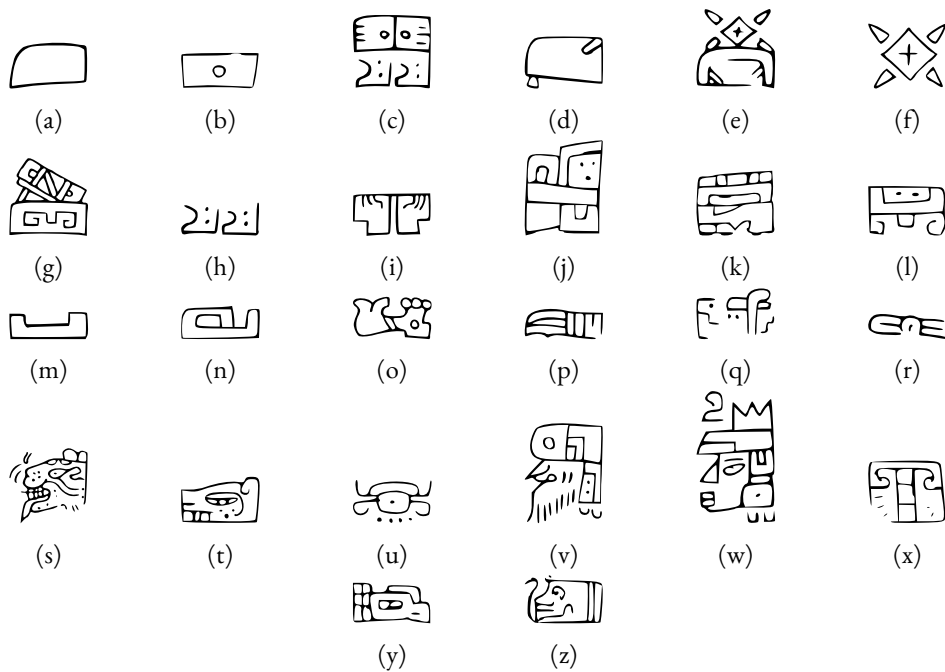


Figure A.22.: Morphograms with possibly transparent iconicity: (a) MS21⁺ **ʔAAK'** “new” (maybe a blank sheet of paper conveying the sense “new”) (b) MS22a **T'AK** “to complete sth.” (a circle conveying the sense “completeness”) (c) MS22b⁺ **T'AK** “to complete sth.” (arms and legs conveying the sense “completeness”) (d) MS23a **T'EK** “to stab/pierce sth./sb.” (e) MS30⁺ **APPEAR.AT.HORIZON** (star above land; pH lexeme unknown) (f) MS31⁺ **STAR(VENUS)** (pH lexeme unknown) (g) MS36⁺ **T'AP** “to erect sth.” (a stone getting erected) (h) MS57⁺ **ʔOOJ** “to go” (a pair of legs) (i) MS59⁺ **JACH** “to raise sth.” (lifting gesture) (j) MS79 **ʔAJATIK** “lord” (royal headdress) (k) MS84/MS169b **K'OOJ** “mask” (a mask or skull) (l) MS93a **JINAJ** “seed” (a germinating seed) (m) MS104⁺ **ʔIICH'** “moon” (crescent moon) (n) MS105 **JUJ** “book” (a folded book) (o) MS109⁺ **JACH'** “to eat” (jaw bone) (p) MS114 **K'UP** “to cut sth.” (knife) (q) MS115⁺ **BAJ** “to chisel sth.” (a hammer/chisel) (r) MS129 **YUT'** “to tie sth.” (knotted ribbon) (s) MS152 **BALAM** “jaguar” (t) MS154⁺ **CHEJ** “deer” (u) MS162 **WAL** “face” (v) MS178⁺ **BE.IN.TRANCE** (a head partly covered with an unknown symbol) (w) MS183 **ʔAJATIK** “lord” (individual wearing the royal headdress) (x) MS210⁺ **ʔEEB** “staircase; sky” (platform with staircase) (y) MS218⁺ **BOT'** “roll, wrap” (head of an armadillo, pH **bot',aw* “he, who rolls himself up”) (z) MS219⁺ **WIʔ** “mouth” (face with speech volute?).

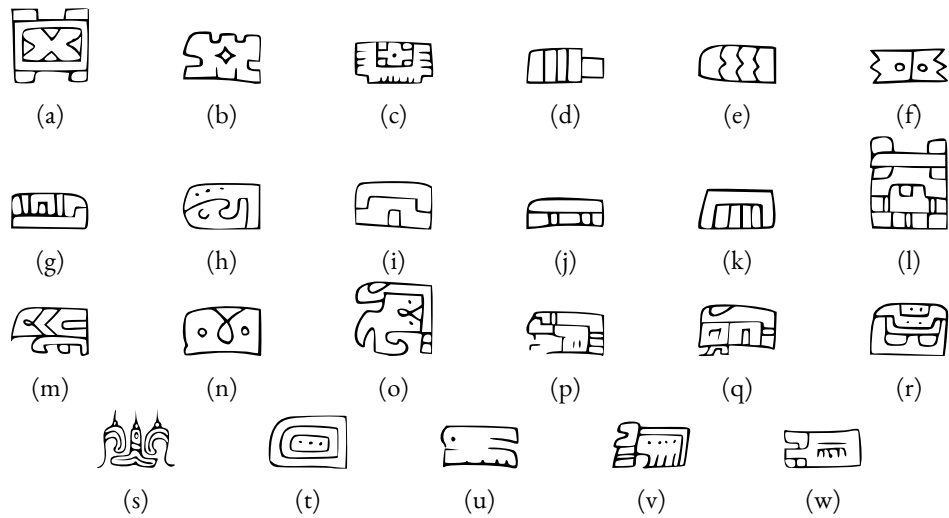


Figure A.23.: Morphograms with unidentified reference object: (a) MS28 **?EEL** “to appear/emerge” (b) MS33⁺ **?AK’UT** “dance” (c) MS34⁺ **CHUB** “to come down” (d) MS40/41⁺ **PAN** “to dig sth.” (e) MS43⁺ **T’ELEJ** “boy” (f) MS46⁺ **TAK** “to choose sth.” (g) MS63 **JAM** “to open sth.” (h) MS65 **BIIT’** “stela” (i) MS68 **WAT’** “to pass by” (j) MS72 **JAAB** “year” (k) MS73⁺ **TIK** “to order sth.” (l) MS74⁺ **TOB** “to join sth.” (m) MS81⁺ **CHAN** “to halt” (n) MS82⁺ **?AAL** “to give birth to sb.” (o) MS83 **?IIX.AAL** “wife” (p) MS87a⁺ **?AAT** “penis” (q) MS88a⁺ **?IK’** “to bring/carry sth.” (r) MS91 **LAJ** “to finish sth.” (s) MS95–98 **?AJ** “to count sth.” (t) MS120⁺ **CHICH’** “blood” (sheet of paper with three blood drops?) (u) MS127/128⁺ **TAJ** “to encounter sth.” (v) MS139a⁺ **TAM** “to occur” (w) MS139b⁺ **POKO** “old/used”.

Phonograms

The CV syllabary ascertained in the deciphering outlined above is presented in Figure A.24. It should be clear that this syllabary must be understood as a tentative proposal. Signs marked with * are common morphograms that are occasionally used as syllabograms via the rebus principle, signs marked with ⁺ are signs that are only attested in less than three different contexts – their decipherment is therefore less reliable.

Note that the syllabary does not include **sV**, **mV** and **ch’V** syllabograms. While the phoneme /s/ could not be detected in the whole *corpus* (probably accidentally; see ch. A.3.1), the phonemes /m/ and /ch’/ are indeed attested, but only as *auslaut* of lexemes written₂ purely morphographically, so the corresponding syllabograms are absent in the inscriptions available – either accidentally or because Isthmian writing₂ did not (yet) develop such syllabograms (the phoneme /ch’/, for instance, is relatively rare).

Some syllabograms could not be deciphered entirely – the vowels of these signs remain indetermined due to the fact that they either indicate the final consonant of a word or complement a verb whose vowel of the transitive/intransitive stem is unknown and cannot be determined due to the principles of the writing₂ system (see ch. A.2.3).

Most CV syllabograms for which a reference object could be identified obtained their phonographic value via the acrophonic principle (Fig. A.25), while only three cases are probably non-acrophonic derivations (Fig. A.26; note that these examples all have initial ?V-). All other syllabograms in the CV syllabary have unknown reference objects.

The process of deriving additional syllabograms via a secondary use of a morphogram in order to write₂ approximately phonetically similar sound sequences (rebus principle) led also to other than CV syllabograms (Fig. A.27). In this process, the vowel length, semi-vowels and the glottal stop are not taken into account.

Some CVC phonograms may also be derived from original morphograms, although the usage of these signs as morphograms is not attested in the *corpus*. This assumption is commonly provided by the iconicity of the signs and a proposed identification of the reference object. These are listed in Figure A.28 (such hypothetical morphograms are marked with an asterisk *).

	<i>a</i>	<i>e</i>	<i>i</i>	<i>o</i>	<i>u</i>	vowel undetermined
<i>ʔ</i>						
<i>p</i>						
<i>b</i>						
<i>t</i>						
<i>t'</i>						
<i>k</i>						
<i>k'</i>						
<i>ch</i>						
<i>x</i>						
<i>j</i>						
<i>n</i>						
<i>l</i>						
<i>w</i>						
<i>y</i>						

Figure A.24.: The syllabary of Isthmian writing₂.

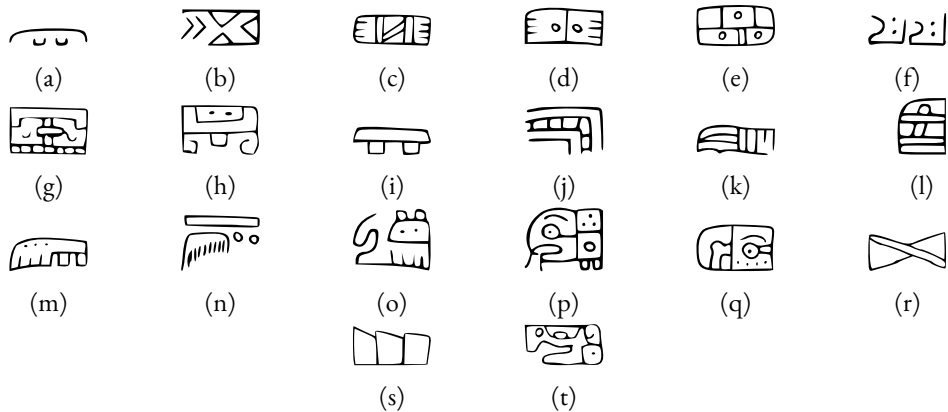


Figure A.25.: CV syllabograms with identifiable reference objects (acrophonic derivations): (a) MS20 **cha/xa** < **chab* “two” (b) MS27a **k’a** < **k’ax* “to cross, pass by” (c) MS37 **to** < **toʔol* “fish” (the sign shows fish fins; see ch. B.1.2) (d) MS45 **ti** < **tiyik* “arm” (the sign shows two arms) (e) MS49⁺ **la** < **laab* “phantasm; *nagual*” (f) MS57/58 **ʔa** < **ʔakan* “foot” (g) MS75c⁺ **wa** < **waj.b* “musical instrument” (a drum) (h) MS93a **ji** < **jinaj* “seed” (i) MS112⁺ **cha** < **chaʔ* “quern/metate” (j) MS113⁺ **pa** < **pak* “to fold. sth.” (k) MS114 **k’u** < **k’up* “to cut sth.” (l) MS136 **tu** < **tuj(ub)* “stone” (m) MS138 **ba** < **bak* “bone” (n) MS142–144 **ju** < **jujul* “hair/feather” (o) MS147⁺ **k’u** < **k’ubak* “hand” (p) MS158⁺ **pe** < **pet* “turtle” (q) MS164 **pi** < **pich’ich* “grasshopper” (r) MS201⁺ **k’o** < **k’ol* “to fold, twist, bend sth.” (s) MS208⁺ **ko** < **kol* “peel, molt” (the sign maybe depicts snake scales after molting) (t) MS217⁺ **li** < **lik.lik* “sparrow hawk”.

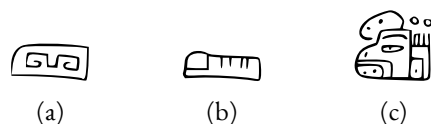


Figure A.26.: CV syllabograms with identifiable reference object (non-acrophonic derivations): (a) MS44 **na** < **ʔanam* “earth” (b) MS107/111⁺ **chi** < **ʔichik’* “fingernail” (c) MS170 **cho** < **ʔochoʔ* “a small lizard” (this identification is based on the assumption that this sign depicts the head of such an animal which is not beyond all doubt).



Figure A.27.: CVC rebusoid phonograms: (a) MS₂₁ **ʔak'** < **ʔAAK'** “new” (b) MS_{22a} **t'ak** < **T'AK** “complete” (c) MS₄₅ **tik** < **TIYIK** “arm” (d) MS_{97/98} **ʔaj** < **ʔAJ** “to count sth.” (e) MS_{149b} **ʔak'** < **ʔAK'** “to put, give sth.” (f) MS₁₆₂ **wal** < **WAL** “face”.

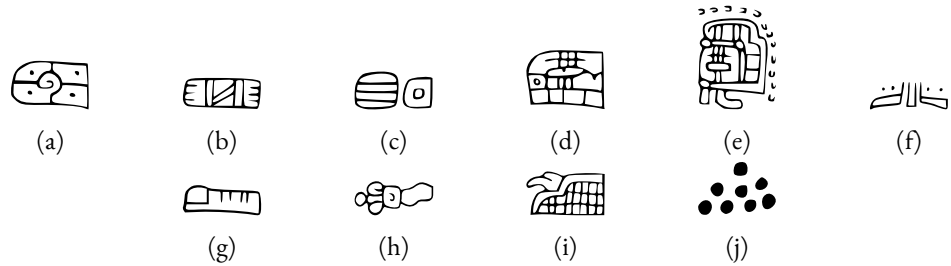


Figure A.28.: CVC rebusoid phonograms derived from hypothetical morphograms: (a) MS₂₄ **xan** < ***XA(A)N** “adobe” (b) MS_{37a} **tol** < ***TOʔOL** “fish” (c) MS₆₀ **k'ol** < ***K'OL** “sth. spherical” (d) MS_{75a} **chan** < ***CHAN** “snake” (e) MS₇₇ **jaj** < ***JAAJ** “house” (f) MS₁₀₁ **t'ek** (unknown reference object) (g) MS₁₀₇ **ʔich** < ***ʔICHIK'** “fingernail” (h) MS₁₁₇ **wich** < ***WICH** “flower” (i) MS₁₁₉ **k'ul** < ***K'UL** “mountain” (j) MS₁₂₂ **k'al** < ***K'ALUL** “charcoal”.

Note that these derived rebus signs are in general not morphograms, but indeed phonograms that also may span over morphemes as in the examples in (1). In the first example, the first CVC phonogram (**ʔaj**) does not coincide with the lexeme *jaaj*, while the second CVC phonogram (**k'ol**) renders a so-called derivational morpheme (DM; see ch. A.3.3) as well as the inchoative ending. The second example shows the CVC phonogram **chan** spanning over the lexeme *ʔooch* (partially) and the middle voice ending *.an*.

- (1) a. **ja-ʔaj-k'ol**
 Ø-*jaaj.k'ol*
 3ABS-true.DM.INCH(COM)
 “It has become true.” (LM: R20–22)
- b. **ʔo*chi-chan**
 Ø-*ʔooch.an*
 3ABS-enter.MID(COM)
 “He/she/it has entered” (LM: O24–25)

In some cases they can, however, coincide with morphemes, e. g. in the rulers name **k'UP-ʔa*k'ul** *k'up(./) ʔaj=k'ul* “He, Who Cuts Down The Enemy”, but functionally they are still phonograms.

Polyvalence

Most signs have a fixed single reading, which is in particular true for the majority of the pure phonograms. Morphograms are intrinsically polyvalent due to the rebus principle though only 22 of the 91 morphograms actually are attested as being used also in rebusoid writings₂.

Despite this intrinsic polyvalence of morphograms, there are only three morphograms (two of them being partially phonograms) and one syllabogram which are truly polyvalent in the sense that the the two or more different readings cannot be derived from each other as in the case of secondary rebus signs. While the polyvalence of MS20 (Fig. A.29a) **xa/cha** could be explained in chapter A.2.1 as a consequence of a historical sound shift, the other cases are most probably motivated iconically. MS149b, a hand putting something down or giving something (Fig. A.29c), is maybe the most outstanding case: a total number of three lexemes can be written₂ by means of this morphogram distinguishable only if phonographic indicators/complements are present: **ʔAK'** “to give, put sth.”, **CHOJ** “to use, put sth.” and **YEʔ** “to give, show sth.” Indeed, this sign is attested twelve times – nine times clearly indicated/complemented by a phonogram (three occurrences are rebusoid derivations **ʔak'/choj**) and only three times without indicator/complement (but the context resolves the ambiguity in these cases).

MS57/58 (Fig. A.29b), a pair of feet/legs, is attested as a morphogram **ʔooj** “to go” but also as a syllabogram **ʔa** apparently derived from pH **ʔakan* “foot, leg”. MS174–177, all

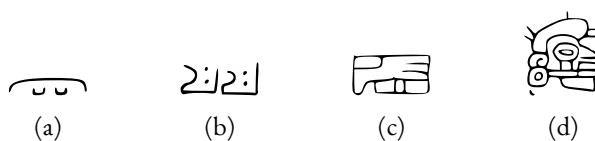


Figure A.29.: Polyvalent signs: (a) MS20 **xa/cha** (b) MS57/58 **?a/?ooj** (c) MS149b **?AK'/CHOJ/YE?** (d) MS174-177 **ba/pa/PALAJ**.

showing an individual in profile with a certain face painting, an earring and emphasized hair (Fig. A.29d), have basically two phonographic readings: **ba** and **pa**. While the latter is certainly derived from pH **palaj* “face, front” as this logographic reading is indeed attested once (LM: V27 with a phonographic indicator **PALAJ**^{1aj}), the second is possibly derived from pH **baj* “self; top, above”.

Allographs

As could already be seen in the syllabary (Fig. A.24), the set of signs in Isthmian writing₂ consists to a certain amount of allographs – a trait that Isthmian writing₂ shares with Mayan writing₂ (though at least, for the moment being, not that extensive). Including rebus signs, the syllable /ʔa/, for instance, may be expressed using one of four different signs. Overall, allographs could be identified for 19 syllables (two or more non-stylistic variants) – and it is to be expected that this number will increase once more data is available.²⁶ Due to the rebus principle, also CVC phonograms can be expressed by different signs, e. g. the syllable /ʔak'/ by means of MS21 (< **?AAK'** “new”; Fig. A.22a) or MS149b (< **?AK'** “to give, put sth.”; Fig. A.27e). MS172/173/179 can be seen as head variants of MS136 (all having the value **TUJ/tu**). This may be true also for MS123 and MS180 (**TUY/tu**) and MS31+MS31 and MS181 (*textbfSTAR (VENUS?)*).

In the domain of morphograms, also some allographs could be identified: MS22a (circle within rectangular frame; Fig. A.22b) and MS22b (the arms and legs sign; Fig. A.22c), for instance, can both be used to write₂ **T'AK** “to complete sth.” Figure A.30 shows a set of allographs for **TIK** “to order sth.” (this reading is confirmed by a preceding CVC rebusoid sign **tik** < **TIYIK** “arm”, MS45). Obviously, these signs relate to each other: MS151 shows a hand putting down a certain unidentified object, a sign which by itself could also be used to write₂ **TIK** (MS73). MS212 shows very likely a bead chain which is worn at the wrist of MS151 and also reads **TIK** on the FM. This process of graphic reduction is not uncommon also in other writing₂ systems.

²⁶As stated in ch. 2, I reckon that the total number of distinct signs in Isthmian writing₂ should be roughly 500 ± 100.



Figure A.30.: The **TIK** (“to order sth.”) allographs: MS73 (left), MS151 (center) and MS212 (right).

A.2.3. Principles of the writing₂ system

Reading order and conjoined signs

The writing₂/reading order for the known objects were already correctly described in Winfield Capitaine (1988), Méluzin (1995) and Houston and Coe (2003:157) regarding the LM, the TS and the FM respectively. It is basically a linear arrangement of separated signs in single columns top-to-bottom and column-wise either left-to-right or right-to-left; asymmetric signs are then oriented accordingly, i. e. in particular head signs (human or animal) are oriented facing the beginning of the text. Usually a single sign block corresponds to one sign. Words are then either written₂ by means of one single sign or a sequence of up to four signs (two/three sign sequences are most common, four sign sequences can be found, e. g. on the LM: M1–4, N15–18, O37–P3, S14–17 or on the FM: D10–13). Such sequences may be interrupted at the end of a column but continued in the next column.

Occasionally, signs may be attached to each other or conflated to form a single sign block consisting of two or more signs (in transliterations marked by an asterisk *).²⁷ In this case the linear writing₂/reading order is broken, which is not really a case of metathesis but an internal freedom of arranging constituents of a compound sign block following aesthetic considerations: the feet sign MS57/58, for instance, may be attached below a given sign (which is quite natural for feet which may look strange if they were attached on top of a sign turned upside down) even though it may be read as the preponent agentive **?a ?a(j)**= with respect to the sign it is attached to, just as in the case of the rulers name *k’up./ ?aj=k’ul*. In chapter A.2.1 (Fig. A.9a), a case of conflation was already analyzed. This example also showed that if the sign compound is indicated by another sign (even though it may be an indicator for an intermediate syllable) it may be written₂ *preceding* the compound sign block – again a case of regular broken linearity.²⁸

²⁷This process has to be distinguished from cases like MS22b or MS36 which are signs by themselves even though they consist of other signs: the former is composed of MS45a (arms) and MS57/58 (legs) to form a new sign with the reading **T’AK** independent of the reading of the constituents (**ti** and **?a/?ooj** respectively). The latter consists of MS44a, the earth maw, and MS136, the bound stone, in a specific arrangement to form a new sign meaning **T’AP** “to erect sth.”

²⁸There are possibly some very few cases of accidental metatheses of signs (e. g. V7–8 compared to Q6–7) which are marked in the transliteration by parentheses. Some of them may, however, be as well false interpretations by the author (e. g. if the contexts are corrupted).

Spelling conventions

As usual for morpho-phonographic writing₂ systems with a high ratio of morphograms, words may be written₂ purely morphographically, purely phonographically or mixed morpho-phonographically, where in the latter case a morphogram may be indicated or complemented by one or more phonograms. This phenomenon of graphic alteration has been already encountered in chapter A.2.1, Figure A.4.

As in Mayan writing₂, closed CV(V)C syllables may be written₂ by means of two successive CV syllabograms, where the vowel of the second syllabogram is mute (i. e. **CV-CV** yields CV(V)C). The same is true for phonographic indication of the *auslaut* of a word (e. g. **cvc₁^{c₁v}** yields also CV(V)C). There is slight evidence that synharmonic/disharmonic spellings may indicate vowel length (i. e. disharmonic spellings indicate long vowels), but this is for the moment being only rudimentarily traceable for two reasons: 1) vowel length reconstructions of proto-Huastecan are uncertain to some degree, and 2) the limited epigraphic data does not permit clear statements on this mechanism. Remarkably, words that are spelled synharmonic/disharmonic on the LM, e. g. **k'i-bi** *k'ib* “jug” or **k'i-ja** *k'ij* “day” are written₂ about four hundred years later on the FM with interchanged vowels in the second syllabogram, i. e. **k'i-ba** *k'ib* and **k'i-ji** *k'ij*, which may be either a falsification of this rule, a hint on shifts of vowel length, or an evidence that the rule has been discarded.

As was already described in chapter A.2.1, rebusoid writings₂ were quite common and well established in Isthmian writing₂, which also included numerals (see the examples involving the numerals **3**, **4** and **10** given in ch. A.2.1). Since the rebus principle is a very important part in the historical evolvement of writing₂, rebusoid spellings are indeed expected to be present to a certain amount in Isthmian writing₂.

Syllable final weak consonants/semi-vowels, i. e. /j/, /w/, /y/ and /ʔ/, are often under-spelled which in particular applies to verbal affixes (but occasionally they are spelled out so they are indeed attested). These are also the phonemes that may be unconsidered when deriving a rebus sign from an existing morphogram.

Morphograms commonly represent the word root (nominal or verbal). Since verbal TAM markers are oblique in proto-Huastecan, uncomplemented verbal morphograms can be seen as implicitly representing several stems including a corresponding stem vowel as, for instance, *ʔaj.iy* and *ʔahj.uj* (the transitive and the intransitivized passive stem of the root transitive *ʔaj*) may both be written₂ by means of the morphogram **ʔAJ**. Notwithstanding, the knowledgeable ancient reader could easily distinguish between these two stems in Isthmian writing₂ even if phonographic complements are absent: They differ definitely due to the absence/presence of an ergative pronoun, so even single uncomplemented verbal morphograms are disambiguated by the context. Verbal suffixes ending in other phonemes than /j/, /w/, /y/ and /ʔ/ are by contrast always spelled out, e. g. the mediopassive *.Vx* or the middle voice *.Vn*, though in this case the stem vowels may also be only implicitly present if the verb is written₂ by means of an uncomplemented morphogram.

Complements of verbal morphograms usually indicate the final consonant of the root and spell out at least the stem vowel: **CHUB-be** *Ø-chub.e(y)* “it has come down”, **T’EK-k’u-xa** *Ø-t’ek.ux* “he has got pierced”, **WAT’-t’e** *Ø-wat’.e(y)* “it has passed by”, **YUT’-t’e** *Ø-yubt’.e(j)* “it has been tied”. One very frequent verb, the verb *ʔaj* “to count/read sth.”, seems to be preferentially complemented by **ji** also if it is intransitivized (e. g. the passive *ʔabj.uj* or the mediopassive *ʔaj.un*) showing the stem vowel /u/ which is then additionally written₂ by means of a complement **ju**. So the original phonographic complement **ji** for transitive *ʔaj.iy*, written₂ **ʔAJ-ji**, shifts to a phonographic indicator in intransitivized derivations such as *ʔaj.un*, written₂ **ʔAJ^{ji}-ju-na**.

Phonographic indicators are arranged as follows: if only the two initial phonemes of a word are indicated by means of a CV syllabogram, it always precedes the indicated sign (which may be a morphogram **ʔ^aʔAK’UT** *ʔak’ut* “dance” or a phonogram **x^axan** *xan* “moreover”). If only the final consonant is indicated by means of a CV syllabogram, it always succeeds the indicated sign (**BIIT’^{t’e}** *biit’* “stela”). CVC roots can also be indicated completely by means of two CV syllabograms – either both preposed (LM: S₉₋₁₁ **ʔ^{i-k’i}ʔIK’**), both postposed (FM: A₁₋₃ **K’OOJ^{k’o-je}**), or preposed and postposed (FM: D₁₄₋₁₆, E₃₋₅ **P^oPOKO^{ko}**). A CVC root can also be indicated by a rebusoid CVC phonogram which may then be preposed *or* postposed (TS: D₂₋₃ **tiikTIK**; LM: O₃₅₋₃₆ **T’EK^{t’ek}**).

Also other than CVC words can be indicated: LM: S₃₉₋₄₂ **ʔ^{ak’}[ʔAK’B.AAL]^{ba-le}**, LM: P₈₋₁₀ **ʔ^{i-xa}ʔIIX.AAL**, LM: Q₉₋₁₁ **ʔIIX.AAL^{xa-IV}**, LM: R₄₅₋₄₇ **T’ELEJ^{t’e-le}**.

A.2.4. Possible sign transfers to the Mayan writing₂ system

Figure A.31 shows a selection of possible sign transfers from Isthmian writing₂ to Mayan writing₂. It should be stressed out that the deciphering of these signs was not motivated by comparison with similar Mayan signs, but came to light during the deciphering process and could be adduced as additional confirmations for an identified reading.²⁹ The cases of MS₂₀ (**xa** < **cha** < **chab* “two”; Fig. A.31a), MS₄₄ (**na** < **ʔanam*; Fig. A.31f), MS₄₉ (**la** < **laab* “phantasm, *nagual*”? Fig. A.31g), MS₇₂ (**JAAB** “year”; Fig. A.31h) and MS₁₄₁ (**nu**; Fig. A.31i) were already discussed above in chapter A.2.1.

Additional sign transfers of CV syllabograms can be identified: MS₃₇ (Fig. A.31e) reads **to** and is apparently cognate with T_{563b} which has the same reading. Originally it shows fish fins (this line of evidence goes back to the El Sitio Celt; see ch. B.1.2) – its reading

²⁹While this statement is indeed true for some cases, this sentence basically has been included in order to imitate Justeson and Kaufman’s work as they “repeatedly dismiss the claim of Mayanist influence in their research” (Houston and Coe 2003:153). The truth is that no researcher can hide his previous knowledge when working on related subjects – and I do not believe that this is really necessary. On the contrary, I am convinced that a meticulous analysis *also* requires the consideration of all possible links as long as they are plausible and well grounded. A sign system does never reveal its meaning sphere by itself – every additional hint may therefore always worth a mint.

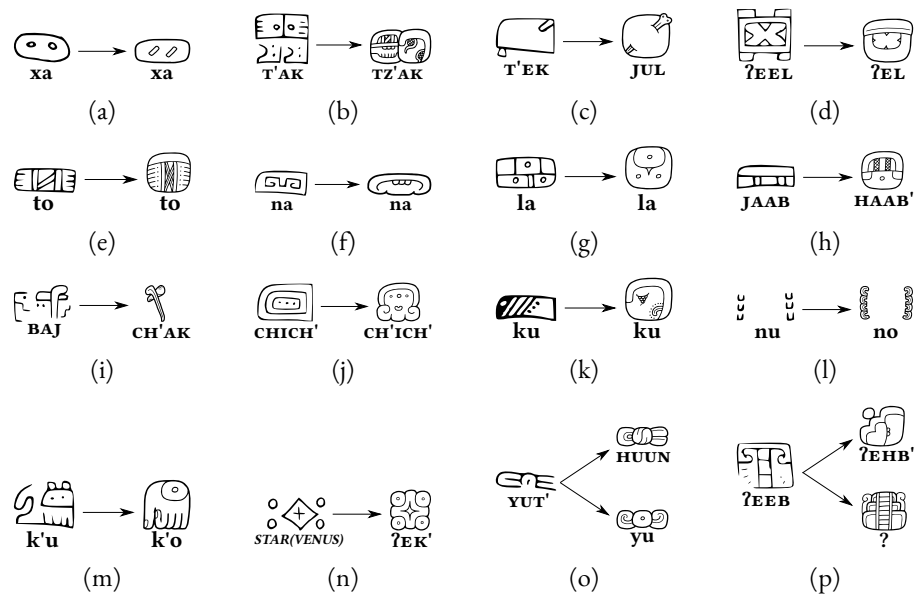


Figure A.31.: Possible cases of sign transfers from Isthmian writing₂ to Mayan writing₂: (a) MS20 → T114 (b) MS22b → a set of conceptually similar signs with the logographic value **TZ'AK** “to complete sth.” (c) MS23 → T653 (d) MS28 → T546 (e) MS37 → T563b (f) MS44 → T23 (g) MS49 → T534 (h) MS72 → T548 (i) MS115 → T190/T333 (j) MS120 → T628a (k) MS124 → T528 (l) MS141 → T134 (m) MS147 → T667 (n) MS31/MS32 → 51ob (o) MS129 → T60 (p) MS210 → T685.

is acrophonically derived from pH **to?ol* “fish”. Also MS124 (**ku** < **kuwok*³⁰ “rain”; Fig. A.31k) was adopted unchanged though the iconic representation changed slightly. The sign MS147 (Fig. A.31m) showing a hand similar to T667 reads **k'u** in Isthmian writing₂ (pH < **k'ubak/k'obak*) but **k'o** in the Mayan writing₂ system. The same u → o shift was already encountered in the case of the **nu/no** syllabogram. Probably the readings of the bird head signs MS157/159 and MS217 (**be** and **li** respectively) were also transferred to similar bird head signs in Mayan writing₂.

Among the logograms one can distinguish several different borrowing processes: Some were adopted without any change, as MS72 was still the year sign in Mayan writing₂ (phonetically adjusted, of course) or the finger MS146, for which the reading as the numeral **1** was ascertained, is still in use as T329 in Mayan writing₂. The same is true for MS120 (Fig. A.31j) – maybe a sheet of paper with three drops of blood – which reads **CHICH'**

³⁰This reconstruction for the pH lexeme from pM ***kaboq* was actually proposed in order to fit the phonographic value of MS124; see comments on MS125a in the sign list ch. D.

“blood” in Isthmian writing₂. The shape of the corresponding sign in Mayan writing₂ T628a has changed a little (still showing the three diagnostic blood drops) but still stands for the etymologically same lexeme *k’ik’/ch’ich’*. MS23 (**T’EK** “to stab, pierce”; Fig. A.31c) and MS115 (**BAJ** “to hammer/chisel”; Fig. A.31i) on the other hand are iconically preserved in T653 and T190/333, but stand for the similar but different lexemes *jul* “to perforate sth.” and *ch’ak* “to axe, decapitate sth./sb.” Iconically equivalent are also MS31/32 and T510b (Fig. A.31n; **?EK’** “star” in Mayan writing₂) – both showing a star – but the phonetic shape for the former in pH could not be determined from the data available (I presume it stands for Venus on the LM; see ch. B.2.2). MS210 showing a platform with a staircase (Fig. A.31p) is iconographically clearly related to T685/697 (reading unknown), its logographic value **?EEB** “ladder, staircase; sky”³¹ can be found again in another sign in Mayan writing₂ showing a slight different representation of a staircase (**?EHB’**). Another possible case of a morphogram transferred to Mayan writing₂ is MS87a → T761a (**?AAT** “penis”), but the sign is partly corrupted on the LM, so its reference object is not identifiable any longer with certainty.

MS28 (Fig. A.31d), however, seems to be adopted as an original rebus sign. Identified as a morphogram **?EEL** “to go out/appear” in Isthmian writing₂, its cognate T546 in Mayan writing₂ is known as a morphogram **?EL** “to burn” making it plausible to assume an intermediate usage as a rebusoid phonogram **?el** before it was established again as a morphogram with the new meaning.

It should be stressed out that MS36 is *not* cognate with the *SUN.AT.HORIZON* sign in Mayan writing₂ as it was proposed in earlier decipherment attempts. First, it should be noted that the *SUN* part of the logogram is apparently absent in MS36. Second, the upper sign in MS36 is not a sign for “heaven” (why should it be oriented vertically in all other appearances if it were showing the heaven? Compare the Mayan numeral **12** head variant: the heaven sign is still oriented horizontally and not vertically as in MS172/179) – it could be identified as a bound stone/stela (ch. A.2.1). Conceptionally, the Mayan *SUN.AT.HORIZON* sign is rather related to MS30 showing a star above the horizon (maybe **?EEL** “to appear”?).

Another conceptional predecessor of a Mayan sign – in this case a set of paired signs – can be seen in MS22b (Fig. A.31b) which is also a compound sign group consisting of the arm sign MS45a and the feet sign MS57/58. Read together, the sign group conveys the sense of “completeness” and hence stands for **T’AK** “to complete sth.” as a substitution for MS22a. A set of paired signs such as heaven-earth, sun-moon, man-woman, etc., which have exactly the same reading (the etymologically cognate **TZ’AK**) are well-known in Mayan writing₂.

Admittedly, some of the presented candidates of sign transfers of morphograms are probably actually similar morphograms that are based either on a more ancient shared

³¹It is crucial for the interpretation of the corresponding passage on the FM that this lexeme in the Huastecan languages also has the meaning of “sky”, probably related to the concept of multiple layers of heavens known from Mayan cosmology (see ch. B.4.4).

iconography (e.g. the *STAR(VENUS)* or the **CHICH'** logogram) or on common concepts (e.g. MS22b), or are coincidences due to natural representations (e.g. the several hand gesture morphograms, the lower part of body signs MS132/T700, the **BALAM/B' AHLAM** logogram) – but this cannot be decided ultimately from the current data.

A.3. The recorded language

A.3.1. Phoneme inventory

The phoneme inventory of proto-Huastecan found in the epigraphic data most closely corresponds to the proto-Huastecan phoneme inventory reconstructed by Norcliffe (2003). In particular, most of the consonantal sound changes from pM > pH are also evident in the epigraphic data (neglecting special cases in specific phonological environments these are: $**t^{(s)}$, $**t^{(s)} > *t^{(s)}$; $**k^{(s)} > *ch^{(s)}$; $**q^{(s)} > *k^{(s)}$; $**b > *j$; also the several outcomes of $**\eta$, $**w$, $**\text{?}$ and $**j$ described in Norcliffe 2003). This results in the consonantal phoneme inventory shown in Table A.4. The vowels in proto-Huastecan are /i(:)/, /e(:)/, /a(:)/, /o(:)/ and /u(:)/.³²

		bilabial	alveolar	alveo-palatal	palatal	retroflex	velar	labio-velar	glottal
stops	plain	<i>p, b</i>	<i>t</i>			<i>t</i> (?)	<i>k</i>	<i>(k^w)</i>	<i>ʔ</i>
	ejective		<i>t'</i>			<i>t'</i> (?)	<i>k'</i>	<i>(k^w)'</i>	
affricatives	plain			<i>ch</i>					
	ejective			<i>ch'</i>					
fricatives			<i>(s)</i>	<i>x</i>			<i>j</i>		<i>h</i> (?)
nasal		<i>m</i>	<i>n</i>						
lateral			<i>l</i>						
glide		<i>w</i>			<i>y</i>				

Table A.4.: Proto-Huastecan phoneme inventory: consonants. Phonemes in brackets are unattested in the Isthmian writing₂ system.

The phonemes /s/ and /k^(s)w/ are absent in the epigraphic data, which is – regarding /s/ – most likely accidental. The sounds /k^(s)w/ that exist in modern Huastecan languages as reflexes of pM $**q^{(s)}$ before /o/ and /u/ in certain environments (see Norcliffe 2003:67–68) may be more recent developments and consequently absent in proto-Huastecan.

It may be possible that pM $**t^{(s)}$ underwent an intermediate sound shift to a stop with a certain quality different from /t^(s)/ (e.g. a retroflex as proposed by Norcliffe 2003:56–60)

³²In this study, the vowel length has been reconstructed whenever clear data was available (long vowel written₂ by means of a doubled vowel). For a possible way of expressing the vowel length in Isthmian writing₂ through spelling conventions similar to the corresponding rules in Classic Mayan writing₂, see ch. A.2.3.

which was assumed in order to explain the outcomes of this phoneme in several modern Huastecan languages. However, a contrast between pH $*t^{(s)}$ resulting from pM $**tz^{(s)}$ and $**t^{(s)}$ on the one hand and resulting from pM $**t^{(s)}$ on the other hand could not be verified in the epigraphic data which may be again due to the limited *corpus* (therefore a distinction between these hypothetical phonemes are not made in the transliteration). Regarding this characteristic, the proto-Huastecan *reconstructum* of the Isthmian writing₂ system can be seen as most closely related to Chicomuceltec.

There is slight evidence that at some stage in the history of Isthmian writing₂ /j/ and /h/ were graphematically – and therefore also in proto-Huastecan – distinguished: MS54 and MS63 are both phonograms read **ja**, but while the former more often is used to indicate/complement sounds that reflect pM $**b$, the latter more often indicates/complements sounds that reflect pM $**j$. Of course, this may be accidental, but if this observation holds in future research (when more inscriptions are available) this would give a hint for the dating of the sound shift pM $**b > pH *j$.

In some cases / $k^{(s)}$ / appears where / $ch^{(s)}$ / is expected, which may indicate that the corresponding sound shift is still ongoing, or that the lexemes in question are in fact loans. However, since some of these terms are ritually relevant (e. g. *k'uj.uul* “divine”, or the calendrical terms *kuwok* “(the day) Rain” and *k'al* “month”/“twenty (days)”), these may just as well be conservative spellings – a feature not atypical also for other writing₂ systems.³³

A.3.2. Lexicon

The lexicon (see the list of lexemes in section C) preserved in Isthmian writing₂ texts consists of 57 nouns (from which four are only attested as day names), 50 verbs (37 transitives and 13 intransitives), 7 Adjectives and 9 other word types (adverbs, pronouns, prepositions, the latter two word classes are not listed in section C). 17 additional lexemes are attested indirectly through preserved phonographic values of some iconic signs (see the list of signs in section D), so the total number of lexemes (excluding numerals) is 140. The following classification of the lexicon is based on classifications in Norcliffe (2003) and Kaufman (2003) and may be deficient due to the lacking of exhaustive linguistic data, but at least approximately this should be correct (note that also some lexeme identifications are uncertain, in particular if the lexeme in question is only attested once or written₂ by means of a morphogram appearing without any phonographic indicator).

66 of these lexemes are still attested in modern Huastecan languages ($\approx 47, 1\%$) from which 10 are unknown to other Mayan languages and therefore most probably early loans or innovations of proto-Huastecan (e. g. *pich'ich* “grasshopper”, *to?ol* “fish”, *jujul* “hair”, *wat* “pass by”, *tak* “to choose sth.”). This drastic loss of pM lexemes in modern Huastecan languages is, of course, to be expected for its long lasting separation from other Mayan languages within a distinct linguistic environment.

³³See Law et al. (2014) for some remarks on the shift / $k^{(s)}$ / $>$ / $ch^{(s)}$ / in GTz.

The other 74 lexemes split up into 32 pM lexemes extinct in modern Huastecan languages ($\approx 22.9\%$ of the total number of lexemes) and 42 lexemes considered as non-pM (after the classification in Kaufman 2003; 30% of the total number of lexemes). However, at least the 25 lexemes considered as CM, LL, or GLL lexemes in Kaufman (2003) may now that they are also attested in pH considered as original pM lexemes (alternatively this may hint at stronger contacts to the lowland area). The remaining 17 lexemes point to stronger relationships (language contact or genetic affiliation) to the Greater Tzeltalan group (12 lexemes) and less strong contacts to Eastern Mayan languages (5 lexemes).

A.3.3. Morphology

Nominal morphology

All nouns in the data set appear in singular, even if a numeral marks them explicitly as plural. This is in accordance with the linguistic data from modern Mayan languages (Coon 2016:528), since all of the attested nouns that should be understood as plurals are inanimate. Correspondingly, plural pronouns are absent in the data.

Nominal roots may appear in an unmarked independent state or in a possessive state. The possessive pronominal suffixes attested in Isthmian writing₂ are the ergatives pronouns *nu-* “my” and *yu-* “his/her/its”. Note that these pronouns seem to remain unchanged even if they precede words with initial *?V*, e. g. *yu-?ak’ut* “his dance”, which is also true for verbal phrases. In only one case a specific possessive suffix *.il* could be found. This instance can be found in (2-b) contrasted to the unpossessed state in (2-a). From the limited data set it is not clear if pH possessives behave in the same manner as reported for modern Huastecan languages, i. e. if they appear with/without the *.il* suffix depending on an iconic proximity relationship between possessum and possessor (see Maldonado 1994).

- (2) a. **po^oPOKO^{ko_wa}WAL**
poko=wal
 old=face
 “the ‘old-face’” (FM: D14–C1)
- b. **nu^o.po^oPOKO^{ko_wa}WAL-li**
nu-poko=wal.il
 1ERG-old=face.POSS
 “my ‘old-face’” (FM: E2–8)

The same example (2) shows also that there existed a set of prepositional adjectives, in this case *poko=* “old”. Another example is *?at=* “fellow, accompanying”. Of course, pH nouns could be further qualified by preceding adjectives (e. g. FM: F8–9 *kop ?ajatik* “the fiery lord” or TS: F1–3 *?aak’juuj* “a new book”) or a demonstrative (e. g. TS: I3–5 *ja? juch.ow*

“this inscription”), or further quantified by preceding numerals (other quantifiers could not be determined in the data set). Articles do not exist in pH.

Noun roots are mostly CV(V)C (e. g. *?aat* “penis”, *chich’* “blood”, *jaab* “year”). CVCVC roots are less common: *?ak’ut* “dance”, *?anam* “earth”, *balam* “jaguar”, *jinaj* “seed”, *palaj* “face, front” and *t’elej* “boy” were found in the epigraphic data. Nouns showing additional derivational morphemes are *?ak’b.aal* “night” (< **?ak’ab*), *?iix.aal* “wife” (< **?i(i)x* “female”), *tik.w.al* “heat” (< **tik.aw* “hot”) and *tuj.ub* “stone” (< *tuj*).

Nouns may also be derived from verbs by adding a suffix *.Vw* (remind that final /w/ is commonly underspelled, so the corresponding examples are based on linguistic reconstruction and the syntactic environment), e. g. *nu-?eel.aw* “my appearance/guise” (< *?eel* “to appear”; written₂ **nu-?EEL-la**; FM: C9–11) or *ja? juch.ow* “this inscription” (< *juch* “to scratch sth.”; written₂ **ja-ju-cho**; TS: I3–5). A derivation of an agentive noun via the common Mayan preposition element *?aj=* is solely attested in *?aj=k’ul* “enemy” as part of the personal name K’up Aj-K’ul.

Only one adjective derived from a noun via the common Mayan suffix *.V(V)l* could be found: *k’uj.uul* “divine”.

Verbal morphology

Proto-Huastecan as it appears in the Isthmian writing₂ epigraphic data is tenseless but makes an aspectual distinction between completive/incompletive.³⁴ All encountered verbal phrases are in indicative mood.

Verbal roots (all attested roots are CV(V)C) appear with a large variety of suffixes, as it is also attested for modern Huastecan languages (see, e. g., McQuown 1984). Root transitives are attested having one of the following suffixes when appearing as completives: *.a?*, *.ay*, *.iy*, *.ey*, *.ow*, *.uy* or *.uw*. Root intransitives have *.a?* or *.ey* when appearing as completives. Note that the *auslaut* of each of these suffixes are only occasionally attested due to the writing₂ principles, while the corresponding vowels are attested more often (by means of phonographic complements).

By contrast, the exact morphology of incompletives is not fully determinable from the data for three reasons: a) incompletives are less frequently attested than completives b) because of the writing₂ principles, the suffixes are often underspelled, and c) the incompletives follow a pattern which is no longer preserved in modern Huastecan languages, i. e. the old Mayan paradigm for incompletives, with a preceding incompletive marker *x* and a corresponding verbal suffix (modern Huastecan languages show a different pattern which derives from a progressive; for this process, see Robertson 1993). The few hints, however,

³⁴Please note: As a makeshift and in order to mark these aspects in the translations, I translate a completive as perfect tense in English and an incompletive as present tense, simple past, or progressive depending on the context.

point to a change in the ending vowel (3).³⁵

- (3) a. **ʔo-ja BALAM**
Ø-ʔooj.aʔ balam
 3ABS-go.IS(COM) jaguar
 “The jaguar (the moon?) has gone.” (FM: B12–13)
- b. **xa-ʔo-ju**
x Ø-ʔooj.u/
 INC 3ABS-go.IS(INC)
 “(while) he went away.” (TS: G7–8)

Most passives follow a paradigm which is presumably derived from a common Mayan paradigm, which involved a shift $CVC \rightarrow CVbC$ and included a certain suffix. This shift of the root, however, may already be actually absent in pH due to an eliding process (remember the phoneme /b/ is presumably already absent in pH). It may therefore be possible that the corresponding passives are only marked by their respective endings, i. e. most probably *.Vj*, as most examples where the *auslaut* is indeed written₂ point to this ending. As Kondic (2011:135) reports, passives ending in *.Vj* are indeed preserved in modern southern Huastecan languages without a changing of the root (today restricted to transitives stems finishing in *.aʔ*). For the sake of clarity, I have decided to mark these passive roots nevertheless with an infix */b/* even though it may be already elided.

Passives may also be formed by adding a suffix *.Vt*, an ending which is also preserved in modern Huastecan languages (Kondic 2011:119). This suffix is, however, attested much less frequent: on the LM (B6–8) *Ø-jachʔ.at* “he has been eaten” and below in (5-b). The predominant usage of the canonical common Mayan passive in *.Vj* is possibly a consequence of conservation phenomena known also from other ancient writing₂ systems.

As discussed already in chapter A.2.1, many verbs appear as mediopassives with the suffix *.Vx*, which is also common Mayan (compare Wichmann 2006:287) and which in modern southern Huastecan languages has become an antipassive suffix (Kondic 2011:120). These forms appear frequently on the preserved Isthmian writing₂ texts, mostly to form impersonal expressions as, for instance, *Ø-laj.ax* “it has got finished” (LM: O13–14, R2–3, V29–30) or *Ø-tuy.ux* “it has got fixed/recorded” (LM: V21–23; TS: E1–3).

Interestingly, the middlevoice suffix *.Vn* seems to have the same functions in Isthmian writing₂ as in modern Huastecan languages – three of the five functions reported by Kondic (2011:124–136) are also attested in pH: reflexives (4-a), mediopassives (4-b), and change of state/movement (4-c).

³⁵From a comparative point of view the suffix should be derived from ***ik > *.i*. Maybe this resulted in pH in a set of *.V* suffixes due to vowel shifts induced by different phonetic environments (in particular different root vowels).

- (4) a. **xa-^{ye}YEʔ-na-ja**
x Ø-yeʔ.an jaʔ
 INC 3ABS-show.MID(INC) water
 “Water was showing itself (it was raining).” (LM: T25–28)
- b. **ʔAJ^{ji}-ju-na**
Ø-ʔaj.un
 3ABS-count.MID(COM)
 “It has been counted.” (LM: O38–P3)
- c. **ʔO*chi-chan ta?ʔANAM**
Ø-ʔoch.an taʔ ʔanam
 3ABS-enter.MID(COM) PREP ground
 “It (the stela) has entered into the ground.” (LM: O24–26)

Causatives derived via a morpheme *.b* are attested occasionally (5), while the other possibility of forming causatives in Huastecan languages via the morpheme *.s* (modern *.th*) is absent in the epigraphic data (maybe accidentally).

- (5) a. **yu-^{tʼa}TʼAP-ba-ʔa**
Ø-yu-tʼap.b.aʔ
 3ABS-3ERG-erect.CAUS.TS(COM)
 “he has caused to erect (a stela)” (LM: S13–17)
- b. **ʔOOJ^{ji}-ba-ta**
Ø-ʔooj.b.at
 3ABS-go.CAUS.PASS
 “it has been brought away” (FM: D10–13)

An applicative with benefactive meaning is attested once in the epigraphic data (6) (compare Kondic 2011:121). The morpheme *.cb* for applicatives is unique to Huastecan languages (common Mayan: **bʼe*; Coon 2016:521).

- (6) **xa-yu-tʼak-cha yu-TʼELEJ^{tʼe-le}**
x Ø-yu-tʼak.cb.aʔ yu-tʼelej
 INC 3ABS-3ERG-purify.APPL.TS(INC) 3ERG-boy
 “he was purifying it (for) his son.” (LM: R40–43)

In modern Huastecan languages exists a set of so-called derivational morphemes (DM) whose exact semantics are not yet known (the function is probably an aspectual one; Kondic 2011:116). Two of these morphemes, *.k* and *.kʼ*, are also attested in Isthmian writing₂ and maybe denote a (more or less) sudden(?) change of state (7).

- (7) a. **ʔEEL-ku**
Ø-ʔeel.k.u/

- 3ABS-appear.DM.TS(COM)
 “It has (suddenly?) emerged.” (FM: B1–2)
- b. **ja-ju-k’ol^o**
Ø-jaaj.k’ol
 3ABS-true.DM.INCH(COM)
 “It has (suddenly?) become true/real.” (LM: N15–18)

The latter example also shows a possible example of an inchoative derived from an adjective via the suffix *.Vl*, but since a modern Huastecan cognate of this morpheme is lacking, this interpretation based on contextual analyses is less certain.

Temporal deixis appears twice in the data (8). While the suffix *.ej* attached to the noun *jaab* “year” in the first example indicates that the following sentences refer to something that happened chronologically afterwards (after one year had passed by), the suffix *.jey* in the second sentence indicates that what follows happened chronologically prior to the date mentioned in this passage (see also ch. B.2.4).

- (8) a. **ʔooj JAAB-je**
Ø-ʔooj(.aʔ) jaab.ej
 3ABS-go.IS(COM) year.DEI
 “A year has gone.” (FM: E14–16)
- b. **ʔo-ju-je-ye**
Ø-ʔooj.jey
 3ABS-go.DEI
 “It has gone.” (LM: M1–4)

A.3.4. Syntax

In verbal phrases, pronominal subjects of transitives appear as ergatives and precede the verb. Absolutes functioning as pronominal subjects of intransitives and pronominal objects of transitives appear within the epigraphic data only in the 3rd person singular *Ø-*, but they are assumed to precede the verb. Transitives are assumed to have a ABS-ERG-VERB order (see Robertson 1993:296).

From the epigraphic data it is not possible to decide whether the basic word order for transitives when nominal subjects and objects are present is VOS or VSO since a simultaneous appearance of both is absent in the data. If one of these is present as a noun, VS (also for intransitives) and VO respectively seems to be the neutral word order. Nouns can, however, also occur in a clause initial position preceding the verbal phrase, which are most probably cases of topicalization (9-a) or focalization (9-b). The basic word order in pH is therefore very likely either TOPIC/FOCUS VOS or TOPIC/FOCUS VSO (compare England 1991 for the proto-Mayan reconstruction; modern Huastecan languages were described as rather flexible regarding the word order; see Kondic 2013:31).

- (9) a. **K'OOJ nu-JAM yu-wiʔ**
k'ooj Ø-nu-jam(./) yu-wiʔ
 mask(TOPIC) 3ABS-3ERG-open.TS(COM) 3ERG-mouth
 “As for the mask, I have opened its mouth.” (FM: E9–13)
- b. **ʔAAK^{k'i} ju*JUJ PAK-ko**
ʔaak' juuj Ø-pahk.o/
 new book(FOCUS) 3ABS-fold(PASS).IS(COM)
 “It was a new book that has been (un)folded.” (TS: F1–5)

Nominal sentences are also attested, either with nominal subjects (10-a) or with pronominal (absolutive) subjects (10-b). Following Robertson (1993:296), it is to be expected that in the latter case the absolutive pronoun succeeds the noun phrase.

- (10) a. **K'OOJ nu-^{po}POKO^{ko-wa}WAL-li**
k'ooj nu-poko=wal.il
 mask 3ERG-old=face.POSS
 “The mask is my ‘old-face’.” (FM: E1–8)
- b. **yu-ʔAK'UT**
yu-ʔak'ut-Ø
 3ERG-dance-3ABS
 “There was his dance.” (LM: N11–13, R17–18)

The clause structure is simple. Main clauses are commonly coordinated by juxtaposition which has no morphological effect on the involved matrix clauses (syntactically they are still independent clauses). Only one coordinating conjunction (*xan* “moreover”) could be detected in the epigraphic data. Occasionally attested are coordinating main clauses involving verbs meaning “to join”, “to affix”, or similar (11). These then appear as mediopassives and can loosely be translated as “and”.

- (11) “It happened X” *Ø-tob.ax* “It happened Y”
 3ABS-join.MP(COM)
 “It happened X. It got joined: It happened Y.” > “It happened X, and in connection with that, it happened Y.” or “It happened X and it happened Y.” (LM: C5–7)

A.3.5. The texts

For a summary and comment on the contents of the texts, see the corresponding sections in section B. Here I will give only some short notes on general characteristics of the Isthmian writing₂ texts deciphered for this study.

The texts on the Tuxtla Statuette and the Feldspar Mask relate to the ritual manufactur-

ing and dedication of these objects, they are self-referential.³⁶ They appear mostly in the 1st person singular and can therefore be seen as recorded ritual speech. Their performative character is evident.

The main text on the La Mojarra Stela on the contrary is a historical account about the reign of the individual depicted prominently on the stela whose name I read K'up Aj-K'ul "He, Who Cuts Down The Enemy". It predominantly relates the several throne anniversaries of this ruler (in particular his 13th jubilee). The text contains many impersonal constructions in order to relate the elapsing of time or to coordinate the reported events. This style provides the text with an exalted, dignified distance. Moreover, some parts, in particular the ending sequences on the LM and the TS, come with a series of similar/equivalent statements (e. g. "It has passed by, it has got ceased. It has been remembered, it has got recorded. The front (text) has been carved. It has got finished.") which certainly increases its affirmative potency and makes the presence of ritual speech also evident for the mostly historical text on the La Mojarra Stela.

A.4. Discussion

As has been shown, a consistent decipherment of the Isthmian writing₂ system has been achieved by considering a Huastecan language model, though parts of this decipherment remain uncertain and some questions have to remain unanswered due to the limited *corpus*. In particular, the grammatical reconstruction of pH remains for the moment being incomplete or provisionally (e. g. the morphology of incompletives due to the writing₂ principles). Nevertheless, it could be shown that this decipherment is indeed in accordance with what could have been expected from other known ancient writing₂ systems, i. e., for instance, the ratio of morphograms/phonograms (ch. A.2.2), and spelling conventions typical for morpho-phonographic writing₂ systems including phonographic indication/complementation, rebusoid spellings and (occasionally) graphic conflation.

Not only do these spelling conventions and writing₂ principles show a significant similarity with the Classic Mayan writing₂ system (e. g. that the vowel of a word final CV syllabogram is mute),³⁷ but also the unearthed parallels of the set of signs (ch. A.2.4) strikingly demonstrated the affiliation of both writing₂ systems. Future researches have to clarify whether these are both descendants of a still unknown common ancestor or whether Mayan writing₂ at some time split off from Isthmian writing₂ (In this context, the role of the writing_{1/2} systems of Izapa and Kaminaljuyu of course also have to be considered). However, Isthmian writing₂, even if considered as being not the direct predecessor of Mayan

³⁶The lexemes *pech* "boat-billed heron" (i. e. the bird the statuette represents) and *k'ooj* "mask" are indeed attested on the TS and the FM, respectively.

³⁷There are, however, some apparent differences, e. g. the characteristic Classic Mayan double column reading order or the typical arrangement of word constituting signs into a glyph block.

writing₂, is certainly the donor of some phonographic signs whose origin could be reasonably traced back to Isthmian writing₂ and pH respectively (e. g. MS20/T114 **xa**, MS37/T563b **to**, MS44/T23 **na**, MS49/T534 **la**, MS124/T528 **ku**, MS141/T134 **nu/no**, MS147/T667 **k'u/k'o**).

The proto-Huastecan language as encountered in Isthmian writing₂ showed a couple of traits that demonstrate its proximity to the proto-Mayan language, in particular the paradigms of the incompletive and the passives (ch. A.3.3), as well as the lexicon. Especially the latter showed also that the Huastec people indeed participated “extensively in the lowland Mayan sphere of linguistic interaction”, as Law (2013:151) already argued (see ch. A.3.2). A relation to the Tzeltalan group that was suggested previously³⁸ is also evident to some degree. On the other hand, the language of Isthmian writing₂ clearly exhibits features typical for Huastecan languages, e. g. the middle voice ending in *.Vn*, the applicative morpheme *.ch*, or the so-called derivational morphemes *.k* and *.k'*.

These results therefore irrefutably prove that the Huastec people did not immigrate to the region today known as La Huasteca “surely before 1,000 B.C.” as Kaufman (1976:106) proposed, but considerably later, as their presence in the Isthmian region is witnessed by the Isthmian writing₂ inscriptions. However that be, the position of the Huastecan branch within the Mayan Languages and possible interaction processes have to be reevaluated in the light of the presented findings, which clearly support the arguments put forward by Robertson and Houston (2015). Furthermore, observe that the datings of the currently known inscriptions also indicate a movement of the originators to the north: While the earliest examples come from the southernmost site, Chiapa de Corzo (~ 3rd–1st century BCE), the latest inscriptions were found in Cerro de las Mesas, the northernmost site (5th–6th century CE). This is rather in accordance with the proto-Huastecan decipherment than with the “pre-*proto-Zoquean*” decipherment by Justeson and Kaufman (1993), since the distribution of the Zoquean languages shows a concentration in the vicinity of the southern sites.

The texts found on the Isthmian writing₂ inscriptions are now coherently legible (they are discussed in detail in ch. B): they provide valuable insights into the Huastec culture at this specific time in history. Especially regarding religious notions and practices, numerous traits are recognizable that demonstrate the strong affiliation with common Mayan beliefs (e. g. the notion of 13 layers of heaven on the FM).

Admittedly, some passages may perhaps sound at this stage of decipherment strange or clumsy – they have to be adjusted as soon as more reliable epigraphic data is available. However, *it is not believable that the model presented in this study for the phonological and grammatical structure of the Isthmian language could fit both the comparative Huastecan*

³⁸See, e. g., Robertson and Houston (2015). These authors position themselves against Campbell and Kaufman (1985) who advocate the hypothesis that the Huastecs very early split off from other Mayan groups (including the migration northwards).

data and the Isthmian epigraphic data in the detail that it does were it not fundamentally correct.

quod erat demonstrandum

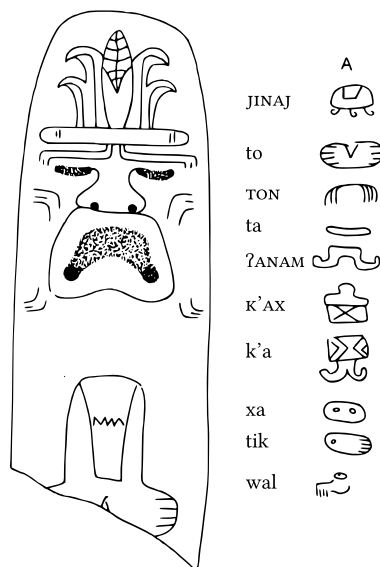
B. “Deciphered” Isthmian Texts

B.1. The El Sitio Celt

B.1.1. Translation

A1	A2-3	A4	A5
JINAJ	^{to} TON	ta	?ANAM
<i>jinaj</i>	<i>ton</i>	<i>ta?</i>	<i>?anam</i>
seed	hair	PREP	earth
The seed (is)	the hair	on	earth.

A6-8	A9-10
K'AX ^{k'a-xa}	tik-wal (or: TIYIK-wal)
<i>Ø-k'ax.a'</i>	<i>tikwal</i> (or: <i>tiyik wal</i>)
3ABS-pass.IS(COM)	heat (or: arm (is) maize ear)
It has passed by	the heat.



Running Translation

“The seed is (will be) the hair on earth. The heat has passed by.” (Alternative reading of the second sentence: “It has passed by: The arm is the maize ear.”)

B.1.2. Comment

Due to its age, the El Sitio Celt shows some early variants of common Isthmian writing₂ signs (for comments on a particular sign, see the corresponding *lemmata* in the sign list ch. D): the germinating seed in A₁ (MS93; here as a morphogram), the fish fin in A₂ (MS37; compare the fish fins of the numinous being on the front of the celt), the hair sign in A₃ (MS142–144; the reading **TON** is here indicated by the previous sign), the earth maw in

A5 (MS44), the cross sign in A7 (MS26/27), the **xa** sign in A8 (MS20), the arm sign in A9 (MS45; here only one arm) and the face sign in A10 (MS162). The other two signs in A4 and A6 are not listed in the MS catalog and not attested elsewhere, but they could be deciphered within the context as **ta** (the preposition *ta?*) and **k'ax** (“to pass by/cross”; indicated by the two following signs and the parallel text on the TS).

The two sentences are directly related to the numinous being depicted on the front of the celt, which can be identified as the maize god due to the conspicuous corn cob at his head (compare Taube 2004:25–29):

A1–5: The first sentence is a nominal sentence and states that the seeds will result in fields of maize plants, metaphorically expressed as “the hair on earth” (and it is indeed also the hair of the being on the front).

A6–10: The second sentence has a parallel on the Tuxtla Statuette (C5–10; see ch. B.3.1), where the word order has been inverted (thus emphasizing the subject). The verb is in both cases pH **k'ax* “to pass by” (here written₂ morphographically and indicated by the two following phonograms; on the TS it is written₂ purely phonographically). The following two signs can, however, be understood as a rebusoid writing₂ of pH **tikw.al* “heat” (from pH **tiyik* “arm” > **tik** ignoring the glide in the middle and pH **wal* “face” > **wal**) or alternatively as another nominal sentence consisting of the morphogram **TIYIK** “arm” and a rebusoid writing₂ of pH **wal* “maize ear” (< pM **ŋal*; Kaufman 2003:1063; mH *way?*; Norcliffe 2003:174; This rebus spelling with the morphogram **wal** “face” only works in pH). The sentence “(My) heat passed by” would then probably refer to the desired end of a dry season (or drought), while the sentence “(My) arm is the maize ear” would again refer to the growth of a maize plant, whose sideways sprouting fruits can indeed be imagined as “the arm” of the plant. Epigraphically, none of the interpretations can be ruled out.

B.2. The La Mojarra Stela

B.2.1. La Mojarra Stela, Inscription 1 (Columns A–L): Text

A1	A2	A3-7	A8	B1-2	B3	B4	B5
ʔAJ	3-K'AYAB	8.5.3.3.5	13 CHAN	k'u*ju-le	BALAM	ʔIICH'	T'EK
Ø-ʔahj(.uj)	ʔux ?	8.5.3.3.5	lajuj-ʔux chan	k'uj.uul	balam	ʔiich'	Ø-t'ehk(.u)
3ABS-count(PASS).IS(COM)	NUM MN	LC	NUM DN	divine	jaguar	moon	3ABS-stab(PASS).IS(COM)
It has been counted:	May 21, 143 CE, day 13	Serpent.		The divine Jaguar	Moon,	he	has been stabbed,
B6-8	B9-C2	C3-4	C5-7				
^{ja} JACH ² -to	xa- ^{ja} APPEAR.AT.HORIZON	STAR(VENUS)-xa/cha	TOB-ba-xa				
Ø-jach'.at	x Ø-?(/.)	?	Ø-tob.ax				
3ABS-eat.PASS(COM)	INC 3ABS-appear.at.horizon.IS(INC)	star/Venus	3ABS-join.MP(COM)				
he has been eaten.	It appeared at the horizon	the Venus.	It got joined.				
D1	D2-3	D4-6	E1	E2	E3-4		
YUT'	ja-ba	^{ta} TAJ-ja	GOD.X	VENUS?	xa- ^{ja} JACH		
Ø-yuht'(.ej)	jaab	Ø-tahj.aj	?	?	x Ø-jahch./		
3ABS-tie(PASS).IS(COM)	year	3ABS-encounter(PASS).IS(COM)	?	?	INC 3ABS-raise(PASS).IS(INC)		
It has been tied	the year.	It has been encountered	"God X", Venus.	He	was raised.		
F1-2	F3-5	F6-G1	G2-3	G4-6			
TAJ-ja	yu-cho-tu	xa-JAM	k'i-ja	ʔAT ^a ʔa ^{tu} -k'i-ja			
Ø-tahj.aj	yu-chot	x Ø-jahm(/.)	k'ij	ʔat=k'ij			
3ABS-encounter(PASS).IS(COM)	3ERG-seat	INC 3ABS-open(PASS).IS(INC)	day	fellow=day			
It has been encountered	his seat.	It was opened	a day	and the following day.			
G7-H2	H3-4	I1	I2-3	I4-6	J1	J2	J3-4
na-pa-xa	yu-t'e	13	JAAB ^a be ^{ch}	CHUB*be	chu	6	k'al ^{ia}
Ø-nap.ax	Ø-yuht'.e(j)	lajuj-ʔux	jaab	Ø-chub.e(y)	(ʔi)ch	ʔakak	k'al
3ABS-affix.MP(COM)	3ABS-tie(PASS).IS(COM)	NUM	year	3ABS-come.down.IS(COM)	already	NUM	month
It has got affixed.	It has been tied	13 years.	It has come down	already	6 months.		
.J5-K1	K2-3	K4-6	K7-L0				
xa-ʔAJ ^{ji} -ju-na	ku-ji	t'e-je-t'e	xa-[xa]				
x Ø-ʔaj.un	Ø-kuj	t'eje?	x Ø-xaj(.a?)				
INC 3ABS-count.MID(INC)	3ABS-seated	on the left	INC 3ABS-stride.IS(INC)				
It was counted.	He was seated.	On the left,	he is striding,				
L1	L2-3	L4-5	L6-9				
GOD.X	K'UP-ʔa*k'ul	na-ʔe	BAJ ^{ba-ja} -xa				
?	k'up(/.) ʔaj=k'ul	Ø-nah?.e/	Ø-baj.ax				
?	cut.NLZR enemy	3ABS-remeber(PASS).IS(COM)	3ABS-chisel.MP(COM)				
"God X"	He, Who Cuts Down The Enemy.	It has been remembered.	It has got chiselled.				

Running Translation

“(A) It has been counted: May 21, 143 CE, day 13 Serpent. (B) The divine Jaguar Moon, he has been stabbed, he has been eaten, while (C) Venus appeared at the horizon, and in connection with that, (D) the year has been tied.

(E) ‘God X’, ‘Venus’, has been encountered and he was raised (into rulership). (F) His seat (also) has been encountered. (G) It was opened a day and the following day, and (H) in connection with that, (I) 13 years have been tied, and also (J) 6 months have come down, as it was counted. (K) (For all these years) he was seated. On the left side (L) ‘God X’ K’up Aj-K’ul, ‘He, Who Cuts Down The Enemy’, is striding. It has been remembered, it has got chiselled/carved.”

B.2.2. La Mojarra Stela, Inscription 1 (Columns A–L): Comment

This short text relates the enthronement of ruler K’up Aj-K’ul which took place at the date given in column A. It also provides a count of the time elapsed since this event until the completion of the stela (in total 13 “tuuns”, 6 “months” and two days). Columns K–L refer directly to the depiction of K’up Aj-K’ul on the lower left side of the stela: “On the left, ‘God X’ K’up Aj-K’ul is striding.”

A2: The month name (MS110) could not be deciphered in pH due to the single occurrence of the signs it is composed of. Following standard Mayan calendrical arithmetic, it should be a month corresponding to Yucatec *k’ayab*. See also Méluzin (1992:290–292).

B1–C4: This opening sequence relates to the celestial phenomena that occurred on the day of the enthronement of K’up Aj-K’ul. Most probably, the date for the enthronement was chosen with respect to a certain moon/Venus constellation. The first sentence “The divine Jaguar Moon, he has been stabbed” clearly relates the first appearance of Venus (as morning or evening star) which is numerously attested in Mesoamerican iconography, namely depicted as personified god throwing spears. The sentence “He (i. e. the moon) has been eaten” can mean that there was a lunar eclipse, a new moon (or decrescent moon?) in the same night, or nothing but the dawn of a new day (hence the Venus event would be the return of Venus as morning star). Lastly, the next sentence affirms that Venus appeared at the horizon (note the star-above-land sign MS30). The phonographic reading of the single star (Venus) sign MS31 is not clear, maybe it simply reads “the star” as a synecdoche for “Venus”. Note that the notion “Jaguar Moon” may be cognate to the Mayan belief that one of the divine twins, i. e. Xb’alanke (his name in the Popol Vuh), who is commonly portrayed with jaguar patches, transformed into the moon.

C5–7: For *Ø-tob.ax* as a coordinating clause, see ch. A.3.4.

D1–3: Since the date given in column A clearly is not at the beginning of a new year or “tuun” period and regarding what follows, the sentence “The year has been tied” can be interpreted as stating that it was the first year in the reign of K’up Aj-K’ul that began with

this date. Later (e.g. N35–36, P19–22), the main text of the stela often relates to throne anniversaries (with respect to completed “tuun” periods) of K’up Aj-K’ul.

D4–F5: These sentences have to be understood in the sense that the new ruler has been enthroned (“has been encountered”, “has been raised”). His main title is given morphographically in E1–E2, the second showing a head in profile wearing the morphogram MS30 as headdress (MS181). I assume it is a title that relates him to the morning star, which hence conforms with the accession date. The sign in E1, however, shows another head with an elaborated headdress, but also with a lipplug (MS182/184). Maybe this is another title, e.g. a certain sacred honorific title, meaning that the name of the ruler is not mentioned until column L. As described in ch. A.2.1, I propose that this sacred title relates K’up Aj-K’ul to the god also shown attached to the head of the individual depicted largely on the stela,¹ which I provisionally call “God X”, so this god can be interpreted as K’up Aj-K’ul’s patron/tutelary deity. Alternatively, this sign may be part of K’up Aj-K’ul’s name, which would then appear in column L in its full form.

F6–G6: “It was opened a day and the following day” means that two (successive) days passed by (see also ch. A.2.1).

G7–H2: *Ø-nap.ax* is again a coordinating clause (see ch. A.3.4).

H3–J4: These sentences state that 13 “tuun” periods and 6 twenty day periods (“months”) elapsed (“have been tied” and “have come down” where the latter should be understood as “have appeared”). Together with the two days mentioned before, the long count date then arrived from 8.5.3.3.5 – the date mentioned in column A – at 8.5.16.9.7 which is the date given in column M. This is also the date the stela was carved/completed as column L finally tells. For the decipherment of time measuring terms, see ch. A.2.1.

K2–3: “He was seated” certainly means that he was the ruler during all these years.

K4–L3: The sentence “On the left side, ‘God X’ K’up Aj-K’ul is striding” directly refers to the accompanying iconographic depiction of the ruler, which is indeed on the left side of the stela. The additional **t’e** phonogram (MS101) in K6 is certainly a mistake by the scribe (this sign seems also more indistinct as compared to the same sign in K4 which could be a result of the scribe’s attempt to disguise his mistake). Note that the additional **xa** at L0 was included parallel to the finding that the repeated arm sign in U5 is suppressed (in this case, clearly two successive **ti** phonograms are expected, but only one appears; see the corresponding comment in ch. B.2.4). The first **xa** then gives the incompletive, while the second **xa** renders the verbal expression “to stride”. If the reader is skeptical about this, note that one may as well read only one **xa** which would then render the verbal phrase as a completive. For the ruler’s name, see ch. A.2.1.

L4–9: These last two sentences finally relate that this stela was completed, i.e. that

¹Taube (2004:33) proposed that this god is the maize god as its graphic representation is presumably cognate to other eastern Mesoamerican representations of this deity. The other parts of the elaborated ruler’s headdress on the LM were described as “Shark Monster” (Arnold III 2005).

the events during the reign of K'up Aj-K'ul were recorded (“it has been remembered”; the actual records of the events are found in the second inscription on the stela) and the inscription together with the accompanying iconography was manufactured (“it has got chiselled”).

B.2.3. La Mojarra Stela, Inscription 2 (Columns M–V): Text

M1-4	M5-7	M8	M9	M10-14	M15	
ʔo-ju-je-ye	yu-t'e-xa	ʔAJ	15-POP	8.5.16.9.7	[5] CHEJ	
<i>Ø-ʔooj.jey</i>	<i>Ø-yut'ex</i>	<i>Ø-ʔahj(.uj)</i>	<i>lajuj-bo? ?</i>	<i>8.5.16.9.7</i>	<i>[bo?] chej</i>	
3ABS-go.DEI	3ABS-tie.MP(COM)	3ABS-count(PASS).IS(COM)	NUM MN	LC	NUM DN	
Before	it has got tied,	it has been counted:	July 13, 156 CE, day [5] Deer.			
N1	N2-4	N5-6	N7-8	N9-10	N11-13	N14
4	ʔa-tu-k'ii^{ja}	yu-ʔo	JAAB^{bc}	k'u-xa	yu-ʔa^{7a}ʔAK'UT	JAAB
<i>chaj</i>	<i>ʔat=k' iij</i>	<i>Ø-yu-ʔo(y./)</i>	<i>jaab</i>	<i>Ø-k'ux.a?</i>	<i>yu-ʔak'ut</i>	<i>jaab</i>
NUM fellow=day	3ABS-3ERG-wait.TS(COM)	year	3ABS-repose.IS(COM)	3ERG-dance	year	
4 succeeding days, he has waited.		A year, he has reposed.		There was his dance.		The year,
N15-18	N19	N20-21	N22-23	N24-27		
ja-ju-k'ol^o	xa	yu-nu^{nu}*NUP	yu-ʔiiX.AAL	yu-to^{to}-bv^{bv}TOB		
<i>Ø-jaaj.k'ol</i>	<i>xa(n)</i>	<i>Ø-yu-nup(./.)</i>	<i>yu-ʔiix.aal</i>	<i>Ø-yu-tob./</i>		
3ABS-true.DM.INCH(COM)	moreover	3ABS-3ERG-marry.TS(COM)	3ERG-wife	3ABS-3ERG-join.TS(COM)		
it has become true.	Moreover,	he has married	his wife.	He/she has joined her/him.		
N28-29	N30-31	N32-33	N34	N35	N36	N37-N38
k'i-bi	[...] (k'u-k'i)	*xan	LEM	T'AK	tu*ju	xa BE.IN.TRANCE
<i>k'ib</i>	<i>? k'uk'</i>	<i>xan</i>	<i>lem</i>	<i>Ø-t'ahk(.ey)</i>	<i>tuj</i>	<i>x Ø-?</i>
jar	? quetzal feathers	also	mirror	3ABS-complete(PASS).IS(COM)	“tuun”	INC 3ABS-be.in.trance
A jar,	[...] quetzal feathers	and also	a mirror.	It has been completed	a “tuun”.	He was in trance
O1	O2-3	O4-5	O6-8	O9	O10-11	O12
13	k'i-ja^{7ak'7}ʔAK'B.AAL^{ja}	jaj-lo		GOD.X	k'UP-ʔa-k'ul	ʔo*cha
<i>lajuj-ʔux</i>	<i>k' iij</i>	<i>ʔak'b.aal</i>	<i>Ø-jaaj.ol</i>	<i>?</i>	<i>k'up(./.)</i>	<i>ʔaj=k'ul</i>
NUM	day	night	3ABS-true.INCH(COM)	?	cut.NLZR enemy	3ABS-enter.IS(COM)
13 days and nights		it has become true.		“God X”He, Who Cuts Down The Enemy, he has entered.		
O13-14	O15-16	O17	O18-20	O21-22	O23	
LAJ-xa	TAM-ʔo	TAK	tu*ju^{ju}-bu	ti-cho	BIIT'	
<i>Ø-laj.ax</i>	<i>Ø-tam.o(w)</i>	<i>Ø-tahk(./.)</i>	<i>tuj.ub</i>	<i>Ø-tich.o/</i>	<i>biit'</i>	
3ABS-finish.MP(COM)	3ABS-occur.IS(COM)	3ABS-chose(PASS).IS(COM)	stone	3ABS-begin.IS(COM)	stela	
It has got finished.	It has occurred:	It has been chosen	a stone.	It has begun:	A stela,	
O24-25	O26	O27-28	O29	O30	O31	
ʔo*chi-chan	ta?ʔANAM	[...] PAN-xa	JAAB	LAJ	?	
<i>Ø-ʔooch.an</i>	<i>ta? ʔanam</i>	<i>? Ø-pan.ax</i>	<i>jaab</i>	<i>Ø-lahj(./.)</i>	<i>?</i>	
3ABS-enter.MID(COM)	PREP ground	? 3ABS-dig.MP(COM)	year	3ABS-finish(PASS).IS(COM)	?	
it has entered	(into) the ground.	[...] It has got dug.	A year,	it has been finished.	?	
O32-33	O34-36	O37-P3	P4	P5-7	P8-10	
ju^{ju}*JUJ^{ji}	yu-T'EK^{t'ek}-yu	ʔAJ^{ji}-ju-na	T'AK	yu-^{tiy}TIY	ʔi-xa^{7iix}ʔIIX.AAL	
<i>juuj</i>	<i>Ø-yu-t'ek.yu</i>	<i>Ø-ʔaj.un</i>	<i>Ø-t'ahk(.ey)</i>	<i>yu-tiy(.Vw)</i>	<i>ʔiix.aal</i>	
book	3ABS-3ERG-stab.TS(COM)	3ABS-read.MID(COM)	3ABS-complete(PASS).IS(COM)	3ERG-shed.NLZR	wife	
a book.	He has stabbed her.	He has read.	It has been completed	the shedding of (his) wife.		

P11-13	P14	P15-16	P17-18	P19-20
TAM-ʔo-wV	ʔAJ	^{ja} J AAB	YUT ^ʔ -ji	ʔAJ ^ʔ -ju-ja
Ø-tam.ow	Ø-ʔahj(.uj)	jaab	Ø-yuht ^ʔ .ej	Ø-ʔahj.uj
3ABS-occur.IS(COM)	3ABS-count(PASS).IS(COM)	year	3ABS-tie(PASS).IS(COM)	3ABS-count(PASS).IS(COM)
It has occurred:	It has been counted	the year.	It have been tied,	it have been counted

P21	P22	P23	P24-26	P27-29	P30-31	P32	P33
10	tu·ju	ti	T ^ʔ EK-ku-xa	yu-ʔo-t ^ʔ e	yu-ʔAAT	[...]	[yu]-LET.BLOOD
lajuj	tuj	Ø-ti(hy.e/)	Ø-t ^ʔ ek.ux	yu-ʔoot ^ʔ	yu-ʔaat	?	Ø-[yu]-?
NUM	“tuun”	3ABS-shed(PASS).IS(COM)	3ABS-stab.MP(COM)	3ERG-skin	3ERG-penis	?	3ABS-3ERG-?
10	“tuuns”.	It has been shed,	it has got pierced	the skin of his penis.	[...]	He has let	

P34-35	P36-37	P38	P39-40	P41	P42-Q1
^{chi} CHICH ^ʔ	TAK-ku·na	BAK	^{xa} xan	ʔEEL	yu-ʔa ^ʔ AAL
chich ^ʔ	Ø-tak.un	bak	xan	Ø-ʔeel(.ey)	Ø-yu-ʔaal(.aʔ)
blood	3ABS-choose.MID(COM)	captive	also	3ABS-appear.IS(COM)	3ABS-3ERG-give.birth.TS(COM)
blood.	He has elected (for himself)	a captive. Moreover,	it has appeared:	She has given birth	

Q2-3	Q4-5	Q6-7	Q8	Q9-11	Q12	Q13
t ^ʔ e-ja	(ʔAK ^ʔ -k ^ʔ a)	^{ju} JUJU ^{ji}	ʔAJATIK	(YU-ʔ)ʔIIX.AAL ^{xa-IV}	T ^ʔ AK	tu·ju
t ^ʔ e(le)j	Ø-ʔahk ^ʔ .a/	juuj	ʔajatik	yu-ʔiix.aal	Ø-t ^ʔ ahk(.ey)	tuj
boy	3ABS-give(PASS).IS(COM)	book	ruler	3ERG-wife	3ABS-complete(PASS).IS(COM)	“tuun”
to a boy.	It has been given	a book	(to) the ruler’s wife.	It has been completed	a “tuun”.	

Q14	Q15-16	Q17-19	Q20-21	Q22-23
GOD.X	k ^ʔ UP-ʔa·k ^ʔ ul	yu-ti-ye	(T ^ʔ EK-ku·xa)	(chan-ni)
?	k ^ʔ up(./) ʔaj=k ^ʔ ul	Ø-yu-tiy.ey	Ø-t ^ʔ ek.ux	Ø-chan.i/
?	cut.NLZR enemy	3ABS-3ERG-shed.TS(COM)	3ABS-stab.MP(COM)	3ABS-halt.IS(COM)
“God X”	He, Who Cuts Down The Enemy,	he has shed it (blood),	he has got pierced.	He has halted,

Q24-27	Q28-29	Q30-31	Q32-34	Q35	Q36	Q37
xa- ^{ye-IV} YE ^ʔ	KOJ-ju	k ^ʔ i-ja	^{xa} xan ^{na}	ʔich	ʔEEL	ja
x Ø-yeh ^ʔ ./	koj.u(w)	k ^ʔ iij	xan	ʔich	Ø-ʔeel(.ey)	jaʔ
INC	3ABS-give(PASS).IS(COM)	royal headdress	day	also	already	3ABS-appear.IS(COM)DEM
it was given	the royal headdress.	There was a day,	also this has already appeared:			

Q38-39	Q40-42	Q43-45	Q46	Q47-48	Q49
wich-k ^ʔ u	YUT ^ʔ -k ^ʔ ol ^{ʔa}	^{ja} jaj-lo	cho	^{xa} xan	TUJ
Ø-wich.k ^ʔ .u/	Ø-yut ^ʔ .k ^ʔ .ol	Ø-jaaj.ol	choʔ	xan	tuj
3ABS-quake.DM.IS(COM)	3ABS-tie.DM.INCH(COM)	3ABS-true.INCH(COM)	indeed	another	“tuun”
it has quaked/trembled.	Then it has become tied,	it has indeed become true/real	another “tuun”.		

R2-3	R1	R4	R5-6	R7-8
LAJ-xa	BALAM	JACH ^ʔ ·to	^{ja} APPEAR.AT.HORIZON	STAR(VENUS)-xa
Ø-laj.ax	balam	Ø-jach ^ʔ .at	Ø-ʔ(./)	?
3ABS-finish.MP(COM)	jaguar	3ABS-eat.PASS(COM)	3ABS-appear.at.horizon.IS(COM)	star (venus)
It has got finished.	The jaguar,	he has been eaten.	It has appeared at the horizon	the Venus.

R9-10	R11	R12-13	R14	R15-16	R17-18	R19
BE.IN.TRANCE	9	k'i-ja	BALAM	ʔEEL-ku	yu-ʔAK'UT	JAAB
∅-?	<i>belew</i>	<i>k'iij</i>	<i>balam</i>	<i>∅-ʔeel.k.u/</i>	<i>yu-ʔak'ut</i>	<i>jaab</i>
3ABS-be.in.trance	NUM	day	jaguar	3ABS-emerge.DM.IS(COM)	3ERG-dance	year
He has been in trance	nine days.		The jaguar,	he has emerged.	There was his dance.	The year,
R20-22	R23-25	R26	R27	R28-29	R30-31	
ja-ʔaj-k'ol	^{chan-li} CHAN	JAAB	ʔAK'B.AAL	yu-ʔAK'	ba-k'i	
<i>∅-jaaj.k'ol</i>	<i>chan.il</i>	<i>jaab</i>	<i>ʔak'b.aal</i>	<i>∅-yu-ʔak'(u)</i>	<i>baak'</i>	
3ABS-true.DM.INCH(COM)	3ABS-halt.INCH	year	night	3ABS-3ERG-give/put.TS(COM)	grain	
it has become true.	It has become halted	the year (and)	the night.	He has donated	grains.	
R32-33	R34-35	R36	R37-39	R40-43		
WAT'-t'e	yu-TIY	[...]	yu-cho-tu	xa-yu-t'ak-cha		
<i>∅-wat'.e(y)</i>	<i>∅-yu-tiy(.ey)</i>	?	<i>yu-cho-t</i>	<i>x ∅-yu-t'ak.ch.a?</i>		
3ABS-pass.by.IS(COM)	3ABS-3ERG-scatter.TS(COM)	incense/blood(?)	his seat	INC 3ABS-3ERG-wash.APPL.TS(INC)		
He has passed by.	He has scattered/shed	incense/blood(?).	His seat,	he was purifying it for		
R44-47	R48-S1	S2	S3-4	S5-6		
yu-T'ELEJ^{t'e-le}	ʔa-ju-na	T'AK	ti-ta	cho-ju		
<i>yu-t'elej</i>	<i>∅-ʔaj.un</i>	<i>∅-t'ahk(.ey)</i>	<i>∅-ti?at</i>	<i>chooj</i>		
3ERG-boy	3ABS-read.MID(COM)	3ABS-complete(PASS).IS(COM)	3ABS-incorporate.PASS(COM)	cougar		
his son.	He has read.	It has been completed.	It has been incorporated	a cougar.		
S7-8	S9-12	S13-17	S18-19	S20-22		
t'e-T'ELEJ	ʔik'-xa	yu-t'AP-ba-ʔa	k'u-pi	PAN^{pa-na}		
<i>t'elej</i>	<i>∅-ʔik'.ix</i>	<i>∅-yu-t'ap.ba?</i>	<i>∅-k'uhp.i(j)</i>	<i>∅-pahn.a/</i>		
boy	3ABS-bring.MP(COM)	3ABS-3ERG-erect.CAUS.TS(COM)	3ABS-carve(PASS).IS(COM)	3ABS-dig(PASS).IS(COM)		
The boy, he got brought.	He has caused to erect (a stela).	It has been carved,	it has been dug.			
S23	S24-26	S27-28	S29-30			
T'AK	xa-yu-T'AK	BIIT^{t'e}	chu-be			
<i>∅-t'ahk(.ey)</i>	<i>x ∅-yu- t'ak(/)</i>	<i>biit'</i>	<i>∅-chub.ey</i>			
3ABS-complete(PASS).IS(COM)	INC 3ABS-3ERG-complete.TS(INC)	stela	3ABS-come.down.IS(COM)			
It has been completed.	He was completing	the stela.	It happened:			
S31-33	S34	S35-36	S37-38			
ʔa-ju-na	T'AK	xxan	T'AK-ye			
<i>∅-ʔaj.un</i>	<i>∅-t'ahk(.ey)</i>	<i>xan</i>	<i>∅-t'ahk.ey</i>			
3ABS-read.MID(COM)	3ABS-complete(PASS).IS(COM)	moreover	3ABS-complete(PASS).IS(COM)			
He has read	It has been completed.	Moreover,	it has been completed			
S39-42	S43-44	S45-46	S47	S48		
ʔak'[ʔAK'B.AAL]^{ba-le}	YUT'-t'e	xan^{na}	TIY	JOM		
<i>ʔak'b.aal</i>	<i>∅-yuh't'.e(j)</i>	<i>xan</i>	<i>∅-tihy(.e/)</i>	<i>jom</i>		
night	3ABS-tie(PASS).IS(COM)	moreover	3ABS-scatter(PASS).IS(COM)	incense		
the night.	It has been tied (a year?).	Moreover,	it has been scattered	incense.		

S49-50	S51-T2	T3-4	T5-6	T7-8		
yu-ba	yu-^taT'AP-ba	BIIT^{te}	na-xa	yu-t'e		
<i>yu-baa?</i>	<i>Ø-yu-t'ap.b.a?</i>	<i>biit'</i>	<i>Ø-na?ax</i>	<i>Ø-yuht'.e(j)</i>		
3ERG-self	3ABS-3ERG-erect.CAUS.TS(COM)	stela	3ABS-remember.MP(COM)	3ABS-tie(PASS).IS(COM)		
He himself was it, he has caused to erect		a stela.	It has got remembered.	It has been tied		
T9-10	T11-12	T13-14	T15	T16	T17-18	
1*JAAB^{bi}	CHAN-ni	xa-?o	BALAM	?iich'	t'ek-?ux	
<i>juun jaab</i>	<i>Ø-chan.i/</i>	<i>x Ø-?o(hy./)</i>	<i>balam</i>	<i>?iich'</i>	<i>Ø-t'ek.ux</i>	
NUM year	3ABS-halt.IS(COM)	INC 3ABS-await(PASS).IS(INC)	jaguar	moon	3ABS-stab.MP(COM)	
one year.	He has halted	It was being awaited:	The Jaguar Moon,	he has been stabbed.		
T19-20	T21	T22	T23-24	T25-28	T29	T30
BE.IN.TRANCE	13	TUJ	?EEL-ku	xa-^{ye}?na	ja	xa
<i>Ø-?</i>	<i>lajuj-?ux</i>	<i>tuj</i>	<i>Ø-?eel.k.u/</i>	<i>x Ø-ye?.an</i>	<i>ja?</i>	<i>xa(n)</i>
3ABS-be.in.trance	NUM	tuun	3ABS-appear.DM.IS(COM)	INC 3ABS-show.MID(INC)	water	moreover
He has been in trance. 13 “tuuns”		have appeared.		It was showing (itself)	water. Moreover,	
T31-32	T33	T34-36	T37-38	T39-40	T41-43	
WAT'-t'e	ba	xa-yu-tol	na-wa	YUT'-t'e	yu-tu-jV	
<i>Ø-wat'.e(y)</i>	<i>(yu)-baa?</i>	<i>x Ø-yu-tol(/)</i>	<i>na?.aw</i>	<i>Ø-yuht'.e(j)</i>	<i>yu-tuj</i>	
3ABS-pass.by.IS(COM)	3ERG-self	INC 3ABS-3ERG-tell.TS(INC)	know.NLZR	3ABS-tie(PASS).IS(COM)	3ERG-“tuun”	
he has passed by.	He himself, he was reciting		the knowledge.	It has been tied	his “tuun”.	
T44-45	T46-48	U2-3	U4-5	U5-6		
^{ie}T'ELEJ	?i-k'i-xa	?-yu-JUT'	yu-ti	ti-ta		
<i>t'elej</i>	<i>Ø-?ik'.ix</i>	<i>? Ø-yu-jut'.(uw)</i>	<i>Ø-yu-ti?(.iy)</i>	<i>Ø-ti?.at</i>		
boy	3ABS-bring.MP(COM)	3ABS-1ERG-imbibe.TS(COM)	3ABS-1ERG-incarnate.TS(COM)	3ABS-incarnate.PASS(COM)		
The boy, he has got brought. He has imbibed it,		he has incorporated it.		It has been incorporated		
U7-8	U9-10	U11-12	U13-14	V1-2	V3	V4
cho-ju	^{7a}7AK'	wa-ja	ba-xa	yu-t'e	12 [sic]	JAAB
<i>chooj</i>	<i>Ø-?ahk'.(a/)</i>	<i>waj</i>	<i>Ø-baj.ax</i>	<i>Ø-yuht'.e(j)</i>	<i>lajuj-[/ux]</i>	<i>jaab</i>
cougar	3ABS-give(PASS).IS(COM)	tortilla	3ABS-chisel.MP(COM)	3ABS-tie(PASS).IS(COM)	NUM	year
a cougar. It have been given		tortillas.	It has got chiseled.	It have been tied	1[3] years.	
V5-6	V7-8	V9-10	V11-12	V13-14	V15	
^[chu]CHUB	(^{iu},JUUP^{ji})	[PAK]-xa	yu-CHOJ	ju-je	WAT'	
<i>Ø-chub(.ey)</i>	<i>juuj</i>	<i>Ø-pak.ax</i>	<i>Ø-yu-choj.i(y)</i>	<i>juuj</i>	<i>Ø-wat'.(ey)</i>	
3ABS-come.down.IS(COM)	book	3ABS-fold.MP(COM)	3ABS-3ERG-put.TS(COM)	book	3ABS-pass.by.IS(COM)	
It has happened:	A book,	it has got folded.	He has put/used	the book.	It has passed by.	
V16-18	V19-20	V21-23	V24-26	V27-30		
[ji]-li-xa	na-?e	tu-yu-xa	K'UP^{pi}-ja	PALAJ^{bi}LAJ-xa		
<i>Ø-[ji]l.ix</i>	<i>Ø-nah?.e/</i>	<i>Ø-tuy.ux</i>	<i>Ø-k'uhp.ij</i>	<i>palaj Ø-laj.ax</i>		
3ABS-cease.MP(COM)	3ABS-know(PASS).IS(COM)	3ABS-fix.MP(COM)	3ABS-cut(PASS).IS(COM)	front 3ABS-finish.MP(COM)		
It has come to rest.		It has been remembered.	It has got fixed.	It has been carved the front. It has got finished.		

Running Translation

“(M) Aforetime, before it has got tied (the years) and (before) it has been counted: July 13, 156 CE, day 5 Deer, (N) there were 4 succeeding days he has waited, a year, he has reposed. (Then) there was his dance and so the year, it has become true/real. Moreover, he has married his wife, they have joined each other. A jar [has been placed in front of them(?)] [...] (about 10 signs missing) [It has been given(?)] quetzal feathers and also a mirror.

Then another ‘tuun’ period has been completed. While he was in trance, (O) it were 13 days and nights that have become true/real. It has been ‘God X’ K’up Aj-K’ul, ‘He, Who Cuts Down The Enemy’, who has entered. Then it (the ritual) has got finished. It has occurred: A stone has been selected and it has begun: A stela, it has entered the ground. [...] (about 8 signs missing) [And a hole(?)] It has got dug.

Then a year, it has been finished. A book [has been given(?)]. Then he has stabbed her (his wife) and has read (recited certain verses from the book) (P) so the (blood) shedding of (his) wife has been completed.

Then it has occurred: The year has been counted. 10 ‘tuun’ periods have been tied and have been counted, then it has been shed (blood) and the skin of his penis has got pierced. [...] (about 8 signs missing) [He] has donated blood and he has elected for himself a captive. Moreover, it has appeared: She has given birth (Q) to a boy. A book has been presented to the ruler’s wife.

Then another ‘tuun’ period has been completed. It has been ‘God X’ K’up Aj-K’ul, ‘He, Who Cuts Down The Enemy’, who shed it (blood) and who got pierced. He has halted while the royal headdress was given. One day this already happened: It (the earth) has quaked/trembled.

Then it has become tied and it has indeed become true/real: Another ‘tuun’ period, (R) it has been finished. The Jaguar (moon), he has been eaten and Venus has appeared at the horizon. Then he (K’up Aj-K’ul) has been in trance (for) nine days. The Jaguar (moon), he has emerged. Then there was his dance and so the year, it has become true/real.

Then the year and the night have become halted and he has donated some grains/seeds. He has passed by and shed/scattered it [the grains?/incense?/blood?]. His seat, he was purifying it for his son. He (K’up Aj-K’ul) has read (he has recited some verses) (S) and it (the ritual) has been completed. Then a cougar has been impersonated and the boy, he has got brought/carried. Then he (K’up Aj-K’ul) has ordered to erect (a stela). It (an inscription) has been carved and it (a hole) has been dug, so it has been completed. While he was completing the stela, it has happened: He has read (he has recited some verses), so it (the dedication ritual) has been completed. Moreover, the night has been completed and it has been tied (the stela? a year?). Furthermore, incense has been scattered. He himself (K’up Aj-K’ul) was it, who has ordered to erect (T) the stela, so it has got remembered.

Then one year has been tied. He has halted, while it was being awaited: The Jaguar (moon), he has got pierced. (Then) he (K’up Aj-K’ul) has been in trance. 13 ‘tuun’ periods

have appeared. Water was showing (itself) up (it was raining). Moreover, he himself has passed by reciting the knowledge, so his ‘tuun’ period(s) has/have been tied. The boy, he has got brought/carried and (U) [?] he has imbibed it, he has incorporated it: A cougar has been impersonated and tortillas have been given. It has got chiseled/carved.

(V) 1[3] years have been tied. It happened: A book, it has got [(un)folded]. He has put/used the book. It has passed by and it has got ceased. It has been remembered, it has got recorded. The front (text) has been carved. It has got finished.”

B.2.4. La Mojarra Stela, Inscription 2 (Columns M–V): Comment

The second inscriptions gives an account of the events that took place between ruler K’up Aj-K’ul’s accession, which was reported in the first inscription, and the erection of this stela. These are:

- After one year (360- or 365-day period), i. e. on 8.5.4.3.5 or on 8.5.4.3.9 (see comments below): dancing ritual as part of his first throne anniversary (N1–18)
- Without specific date (either within the first year or after it): K’up Aj-K’ul’s marriage (N19–34)
- When another “‘tuun’ period has been completed”, i. e. on 8.5.5.3.5: K’up Aj-K’ul being in trance for several days as part of his second throne anniversary (N35–O14)
- Without specific date (maybe also as part of his second throne anniversary): A first stela has got erected (O15–28)
- When “a year has been finished” (exact date unclear): Blood shedding ritual of his wife (O29–P10)
- When “ten ‘tuun’ periods have been tied” (counted from K’up Aj-K’ul’s accession on), i. e. on 8.5.13.3.5: K’up Aj-K’ul’s penis got pierced and he elected a captive (for public execution?) as part of his tenth throne anniversary (P11–38)
- Without specific date: K’up Aj-K’ul’s son was born (P39–Q11)
- When another “‘tuun’ period has been completed”, i. e. on 8.5.14.3.5: K’up Aj-K’ul participated in another blood letting ritual as part of his eleventh throne anniversary (Q12–29)
- Without specific date: an earthquake took place (Q30–39)
- When another “‘tuun’ period has become real”: K’up Aj-K’ul being in trance as part of his 13th (see comments) throne anniversary after the same celestial constellation as reported for K’up Aj-K’ul’s enthronement date had appeared 9 days earlier (Venus as morning or evening star and new/descrescent moon or lunar eclipse) (Q40–R22)

- Without specific date: the throne got prepared for his son and a stela has been erected (R23–T6)
- When “one year has been tied” and Venus appeared again (date unclear): K’up Aj-K’ul being in trance (T7–20)
- When “13 ‘tuun’ periods have appeared” (counted from K’up Aj-K’ul’s accession on), i. e. on 8.5.16.3.5: K’up Aj-K’ul participates in a ritual as part of his 13th throne anniversary (T21–U14)
- On 8.5.16.9.7: The La Mojarra Stela 1 has been completed and dedicated (V1–30)

Since the pH term *jaab* can relate to both, the 365-day solar year and the 360-day “tuun” period (this follows from the first inscription on the LM where it is stated that 13 *jaab* have been tied but apparently “tuun” periods are meant), it remains often unclear when certain events actually took place: A sentence like “A year has been tied” may therefore mean (a) that 365 or 360 days elapsed since the last mentioned event (b) that a new “haab” began (c) that a “tuun” period was completed corresponding to a long count date 8.5.X.0.0, or (d) that a “tuun” period of the reign of K’up Aj-K’ul has been completed corresponding to a long count date 8.5.X.3.5.

Interestingly, the whole text from the La Mojarra Stela 1 gives primarily account of the throne anniversaries of K’up Aj-K’ul. Despite some allusions on the preparation of his son’s future throne accession, the stela reports (almost) no other events like, for instance, military campaigns (an exception is, e. g., the statement that an earthquake took place). His family members, i. e. his wife and his son, remain nameless indicating that this stela is solely dedicated to K’up Aj-K’ul and his reign which may have been part of a general political agenda.

M1-4: Ø-?ooj.jey indicates that everything reported in columns N–V took place prior to the date given in M9–15, i. e. in the years between 8.5.3.3.5 (accession of K’up Aj-K’ul) and 8.5.16.9.7 (completion of the La Mojarra Stela).

M9: The month name (MS156) could not be deciphered in pH due to the single occurrence of this sign showing a certain serpent. Following standard Mayan calendrical arithmetic, it should be a month corresponding to Yucatec *pop*. See also Méluzin (1992:289–290).

M15: The numeral 5 can be reconstructed considering Mayan calendrical arithmetic. The day sign corresponding to Yucatec *manik*’ has been identified as a deer (Macri 2017c), pH **chej*.

N1-18: The sign compound in N2 is presumably an awkwardly written₂ version of the compound in G4. “4 succeeding days he has waited, a year, he has reposed” certainly means that K’up Aj-K’ul did not participate in rituals or military campaigns within the first year of his reign (maybe due to cultural restrictions?). I assume that “year” means here a period

of 360 days, so that 4 days + 360 days gives 364 days (i. e. the date 8.5.4.3.9). The dance ritual which is reported for this date will then – provided it lasted the following night – end with the completion of a full 365-day period, i. e. a full solar year. This is announced with the phrase “The year, it has become real”. The verbal phrase has parallels in R20–22, O6–8 and Q43–45 (see also ch. A.2.1).

N19–23: “He has married his wife.” Note that his wife (as well as his son in Q2–3) remains nameless which is in contrast to later Classic Mayan accounts on similar stelae.

N28–34: The word “jar” is still recognizable on the LM but the following signs (about 10) are corrupted. I propose something like “A jar [has been placed in front of them(?)]” which would then refer to a wedding custom attested from late precolonial and early colonial Mesoamerican codices where frequently the marriage of two individuals is iconographically written₁ by means of a richly filled container placed in front of the seated/kneeling couple. But the spatio-temporal distance between Isthmian writing₂ and these attestations recommends caution. The same is true for the following signs for which I propose that they also relate to wedding customs, i. e. a bestowing of certain precious objects (“quetzal feathers and a mirror”). For this interpretation, however, one has to assume an accidental metathesis of the signs in N30–31, so this proposal remains uncertain.

N35–36: “It has been completed a ‘tuun’ period” very likely refers to the second throne anniversary of K’up Aj-K’ul, but it could, in principle, refer also to the date 8.5.5.0.0.

N38: For the sign MS89 *BE.IN.TRANCE* compare the sign sequence T19–20 involving the same sign. I interpret the head sign MS178 in T20 (and in the parallel sequence in R10) showing an individual whose head is partially covered with a certain object as a symbol for “being in trance”, or, to be more precise, a morphogram for a verb which expresses this state. MS89 is maybe a phonogram that matches (approximately) the phonetic shape of this verb for it appears in N38 without MS178 to write₂ this verb. But since the corresponding verb could not be ascertained, its presumably phonographic reading remains indetermined.

O12: The meaning of “he has entered” is unclear. Maybe it relates to the change of K’up Aj-K’ul’s status during or after the ritual whose completion is announced in the following sentence.

O26: The sign attached to MS44, i. e. MS134, is solely attested in this compound. I propose the reading as preposition *taʔ* (or *tiʔ*) but maybe it constitutes together with MS44 another sign with a divergent meaning. The interpretation is, however, complicated by the fact that the following signs (about 8) are illegible, so the full context is not reconstructable any longer.

O29–30: I suppose that MS90 is nothing but a failed version (or graphic variant) of MS91. The sentence “A year, it has been finished” can mean (a) that a “haab” period was completed, (b) that a “tuun” period was completed corresponding to the date 8.5.6.0.0, or (c) that a “haab” or “tuun” period elapsed since the last reported event.

O31–P10: As other rituals reported in the Isthmian writing₂ texts involve the presenta-

tion of a book, I assume that the corrupted sign in O₃₁ is a morphogram for this action. In this ritual, K'up Aj-K'ul apparently performs a blood letting ritual on his wife while he recites some verses from this book (the middle voice in *Ø-ʔaj.un* may also indicate that he is reading for himself during this act).

P11-16: The sentences “It has occurred: The year has been counted.” seem to be superfluous, but I assume they have an affirmative function and were included intending to emphasize that the completion of the 10 “tuun” throne anniversary of K'up Aj-K'ul announced in the next sentences was indeed determined correctly.

P17-35: “Ten ‘tuun’ periods have been tied and have been counted” certainly refers to the 10 “tuun” throne anniversary of K'up Aj-K'ul, i. e. the date 8.5.13.3.5 (compare the Classic Mayan honorific title “(He is) a XX ‘tuun’/‘k’atuun’ *ahaw*”). As part of this anniversary he performed a blood letting ritual (“It has got pierced the skin of his penis.”). Since P₃₃₋₃₅ still report from this ritual, the missing signs (about 8 signs) probably relate to the same event (maybe that some verses were recited during the ritual; compare the notes on O_{31-P10}).

P36-38: The sign in P₃₇ is clearly some variant of MS_{124a} **ku** but it shows a suspicious modification: the lower right edge is missing. I suspect a play on words/signs: Since the scribe seemingly forgot something the sign additionally provides a phonogram **na** (< pH **naaj* “to forget sth.”), which would indicate a middle voice intransitivizing the transitive root *tak* “to choose sth.” This indeed makes sense, since an ergative pronoun is apparently absent. The meaning of the sentence “He has elected for himself a captive.” remains, however, vague since further information on this event are not provided, but it is conceivable that this is also part of his anniversary. The captive is possibly destined for a public execution performed by K'up Aj-K'ul (remember that his name translates “He, Who Cuts Down The Enemy”).

Q2-3: I assume that **t'e-ja** is a defective writing₂ of the lexeme *t'elej* “boy” which repeatedly appears in later parts of the text.

Q4-11: The sign sequence MS₂₆-MS_{149b} is certainly an accidental metathesis since the former is very likely a complement for the latter. The sentence “A book has been presented to the ruler’s wife.” makes indeed sense: After giving birth to a child, the newborn’s destiny commonly was augured throughout Mesoamerica by consulting books with calendrical content, which may be also the case here.

Q20-21: Due to the conflated sign group in Q₂₁, the linear arrangement is interrupted here which results in a regular metathesis (see ch. A.2.1 and A.2.3).

Q22-29: I assume an accidental metathesis for the sequence MS₈₀-MS_{75a} in Q₂₂₋₂₃ because of the parallel sequence in T₁₁₋₁₂ (where MS_{75a} **chan** is substituted by MS₈₁ **CHAN**). The sentence “He has halted while the royal headdress was given” is, however, enigmatic. I suspect that K'up Aj-K'ul received a certain distinct royal headdress during the blood letting ritual which was performed as part of his eleventh throne anniversary.

Q38: The flower (pH **wich*) sign MS117 was used here in order to achieve a rebusoid writing₂ of pH **wich* “to quake”. See comments in the sign list.

Q40–R22: The whole passage has to be understood as relating to the same event, i. e. a ritual which was performed during nine days beginning with the celestial constellation that was also reported for his accession (“The Jaguar (moon), he has been eaten and Venus has appeared at the horizon.”) and ending with another ritual dance which, as in N11–18, correlated with the beginning of a new year. This means that both sentences, “Then it has become tied and it has indeed become true/real: Another ‘tuun’ period, it has been finished” in Q40–R3 and “so the year, it has become true/real” in R19–22, relate to the same anniversary. According to the series of throne anniversaries encountered so far, it should be K’up Aj-K’ul’s twelfth anniversary that is reported in this passage. There is, however, strong evidence that it is actually the 13th throne anniversary that is announced here (and also in T21–24) due to the following considerations: The text states that 9 days before the “tuun” has been completed, Venus appeared again, which also occurred on the day of K’up Aj-K’ul throne accession. Assuming that the 13th throne anniversary is meant, then $13 \times 360 \text{ days} - 9 \text{ days} = 4671 \text{ days}$ which corresponds to $4671 \text{ days} / 583.92 \text{ days} = 7.999 \approx 8$ synodic Venus periods, meaning that indeed 9 days before 13 “tuun” periods have elapsed the same Venus position could be observed. The consequence is thus, that about half of the inscription of the La Mojarra Stela relates to the 13th throne anniversary and everything that surrounded the ceremonies (erection of stela(e), preparation of the throne for his son, being in trance, performing a ritual dance, etc.).

R1–3: There is apparently an accidental metathesis, i. e. the jaguar sign should be read after the two signs that read “has got finished”, as a comparison with the parallel sequence B3–8 lets suggest.

R23–27: The statement “the year and the night have become halted” is enigmatic, but it may relate to a critical moment of the ritual reported in the next sentences (or may describe a certain celestial constellation?).

R28–S2: K’up Aj-K’ul is engaged in another ritual in which he donated certain grains and scattered something unknown (the sign in R36 is illegible). It may be that he scattered the aforementioned grains or something else, e. g. incense or blood. However, the most important part of the ritual seems to be the part recorded in the statement “His seat, he was purifying it for his son” which could mean that K’up Aj-K’ul prepares his throne for his son, who must have been a young child at that time. The exact age is not determinable since his birth was mentioned only *en passant* without giving a date (it is even unclear if this event took place after K’up Aj-K’ul’s tenth anniversary or at some time within the first ten years of his reign). However, again some verses were recited during this ritual. The next part, “Then a cougar has been impersonated and the boy, he has got brought/carried”, could indicate that the cougar is the *nagual* of K’up Aj-K’ul’s son. This interpretation, however, is based on the assumption that the verb *ti?* “eat (meat), incorporate” means

metaphorically “to impersonate”. This interpretation is supported by other appearances of this verb (e. g. on the FM).

S23–S42: This passage seems to come with some superfluous repetitions, but in fact the statements each relate to something specific: “it has been completed” in *S23* refers to the completion of the inscription and the hole, “while he was completing the stela” in *S24–28* refers to the completion of the dedication ritual (again this ritual is accompanied by the recitation of some verses and the scattering of incense), which is announced in *S34* with the phrase “It has been completed”. Furthermore, *S37–42* “the night has been completed” reports that this dedication ceremony was performed at night (some remnants of *MS167/168* **ʔAKʼB.AAL** are evident in *S40*).

S43–44: It is not clear to what the phrase “it has been tied” refers. One conceivable possibility is that it is the newly erected stela which has been tied within its dedication ceremony. Such stone bindings are certainly the origin of the iconic representation in *MS136* and phrases like “the year has been tied”.

S49–T4: The passage on the erection of a stela is concluded with the statement “He himself (*Kʼup Aj-Kʼul*) was it, who has ordered to erect the stela” emphasizing once again *Kʼup Aj-Kʼul*’s role (“he himself”), even though this was already announced in *S13–17*.

T25–29: It is unclear why the sentence “Water was showing itself” (reflexivity indicated by the middle voice) is reported in the context of his 13th throne anniversary. Maybe this sentence means nothing but “it was raining” which then may be the announcement of the beginning of the rainy season which coincided with his throne anniversary?

T34–38: “he was reciting the knowledge” is again the same *topos* encountered numerous hitherto, i. e. that anniversaries and dedication ceremonies are accompanied by the recitation of certain verses.

T39–43: The possessive pronoun in the phrase *yu-tuj* (with the 3ERG pronoun) within the sentence “his ‘tuun’ period(s) has/have been tied”² supports the interpretation that the stela reports “his” (i. e. *Kʼup Aj-Kʼul*’s) throne anniversaries.

U2–12: Since *U2–5* has a parallel on the FM (*C13–16*; there with 1ERG personal pronoun) and *U5–8* has a parallel in *S3–6*, we can reasonably assume that there should be two successive appearances of *MS45 ti* in *U5*. Apparently, the scribe wrote₂ only one **ti** sign which may be (a) accidentally, or (b) due to a writing₂ convention that a repetition of two same signs is avoided. In fact, no such repetitions can be found in the whole *corpus*. The parallel sequence on the LM (*U2–5*) and the FM (*C13–16*) lets suggest that it is a standard expression for ritual impersonations of deities or *naguales*: “He has imbibed it, he has incorporated it: a cougar has been incorporated” thus certainly means metaphorically that this animal has been impersonated within a certain ceremony. This ceremony seems to be accompanied by an offering, as the sentence “tortillas have been given” indicates. As stated

²Inanimate objects do not appear as plurals in pH – the “tuun” here probably has to be understood in a plural sense.

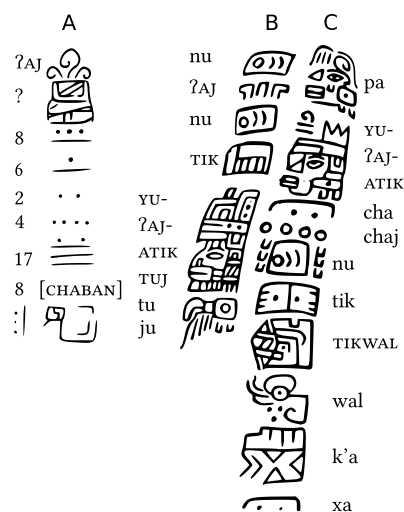
above, the 13th throne anniversary is accounted lengthily and it seems that this passage is nothing but a superfluous repetition of S₃-6 which reports the same ritual in the context of the same anniversary (but maybe the ceremony included two such rituals).

V₁₋₃₀: The ending sequence and the reconstruction of the illegible signs were discussed in detail in chapter A.2.1.

B.3. The Tuxtla Statuette

B.3.1. Tuxtla Statuette, Spell 1 (Columns A–C)

A1		
ʔAJ		
Ø-ʔahj(.uj)		
3ABS-count(PASS).IS(COM)		
It has been counted:		
A2	A3-7	A8-9
Ø-K'ANK'IN	8.6.2.4.17	8-[CHABAN]
?	8.6.2.4.17	waxak [chaban]
NUM MN	LC	NUM DN
March 14, 162 CE, day 8 [Earth].		
B1-2		B3-4
nu-ʔAJ		nu-TIK
Ø-nu-ʔaj(.iy)		Ø-nu-tik(/)
3ABS-1ERG-count.TS(COM)		3ABS-1ERG-order.TS(COM)
I have counted it,		I have ordered it,
B5-6		
YU-ʔAJATIK.TUJ ^{tu*ju}		
yu-ʔajatik tuj		
3ERG-lord year/stone		
the Lord Of The Year (or: "Tuun" Period).		
C1	C2-4	
pa	YU-ʔAJATIK- ^{cha} chaj	
Ø-pa?(/.ay)	yu-ʔajatik chaj	
3ABS-descend.IS(COM)	3ERG-lord heaven	
He has descended,	the Lord Of The Heaven.	
C5-8	C9-10	
nu- ^{tik} TIKWAL ^{wal} (or: nu-TIYIK-?-wal)	k'a-xa	
nu-tikwal (or: nu-tiyik wal)	Ø-k'ax.a/	
1ERG-heat (or: 1ERG-arm maize ear)	3ABS-pass.IS(COM)	
My heat,	it has passed by.	



“It has been counted: March 14, 162 CE. I have counted it, I have ordered it, (I,) the Lord Of The Year. The Lord Of The Heaven has descended, and it is my heat, that has passed by.”















B.3.2. Tuxtla Statuette, Spell 2 (Columns D, E)

D1-3	D4-5
nu - ^{tik} TIK	pe-cho
<i>Ø-nu-tik(/)</i>	<i>pech</i>
3ABS-1ERG-order.TS(COM)	boat-billed heron
I have ordered	the boat-billed heron.

D6-7	D8-9
xa-T'AK	8-chan
<i>x Ø-t'ahk(o/)</i>	<i>waxak cha(ba)n</i>
INC 3ABS-complete(PASS).IS(INC)	NUM DS
It was completed	(on the day) 8 Earth.

D10-?
xa ?
<i>x ?</i>
INC [...]
[...]

E1-3
^{tu} TUY-xa
<i>Ø-tuy.ux</i>
3ABS-fix.MP(COM)
It has got recorded.

	D	E	
nu			tu
tik			TUY
TIK			xa
pe			
cho			
xa			
T'AK			
8			
chan			
xa			
?			

“I have ordered the boat-billed heron (i. e. the statuette), (so) it was completed (on the day) 8 Earth. [...] It has got recorded.”

B.3.3. Tuxtla Statuette, Spell 3 (Columns F-I)

F1-2	F3	F4-5
ʔAAK ^{kh}	juu ^{ju}	PAK-ko
ʔaak'	juuj	∅-pahk.o/
new	book	3ABS-fold(PASS).IS(COM)
A new book,		it has been folded.

F6-7	F8-12
choj-ji	xa-nu-ba-ʔak'-k'a
∅-choj.i/	x ∅-nu-bak'.a?
3ABS-say.IS(COM)	INC 3ABS-1ERG-wrap.TS(COM)
He has spoken:	I wrap it.

F13	G1	G2-3
YUT'	WAT'	ji-li
∅-yuh ^t (.ej)	∅-wat'(ey)	∅-jihLi/
3ABS-tie(PASS).IS(COM)	3ABS-pass.IS(COM)	3ABS-cease(PASS).IS(COM)
It has been tied.	It has passed by.	It has been ceased.

G4	G5-6	G7-9
CHOJ	K'ooj ^h	xa-ʔo-ju
∅-choj(.i)	k'ooj	x ∅-ʔooj.u/
3ABS-put(PASS).IS(COM)	mask	INC 3ABS-go.IS(INC)
It has been put (on)	the mask.	He went away.

G10-11	G12-13
[yu]-bi	CHUB-be
[yu]-bij	∅-chub.e(y)
3ERG-name	3ABS-come.down.IS(COM)
[His] name,	it has come down.

H1-2	H3-4
LAJ-xa	[tu-yu]-xa
∅-laj.ax	[∅-tuy.u]x
3ABS-finish.MP(COM)	3ABS-fix.MP(COM)
It has got finished.	It has got [recorded].

I1-2	I3	I4-5
k'u-pi	ja	ju-cho
∅-k'uhp.i(j)	ja	juch.ow
3ABS-cut(PASS).IS(COM)	DEM	scratch.NLZR
It has been cut	this	inscription.

	F	G	H	
ʔAAK'			WAT'	
k'i			ji	
JUUJ			li	
ju				
PAK			CHOJ	[tu?]
ko				[yu?]
choj			K'ooj	
				xa
ji			ji	
xa			xa	I
nu			ʔo	
				k'u
ba			ju	
				pi
ʔak'			[yu?]	
			bi	
k'a			CHUB	
				ju
YUT'			be	
				cho

“A new book, it has been (un)folded and he (the priest?) has spoken: ‘I wrap it’. Then it has been tied. It has passed by and it has been ceased. The mask has been put on. While he/it went away, it was his name that has come down. It has got finished, it has got [recorded]. This inscription has been carved.”

Running Translation

“(A) It has been counted: March 14, 162 CE. (B) I have counted it, I have ordered it, (I,) the Lord Of The Year (‘Tuun’). (C) The Lord Of The Heaven has descended, and it is my heat, that has passed by.

(D) I have ordered the boat-billed heron (i. e. the statuette), (so) it was completed (on the day) 8 Earth. [...] (E) It has got recorded.

(F) A new book, it has been (un)folded and he (the priest?) has spoken: ‘I wrap it’. Then it has been tied. (G) It has passed by and it has been ceased. The mask has been put on. While he/it went away, it was his name that has come down.

(H) It has got finished, it has got [recorded]. (I) This inscription has been carved.”

B.3.4. Comment

The text on the TS is self-referential and gives account of the ordering and dedication of the statuette. Columns A–E can be characterized as recorded ritual speech: the words written₂ in 1st person singular were presumably spoken by a priest who impersonated the god who is named by his epithets “Lord Of The ‘Tuun’” and “Lord Of The Heaven”. Columns F–I, on the other hand, relate to the manufacturing and dedication process: The statuette receives its physical appearance, i. e. the mask-like face showing a boat-billed heron (“The mask has been put on”; G_{4–6}), its name (“His name, it has come down”; G_{10–11}), and its inscription (“This inscription has been carved”; I_{1–5}).

A₂: The “haab” date should correspond to *o k’ank’in* in Yucatec, which in Classic Mayan inscriptions correspond to the “seating” of the month. However, since the signs in A₂ are rendered indistinctly, an exact reading cannot be given.

A_{8–9} and D_{8–9}: The “tzolk’in” date clearly should be 8 *chaban* “8 Earth” following Mayan calendrical arithmetic. While the corresponding day sign in A₉ is corrupted, the coefficient 8 is still legible. The same numeral appears in D₈ again, followed by MS75a, which was consistently deciphered in other contexts as phonogram **chan**. This value is certainly derived from *chan* “snake” as MS75a shows a serpent’s head. Noting that the “tzolk’in” day sign for the day (*chik*)*chan* shows a different depiction of another serpent’s head, i. e. MS155 (LM: A₉), I propose that MS75a **chan** on the TS is a phonographic approximate rendering of the “tzolk’in” day *chaban*, maybe substituting the actual day sign which originally was written₂ in A₉ in order to avoid a repetition of the same sign. Indeed, the phrase “it was completed (on the day) 8 Earth” in D_{6–8} is in perfect accordance with the introductory year/day count.

B_{1–4}: I suspect a play on words: the verbs *?aj* “to count sth.” and *tik* “to order sth.” together match the word *?ajatik* “lord” almost completely, even though the etymology of the latter word is certainly a different one. Nevertheless, *?aj=tik* “he, who gives orders” as a conceivable (folk?) etymology, for instance, may play a role here. This assumed play on

words is by the way the only hint that pH “lord” was indeed *?ajatik* and not *?a(a)ja(a)w* as it would be if it were a regular descendant of the pM lexeme ***?aajaaw*.

B5-6 and *C2-4*: The interpretation as *yu-?ajatik tuj* is based on the fact that the individual of the head sign wears the royal headdress (*?ajatik*) and the *tuj* ear adornment (see also ch. A.2.1). I assume that the 3ERG pronoun is always implicitly present in such “Lord of ...” sequences (e. g. also in *C2*). Alternatively, one can as well transcribe *?ajatik tuj* “Lord ‘Tuun’” and *?ajatik chaj* “Lord Heaven” respectively. Note that the word *chan* is written₂ here phonographically by the numeral 4 **chaj** preceded by MS20a which indicates that the original value of the latter was indeed **cha** which later shifted to **xa** as proposed in chapter A.2.1. *C3-4* can therefore be seen as a conservative spelling of the word “heaven”. See FM A11 for another pH word for “heaven/sky”.

C5-10: This sentence has a parallel on the El Sitio Celt (see comments in B.1.2 and chapter A.2.1).

D1-5: *pech* in modern WM+ languages (see Kaufman 2003:617) means “duck”. I suppose that this lexeme in pH rather means “boat-billed heron” (it may therefore either be an original pM lexeme preserved today only in WM+ languages or a WM+ lexeme which at some time was borrowed into pH) as it is this bird that the statuette represents (Kaufman and Justeson 2001:2.82). The sentence “I (the aforementioned Lord Of The ‘Tuun’) have ordered the boat-billed heron” hence directly relates to the divinely ordering of the Tuxtla Statuette, whose completion is announced in the next sentence for the day 8 Earth.

D10-?: Since parallel sequences are lacking, the sequence *D10-?* cannot be reconstructed.

E1-2: This sequence was deciphered considering the parallel on the LM (*V21-23*) where the verb *tuy* is written₂ phonographically **tu-yu**. Literally meaning “to stick, fasten”, the context provides that it should rather be understood in the sense of “to record sth.”

F1-15: For the ending sequence and its parallel on the LM (*V1-30*), see chapter A.2.1.

F1-5: As attested numerously on the LM, the dedication ceremonies of ritually important objects involve the recitation of certain verses, commonly alluded by phrases like “a book has been given/(un)folded”.

F6-12: That MS149a, the hand sign, in this context is a rebus sign for the quotative verb *choj* “to say/speak”, is indicated by the fact that the following phrase changes to 1st person singular, while the preceding and succeeding sentences in this passage appear in 3rd person singular. Alternatively, if MS149a here reads **CHOJ** “to use, put sth.”, the sequence transcribes *Ø-choj.i(y)* “he has used/put it (the aforementioned book)”, but then the sentence “I wrap it” seems to be unfitting. Maybe the 1st person singular was erroneously written₂ by the scribe resulting from the fact that the first two spells on the TS were indeed expressed in the 1st person singular. Given these interpretations, the word *bak*’ “to wrap” was presumably used here in order to avoid a repetition of *pak* “to fold” in F4.

G1-3: The phrase “It has passed by and it has been ceased” (also on the LM: *V15-18*) possibly means that the dedication ceremony comes to its end.




























G4-6: I interpret the sentence “The mask has been put on” as a confirmation that the statuette received its mask-like appearance as a boat-billed heron. Maybe this can indeed be understood as indicating that the statuette in fact depicts rather a priest wearing such a mask, i. e. impersonating such a bird/deity.

G7-13: It is not entirely clear what “While he went away, it was his name that has come down” means. Does it mean that the statuette, i. e. the representation of the impersonated bird/god, finally received its name as the priest who has conducted the dedication ceremony backed down? However, since this interpretation grounds on the assumption that the partly corrupted sign in *G10* is *MS38* which is not beyond doubt, this interpretation remains uncertain.

B.4. The Feldspar Mask (Teotihuacan-style Mask)

B.4.1. Feldspar Mask, Spell 1 (Columns A, B)

A1-3	A4	A5-6	
K'OOJ ^{k'o-je}	xa	T'AK-ko	
<i>k'ooj</i>	<i>x</i>	<i>Ø-t'ahk.o/</i>	
mask	INC	3ABS-complete(PASS).IS(INC)	
The mask, it is completed.			
<hr/>			
A7-8	A9	A10	A11
ja-IV	YU-ʔAJATIK	13	ʔEEB
<i>Ø-jahl/</i>	<i>yu-ʔajatik</i>	<i>lajuj-ʔux</i>	<i>ʔeeb</i>
3ABS-change(PASS).IS(COM)	3ERG-lord	NUM	sky
It has been transformed the Lord Of The 13 Skies.			
<hr/>			
B1-2	B3-4		
ʔEEL-ku	yu-ʔEEL		
<i>Ø-ʔeel.k.u/</i>	<i>yu-ʔeel(.aw)</i>		
3ABS-emerge.DM.IS(COM)	3ERG-emerge.NMLZ		
It has emerged his appearance.			
<hr/>			
B5-6	B7	B8-9	B10-11
TIK-ku	ti	k'i-ji	5 KUWOK
<i>Ø-tihk.u/</i>	<i>ti</i>	<i>k'ij</i>	<i>bo? kuwok</i>
3ABS-order(PASS).IS(COM)	PREP	day	NUM DN
It has been ordered on the day 5 Rain.			
<hr/>			
B12-13	B14		
ʔo-ja	BALAM		
<i>Ø-ʔooj.aʔ</i>	<i>balam</i>		
3ABS-go.IS(COM)	jaguar		
It has gone the Jaguar.			

	A	B	
k'ooj			ʔEEL
k'o			ku
je			yu
xa			ʔEEL
T'AK			TIK
ko			ku
ja			ti
IV			k'i
YU-			ji
ʔAJ-			5
ATIK			KUWOK
13			ʔo
ʔEEB			ja
			BALAM

“The mask, it is completed. The Lord Of The 13 Skies has been transformed (into it). His appearance has emerged. It has been ordered on the day 5 Rain, (as) the Jaguar (the moon?) has gone.”

B.4.2. Feldspar Mask, Spell 2 (Columns D, C)

D1-2	D3-5
k'ooj^{je}	nu-ʔAK'-k'u
<i>k'ooj</i>	<i>∅-nu-ʔak'.u/</i>
mask	3ABS-1ERG-give/put.TS(COM)
The mask, I have given/put it.	

D6-7	D8-9	D10-13
nu-BOT'	k'i-ba	ʔooj^{je}-ba-ta
<i>∅-nu-bot'(/)</i>	<i>k'ib</i>	<i>∅-ʔooj.ba.t</i>
3ABS-1ERG-envelop.TS(COM)	jug	3ABS-go.CAUS.PASS
I have enveloped the jug. It has been brought away.		

D14-C1	C2-4
POKO^{ko-wa}WAL	nu-CHOJ-ji
<i>poko=wal</i>	<i>∅-nu-choj.i(y)</i>
old=face	3ABS-1ERG-put.TS(COM)
The "old-face", I have put it (on)/used it.	

C5-6	C7-8
nu-ʔAJ	10-LAAB
<i>∅-nu-ʔaj(.iy)</i>	<i>lajuj laab</i>
3ABS-1ERG-count.TS(COM)	NUM spirit
I have counted the ten spirits/naguales.	

C9-11	C12
nu-ʔEEL-la	BALAM
<i>nu-ʔeel.a(w)</i>	<i>balam</i>
1ERG-emerge.NLZR	jaguar
My guise (is) the Jaguar.	

C13-14	C15-17
nu-JUT'	nu-ti-ʔi
<i>∅-nu-jut'.(uw)</i>	<i>∅-nu-tiʔ.i(y)</i>
3ABS-1ERG-imbibe.TS(COM)	3ABS-1ERG-incorporate.TS(COM)
I have imbibed him. I have incorporated him.	

	C	D	
WAL			k'ooj
nu			je
CHOJ			nu
ji			ʔAK'
nu			k'u
ʔAJ			nu
10			nu
LAAB			BOT'
nu			k'i
ʔEEL			ba
la			ʔooj
BALAM			ji
nu			ba
JUT'			ta
nu			po
ti			POKO
ʔi			ko
			wa

“The mask, I have put it (down) and I have enveloped the jug, (which) has been brought away. The ‘old face’, I have put it (on) and I have counted the ten spirits. My guise is the Jaguar. I have imbibed it/him, I have incorporated it/him.”

B.4.3. Feldspar Mask, Spell 3 (Columns E, F)

E1	E2-8
K'OOJ	nu-^{PO}POKO^{KO}-^WWAL-li
<i>k'ooj</i>	<i>nu-poko=wal.il</i>
mask	1ERG-old=face.POSS
The mask (is)	my "old-face".





























E9	E10-11	E12-13
K'OOJ	nu-JAM	yu-wi?
<i>k'ooj</i>	<i>∅-nu-jam(./)</i>	<i>yu-wi?</i>
mask	3ABS-1ERG-open. TS(COM)	3ERG-mouth
The mask,	I have opened	its mouth.

E14	E15-16
?OOJ	JAAB-je
<i>∅-?ooj(.a?)</i>	<i>jaab.ej</i>
3ABS-go.IS(COM)	year.DEI
It has gone	a year.

F1-2	F3-4
^{TIK}TIK	9 CHEJ
<i>∅-tihk(.u)</i>	<i>belew chej</i>
3ABS-order(PASS).IS(COM)	NUM DS
It has been ordered	(on the day) 9 Deer.

F5-6	F7	F8-9
nu-?EEL	ja	KOP-?AJATIK
<i>nu-?eel(.aw)</i>	<i>ja?</i>	<i>kop ?ajatik</i>
1ERG-appear(NLZR)	DEM	fiery lord
My guise (is)	this	Fiery Lord.

F10-12
nu-JUT'-t'u
<i>∅-nu-jut'.u(w)</i>
3ABS-1ERG-imbibe.TS(COM)
I have imbibed him.

	E	F	
K'OOJ			tik
nu			TIK
po			9
POKO			CHEJ
ko			nu
wa			?EEL
WAL			ja
li			KOP
K'OOJ			?AJATIK
nu			nu
JAM			JUT'
yu			t'u
wi?			
?OOJ			
JAAB			
je			

“The mask is my ‘old face’. The mask, I have opened its mouth. (Then) the year has gone. It has been ordered (on the day) 9 Deer. My guise is this Fiery Lord (the sun?). I have imbibed it/him.”

Running Translation

“(A) The mask, it is completed. The Lord Of The 13 Skies has been transformed (into it).

(B) His appearance has emerged. It has been ordered on the day 5 Rain, (as) the Jaguar (the moon?) has gone.

(D) The mask, I have put it (down) and I have enveloped the jug, (which) has been brought away. The ‘old face’, (C) I have put it (on) and I have counted the ten spirits. My guise is the Jaguar. I have imbibed it/him, I have incorporated it/him.

(E) The mask is my ‘old face’. The mask, I have opened its mouth. (Then) the year has gone. (F) It has been ordered (on the day) 9 Deer. My guise is this Fiery Lord (the sun?). I have imbibed it/him.”

B.4.4. Comment

Just as the inscription on the TS, the text on the FM is self-referential: According to this text, the mask represents a god whose epithet is given as “Lord Of The 13 Skies” (A9–11) and whose guises are given as “Jaguar” (C12) and “fiery Lord” (F7–9). The second and third spell are expressed in the 1st person singular indicating that it is again recorded ritual speech – maybe the spells recited by a priest during a dedication ceremony. Two “tzolk’in” dates are recorded on the FM: 5 Rain (B10–11), the date of the ordering (and completion?) of the mask, and 9 Deer (F3–4). This last date is also introduced by the phrase “it has been ordered”, but according to the preceding sentence after “a year ha[d] gone”. This possibly means that there was a second dedication ceremony which has been ordered for the day 9 Deer.

A1–3, D1–2, and E9: The word “mask” always appears on the FM as the topic of the verbal clauses hence preceding the verbal phrase: “As for the mask, ...” (for comments on the decreasing phonographic indication of the morphogram **K’OOJ** on the FM, see ch. A.2.1).

A4: For the numeral **2** as a substitute of MS20a see the parallel on the TS (D6–7) and chapter A.2.1.

A7–8: The verb *jal*, lit. “to change”, should be understood in the sense that the divine essence of the god the mask is intended to represent has been transformed into the mask.

A9–11: Again, I assume an implicit 3ERG pronoun for the lord sign (alternatively one can read the phrase as *ʔajatik 13 ʔeeb* “Lord 13 Skies”). Note that the secondary meaning “sky” of *ʔeeb*, lit. “ladder, staircase” (compare the iconic representation of the staircase of MS210 in A11), is indeed attested for modern Huastecan languages. The expression “13 skies” hence apparently refers to the well-known Mayan belief that the sky consisted of 13 layers superimposed upon each other. This passage therefore can be seen as a strong hint at the “proto-Huastecan” hypothesis, since this secondary meaning for *ʔeeb* is, as far as I know, only attested for Huastecan languages.

B1–4: Ø-ʔeel.k.u/ yu-ʔeel(.aw) (addition of (.aw) after C10–11) is a typical *figura etymo-*

logica, lit. “His appearance has appeared.” The sense of this sentence is that the god intended to be represented by the mask was indeed ritually present (and is in fact still present in the form of the mask).

B11: For the day sign, see comments on MS125a in the sign list ch. D.

B12-14: This sentence is enigmatic. Does it mean that there was a lunar eclipse/new moon (compare the expression “Jaguar Moon” on the LM) in the night the mask was dedicated or that the night has passed by (hence the moon “has gone”)? Or does it relate to the deity of the mask (compare the sentence “my guise is the jaguar” in C9-12)?

D3-5 and *C2-4*: The verbs *ʔakʔ* (D4) and *choj* (C3), both written₂ by means of MS149a but distinguished by different phonographic complements, can both mean “to put sth.” with only slight nuances in their meaning, hence it is not entirely clear how they relate to each other in this context. I propose that *Ø-nu-ʔakʔ.u/* in C2-4 means that the mask has been put down/given (e. g. as an offering). After performing a certain ritual, the mask finally has been put on/used (by a priest) expressed by the phrase *Ø-nu-choj.i(y)* (note that the mask is identified as “the ‘old-face’” in E1-8).

D6-9: Compare the so-called royal bundle ceremonies attested numerously on Classic Mayan inscriptions. The jug presumably contained some ritually relevant substance and has been kept within a bundle (in order to hide it from unworthy eyes?).

D14-C1: The “old-face” is identified in E1-8 as the mask. The notion behind this expression remains, however, obscure.

C5-8: The sentence “I have counted the ten spirits/*naguales*” seems to relate to another important part of the dedication ceremony of the mask, but the meaning remains unclear.

C9-12: The *nagual* of the god is apparently the jaguar.

C13-17: Compare the parallel sequence on the LM (U2-5, there expressed in 3rd person singular). This shortly written₂ paired expression “I have imbibed him, I have incorporated him” certainly means that the animal guise, i. e. the jaguar, has been metaphorically impersonated.

E9-13: The statement “I have opened its (the mask’s) mouth” possibly means that the mask has been activated ritually.

F5-9: The “Fiery Lord” – maybe the sun(?) – seems to be another epithet of the “Lord Of The 13 Skies” who is represented by the mask.

C. List of identified lexemes

- ʔaak'* “new” < pM ***ʔaak'* (Kaufman 2003:549); Note: The shift pM ***k'* > pH **cb'* did not take place as indicated by the following sign on the TS (see also ch. A.3.1).
TS: F1-2 **ʔAAK'**^{k'i}
- ʔaal* “to give birth” < pM ***ʔaal* “womens offspring” and pCM **ʔaal.a* “to give birth” (Kaufman 2003:97-100); Note: The suffix *.aʔ* has been added in accordance with the linguistic data.
LM: P43-Q1 **ʔaʔAAL** *ʔaal(.aʔ)*
- ʔaat* “penis” < pM ***ʔaat'* (Kaufman 2003:385); Note: Modern Huastecan dialects have short *ʔat*.
LM: P31 **ʔAAT**
- ʔaj* “to count, read sth.” < pM ***ʔaj* (Kaufman 2003:182); Note: The epigraphically attested thematic suffixes are in accordance with modern Huastecan linguistic data.
LM: A1, M8, P14 **ʔAJ** *ʔabh(.uj)*; J6-K1, O38-P3 **ʔAJ^{ji}-ju-na** *ʔaj.un*; P19-20 **ʔAJ^{ji}*ju-ja** *ʔabh.uj*; R48-S1, S31-33 **ʔa-ju-na** *ʔaj.un*; TS: A1 **ʔAJ** *ʔabh(.uj)*; B2 **ʔAJ** *ʔaj(.iy)*; FM: C6 **ʔAJ** *ʔaj(.iy)*
- ʔaj=k'ul* “enemy”, compare GK+GQ **k'ul* (Kaufman 2003:63); Note: Maybe a loan.
LM: L3, O11, Q16 **ʔa*k'ul**
- ʔajatik* “lord” (Norcliffe 2003:177); Note: Lacking phonographic indicators, it is not verified that the pH form is indeed *ʔajatik* as reconstructed by Norcliffe (2003:177) (it may be in principle possible to assume **ʔajaw* as a direct descendant of pM ***ʔaajaaw*). There is however a nice play on words on the TS which indicates the form given here (see comment ch. B.3.4)
LM: E2 **ʔAJATIK**; TS: B5-6 **YU-ʔAJATIK.TUJ^{tu:ju}**; C2 **(YU-)ʔAJATIK**; FM: A9, F9 **(YU-)ʔAJATIK**
- ʔak'* “to give, put sth.”, compare CM **ʔaq'* (Kaufman 2003:774); Note: The transitive suffix (completive) should be *.uw* or *.uy*, which is not decidable from the available epigraphic data.
LM: Q4-5 **ʔAK'-k'a** *ʔabhk'.a/*; R29 **ʔAK'** *ʔak'(.u/)*; U9-10 **ʔaʔAK'** *ʔabhk'(.a/)*; FM: D4-5 **ʔAK'-k'u** *ʔak'.u/*

- ʔakʼb.aal* “night” < pM ***ʔaHqʼ(a)b.aal* (Kaufman 2003:448–450; Norcliffe 2003:184); Note: Modern Huastecan dialects show a loss of the intermediate /b/ but epigraphically it is evident on the LM.
LM: O4–5 ʔakʼ**ʔAKʼB.AAL**; R27 **ʔAKʼB.AAL**; S39–42 ʔakʼ[**ʔAKʼB.AAL**]^{ba-le}
- ʔakʼut* “dance”, compare GLL **ʔabkʼut* (Kaufman 2003:748)
LM: N12–13 ʔa**ʔAKʼUT**, R18 **ʔAKʼUT**
- ʔanam* “earth” (Norcliffe 2003:176)
ES: A5 **ʔANAM**; LM: O26 **ʔANAM**
- ʔat=* “fellow” < pM ***ʔatʼ=* (Kaufman 2003:1519); Note: This is a prebound adjective.
LM: G4, N2 **ʔa*tu**
- baaʔ* “self” < pM ***bʔaab* (Kaufman 2003:277)
LM: S50, T33 **ba**
- baj* “to chisel, carve sth.” < pM ***bʔaj* “to nail sth.” (Kaufman 2003:922)
LM: L6–9 **BAJ**^{ba-ja-xa} *baj.ax*, U13–14 **ba-xa** *baj.ax*
- bak* “captive”; Note: This lexeme is suggested by the context and has been assumed in analogy to the lexeme attested in the classic Mayan writing₂ system.
LM: P38 **BAK/bak**
- bakʼ* “grain, pip, seed” < pM ***bʔaqʼ* (Kaufman 2003:1052)
LM: R30–31 **ba-kʼi**
- bakʼ* “to wrap sth.”, compare CM **bʔakʼ* (Kaufman 2003:910); Note: The transitive suffix (completive) is most probably .aʔ.
TS: F10–12 **ba-ʔakʼ-kʼa** *bakʼ.aʔ*
- balam* “jaguar” < pM ***bʔablam* (Kaufman 2003:594)
LM: B3, R1, R14, T15 **BALAM**; FM: B14, C12 **BALAM**
- biitʼ* “stela”, compare GQ+ **bʔiitzʼ* “wall” (Kaufman 2003:944); Note: The attestations of this lexeme in other Mayan languages indicate that it in general stands for something large standing upright. I suspect that in pH the meaning shifted to “stela”.
LM: O23 **BIITʼ**; S27–28, T3–4 **BIITʼ**^{te}
- bij* “name” < pM ***bʔib* (Kaufman 2003:737; Norcliffe 2003:184)
TS: G11 **bi**
- botʼ* “to roll, envelop sth.”, compare EM **bʔot* “to roll, wrap sth.” and pH **botʼ.aw* “armadillo” (Kaufman 2003:913; Norcliffe 2003:171); Note: cf. comments on MS218.
FM: D7 **BOTʼ** *botʼ(./)*

- chaban* “earth” < pM ***kab*’ (Kaufman 2003:414); Note: Only attested as a day name *chaban* “earth”. While modern Huastec shows /l/ instead of /n/ as word-final consonant for the non-calendrical term “earth”, the form given here is indicated by the rebusoid writing₂ on the TS (D9) and corresponds to the colonial Yucatec day name *kab’an*.
TS: A8 [CHABAN]; D9 **cha(ba)n**
- chaj* “heaven” < pM ***kaʔɪ* (Kaufman 2003:486)
TS: C3–4 ^{cha}**chaj**
- chan* “serpent” < pM ***kaan* (Kaufman 2003:636); Note: Only attested as a day name and indirectly via the phonographic value of MS75. It corresponds to Yucatec *chikchan*.
LM: A8 **CHAN**
- chan* “to halt” < pM ***kan* (Kaufman 2003:839)
LM: Q22–23 (**chan-ni**) *chan.i/*; R23–25 ^{chan-li}**CHAN** *chan.il*; T11–12 **CHAN-ni** *chan.i/*
- chej* “deer” < pM ***kebj* (Kaufman 2003:583); Note: Only attested as a day name corresponding to Yucatec *manik’*.
LM: M15 **CHEJ**; FM: F4 **CHEJ**
- chich’* “blood” < pM ***kik’* (Kaufman 2003:322)
LM: P34–35 ^{chi}**CHICH’**
- choʔ* “indeed” < pM ***ko* (Kaufman 2003:728); Note: This is an affirmation particle.
LM: Q46 **cho**
- choj/koj* “to use, put sth.”, compare GK **koj* (Kaufman 2003:777); Note: Since this lexeme is only attested in GK and EM it may be either a pM root which would give the given reconstructed pH form (meaning that the lexeme is extinct in other Mayan branches), or it may be a GK or EM innovation meaning it would be a loan in pH and should therefore read **koj* which is not decidable from the epigraphic data. The transitive suffix, however, should regularly be *.iy* indicated by the phonographic complement on the FM.
LM: V12 **CHOJ** *choj.i(y)*; TS: C3–4 **CHOJ** *chohj(.i/)*; FM: C3–4 **CHOJ-ji** *choj.i(y)*
- choj/koj* “to speak”, compare CM **kib* (Kaufman 2003:739); Note: This verb is a common quotative verb. If the rebusoid reading of MS149b is correct, the vowel should be /o/ as it is in CHR (see Kaufman 2003:739). But see also the comment in ch. B.3.4.
TS: F6–7 **choj-ji** *choj.i/*

- chooj* “cougar” < pM ***koj* (Kaufman 2003:582); Note: Modern Huastecan varieties show a long vowel (Norcliffe 2003:185) which is in accordance with the disharmonic spelling on the LM.
LM: S5-6, U6-7 **cho-ju**
- chot* “seat”, compare TZE **chot* “seated” (Kaufman 2003:915)
LM: F4-5 **cho-tu**
- chub* “to come down, to happen”, compare EM **kub*’ (Kaufman 2003:1280); Note: The context provides that it should be understood metaphorically in the sense of “it happened, emerged” when used in impersonal constructions. The added .*ey* is the most common intransitive suffix in Huastecan.
LM: I4-6 ^{chu}**CHUB*be** *chub.e(y)*; S29-30 **chu-be** *chub.e(y)*; V5-6 [^{chu}]**CHUB** *chub(ey)*; *TS*: G12-13 **CHUB-be** *chub.e(y)*
- ?eeb* “sky”, compare LL **?ebb*’ “ladder” (Kaufman 2003:942); Note: The derived meaning “sky” is not attested in other Mayan languages, only in western Huastec.
FM: A11 **?EEB**
- ?eel* “to appear, emerge” < pM ***?eel* “to go out” (Kaufman 2003:1314); Note: For the nominalized form *?eel.aw* “appearance, guise” compare WM **?elaw* “colour, face” (Kaufman 2003:140). The intransitive suffix .*ey* has been added according to the linguistic data.
LM: P41, Q36 **?EEL** *?eel(ey)*; R15-16, T23-24 **?EEL-ku** *?eel.k.u/*; *FM*: B1-2 **?EEL-ku** *?eel.k.u/*; B4, F6 **?EEL** *?eel(.aw)*; C10-11 **?EEL-la** *?eel.a(w)*
- ?ich* “already”; Note: Attested also in modern southern Huastec.
LM: J1 **chu** (*?i*)*ch*; Q35 **?ich**
- ?iich*’ “moon” < pM ***?iik*’ (Kaufman 2003:499)
LM: B4, T16 **?IICH**’
- ?iix.aal* “wife” < pM ***?ix* “female, woman” (Kaufman 2003:80); Note: The meaning “wife” is preserved in modern western Huastec.
LM: N23 **?IIX.AAL**; P8-10 ^{?i-xa}**?IIX.AAL**; Q9-11 **?IIX.AAL**^{xa-IV}
- ?ik*’ “to bring/carry sth.”, compare WM+ **?iq*’ (Kaufman 2003:765)
LM: S9-12 ^{?i-k}**?IK’-xa** *?ik’.ix*; T46-48 **?i-k**ⁱ**-xa** *?ik’.ix*
- ja?* “water” < pM ***Ha?* (Kaufman 2003:552; Norcliffe 2003:191)
LM: T29 **ja**
- ja?* “this” < pM ***ba?* (Kaufman 2003:1534)
LM: Q37; *TS*: I3; *FM*: F7 **ja**

- jaab* “year” < pM ***baʔbʔ*’ (Kaufman 2003:455); Note: *jaab* may refer to both, the 365-day solar year and the 360-day “tuun” period.
LM: D2–3 **ja-ba**; I2–3, N7–8 **JAAB**^{be}; N14, O29, R19, R26, V4 **JAAB**; P15–16 ^{ja}**JAAB**; T10–11 **JAAB**^{bi} *FM*: E15 **JAAB-je** *jaab.ej*
- jaaj* “true”, compare LL+WM **jaaj* (Kaufman 2003:147)
LM: N15–18 **ja-ju-k’ol**^{lo} *jaaj.k’ol*; O6–8 ^{ja}**jaj-lo** *jaaj.ol*; R20–22 **ja-ʔaj-k’ol** *jaaj.k’ol*; Q43–45 ^{ja}**jaj-lo** *jaaj.ol*
- jach* “to raise sth.”, compare GTz **bach* (Kaufman 2003:1411)
LM: E4 ^{ja}**JACH** *jach(./)*
- jach’* “to eat sth.” < pM ***bach’* “to chew sth.” (Kaufman 2003:1213)
LM: B6–8 ^{ja}**JACH’-to** *jach’.at*; R4 **JACH’-to** *jach’.at*
- jal* “to change, transform sth.” < pM ***jal* (Kaufman 2003:779)
FM: A7–8 **ja-IV** *jabl./*
- jam* “to open sth.” < pM ***jam* (Kaufman 2003:852)
LM: G1 **JAM** *jam(./)*; *FM*: E11 **JAM** *jam(./)*
- jil* “to cease sth.” < pM ***bil/bihl* (Kaufman 2003:1245); Note: While most modern Mayan languages have intransitive derivations of the pM lexeme with the meaning “to rest” (maybe fossilized passive?), western Huastec has transitive *jil.aʔ* “to cease sth.”
LM: V16–18 [**ji**]-**li-xa** [*ji*].*ix*; *TS*: G2–3 **ji-li** *jihl.i/*
- jinaj* “seed”, compare LL **hinaj* (Kaufman 2003:1053); Note: See comments on MS93a.
ES: A1 **JINAJ**
- jom* “incense”; Note: Modern Huastecan show this form. If it would be a regular descendant of pM ***pom* (< proto-Mixe-Zoquean **poomaʔ* Kaufman 2003:1358) the anlaut /p/ would be preserved. However, since this lexeme occurs without a phonographic indicator on the LM, it is not decidable whether pH has **pom* or **jom*.
LM: S47 **JOM**
- juch* “to scratch sth.”, compare WM/EM+ **jox* (Kaufman 2003:872); Note: The word *jox* is certainly sound symbolic (the sound when scratching sth.), *juch* may therefore be a sound symbolic intensification.
TS: I4–5 **ju-cho** *juch.ow*
- jut’* “to imbibe sth.” < pM ***ʔutz’* (Kaufman 2003:1231); Note: The suffix *.uw* is in accordance with the modern linguistic data.
LM: U3 **JUT’** *jut’(uw)*; *FM*: C14 **JUT’** *jut’(uw)*; F11–12 **JUT’-t’u** *jut’.u(w)*

- juuj* “book” < pM ***buʔij* (Kaufman 2003:1107)
LM: O32-33, Q6-7, V7-8 ^{ju}***JUUI^{ji}**; V13-14 **ju-je**; *TS*: F3 ^{ju}***JUUI**
- koj.uw* “royal headdress”; Note: This is certainly a cognate of the classic Mayan *koʼb.aw* “helmet, headdress”.
LM: Q28-29 **KOJ-ju**
- kop* “glowing” < pM ***qop* (Kaufman 2003:524)
FM: F8 **KOP**
- kuj* “seated”, compare TZO/TOJ **quj* (Kaufman 2003:915)
LM: K2-3 **ku-ji**
- kuwok* “thunder, rain” < pM ***kahog* (Kaufman 2003:489); Note: Only attested as a day name (Yucatec *kawak*), which explains the conservative initial /k/ instead of the expected /ch/. The phonographic value **ku** of MS124 implies that the first vowel is /u/ in pH and not /a/ as in pM.
FM: B11 **KUWOK**
- kʼal* “month” < pM ***kʼaal* “twenty” (Kaufman 2003:1496); Note: The anlaut /kʼ/ instead of expected /chʼ/ may be due to borrowing or conservation processes. The latter is indeed very probable for a calendrical term.
LM: J3-4 **kʼal^{la}**
- kʼax* “to pass by, cross” < pM ***qʼabx* (Kaufman 2003:1311)
ES: A6-8 **KʼAX^{kʼa-xa}** *kʼax.aʔ*; *TS*: C9-10 **kʼa-xa** *kʼax.aʔ*
- kʼib* “jug”, compare CM **qʼibʼ* (Kaufman 2003:984)
LM: N28-29 **kʼi-bi**; *FM*: D8-9 **kʼi-ba**
- kʼij* “day” < pM ***qʼiiij* (Kaufman 2003:461)
LM: G2-3, G5-6, O2-3, Q30-31, R12-13 **kʼi-ja**; N3-4 **KʼIJ^{ja}**; *FM*: B8-9 **kʼi-ji**
- kʼooj* “mask” < pM ***kʼooj* (Kaufman 2003:1020); Note: This lexeme diffused throughout the Mayan languages with initial /kʼ/, so it is assumed that the shift pM /kʼ/ > pH /chʼ/ does not appear here.
TS: G5-6 **KʼOOJ^{ji}**; *FM*: A1-3 **KʼOOJ^{kʼo-je}**; D1-2 **KʼOOJ^{je}**; E1, E9 **KʼOOJ**
- kʼuj.uul* “divine”, compare GLL+ **kʼuj.ul* (Kaufman 2003:459)
LM: B1-2 **kʼu-ju-le**
- kʼukʼ* “quetzal (feathers)” < pM ***qʼuʔqʼ* (Kaufman 2003:614)
LM: N30-31 (**kʼu-kʼi**)

- k'up* “to cut sth.”, compare CM **q'up* (Kaufman 2003:874)
LM: L2, O10, Q15 **K'UP** *k'up(./)*; S18–19 **k'u-pi** *k'ubp.i(j)*; V24–26 **K'UP^{PI}-ja**
k'ubp.ij; *TS*: I1–2 **k'u-pi** *k'ubp.i(j)*
- k'ux* “to repose”, compare TZE **k'ux* (Kaufman 2003:1257)
LM: N9–10 **k'u-xa** *k'ux.a?*
- laab* “nagual, ghost” < pM ***laab'* (Kaufman 2003:1367)
FM: C8 **LAAB**
- laj* “to finish sth.”, compare pCM **laj* (Kaufman 2003:1271)
LM: O13–14, R2–3 **LAJ-xa** *laj.ax*; O30 **LAJ** *lahj(./)*; V28–30 ^{1aj}**LAJ-xa** *laj.ax*; *TS*:
H1–2 **LAJ-xa** *laj.ax*
- lem* “mirror” < pM ***lem* (Kaufman 2003:472)
LM: N34 **LEM**
- na?* “to know, remember sth.” < pM ***na?* (Kaufman 2003:214)
LM: L4–5, V19–20 **na-?e** *nab?.e/*; T5–6 **na-xa** *na?.ax*; T37–38 **na-wa** *na?.aw*
- nap* “to affix sth.”, compare GLL **nap'* (Kaufman 2003:802)
LM: G7–H2 **na-pa-xa** *nap.ax*
- nup* “to marry sb.”, compare WM+LL **nup* “to join, marry” (Kaufman 2003:64); Note:
There are several cognate intransitive derivations of this verb in modern Mayan lan-
guages. On the LM it is evidently transitive.
LM: N21 ^{nu}**NUP** *nup(./)*
- ?ooch* “to enter” < pM ***?ook* (Kaufman 2003:1318)
LM: O12 **?o*cha** *?ooch.a?*; O24–25 **?o*chi-chan** *?ooch.an*
- ?ooj* “to go”, compare CM/EM **?ooj* (Kaufman 2003:73, 1450)
LM: M1–4 **?o-ju-je-ye** *?ooj.jey*; *TS*: G8–9 **?o-ju** *?ooj.u/* (INC); *FM*: B12–13 **?o-
ja** *?ooj.a?* (COM); D10–13 **?ooj-ji-ba-ta** *?ooj.ba.t*; E14 **?ooj** *?ooj(.a?)*
- ?oot'* “skin” (Kaufman 2003:375; Norcliffe 2003:187)
LM: P28–29 **?o-t'e**
- ?oy* “to await sth.”, compare MP/GK **?oy* (Kaufman 2003:708–709)
LM: N6 **?o** *?o(y./)*; T14 **?o** *?o(hy./)*
- pa?* “to descend” (Norcliffe 2003:182); Note: The thematic suffix has been added accord-
ing to modern sources (Kondic 2013:45).
TS: C1 **pa** *pa?(.ay)*








- pak* “to fold sth.” < pM ***paq* (Kaufman 2003:1436)
LM: V9–10 [PAK]-**xa** *pak.ax*; *TS*: F4–5 **PAK-ko** *pabk.o/*
- palaj* “front” < pM ***palaj* “front, face” (Kaufman 2003:332)
LM: V27–28 **PALAJ**^{1aj}
- pan* “to dig sth.”, compare LL **pan* (Kaufman 2003:819)
LM: O27–28 **PAN-xa** *pan.ax*; S20–22 **PAN**^{pa-na} *pahn.a/*
- pech* “boat-billed heron”, compare WM+ **pech* “duck” (Kaufman 2003:617); Note: The attestations of this lexeme in modern Mayan languages have the meaning “duck”, but it should here be understood as the bird that is represented by the Tuxtla Statuette, on which this word is written², i. e. most probably as “boat-billed heron”.
TS: D4–5 **pe-cho**
- poko=* “old”, compare TZO/TZE **poko=* (Kaufman 2003:137); Note: This is a prepond adjective.
FM: D14–16, E3–5 **po****POKO**^{ko}
- taj* “to find, encounter sb.” < pM ***tab* (Kaufman 2003:164); Note: Only attested in passive voice. The phonogram may be only an indicator for the final consonant.
LM: D4–6 ^{ta}**TAJ-ja** *tahj.aj*; F1–2 **TAJ-ja** *tahj.aj*
- tak* “to choose sth.” ; Note: Attested in modern southern Huastec as *tak.uj* (Kondic 2016:6).
LM: O17 **TAK** *tabk./*; P36–37 **TAK-ku*na** *tak.un*
- tam* “to occur” ; Note: Attested in modern southern Huastec as *tam.uw* (Kondic 2016:30).
LM: O15–16 **TAM-ʔo** *tam.o(w)*; P11–13 **TAM-ʔo-wV** *tam.ow*
- tiʔ* “to incorporate sth.” < pM ***tiʔ* “eat meat” (Kaufman 2003:1200); Note: The contexts provide that it should be understood in the sense of “to impersonate sth./sb.”.
LM: S3–4, U5–6 **ti-ta** *tiʔ.at*; U5 **ti** *tiʔ(iy)*; *FM*: C16–17 **ti-ʔi** *tiʔ.i(y)*
- tich* “to begin”, compare EM+ **tik* (Kaufman 2003:1269); Note: Since /k/ shifted already to /ch/ it is either a very early loan or the EM and pH forms share a common pM root which is extinct in other Mayan branches.
LM: O21–22 **ti-cho** *tich.o/*
- tik* “to order sth.” < pM ***teq* (Kaufman 2003:723)
TS: B4 **TIK** *tik./*; D2–3 ^{tik}**TIK** *tik./*; *FM*: B5–6 **TIK-ku** *tibk.u/*; F1–2 ^{tik}**TIK** *tibk(u/)*

- tikw.al* “heat” < pM ***tigaw* “hot” (Kaufman 2003:519); Note: See the comment on the ES in ch. B.1.2.
ES: A9–10 **TIK-WAL**; TS: C6–8 **TIK.W.AL**^{wal}
- tiy* “to shed (blood), scatter sth.” < pM ***tir* “” (Kaufman 2003:828)
LM: P6–7 **TIY tiy(.aw)**; P23 **ti ti(hy.e/)**; Q17–19 **ti-ye tiy.ey**; R35 **TIY tiy(.ey)**; S47 **TIY tihy(e/)**
- tiyik* “arm” (Norcliffe 2003:171); Note: The anlaut should be /t/ as indicated by the phonographic value of MS45. See also the comment on the ES in ch. B.1.2.
ES: A9 **TIYIK**; TS: C6 **TIYIK**
- tob* “to join sth./sb.” < pM ***tzob*’ (Kaufman 2003:168)
LM: C5–7 **TOB-ba-xa tob.ax**; N25–27 **to-bV TOB tob./**
- tol* “to tell, recite sth.”, compare CM **tzol/chol* “to line up, tell sth.” (Kaufman 2003:845); Note: I assume a common pM root ***tzol* giving regularly the pH form given here.
LM: T36 **tol tol(/)**
- ton* “hair”, compare GLL **tzolʔn* (Kaufman 2003:292); Note: In modern dialects, this lexeme is replaced by pH **jujul* (“hair, feather”; see Norcliffe 2003:180), but it is still preserved in GLL.
ES: A2–3 **toTON**
- tuj* “year (‘tuun’ period)”, compare GLL+WM **tooŋ* (Kaufman 2003:436); Note: As many Mayan languages, pH has /u/ instead of /o/. The anlaut, however, is glottalized in modern Huastec varieties (Norcliffe 2003:180), but all epigraphic evidences make unglottalized *tuj* more likely for pH at the time of writing₂ these texts.
LM: N36, P22, Q13 **tu*ju**; Q49, T22, T42 **TUJ**; TS: B5–6 **TUJ**^{tu*ju}
- tujub* “stone” (Norcliffe 2003:188); Note: It seems that pH carefully distinguishes **tuj* “year (‘tuun period’)” and **tujub* “stone” though they share the same root pM ***tooŋ* “stone”.
LM: O18–20 **tu*ju^u-bu**
- tuy* “to fix, record sth.” < pM ***tzuy* “to stick, fasten sth.” (Kaufman 2003:902); Note: The contexts provide that it should be understood in the sense of “to record sth.”
LM: V21–23 **tu-yu-xa tuy.ux**; TS: E1-3 **tuTUY-xa tuy.ux**; H3–4? **[tu?-yu?]-xa [tuy.u]x**
- t’ak* “to complete sth.” < pM ***tz’aq* (Kaufman 2003:803)
LM: N35, P4, Q12, S2, S23, S34 **T’AK t’abk(.ey)** (COM); S26 **T’AK t’ak(/)**; S37–38 **T’AK-ye t’abk.ey** (COM); TS: D7 **T’AK t’abk(o/)** (INC); FM: A5–6 **T’AK-ko t’abk.o/** (INC)

- t'ak* “to wash sth.” < pM ***tz'aq* (Kaufman 2003:544); Note: This lexeme differs from the previous lexeme “to complete” by the transitive suffix.
LM: R42-43 **t'ak-cha** *t'ak.ch.a?*
- t'ap* “to erect (a stela)” < pM ***tz'ap* “to cover” (Kaufman 2003:864); Note: The shifted meaning “to erect/drive into the ground” is also attested in the Maya writing₂ system.
LM: S14-17 **t'aT'AP-ba-?a** *t'ap.b.a?*; S51-T2 **t'aT'AP-ba** *t'ap.b.a?*
- t'eje?* “(on the) left side”, compare GLL+ **tz'eeb* (Kaufman 2003:241)
LM: K4-5 **t'e-je**
- t'ek* “to stab, pierce” < pM ***t'ik*, compare GQ/CM **te(e)q.u* (Kaufman 2003:836-837); Note: The transitive suffix (completive) may be *.uw* or *.uy*, the vowel /u/ is in accordance with the linguistic data.
LM: B5 **T'EK** *t'ek(.u/)*; O35-36 **T'EK^{t'ek}-yu** *t'ek.uj*; P24-26 **T'EK-ku-xa** *t'ek.ux*; Q20-21 **T'EK(-ku)*xa** *t'ek.ux*; T17-18 **t'ek-?ux** *tek.ux*
- t'elej* “boy”; Note: Attested in modern western Huastec as *t'ele?* “boy” (the auslaut /j/ in pH is indicated epigraphically) presumably a cognate of pM ***t'eel* “cock(scomb)” (Kaufman 2003:388).
LM: Q2-3 **t'e-ja** *t'e(le)j*; R45-47 **T'ELEJ^{t'e-le}**; S7-8, T44-45 **t'eT'ELEJ**
- waj* “tortilla”, compare LL+WM+ **waaj* “” (Kaufman 2003:1199); Note: Modern Huastecan have *wakan/bakan* (Norcliffe 2003:190), but the form attested on the LM clearly reflexes the pM lexeme, which must have been replaced by *wakan/bakan* at a later time.
LM: U11-12 **wa-ja**
- wal* “face” < pM ***Ha?* (Kaufman 2003:324; Norcliffe 2003:177)
FM: D17-C1 **waWAL**; E6-7 **waWAL-li** *wal.il* (POSS)
- wal* “maize ear” < pM ***ʔal* (Kaufman 2003:1064); Note: See the comment on the ES in ch. B.1.2.
ES: A10 **wal**; *TS*: C8 **wal**
- wat'* “to pass by”; Note: This lexeme is preserved unalteredly in modern southern Huastec (including the transitive suffix; see Kondic 2013:45).
LM: R32-33, T31-32 **wAT'-t'e** *wat'.ey*; V15 **wAT'** *wat'(.ey)*; *TS*: G1 **wAT'** *wat'(.ey)*
- wi?* “mouth” (Norcliffe 2003:138)
FM: E13 **wi?**
- wich* “to quake”, compare CM **ʔibk* (Kaufman 2003:1285)
LM: Q38-39 **wich-k'u** *wich.k'.uy*

- xaj* “to walk, stride” < pM ***xaj* (Kaufman 2003:1293); Note: The added suffix *.aj* is a standard intransitive suffix (completive) in Huastecan.
LM: Lo [**xa**] *xaj(.aj)*
- xan* “also, moreover”, compare CM **xa(n)* (Kaufman 2003:1529)
LM: N19, T30 **xa**; N32-33, P39-40, Q47-48, S35-36 **xa****xan**; Q32-34 **xa****xan**^{na}
- yeʔ* “to give/show sth.” < pM ***yeʔ* (Kaufman 2003:180, 775)
LM: Q25-27 ^{ye-ʔV}**YEʔ** *yeʔ./*; T26-28 ^{ye}**YEʔ-na** *yeʔ.an*
- yutʔ* “to tie sth.”, compare GK **yutʔ* (Kaufman 2003:998); Note: The passiv form including its suffix (completive) is totally determined by the epigraphic data.
LM: D1 **YUTʔ** *yubtʔ(.ej)*; H3-4, M5-6, T7-8, V1-2 **yu-tʔe** *yubtʔ.e(j)*; M5-7 **yu-tʔe-xa** *yutʔ.ex*; P17-18 **YUTʔ-ji** *yubt.ej*; Q40-42 **YUTʔ-kʔol**^{la} *yutʔ.kʔol*; S43-44, T39-40 **YUTʔ-tʔe** *yubtʔ.e(j)*; *TS*: F13 **YUTʔ** *yubtʔ(.ej)*

D. Sign list

- 
MS20a
xa
cha
 Note:
- two dots with half framing
LM: B9, C4, C7, E3, F6, H2, J5, K7, L9, M7, N10, N19, N32, N37, O14, O28, P9, P26, P39, Q10, Q24, Q32, Q47, R3, R8, R40, S12, S24, S35, T6, T13, T25, T30, T34, T48, U14, V10, V18, V23, V30; *TS*: C10, D6, D10, E3, F8, G7, H2, H4
TS: C3
 Derived from the numeral pH **cbab* “two” (Norcliffe 2003:192). Compare classic Mayan T114. See ch. A.2.1.
- 
MS20b
xa
- early variant of MS20a on ES
ES: A8
- 
MS20c
xa
cha
- variant of MS20a (numeral 2)
FM: A4
LM: R43
- 
MS21
ʔAAK'
ʔak'
 Note:
- rectangular frame
TS: F1
LM: O4
 Maybe an empty sheet of paper conveying the sense “new” (pH **ʔaak'*).
- 
MS22a
T'AK
t'ak
t'a
 Note:
- circle within a rectangular frame
LM: P4, S2, S23, S26, S34, S37; *TS*: D7; *FM*: A5
LM: R42
LM: S14, S52
 The circle maybe conveys the meaning “completeness” (*t'ak* “to complete sth.”). The logographic reading is phonographically confirmed via its occasional usage as rebus sign. See also MS22b.
- 
MS22b
T'AK
 Note:
- arms and legs (MS45a + MS57/58)
LM: N35, Q12
 The classic Mayan writing₂ system has a couple of similar combinations that metaphorically express the meaning “completeness”. Compare MS22a.
- 
MS23a
T'EK
- a pierced rectangular frame
LM: B5, O36, P24

Note: The logographic reading is implied by its iconic reference. The phonetic structure is supported by the alteration with MS101 on the LM (T17) and by the phonographic complementation with the phonogram **ku**. Compare classic Mayan T653. See ch. A.2.1.



MS23b
T'EK*xa

MS23a and MS24 conflated
LM: Q20



MS24
xan
Note:

unidentified object
LM: N33, P40, Q33, Q48, S36, S45
Maybe depicting adobe bricks (pH **xa(a)n* < pM ***xaan*).



MS25
?a
Note:

unidentified object
LM: R48, S31, U9
Reading confirmed via its interchanging with MS97 and its usage as phonographic indicator of MS149b.



MS26
k'a

= MS27a
LM: Q4



MS27a
k'a
Note:

something crossed
TS: C9, F12
Derived from pH **k'ax* "to pass by, cross".



MS27b
k'a

variant of MS27a on ES
ES: A7



MS28
?EEL
Note:

unidentified object
LM: P41, Q36, R15, T23; *FM*: B1, B4, C10, F6
Compare T546 and its logographic reading **?EL** "to burn". The sign transfer may in this case be motivated by considering the similar sound.



MS29
?a
Note:

unidentified object
LM: P43, S17
Compare MS97



MS30
APPEAR
Note:

star (venus?) at horizon
LM: C2, R6
See comments in ch. B.2.2. Compare classic Mayan T510b, and see also MS181.













MS31
STAR
Note:












star (venus?)
LM: C3, R7
See comments in ch. B.2.2.

























MS32












see MS30












	<i>MS33</i> ?AK'UT	unidentified object <i>LM</i> : N13, R18
	<i>MS34</i> CHUB	unidentified object <i>LM</i> : I5, V6
	<i>MS35</i> CHUB	= MS34 <i>TS</i> : G12
	<i>MS36</i> T'AP Note:	stone getting erected (see MS44a and MS136) <i>LM</i> : S15, T1 See ch. A.2.1.
	<i>MS37a</i> to tol Note:	fish fins <i>LM</i> : B8, N25, R4 <i>LM</i> : T36 See comments on MS37b.
	<i>MS37b</i> to Note:	variant of MS37a on ES <i>ES</i> : A2 The sign appears twice on the ES: as part of the written ₂ text and of the iconography on the front. The iconographic sign could be identified as fish fins. The phonographic value to derives from pH * <i>to?ol</i> “fish” (Norcliffe 2003:178). This is further supported by the rebusoid writing ₂ of the lexeme pH * <i>tol</i> “to recite sth.” via MS37a on the LM. Compare T563b in Mayan writing ₂ . See ch. A.2.1 and ch. B.1.2.
	<i>MS38</i> yu Note:	upper section of MS75a <i>LM</i> : F3, H3, M5, N5, N11, N20, N22, N24, O34, P5, P27, P30, Q17, R17, R28, R34, R37, R41, R44, S13, S25, S49, S51, T7, T35, T41, U2, U4, V1, V11, V22 See ch. A.2.1. Compare MS202.
	<i>MS39a</i> nu Note:	unidentified object, MS39b + MS141 <i>TS</i> : C5, D1, F9; <i>FM</i> : C2, C9, C13, D3, D6, E2, E10, F5, F10 See ch. A.2.1.
	<i>MS39b</i> nu Note:	inner element of MS39a <i>LM</i> : N21; <i>TS</i> : B1, B3; <i>FM</i> : C5, C15 This element may be oriented horizontally or vertically without any effect on its phonographic value. See ch. A.2.1.
	<i>MS40</i> PAN	unidentified object <i>LM</i> : O27











	<i>MS41</i> PAN	= MS40 <i>LM</i> : S20
	<i>MS42</i>	see MS149b
	<i>MS43</i> T'ELEJ	unidentified object <i>LM</i> : R45, S8, T45
	<i>MS44a</i> ?ANAM na Note:	stylized earth maw <i>LM</i> : O26 <i>LM</i> : G7, K1, L4, P3, Q34, S1, S22, S33, S46, T5, T28, T37, V19 See ch. A.2.1. Cognate to T23 in Mayan writing2.
	<i>MS44b</i> ?ANAM Note:	early variant of MS44a on ES <i>ES</i> : A5 The sign appears on the ES without framing and inverted, but compare the earth maw on Cerro de las Mesas Stela 8.
	<i>MS45a</i> TIYIK ti tik Note:	two hands or arms <i>TS</i> : C6 <i>LM</i> : O21, P6, P23, Q18, S3, U5; <i>TS</i> : C6; <i>FM</i> : C16 <i>TS</i> : C6, D2; <i>FM</i> : F1 Derived from pH * <i>tiyik</i> "arm, elbow" (Norcliffe 2003:171). See also MS22b; See ch. A.2.1 and comments on MS45b in ch. B.1.2.
	<i>MS45b</i> TIYIK/tik Note:	variant of MS45a showing only one arm <i>ES</i> : A9 See ch. B.1.2.
	<i>MS46</i> TAK	unidentified object <i>LM</i> : O17, P36
	<i>MS47</i> ?i	variant of MS48 <i>LM</i> : P8
	<i>MS48</i> ?i	unidentified object <i>LM</i> : S9, T46
	<i>MS49</i> la Note:	stylized face turned upside down? <i>LM</i> : J4, Q42 Maybe this strange looking face turned upside down refers to pH * <i>laab</i> "phantasm, nagual" (< pM ** <i>laab</i> '; Kaufman 2003:1367). Compare classic Mayan T534.













	<i>MS</i> ₅₀	see <i>MS</i> _{149c}
	<i>MS</i> ₅₁ 𐎎𐎗𐎏𐎑𐎒 Note:	unknown object having <i>MS</i> _{39b} infixes <i>LM</i> : N ₂₁ See ch. A.2.1.
	<i>MS</i> ₅₂ lo	unidentified object <i>LM</i> : N ₁₈ , O ₈ , Q ₄₅
	<i>MS</i> ₅₃ k'i Note:	unidentified object <i>LM</i> : O ₂ , R ₃₁ Interchanges with <i>MS</i> ₁₆₅ .
	<i>MS</i> ₅₄ ja Note:	unidentified object <i>LM</i> : E ₄ , O ₆ , P ₁₅ , Q ₄₃ , T ₂₉ ; <i>FM</i> : F ₇ The distribution of this phonogram implies that it originally read ha before pM **h > pH *j , so its reading later coincided with the phonographic value of <i>MS</i> ₆₃ .
	<i>MS</i> ₅₅ ja	variant of <i>MS</i> ₅₄ <i>LM</i> : N ₁₅ , R ₂₀
	<i>MS</i> ₅₆ ye	unidentified object <i>LM</i> : M ₄ , Q ₁₉ , Q ₂₅ , S ₃₈ , T ₂₆
	<i>MS</i> ₅₇ ?ooj ?a Note:	two feet <i>FM</i> : D ₁₀ , E ₁₄ <i>LM</i> : L ₃ , O ₁₁ , Q ₁₆ The phonographic value is derived from pH *?akan “foot, leg” (Norcliffe 2003:181). See also <i>MS</i> _{22b} .
	<i>MS</i> ₅₈ ?a	= <i>MS</i> ₅₇ <i>LM</i> : N ₁₂
	<i>MS</i> ₅₉ JACH	two arms performing a lifting gesture <i>LM</i> : E ₄
	<i>MS</i> ₆₀ k'ol Note:	two spherical objects <i>LM</i> : N ₁₇ , Q ₄₁ , R ₂₂ Compare pM **k'ol and the derived lexemes having to do with “sth. round/spherical” (Kaufman 2003:1430–1431).











	<i>MS61</i> li	unidentified objects <i>LM</i> : R24, V17; <i>TS</i> : G3
	<i>MS62</i> ko Note:	unidentified object <i>TS</i> : F5 The left part of the sign (quadrate surrounded by four circles) resembles the left part of MS211, so the phonographic value may be derived from the logographic value of MS211 (KOP).
	<i>MS63</i> JAM ja Note:	unidentified object <i>LM</i> : C1, G1, R5; <i>FM</i> : E11 <i>LM</i> : B6, D2, D6, F2, G3, G6, L8, N4, O3, P20, Q3, Q31, Q37, R13, U12, V26; <i>TS</i> : I3; <i>FM</i> : A7, B13 The logographic meaning “open sth.” lets suggest that the depicted object may be (a part of) a door or similar. See also the notes on MS54.
	<i>MS64</i> chu	unidentified object <i>LM</i> : I4, J1, S29, [V5]
	<i>MS65</i> BIIT' bi	unidentified object <i>LM</i> : O23, S27, T3 <i>TS</i> : G11
	<i>MS66</i>	see MS126b
	<i>MS67</i> bV Note:	unidentified object <i>LM</i> : N26 The vowel can not be determined due to its single attestation on the LM.
	<i>MS68</i> wAT' wa	unidentified object <i>LM</i> : R32, T31, V15; <i>TS</i> : G1 <i>LM</i> : T38, U11
	<i>MS69</i> JAAB	= MS72 <i>LM</i> : P16
	<i>MS70</i> jV?	unidentified object <i>LM</i> : T43
	<i>MS71</i> le	unidentified object <i>LM</i> : R47










	<i>MS72</i> JAAB Note:	unidentified object <i>LM</i> : I2, N7, N14, O29, R19, R26T9, V4; <i>FM</i> : E15 This sign is obviously cognate to the corresponding sign in the Maya writing ₂ system (T548 HAAB ’).
	<i>MS73</i> TIK	unidentified object <i>TS</i> : B4, D3
	<i>MS74</i> TOB	unidentified object <i>LM</i> : C5, N27
	<i>MS75a</i> chan Note:	head of a serpent <i>LM</i> : O25, Q22, R23; <i>TS</i> : D9 This sign is always used in rebusoid writings ₂ , but I suppose it is originally a logogram CHAN “snake” (< pM ** <i>kaan</i> ; Kaufman 2003:636).
	<i>MS75b</i> YUT Note:	= MS75a + MS129 <i>LM</i> : D1, P17, S43; <i>TS</i> : F13 See ch. A.2.1.
	<i>MS75c</i> wa Note:	a drum <i>FM</i> : D17, E6 The origin may be pM ** <i>waj.b</i> ’ “musical instrument” (Kaufman 2003:750).
	<i>MS76</i> BAK/bak Note:	a skull? <i>LM</i> : P38 It depends on the interpretation of the reference object and the etymology of the lexeme whether it is seen as a logogram or phonogram.
	<i>MS77</i> jaj Note:	an architectural structure? <i>LM</i> : O7, Q44 Probably derived from pH * <i>jaaj</i> “house” (< pM ** <i>ḡaab</i> ; Kaufman 2003:947–948). See ch. A.2.1.
	<i>MS78</i>	see MS76
	<i>MS79</i> ʔAJATIK Note:	headdress (with a knot of ribbons) of a ruler? <i>LM</i> : Q8; <i>FM</i> : A9, F9 Compare the headdress of MS185 and the year bearer sign in the Monte Alban writing ₂ system. The 3ERG possessive prefix is implicit in FM A9 (thus yielding the logographic value YU-ʔAJATIK).
	<i>MS80</i> ni	unidentified object <i>LM</i> : Q22, T12













	<i>MS81</i> CHAN	unidentified object <i>LM</i> : R25, T11
	<i>MS82</i> ?AAL	unidentified object <i>LM</i> : Q1
	<i>MS83</i> ?IIX.AL Note:	unidentified object <i>LM</i> : N23, P10, Q9 The phonetic structure is completely determined by phonographic indicators. The 3ERG possessive is implicit in Q9 on the LM.
	<i>MS84</i> K'OOJ	profile of a mask (or skull?); see also MS169b <i>TS</i> : G5
	<i>MS85</i> be Note:	unidentified object <i>LM</i> : I3, N8 Always attached to the preceding sign.
	<i>MS86</i> be	variant of MS85 <i>LM</i> : I6
	<i>MS87a</i> ?AAT	unidentified object <i>LM</i> : P31
	<i>MS87b</i> POKO	= MS139b <i>FM</i> : D15
	<i>MS88a</i> ?IK'	unidentified object <i>LM</i> : S11
	<i>MS88b</i> IV Note:	unidentified object <i>FM</i> : A8 The vowel can not be determined due to its single attestation on the FM.
	<i>MS89</i> TRANCE Note:	unidentified object <i>LM</i> : N38, R9, T19 This sign appears once separate and twice preceding MS178 for which I propose the logographic reading BE.IN.TRANCE , so MS89 may be a phonogram rendering approximately the phonetic structure of MS178. But since the lexeme behind MS178 is unknown, the exact reading of MS89 remains indetermined.












	<i>MS90</i> LAJ	failed version of MS91 <i>LM</i> : O30
	<i>MS91</i> LAJ Note:	unidentified object <i>LM</i> : O13, R2, V29; <i>TS</i> : H1 Being once indicated by the numeral 10 (pH * <i>lajuj</i>) as a phonogram laj , the logographic reading of MS91 can be seen as confirmed. See ch. A.2.1.
	<i>MS92</i> JOM Note:	unidentified object <i>LM</i> : S48 See comments on the LM in ch. B.2.4.
	<i>MS93a</i> JINAJ ji Note:	germing seed <i>ES</i> : A1 <i>LM</i> : O33, V7; <i>TS</i> : F7, G2, G6; <i>FM</i> : B9, C4, D11 The phonographic value ji is provided by several contexts. On the ES and therefore at an early stage of Isthmian writing ² , the sign is used as a logogram for “seed”. It illustrates that the Huastecan lexeme had at some stage initial / <i>ji</i> / and therefore shares features with the LL forms, while modern dialects have initial / <i>ʔi</i> / (the reconstructions for this lexeme are inconclusive; see Kaufman 2003:1053)
	<i>MS93b</i> ji	upper part of MS93a <i>LM</i> : J7, K3, P1
	<i>MS94</i> ji•ju	MS93b and MS153 conflated <i>LM</i> : P19
	<i>MS95</i> ʔAJ Note:	unidentified object <i>LM</i> : A1, M8 This elaborated sign commonly introduces the year counting sequence, it therefore transcribes <i>ʔabj(.aʔ)</i> “it has been counted”.
	<i>MS96</i> ʔAJ ʔa	reduced form of MS95 <i>LM</i> : P14, P19; <i>TS</i> : A1 <i>LM</i> : G4
	<i>MS97</i> ʔAJ Note:	reduced form of MS95 <i>LM</i> : J6, O38; <i>TS</i> : B2; <i>FM</i> : C6 See also MS29
	<i>MS98</i> ʔaj	= MS97 <i>LM</i> : R21

	<i>MS99</i> JUT'	unidentified object <i>LM</i> : U3; <i>FM</i> : C14, F11
	<i>MS100</i> ji	lower part of MS93a <i>LM</i> : P18, Q7
	<i>MS101a</i> t'e Note:	unidentified object <i>LM</i> : K4, M6, Q2, T4, V2 See ch. A.2.1.
	<i>MS101b</i> t'e t'ek Note:	lower part of MS101a <i>LM</i> : H4, P29, R33, R46, S28, S44, T8, T32, T40 <i>LM</i> : O36, T17 See ch. A.2.1.
	<i>MS102</i> t'e Note:	unidentified object <i>LM</i> : S7, T44 variant of MS101b?
	<i>MS103</i>	see MS101a
	<i>MS104</i> ?ICH'	crescent moon <i>LM</i> : B4, T16
	<i>MS105</i> JUJ	a book (folded) <i>LM</i> : O32, Q6, V8
	<i>MS106</i> K'ANK'IN Note:	unidentified object <i>TS</i> : A2 This sign is part of the month sign corresponding to Yucatec <i>k'ank'in</i> .
	<i>MS107</i> chi ?ich Note:	a finger <i>LM</i> : P34 <i>LM</i> : Q35 The emphasized fingernail lets suggest that both attested phonographic values are derived from pH * <i>?ichik'</i> / <i>?ichak'</i> (compare pM ** <i>ixk'aq</i> ; Kaufman 2003:364; Norcliffe 2003:178). See also MS111.
	<i>MS108</i>	see MS27a
	<i>MS109</i> JACH'	jaw bone <i>LM</i> : B7, R4

	<i>MS110</i> K'AYAB Note:	unidentified object(s) <i>LM</i> : A2 This sign (group) is part of the month sign corresponding to Yucatec <i>k'ayab</i> . See Méluzin (1992:290–292).
	<i>MS111</i> chi	= MS107 <i>LM</i> : O24
	<i>MS112</i> cha Note:	a metate <i>LM</i> : O12 Derived from pH <i>*chaʔ</i> “quern, metate” (< <i>**kaaʔ</i> ; Kaufman 2003:934).
	<i>MS113</i> PAK pa	something buckled, folded <i>TS</i> : F4 <i>LM</i> : S21
	<i>MS114</i> K'UP k'u Note:	a knife <i>LM</i> : L2, O10, Q15, V24 <i>LM</i> : B1 See ch. A.2.1.
	<i>MS115</i> BAJ Note:	a hammer or chisel <i>LM</i> : L6 Compare T190/333 in Mayan writing ₂ .
	<i>MS116</i> K'IJ	unidentified object <i>LM</i> : N3
	<i>MS117</i> wich Note:	a flower <i>LM</i> : Q38 pH <i>*wich</i> “flower” (Norcliffe 2003:178; Kaufman 2003:1048) is apparently a cognate of pM <i>**nik</i> , though it shows an untypical /n/ > /w/ shift. This untypical shift, however, made the MS117 available for the rebusoid writing ₂ of pH <i>*wich</i> “to quake” which is unattested in modern Haustecan dialects, but related with CM <i>*ijbk</i> (Kaufman 2003:1285). In this case, the shift pM <i>**ij</i> > pH <i>*w</i> is regular.
	<i>MS118</i> ju *JUJ	MS105 + lower part of MS153 <i>TS</i> : F3
	<i>MS119</i> k'ul	a mountain/hill <i>LM</i> : L3, O11, Q16

	Note:	Probably originally a logogram K'UUL “mountain” (compare pM ^{**} <i>k'uul</i> ; this lexeme diffused also through WM with initial /k'/ instead of /ch'/, e. g. TZE <i>k'ul</i> ; Kaufman 2003:413), it is only attested as a rebus sign in the sequence that renders <i>aj=k'ul</i> “enemy”. See ch. A.2.1.
	<i>MS120</i> CHICH' Note:	blood drops on paper? <i>LM</i> : P35 Compare classic Mayan T628a which is also a logogram for blood (CH'ICH'/K'IK').
	<i>MS121</i> IV Note:	unidentified object <i>LM</i> : Q11 The vowel can not be determined due to its single attestation on the LM.
	<i>MS122</i> k'al Note:	charcoal? <i>LM</i> : J3 Possibly derived from pH [*] <i>k'alul</i> “charcoal” (Kaufman 2003:503). See ch. A.2.1.
	<i>MS123</i> tu Note:	an earring/stud <i>LM</i> : V21; <i>TS</i> : E1 Probably cognate to MS180 and its logographic reading TUŸ . See ch. A.2.1.
	<i>MS124a</i> ku Note:	unidentified object <i>LM</i> : K2, P25, Q21, R16, T24; <i>FM</i> : B2, B6 See notes on MS125a.
	<i>MS124b</i> ku*na Note:	MS124a where something is missing <i>LM</i> : P37 I suspect a play on words: the sign itself primarily provides the phonographic reading ku , but the fact that something is missing gives also the additional phonographic value na , since the scribe forgot something (compare CM [*] <i>naaj</i> “to forget sth.”)!
	<i>MS125a</i> KUWOK Note:	unidentified object within rectangular frame <i>FM</i> : B11 The framing makes it plausible to assume that this is a day sign, corresponding to Yucatec <i>kawak</i> for its similarity with MS124 and T528. pM ^{**} <i>kahog</i> “thunder” (Kaufman 2003:489) is a reasonable candidate for the origin of the day name as well as for the phonographic values ku/ka of MS124 and T528 assuming that the sign stems from a very early phase before the shift pM ^{**} <i>k</i> > pH [*] <i>ch</i> took place (see also ch. A.3.1).
	<i>MS125b</i> LEM le Note:	= MS125c + MS66 <i>LM</i> : N34 <i>LM</i> : S42 Maybe MS66 is a sign by itself with an unknown meaning.
	<i>MS125c</i> le	short form of 125b? <i>LM</i> : B2

	Note:	This sign is distinguished from MS125a by the framing, which surrounds MS125a completely as in the case of other day signs.
	<i>MS126</i> TIKWAL Note:	unidentified object <i>TS</i> : C7 See comments in ch. B.1.2.
	<i>MS127</i> TAJ	= MS128 <i>LM</i> : D5
	<i>MS128</i> TAJ	unidentified object <i>LM</i> : F1
	<i>MS129</i> YUT' Note:	a knotted ribbon <i>LM</i> : Q40, T39 See also MS75b. Compare classic Mayan T61 and its phonographic value yu and T60.
	<i>MS130</i> KOJ.UW	a certain headdress <i>LM</i> : Q28
	<i>MS131</i> CHABAN	corrupted day sign <i>TS</i> : A9
	<i>MS132</i> LET.BLOOD	lower part of the body (blood letting?) <i>LM</i> : P33
	<i>MS133</i> ?e	unidentified object <i>LM</i> : L5, V19
	<i>MS134</i>	unidentified object(s) (see MS44)
	<i>MS135</i> ?V Note:	unidentified object <i>LM</i> : Q26 The vowel can not be determined due to its single attestation on the LM.
	<i>MS136</i> tu Note:	a bound stone <i>LM</i> : G4, O18, P22 Derived from pH * <i>tujub</i> "stone" (Norcliffe 2003:188).
	<i>MS137</i> ?a*tu	failed version of G4 on the LM (MS96 + MS136) <i>LM</i> : N2

	<i>MS138a</i> ba Note:	a bone? <i>LM</i> : C6, L7, R30, S16, S41, T2 Maybe derived from pH * <i>bak</i> “bone” (< pM ** <i>b'aaq</i> ; Kaufman 2003:357).
	<i>MS138b</i> ba	variant of MS138a on the FM <i>FM</i> : D9, D12
	<i>MS139a</i> TAM	unidentified object <i>LM</i> : O15, P11
	<i>MS139b</i> POKO	unidentified object; compare MS87b
	<i>MS140</i> je	unidentified object <i>LM</i> : K5, M3, V14
	<i>MS141</i> nu Note:	see MS39 (also for attestations) The resembling classic Mayan sign T134 may be derived from this sign, compare the similar phonographic values nu (MS141) and no (T134). See ch. A.2.1.
	<i>MS142</i> ju	= MS143a <i>LM</i> : Q6, Q29
	<i>MS143a</i> ju Note:	hair or feathered wing <i>LM</i> : B1, J8, O19, O32, P2, R49, S6, S32, U8, V8; <i>TS</i> : G9, I4 In modern dialects the lexemes derived from pH * <i>jujul</i> can mean “hair” and “feather” and have replaced the lexeme pH * <i>ton</i> “hair”, which is, however, preserved in the logographic reading of MS143b.
	<i>MS143b</i> TON Note:	early variant of MS143a <i>ES</i> : A3 See comment on MS143a.
	<i>MS144</i> ju Note:	left part of MS143a <i>LM</i> : O18, P22 This variant is used whenever it combines with another small sign (in the case of LM with MS136) to form a sign group.
	<i>MS145</i> tu·ju	MS123 + MS142 <i>LM</i> : N36, Q13; <i>TS</i> : B6



MS146
1

a finger, compare MS107

LM: T9

Note: The finger is used in this context as a substitute for the numeral “one”. Compare T329 of Mayan writing₂.



MS147
k'u

a hand turned upside down and showing the back

LM: N9, Q40

Note: Compare the corresponding hand sign in Maya Writing₂ and the similar phonographic value **k'o**. It derives from pH **k'ubak/k'obak* “hand, arm” (< pM **q'ab'*; Norcliffe 2003:180).



MS148
k'u

variant of MS147 on TS

TS: I1



MS149a

a hand, see following signs



MS149b
?AK'
?ak'
CHOJ
YE?

MS149a holding/putting MS42

LM: Q5, R29, U10; *FM*: D4

LM: S39; *TS*: F11

LM: V12; *TS*: F6(?), G4; *FM*: C3

LM: Q27, T27

Note: The several logographic values – *?ak'* “to put, give sth.”, *choj* “to put, use sth.” and *ye?* “to give sth.” – are commonly distinguished by added phonograms.



MS149c
TIY

MS149a holding/putting MS50

LM: P7, R35, S47



MS150a
ta

a hand with an unidentified objekt

LM: D4, S4, U6



MS150b
ta

variant of MS150a on FM

FM: D13



MS151
TIK

a hand putting down MS73

TS: D3

Note: One diagnostic element is the bead chain at the wrist (see MS212).



MS152a
BALAM












jaguar head












LM: B3, R1, R14, T15



























MS152b










variant of MS152a on FM

	BALAM	<i>FM</i> : B14, C12
	Note:	While the tongue of the depiction of MS152a is missing on the FM, the diagnostic stripes on the cheek are evident.
	<i>MS153</i> ju	skin of animal with tail <i>LM</i> : M2, N16
	Note:	Compare MS143.
	<i>MS154</i> CHEJ	head of a deer <i>FM</i> : F4; <i>LM</i> : M16
	Note:	The typical framing of the day sign is absent on the FM. See Macri (2017c).
	<i>MS155</i> CHAN	head of a serpent within rectangular frame <i>LM</i> : A9
	Note:	In this form only attested as a day sign, but compare MS75a; See also Méluzin (1992:289–290).
	<i>MS156</i> POP	a serpent <i>LM</i> : M9
	Note:	This sign is only attested as a month sign corresponding to Yucatec <i>pop</i> , cf. Méluzin (1992:289–290).
	<i>MS157</i> be	head of an animal/bird? Compare MS159. <i>TS</i> : G13
	<i>MS158</i> pe	head of a turtle <i>TS</i> : D4
	Note:	The phonographic value derives from pH * <i>pet</i> “turtle” (Norcliffe 2003:190).
	<i>MS159</i> be	head of a certain bird. Compare MS157 <i>LM</i> : S30
	<i>MS160</i> bu	head of a certain bird with unidentified objects <i>LM</i> : O20
	<i>MS161</i> k'u	unidentified object (head?) <i>LM</i> : N31, S18
	<i>MS162a</i> wal	part of a face <i>TS</i> : C8
	<i>MS162b</i> wal	variant of MS162a on ES <i>ES</i> : A10

	<i>MS162c</i> wAL	variant of MS162a on FM <i>FM</i> : C1, E7
	<i>MS163</i> ?AT	unidentified object <i>LM</i> : G4
	<i>MS164</i> pi Note:	a grasshopper <i>LM</i> : S19, V25; <i>TS</i> : I2 Derived from pH * <i>picb'ich</i> “grasshopper” (Norcliffe 2003:179; note the emphasized hind leg).
	<i>MS165</i> k'i Note:	an insect? Compare MS164 <i>LM</i> : G2, G5, N28, N30, Q30, R12, S10, T47; <i>TS</i> : F2; <i>FM</i> : B8, D8 The value may be derived from a word for “cockroach”, compare MP+ * <i>(xh=)kʷ iʔl</i> (Kaufman 2003:661).
	<i>MS166</i> wV Note:	head with bound eyes <i>LM</i> : P13 Vowel indetermined. Maybe derived from pH * <i>way</i> “to sleep” (< pM ** <i>war</i> ; Kaufman 2003:1257)?
	<i>MS167</i> ?AK'B.AAL	head wearing a certain mask <i>LM</i> : R27
	<i>MS168</i> ?AK'B.AAL	= MS167 <i>LM</i> : O5
	<i>MS169a</i> bi	unidentified object <i>LM</i> : N29, T10
	<i>MS169b</i> k'ooj	variant of MS84 on FM <i>FM</i> : A1, D1, E1, E9
	<i>MS170</i> cho Note:	head of an animal <i>LM</i> : F4, O22, Q46, R38, S5, U7; <i>TS</i> : D5, I5 Maybe derived from pH * <i>ʔochʊʔ</i> “small lizard” (< pM ** <i>ʔobkoʔ</i> ; Kaufman 2003:641).
	<i>MS171</i> ?o Note:	head of an animal <i>LM</i> : M1, N6, O12, O16, O24, P12, P28, T14; <i>TS</i> : G8 Maybe derived from pH * <i>ʔooʔ</i> “frog” (< pM ** <i>wooʔ</i> ; Kaufman 2003:644).

	<i>MS172</i> TUJ	head with MS136; see also MS173 and MS179 <i>LM</i> : T22
	<i>MS173</i> TUJ	head with MS136; see also MS172 and MS179 <i>LM</i> : Q49
	<i>MS174</i> ba	variant of MS176 <i>LM</i> : S50
	<i>MS175</i> pa	variant of MS176 <i>TS</i> : C1
	<i>MS176</i> PALAJ pa ba	head/face <i>LM</i> : V27 <i>LM</i> : H1 <i>LM</i> : D3, T33, U13
	Note:	The two phonographic values are derived from pH * <i>palaj</i> “front, face” (pM ** <i>palaj</i> ; Kaufman 2003:332) and pH * <i>baj</i> “self; top, above” (< pM ** <i>b’ab</i> ; Kaufman 2003:276), respectively.
	<i>MS177</i> ba	variant of MS176 <i>TS</i> : F10
	<i>MS178</i> TRANCE	head with a symbol covering the eyes <i>LM</i> : R10, T20
	Note:	Most probably a verb “to be in trance”; See also comments on MS89.
	<i>MS179</i> tu	bearded head with MS136; see also MS172 and MS173 <i>LM</i> : F5, R39, T42
	<i>MS180</i> TUY	Head of a person wearing a certain earring <i>TS</i> : E2
	Note:	The earring resembles MS123.
	<i>MS181</i> VENUS	head version of MS30 (note the headdress)? Venus god? <i>LM</i> : E2
	Note:	Maybe this is a royal title related to Venus.
	<i>MS182</i> GOD.X	head with headdress and lip plug. A god? <i>LM</i> : L1, O9, Q14
	Note:	Maybe this is a royal title.
	<i>MS183</i>	head with royal headdress

	ʔAJATIK	<i>TS: C2</i>
	<i>MS184</i> GOD.X	= MS182 <i>LM: E1</i>
	<i>MS185</i> ʔAJATIK.TUJ	= MS179 + MS79 <i>TS: B5</i>
	<i>MS201</i> k'o	something twisted <i>FM: A2</i> Note: Derived from pM *q'ol > pH *k'ol "fold, twist, bent sth." (Kaufman 2003:905).
	<i>MS202</i> yu	variant of MS38 <i>FM: B3, E12</i>
	<i>MS203</i> ti	unidentified object <i>FM: B7</i>
	<i>MS204</i> t'u	unidentified object <i>FM: F12</i>
	<i>MS205</i> ʔo	unidentified object, maybe variant of MS171 <i>FM: B12</i>
	<i>MS206</i> LAAB	unidentified object <i>FM: C8</i>
	<i>MS207</i> po	unidentified object <i>FM: D14, E3</i>
	<i>MS208</i> ko	snake scales after molting? <i>FM: A6</i> Note: Maybe derived from pM *qol > pH *kol "peel, molt" (Kaufman 2003:816).
	<i>MS209</i> ʔi	unidentified object <i>FM: C17</i>
	<i>MS210</i>	platform with staircase

	ʔEEB	<i>FM</i> : A11
	Note:	Compare T697/T685 in Mayan writing ₂ .
	<i>MS</i> ₂₁₁ KOP	unidentified object <i>FM</i> : F8
	Note:	Compare MS62.
	<i>MS</i> ₂₁₂ TIK	variant of MS151 (bead chain worn at the wrist in MS151) <i>FM</i> : B5, F2
	<i>MS</i> ₂₁₃ la	unidentified object <i>FM</i> : C11
	<i>MS</i> ₂₁₄ je	variant (upper part) of MS140 <i>FM</i> : A3, D2, E16
	<i>MS</i> ₂₁₅ k'u	variant of MS147 on FM <i>FM</i> : D5
	<i>MS</i> ₂₁₆ ko	unidentified object <i>FM</i> : D16, E5
	<i>MS</i> ₂₁₇ li	head of a sparrowhawk <i>FM</i> : E8
	Note:	Compare CM * <i>lik.lik</i> “sparrowhawk” (Kaufman 2003:607).
	<i>MS</i> ₂₁₈ BOT'	head of an armadillo <i>FM</i> : D7
	Note:	The logographic meaning (pH verb * <i>bot'</i> “roll, wrap, envelop”) is iconically indicated. The sign shows the head of an armadillo, whose Huastecan name is indeed pH * <i>bot'.aw</i> (Norcliffe 2003:171), lit. “he, who rolls himself up”
	<i>MS</i> ₂₁₉ wIʔ	head (with a speech volute?) <i>FM</i> : E13

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