

Introduction to Maya Hieroglyphs

Workshop Handbook

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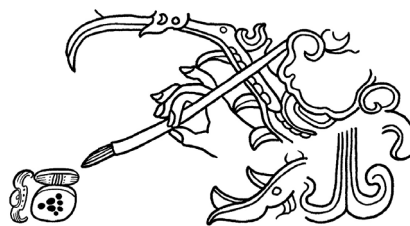


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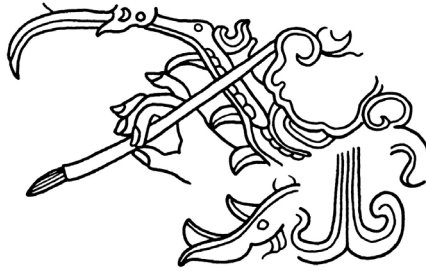
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FOREWORD



During the past four decades we have witnessed groundbreaking developments in the field of Maya epigraphy. The purpose of this handbook is to provide an introduction to the study of Maya hieroglyphs and is designed to be used in conjunction with Maya hieroglyphic workshops. It is our objective to summarize and render intelligibly the recent developments of Maya epigraphy (i.e. hieroglyph studies). The audience targeted is that of beginners attending Maya hieroglyphic workshops³.

The authors wish to receive any possible comments on the contents and structure of this handbook in order for us to be able to produce improved versions in the future. Readers of this handbook are advised to realize, as noted above, that this introduction is intended to be used in combination with the workshops provided, i.e. the handbook only presents a skeleton of the writing system, and to get the best out of the current volume, the reader is suggested to participate in the workshops and lectures provided by numerous individuals and institutes around the world offering workshops on the Ancient Maya script.

³ This handbook is also designed for more advanced students, and it should be noted here that some parts of the current volume (e.g. Chapter 5.1. **Conventions of Transcribing and Transliterating Maya Texts**, Appendix J: **Synharmonic vs. Disharmonic Spelling, Underspelled Sounds, and Reconstructed Glottal Fricatives in Maya Hieroglyphic Writing** and Appendix K: **Notes on Classic Maya Grammar**) are intended for students already exposed to the Maya writing system, and are only expected to be skimmed through by beginners. This Introduction is intended to be as short as possible as regards to the main part of the volume, but additional information is provided to the audience with extra craving for the intricacies of the Maya script.

ACKNOWLEDGMENTS

Over the years we have had the opportunity and privilege to work in collaboration with the world's best epigraphers and have often had the opportunity to learn of new decipherments firsthand from the people who made these discoveries. As we owe a great deal of our intellectual baggage to the insight of our colleagues, we would like to acknowledge them collectively for their contribution to this workshop handbook, be it conscious or unconscious, direct or unwitting. These are Erik Boot, Pierre Robert Colas, Stanley Guenter, Nikolai Grube, Stephen Houston, Justin Kerr, Alfonso Lacadena, Barbara MacLeod, Simon Martin, Joel Palka, Dorie Reents-Budet, Linda Schele, David Stuart, Robert Wald, Søren Wichmann, and Marc Zender. Special thanks are addressed to the colleagues who have made valuable suggestions and corrections to the earlier versions of this handbook: namely Juan Ignacio Cases Martín, Alfonso Lacadena, Simon Martin, Christian Prager, and Søren Wichmann. Furthermore, we would like to thank Antti Arppe and Matti Miestamo for their insightful and constructive observations and consequent modifications of the linguistic part of this volume.

We would particularly like to thank the late Linda Schele for initiating the formula of the workshops on Maya hieroglyphic writing.

Last but not least, the authors would also like to express more personal gratitudes. The Senior author thanks Asta, Hilla, and Otso Kettunen for their support and affection. The Junior author wishes to thank Reinhart, Françoise and Eric Helmke for unflagging emotional and financial support.

Due to the fact that this handbook is designed for beginners' purposes and intended to be a concise introduction to the topic, we find it extraneous to cite all the people involved in deciphering particular hieroglyphs or producing ideas, insights, and discoveries related to the subject. We would therefore like to apologize for any substantial omissions regarding ignored acknowledgements, and would welcome feedback in this regard.

NOTE ON THE ORTHOGRAPHY

The conventions of orthography have plagued Maya studies since the very beginning of the discipline. Maya words have been and still are written in sundry fashion. One illuminating example is the numerously used word for ‘lord’ or ‘king’ which appears at least in five different forms in the Maya literature: ahau, ahaw, ajau, ajaw and ’ajaw. Since the ratification of the new official alphabets for the Guatemalan Maya languages (*Acuerdo Gubernativo numero 1046-87* [23rd of November 1987]) and its modification (*Acuerdo Gubernativo numero 129-88* [2nd of March 1988]), and its subsequent publication (*Lenguas Mayas de Guatemala: Documento de referencia para la pronunciación de los nuevos alfabetos oficiales*), most but not all Maya scholars around the world have started to use the new alphabet in their publications.

When it comes to the application of this new alphabet, one can notice various ways of dealing with the issue. The conventions of the orthography usually touch four “domains” of groups of words:

- (1) Words in different Maya languages;
- (2) Maya words that are considered to be somewhat constant in the terminology of the Maya studies (such as day and month names [derived from colonial Yucatek]);
- (3) Place and proper names
- (4) Names of languages and ethnic groups

On the other end of the “scale” are scholars, who use new alphabets for the words in Maya languages but retain the custom of using old (colonial) alphabets for the cases #2-4; in the middle of the scale are scholars with various solutions: some are applying the new alphabet for the Guatemalan Maya languages only (case #1), and old alphabets for the others; both of these might use either old or new orthography in the case #2. The Maya name for a so-called ‘day’ may be particularly revealing in this regard: e.g. Cauac/Kawak (see the section on Day Names, below).

On the other end of the “scale” are scholars, who employ the new alphabets not only in the cases #1-2, but also in the cases #3-4 thus using Yucatan instead of Yucatan, Waxaktun instead of Uaxactun, and K’iche’ instead of Quiche or Quiché. Also, most scholars who have started

employing the new orthography in all of the cases stated above, still maintain the convention of using traditional orthography for languages and ethnic groups outside the Maya realm, thus using words such as Q’eqchi’, Kaqchikel, and Wastek in the same text with Mixe, Zoque, and Nahuatl instead of using either one of the following sets:

- (a) Q’eqchi’, Kaqchikel, Wastek, Mihe, Soke, and Nawatl
- (b) Kekchi, Cakchiquel, Huastec, Mixe, Zoque, and Nahuatl

Our position in this medley is that of finding a closely argued, consistent, and coherent standpoint. We have chosen to follow the sequent logic: when it comes to the Maya words, whether in the form of the above stated cases #1 or #2, we have chosen to follow the “new alphabet”. In the case of the place names we have chosen *not* to follow the usage of the “new alphabet” since most place names are well established in the geographical vocabulary, including maps and road signs, and, furthermore, reflect a world-wide custom of natural “frozenness” of place names (on the same grounds the cities of Leicester and Gloucester in England retain their old orthographies, and their spellings are not revised to *Lester and *Gloster, respectively). Thus we are inclined to hold back to the traditional orthography in the case of such place names as Yucatan (not *Yukatan), Edzna (not *Etz’na or *Ets’na), Coba (not *Koba or *Kob’a), and Uaxactun (instead of *Waxaktun or *Waxaktuun). Also, the accents represented on Maya words are redundant since all words of Maya origin are pronounced with the stress placed on their last syllable. Thus, the use of Spanish-derived accents is eliminated: thus e.g. Tonina instead of *Toniná⁴.

However, in the case of the names of the Maya languages and “nations” we have chosen to follow the “new” orthography on the ground of practicality and rationality: practicality in the sense that the new forms of the languages and

⁴ On the same grounds, for example, all words in Finnish (including place names) are not marked with accents due to the fact that in Finnish the stress is always on the first syllable; thus: Helsinki, not *Hélsinki (asterisks are used here to indicate incorrect spellings).

nations have been accepted (with some exceptions) by most scholars whether they live in Central America, Mexico, the United States or Europe (regardless of the respective languages they employ); rationality in the sense that the new orthographies reflect the names of the languages and nations far better than the older somewhat inconsistent names.

This reasoning is not, however, accepted by some scholars who – with an understandable and well-grounded argumentation – rationalize that the names of the Maya languages and nations in the English language are *English* words, i.e. it is not reasonable to assume that the change of the orthography of a given language outside of English speaking world affects *English* orthography. According to the same reasoning, English speaking people use words such as German (not *Deutsch), visit countries and places such as Brittany (not *Bretagne), Saxony (not *Sachsen), and Finland (not *Suomi), talk about languages such as French (not *français), Swedish (not *svenska), and Spanish (not *español), etc.

From our viewpoint, names of the Maya languages and nations do not fall into a same type of category as the previous examples. They are less well known and less used in common spoken or written language, and are, therefore, more easily to be “revised” if needed.

In this handbook we will follow the new alphabets and new orthography when dealing with *Maya* names and terminology, but we shall continue using the old orthography when employing names of Maya origin that have been incorporated into English. The ‘old’ or so-called ‘Colonial’ orthography is thus used here to render place names (i.e. toponyms).

1. INTRODUCTION

The earliest known Maya texts date back to the first century BC, and the latest were written around the time of the Spanish Conquest. A very rough estimate of around 10,000 individual texts can be suggested to account for those that have so far been discovered archaeologically or they are found in the museums or private collections around the world. Most of these texts were written during the Classic period (AD 200–900) on ceramic vessels and on stone monuments, such as stelae (sg. stela) and lintels. Besides these

we have hieroglyphic texts on a number of other media and locations, such as codices⁵, wooden lintels, stucco façades, frescoes on the walls of buildings, cave walls, animal shells, bones, jadeite, obsidian, brick, clay, etc.

The system of Maya hieroglyphic writing consists of more than one thousand different signs. However, many of these signs are either variations of the same sign (**allographs**) or signs with the same reading (**homophones**), or they were utilized only at a given period of time or in a given location. Thus, the total of hieroglyphs used at any one time did not exceed an inventory of more than 500 signs⁶.

The Maya writing system is described linguistically as a logosyllabic system, comprised of signs representing whole words (**logograms**) and **syllables** (syllabic signs, which can either work as syllables or phonetic signs). There are approximately 200 different syllabic/phonetic signs in the Maya script, of which around 60 percent comprise of homophonic signs. Thus, there are some 80 *phonetic* syllables in the Classic Maya language and about 200 *graphemic* syllables in the script⁷. Once contrasted to other Mesoamerican writing systems, it is apparent that the ancient Maya used a system of writing that had the potential to record linguistic structures as complex as the syntax present in the oral manifestations of their languages. In practice, however, the writing system is a graphemic abbreviation of highly complex syntactical structures and thus many items omitted had to be provided by readers intimately familiar with the language the script records.

⁵ All the four surviving *readable* Maya codices, or books, date back to the Postclassic period (AD 1000–1697). The Maya codices were manufactured using the inner bark of different species of amate (fig tree, *Ficus cotonifolia*, *Ficus padifolia*). These were folded into the shape of an accordion that can be folded and unfolded like a screen. Besides the Postclassic codices, there are a few examples of Classic period codices that have been uncovered archaeologically in burials (cf. e.g. Angulo 1970). However, these codices have been affected so adversely by the tropical climate, that these have been reduced to amorphous heaps of organic remains, plaster and pigment.

⁶ Michael Coe (1992: 262) gives a lot lower number of 200–300 glyphs used at any given time with the total of 800 glyphs in the Maya script in general.

⁷ See Table XII: Syllable charts.

2. HISTORY OF DECIPHERMENT

The history of the decipherment of the Maya script is an intriguing account, nearly 500 years in duration, wherein a functional understanding of the writing system was pursued, a system that at a first glance looks as alien as can possibly be imagined. It is impossible to relate even the basic features of these histories in this volume, but some outlines of the most important discoveries should be mentioned in order for the reader to be able to comprehend how some of the readings came about.

In 1862, while looking for New World research material at the Royal Academy of History in Madrid, a French clergyman by the name of **Charles Étienne Brasseur de Bourbourg** came upon a manuscript titled *Relación de las cosas de Yucatán*⁸ written by a bishop **Diego de Landa**. Two years later, Brasseur de Bourbourg published the manuscript as a bilingual edition (Spanish and French) by the name of *Relation des choses de Yucatán de Diego de Landa*.

Three decades prior, American lawyer and travel writer **John Lloyd Stephens** set off with English artist **Frederick Catherwood**, from New York to travel to the Maya area via Belize. During their annual sojourns between 1839 and 1842, they explored ruined Maya sites, wrote reports, drafted maps and sketched ancient sculptures and buildings. Through their efforts they made the “lost cities” of the Maya known for the general audience in two lavishly illustrated volumes: *Incidents of Travel in Central America, Chiapas, and Yucatan* (1841) and *Incidents of Travel in Yucatan* (1843). In the first of these volumes Stephens wrote of Copan:

In regard to the age of this desolate city I shall not at present offer any conjecture. Some idea might perhaps be formed from the accumulations of earth and the gigantic trees growing on the top of the ruined structures, but it would be uncertain and unsatisfactory. Nor shall I at this moment offer any conjecture in regard to the people who built it, or to the time when or the means by which it was depopulated, and became a desolation and ruin; whether it fell by the sword, or famine, or pestilence.

⁸ The manuscript is actually an abridgement of the original by Diego de Landa Calderón, written around 1566 in Spain, but never recovered since. This abridgement proceeded from one copyist to another until a later version (written around 1660) was uncovered by Brasseur de Bourbourg.

The trees which shroud it may have sprung from the blood of its slaughtered inhabitants; they may have perished howling with hunger; or pestilence, like the cholera, may have piled its streets with dead, and driven forever the feeble remnants from their homes; of which dire calamities to other cities we have authentic accounts, in eras both prior and subsequent to the discovery of the country by the Spaniards. One thing I believe, that its history is graven on its monuments. Who shall read them? (Stephens 1993 [1841]: 59).

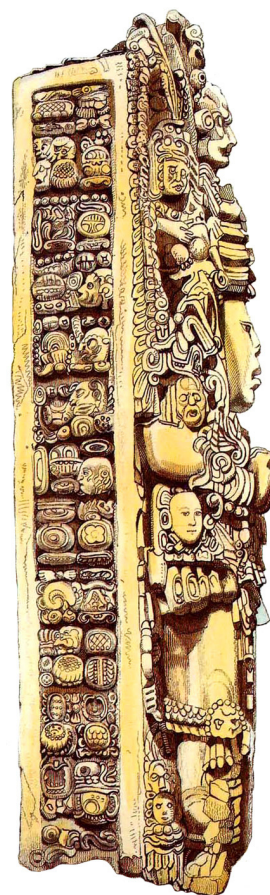


Figure 1: Stela A, Copan, Honduras (drawing by Frederick Catherwood)

This challenge was probably put forward by Stephens in view of the fact that the Egyptian script had been cracked (by **Jean-François Champollion**) just decades prior to the publication of his book. However, during Stephen’s times there was no *Rosetta stone*⁹ available for the still nascent Maya studies. After the discovery of Landa’s *Relación* by Brasseur de

⁹ The Rosetta stone was discovered in 1798 during the intrusion of the Napoleonic army in Egypt. It contained three parallel texts in Greek, demotic Egyptian, and hieroglyphic Egyptian. The proper names in the parallel texts were the basis for cracking the Egyptian hieroglyphs.

Bourbourg, the scholars thought they had the Rosetta stone of Maya studies at their disposal.

In one of the pages Landa describes what he thought were Maya alphabetic characters. The so-called *Landa alphabet* (see Figure 29) was just about instantly condemned to be a misunderstanding by this Spanish clergyman (which it was – to a certain point at least). Thus, it was assumed that this ‘alphabet’ was useless. Consequently, no correlation or academic examination worthy of consideration were completed during the following hundred years.

One of the problems was that both Landa and the scholars of the late 19th century, up to those of the 1950’s, failed to understand that the Maya script was not alphabetic or solely phonetic (or merely logographic for that matter)¹⁰. At first scholars tried to apply the Landa alphabet directly (but, time and again, unsuccessfully) to the Maya script. On the other hand – at around the same time – the logograms for calendrical signs depicted in the *Relación* were successfully applied to Maya texts. Based on the success of logographic signs and the failure of so-called alphabetic ones, it was deemed that Maya writing on the whole could not be phonetic¹¹.

The study of Maya hieroglyphs advanced towards the 1950’s steadily in stages, especially

as relates to the glyphs forming the calendrical parts of texts¹². Perhaps as a direct consequence, the idea was developed that the Maya script was purely logographic. In the same vein, it was presumed that the content of the inscriptions dealt almost exclusively with astronomical and non-historical matters, an idea that prevailed in the academic circles of the time.

Attempts to read Maya hieroglyphs (or parts of the hieroglyphs) phonetically were doomed to failure or, conversely, neglected by the leading scholars of the time. However, beginning already in the 19th century, several prolific interpretations were made by a handful of researchers. Nevertheless, all of these scholars failed to find a systematic method to fully clarify their ideas.

In 1876, a French academic by the name of **Léon Louis Lucien Prunol de Rosny** proposed in his study *Déchiffrement de l’Écriture Hiératique de l’Amérique Centrale* that Maya hieroglyphic writing was partly based on phonetic signs. His work on the Maya hieroglyphs and his linguistic background along with his knowledge of other writing systems in the world made him conclude that the Maya script consist of both logograms and phonetic signs. However, third of a century passed by after de Rosny’s noteworthy work until the first systematic study of the phonetic content of the Maya script saw daylight.

In the beginning of 1950’s a researcher from the Institute of Ethnology in Leningrad, **Yuri Knorozov**, tested out the Landa alphabet once again, and compared them with the then few existing copies (Villacorta and Villacorta 1933) of the three known Maya codices that he had found in the boxes that he and his companions-

¹⁰ In 1915 Sylvanus Morley wrote in his *An Introduction to the Study of Maya Hieroglyphs*: “It is apparent at the outset that the first of these theories [that the glyphs are phonetic, each representing some sound, and entirely dissociated from the representation of any thought or idea] can not be accepted *in its entirety*; for although there are *undeniable traces of phoneticism* among the Maya glyphs, all attempts to reduce them to a phonetic system or alphabet, which will interpret the writing, have signally failed”. (Morley 1975: 26-27 [our italics]).

¹¹ Largely due to unsuccessful attempts by linguists like Benjamin Lee Whorf to prove that the Maya script had phonetic signs as well as logographic, Eric Thompson wrote the following in 1950 in his *Maya Hieroglyphic Writing: An Introduction*: “It had been my intention to ignore Whorf’s (1933, 1942) attempts to read the Maya hieroglyphic writing, supposing that all students of the subject would by now have consigned them to that limbo which already holds the discredited interpretations of Brasseur de Bourbourg (1869-70), de Rosny (1876), Charency (1876), Le Plongeon, Cresson (1894), and Cyrus Thomas (1886) [...] Whorf’s writings are a direful warning to those with a similiary uncritical approach to the hieroglyphic problems.”

¹² Towards the end of the 19th century, a Saxon librarian by the name of **Ernst Förstemann** studied the calendrical part of Landa’s *Relación* together with the Dresden Codex and other Maya texts. He discovered that the Maya used a vigesimal, or base twenty, system in their calculations, and that they employed the concept of zero in their mathematical system. Förstemann also worked out the Venus tables, the Tzolk’in calendar, and the lunar tables in the Dresden codex, and discovered the Long Count system in Maya monumental texts. Early 20th century saw other discoveries, as the identification of head variants for Maya numerals, and the correlation between the Maya Long Count dates and Gregorian dates by **Joseph T. Goodman**, and American journalist.

in-arms had stumbled on and ‘rescued’ in 1945 in Berlin.¹³

The method used by Knorozov was to study writing systems, which had already been deciphered. Based on shared similarities between them, and the number of signs used by each type of writing system, Knorozov suggested that the Maya writing system was comprised of logograms and phonetic signs. In the broad strokes the Maya writing system was thought to resemble the Japanese writing system.

Knorozov set out to test his ideas by using the Landa Alphabet as though it were (partly) comprised not of alphabetic signs, but syllabic ones. The syllabic approach was supported by the fact that this was a typical feature of other ancient scripts which had been deciphered previously. He applied some of these signs directly to the corresponding ones in the Maya codices. One of the signs in the codices was Landa’s **cu**¹⁴ followed by a then unknown sign. These signs were above a figure representing a turkey, and, consequently, Knorozov assumed that the glyph represents the animal depicted¹⁵. This assumption was supported by the repeated association between that glyphic collocation and the representation of the turkey in the codices.

In Yukatek Maya the word for ‘turkey’ is *kutz* (*cutz* in the old orthography; also used by Knorozov; hence the words below are written in the old orthography to avoid anachronisms). Knorozov reasoned that the first sign might represent the syllable **cu**, also represented in the “Landa Alphabet”, while the second, ought to be **tzu** (assuming that the last vowel was dropped since most Maya words end with consonants, and

the vowel in the end he presumed to be /u/ according to the **principle of synharmony**)¹⁶.

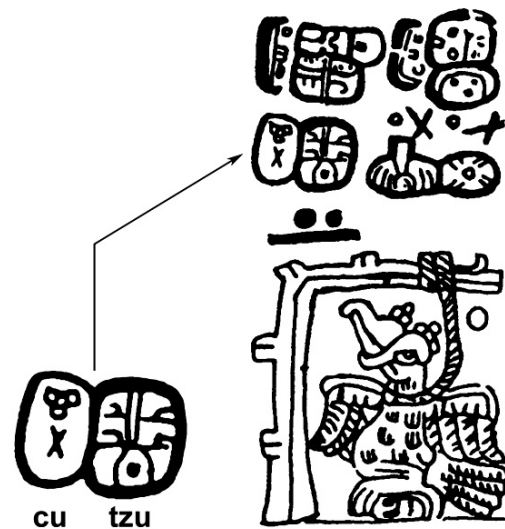


Figure 2: Detail from the Madrid Codex (drawing by Carlos A. Villacorta)

As a result he reached the conclusion that the signs read: **cu-tz(u)**. To verify this, Knorozov looked for a glyph that started with the sign **tz(u)**, and found it above a picture depicting a dog (*tzul* in Yukatek), and, consequently, the signs ought to be **tz(u)** and **lu** (the **lu**-sign is presented in the “Landa Alphabet” as letter “l”).

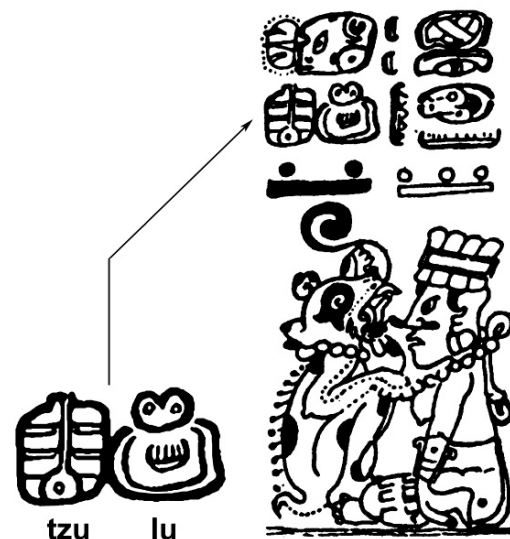


Figure 3: Detail from the Dresden Codex (drawing by Carlos A. Villacorta)

¹³ Kettunen 1998a & 1998b.

¹⁴ This is **ku** in the new orthography (see chapter ‘Note on the Orthography’).

¹⁵ The ‘Knorozovian method’ is simplified here, and below, to provide readers with a rough grasp on how the system works. For a more detailed analysis one should consult either the studies including analyses of the Knorozovian method (e.g. Coe 1992), or, preferably, work by Knorozov himself.

¹⁶ Already in 1876, de Rosny had applied the Landa Alphabet for Maya codices. He also used Landa’s **cu**-sign for the first symbol in the glyph depicting a turkey in the Madrid Codex, and speculated that the complete hieroglyph might stand for *cutz*, or “turkey” in Yukatek.

Knorozov went on with other glyphs in the codices, and arrived at a result, which was going to divide the established school of Maya hieroglyphic studies in the Western academic tradition.

This rather straightforward theorem and its associated method provided the key for the phonetic reading of various glyphs in the Maya script, and irrevocably changed the course of the Maya hieroglyphic studies. However, change in the field would not be visible for another twenty years, largely due to the cold war politics of the iron curtain, language barriers and lack of communication between academic arenas¹⁷.

Besides the work of Knorozov, the 1950's and 1960's saw two other developments in the decipherment of the Maya script. Both of these were to have an important impact on the discipline. In late 1950's, **Heinrich Berlin**, a German-born grocery wholesaler living in Mexico, discovered what he called "el glifo 'emblema'" ("Emblem Glyphs"): hieroglyphs that are linked with specific cities or lineages in the Maya inscriptions¹⁸. In 1960, **Tatiana Proskouriakoff**, a Russian-born American, published for the first time evidence that the texts of Maya monuments did indeed contain historical records¹⁹.

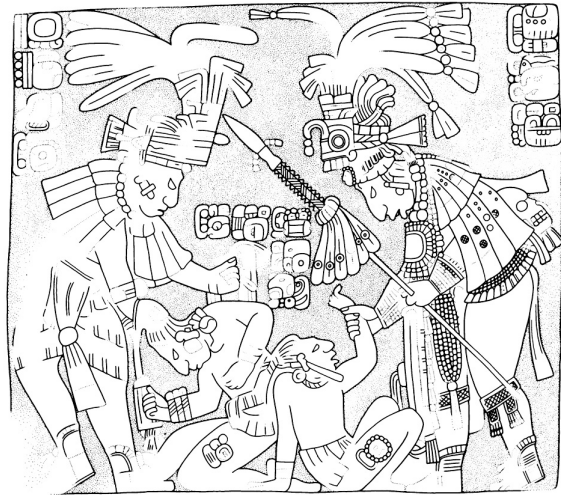


Figure 4: Lintel 8, Yaxchilan, Mexico (drawing by Ian Graham). Note that the names of the captives are written both in the thighs of the captives and in the main captions of the monument.

Around the same time the "great names" in the field of Maya studies, **J. Eric S. Thompson** and **Sylvanus G. Morley**, declared that the Maya hieroglyphic corpus merely contained dates without any historical information. They also argued that the texts on ceramic vessels were crude copies of monumental inscriptions without any meaning or any linguistic value.

¹⁷ In his book *Maya Hieroglyphs Without Tears* Thompson writes: "Overmuch space has been assigned to this 'system' because it has attracted amateurs and a sprinkling of linguists with little or no knowledge of Maya hieroglyphs; keys to codes and simple explanations of complex matters have strange powers to allure. I know of only one serious student of the subject who supports the Knorozov system, and he with reservations." (Thompson 1972: 31).

¹⁸ Berlin 1958: 111-119.

¹⁹ Proskouriakoff 1960: 454-475.

3. ORIGINS OF THE MAYA SCRIPT

The Maya were not the first or last to develop writing systems in Mesoamerica. Before the emergence of the first known Maya hieroglyphs (in the first century BC) writing systems already existed in at least three cultural areas in the region: in the so-called Olmec heartland in the southern coast of the Gulf of Mexico, in the Oaxaca Valley, and in the highland valleys of Alta Verapaz in Southern Guatemala.

Writing in Mesoamerica developed during the late Olmec times, around 700–500 BC and probably originated from Olmec iconography that preceded it, and was later abstracted to a writing system. This writing system was later separated into two traditions in two different areas: the highlands of Mexico, and the highlands of Guatemala and Chiapas with an adjacent area in the Guatemalan Pacific coast.

The latter area was inhabited by the Maya but it was probably influenced also by the peoples, cultures, and languages from the former Olmec areas further west. In the first century BC, the lowland Maya culture was influenced by the highland cultures, and subsequently also showed first evidence of writing system in the area.

The first known example of Maya hieroglyphic writing from the central Lowlands of known archaeological context comes from the site of Cerros in Northern Belize. On the masonry masks fronting Structure 5C-2nd two glyphs can be identified: *yax* (blue-green / first) and *k'in* (sun / day). Roughly contemporaneous to the Cerros example is a masonry mask from Lamanai Structure N9-56 which bears the glyph for *ak'ab'* (night / darkness) on its cheek.

Another early Maya text is found on a reused Olmec greenstone pectoral (the so-called Dumbarton Oaks jade plaque, Figure 5), which can be dated stylistically as being contemporaneous to the Cerros masks. On the back of the jadeite pectoral are incisions representing the portrait of a seated Maya ruler and two double columns of hieroglyphs.



Figure 5: Image and text from a reused Olmec greenstone pectoral (the placement of the text and image is horizontal in the original artefact)

In another early text, a carving on a cliff at the site of San Diego, southern Peten, a standing Maya ruler is depicted with a double column of 19 glyphs. This carving shows that the layout for recording dates (the first two [missing] glyphs, the large Initial Series Introductory Glyph (commonly referred as an ISIG-sign²⁰), and the following four glyphs) was still fairly flexible and inconsistent. This carving, along with the Dumbarton Oaks jade pectoral, represents the events that were to be most frequently documented on subsequent Maya monuments, namely bloodletting and royal accession. From the beginning of the Classic Period (ca. AD 250) the Maya script developed into a more consistent and more rigid system that is explained in the following chapters.

²⁰ See Appendix E: Note on the Calendar.

4. LANGUAGE(S) OF THE HIEROGLYPHS

Until very recently the study of Maya hieroglyphs was a linguistic oddity. Most scholars in the field worked with their respective languages when translating Maya hieroglyphs, and did not realize that the key to understanding Maya hieroglyphs is a basic working knowledge of (at least one) Maya language. Obviously until the work of Knorozov and Proskouriakoff²¹, there were few tools to work with in the first place. However, most scholars at the time suffered from a type of scientific myopia, as none tried to apply any of the modern Maya languages to the ancient script. Nowadays it is well established that the languages of the glyphs are very similar to several modern Maya languages.

Today there are approximately 30 Maya languages spoken in Southern Mexico, Yucatan, Belize, Guatemala, and Honduras constituting a population of approximately six million speakers. These languages are vaguely distinguished between the highland and lowland Maya languages. Most likely the highland Maya languages, or linguistic subgroups, i.e. Q'anjob'alan, Q'eqchi'an, Mamean, K'iche'an, and Tojolab'alan, had little or nothing to do with the hieroglyphic texts that have preserved to this day. On the other hand, the lowland subgroups, Ch'olan, Tzeltalan, and Yukatekan, are more intimately related to the ancient script.

Nowadays there is substantial evidence that nearly all of the Maya hieroglyphic texts were written in an Eastern Ch'olan language, which has been labeled as "Classic Maya" or "Classic Ch'olti'an" (Houston, Robertson, and Stuart 2000) by the linguists. The closest modern relative of this language is Ch'orti', which is spoken in a relatively small area in Eastern Guatemala and Western Honduras (near the ruins of Copan). Besides the Classic Maya language there is some evidence of the influence of other lowland languages in the Maya hieroglyphic corpus: Tzeltalan in a few texts at Tonina, Chontalan in Northern Guatemala (Itzimte),

Yukatekan in Chichen Itza, and possibly Itza'-Mopan in the Madrid Codex²². Moreover, evidence of the influence of Highland Maya language(s) in Chama and Nebaj style ceramics has recently been asserted by a number of scholars (see Beliaev 2005).

5. WRITING SYSTEM

5.1. CONVENTIONS OF TRANSCRIBING AND TRANSLITERATING MAYA TEXTS

When it comes to transcribing Maya texts, the following rules are applied in this volume:

- (1) Transcriptions should be represented in **boldface** letters
- (2) Logograms should be written in **BOLDFACE UPPERCASE** letters
- (3) Syllabic signs (syllabograms) should be written in **boldface lowercase** letters
- (4) Individual signs within a given glyph block should be separated by hyphens (dashes)
- (5) Question marks should be used in the following manner:
 - (a) Separated by hyphens within a given glyph block when the reading is not known
 - (b) Standing alone (isolated) when the reading of a whole glyph(block) is not known
 - (c) Immediately following a transcribed syllabogram or a logogram when the reading of a given sign has not been fully attested or is otherwise questionable or uncertain.
- (6) *Reconstructed* (analyzed) sounds, such as underspellings, glottal fricatives (/h/), and glottal plosives/ stops ('), long vowels or any complex vowel for that matter should not be represented at this juncture of the transcription process. This practice extends to logograms as well, which should be represented in their simplest possible form. The transcription we use is otherwise known as a **broad** transcription excluding all analyzed sounds that are not inherent parts of hieroglyphs but were, conversely, indicated by harmony rules (see Lacadena and Wichmann 2004 and Appendix J in this volume).

²¹ Proskouriakoff herself never accepted Knorozov's phonetic approach but, on the other hand, she established the structural methodology to the study of Maya glyphs still used today. This structural approach requires no assumption about the character of the language under investigation.

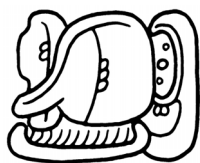
²² Lacadena and Wichmann 2000, 2002b.

As regards to transliterating Maya texts, the following rules are applied:

- (1) Transliterations should be represented in *italics*
- (2) Long vowels and glottal sounds derived from harmony rules²³ are to be indicated without [square brackets]; whereas:
- (3) Reconstructed sounds based on historical, internal, or paleographic evidence should be represented in [square brackets]. Thus the transliteration we use is called a **narrow** transliteration (including reconstructed sounds based either on historical, internal, or paleographic evidence – instead of **broad** transliteration that excludes these reconstructions).

There are different ways of analyzing texts linguistically. The two most common ones are presented on page 68, being described as *morphological segmentation* and *morphological analysis*. The first stage of linguistic analysis represents morphological boundaries divided by hyphens. So-called zero-morphemes are represented by a Ø-sign. In the second type of linguistic analysis the grammatical description of the words is made explicit. There are several methodological ways to describe these components, and the decision is usually left for editors in case of publications. Here we use lowercase letters for glosses²⁴ and CAPITAL LETTERS for linguistic terminology.

The following is to serve as an example how the above indicated stages function:



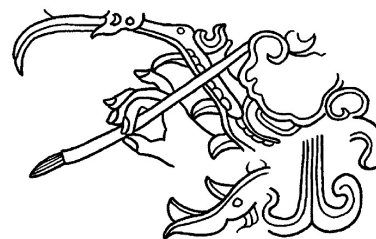
1. **chu-ka-ja**
2. *chu[h]kaj*
3. *chu[-h]k-aj-Ø*
4. capture-PAS-THM-3SA
5. “he/she was captured”

- 1 = transcription
- 2 = transliteration
- 3 = morphological segmentation
- 4 = morphological analysis²⁵
- 5 = translation

When translating Maya texts one should keep in mind that there are various ways of interpreting given words and sentences. Quite often one finds rather rigid translations (or more precisely glosses/ glossing) of given texts where the sentences are translated (or glossed) word-to-word. One should keep in mind that this is not a real translation *per se* but rather a method to show how the sentence is structured in the original language as opposed to the (target) language into which the sentence is translated.

The actual translation can also be divided into different stages and versions where one can move from rigid to less strict translations. The actual meaning of a word or a clause might be different in another language, but the original concept should be preserved at least in one of the stages of translating the text. In the example on page 15 the expression “his/her (?) white wind/breath got withered” serves as a metaphor or as a euphemism for the targeted meaning of “he/she died.” However, such a ‘loose translation’ can only be achieved by understanding the culturally-specific idiom which is used, thereby eliminating the subtleties of the original expression.

As regards translating Maya names and titles, we are leaning towards the routine of *not* translating them at all, or translating only well-attested titles. This approach is based on the fact that the concepts which these embody are not easily translated by a single word in English (as volumes may be written on each concept to clarify the specific meaning of each title).



²³ See Lacadena and Wichmann 2004 and from page 57 onwards in this volume.

²⁴ A gloss is a short general translation of a word or morpheme which does not take into account the context in which it occurs.

²⁵ **PAS**sive voice, **THeM**atic suffix, **3rd** person **Singular Absolute** pronoun. See also Glossary of Linguistic Terminology.

Modus operandi²⁶:

1. Select a text
2. Transcribe the text
 - a. Do not mark reconstructed sounds
 - b. Use **lowercase bold** for syllabic signs
 - c. Use **UPPERCASE BOLD** for logograms
3. Transliterate the text
 - a. use *italics*
 - b. all reconstructed sounds (except for those based on harmony rules should be represented in *[square brackets]*)
4. Analyze the text
 - a. divide morphemes by hyphens
 - b. mark grammatical elements
5. Translate the text using different stages of translation

Finally one should go back to the original (hieroglyphic) text, and *through these steps*, understand it. Eventually you should reach the point where you go back to the original text, and understand it without the restrictions of your innate grammar.

5.2. READING ORDER

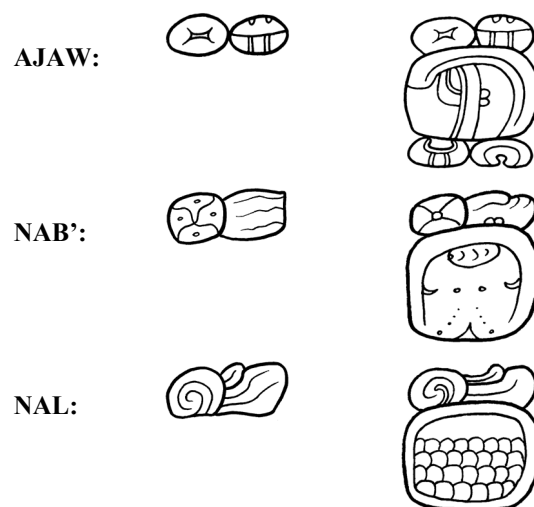
As a rule, the Maya texts are written from left to right, and from top to bottom in columns of two. Exceptions to this general rule are known, especially in small portable items, ceramic vessels, lintels, uncommon graffiti, and texts painted on cave walls. There are also texts written in mirror image, but these are extremely rare. For the texts that do not follow the general rule, the reading order is determined either by looking into the structure of the passage(s), or comparing it with other **parallel clauses** (sentences recording similar or identical content with a similar or identical syntax structure)²⁷.

Reading order within any glyph block usually follows the same rule as with the whole text: from left to right and from top to bottom. However, instances are known wherein aesthetic considerations might compel a scribe to rearrange the individual elements within a collocation.

Most common *prima facie* exceptions to the internal reading order rule are the **AJAW** glyph, and the locative **NAL** superfix, which are seemingly placed on top of a given glyph, but read last: e.g. **K'UH AJAW-wa MUT-la** (The Holy Lord of Tikal) is read *k'uhul Mutul ajaw*, and **NAL-yi-chi** is read *yichnal*.

This seeming exception actually follows the third type of internal reading order, i.e. that of front to back. For example, even though the **NAL** glyph is *graphemically* written on top of the **yi** and **chi** glyphs, it was actually perceived by the Maya as a full-figure **NAL** glyph with only the topmost part visible behind the **yi** and **chi** glyphs.²⁸

'superfixed' glyph: full-figure glyph:



²⁶ During the Maya hieroglyphic workshops it is not sensible or even possible to go through with all the stages listed here. More commonly, a strategy of *structural analysis* is employed along with basic transcriptions, transliterations, and translations.

²⁷ Note that the letters designating glyph blocks (such as A1-B1-A2-B2-A3 and so on) do not always correspond the reading order in texts with unconventional reading orders. I.e. the letters and numbers only give the reader a point of reference in a given text when one is communicating about the glyphs with other scholars without seeing the glyphs themselves.

²⁸ For comparison, see the **AJAW** glyphs on page 16.

5.3. COMPOUND GLYPHS, INFIXING, AND CONFLATIONS

The graphic conventions of Maya hieroglyphic writing form a very flexible system, but quite often these are for the most part just puzzling for an untrained eye. There are a number of ways of writing the same word without changing the reading and / or meaning. *Chum tuun* means “stone-seating” and refers to the beginning of the 360-day period. This can be written in various manners:

- **CHUM[*mu*]** [infixed phonetic complement /*mu*/]²⁹, **TUN-*ni*** [phonetic complement /*ni*/] — *independent* glyph blocks (Example #1)
- **CHUM[*mu*]** [infixed phonetic complement /*mu*/], **TUN-*ni*** [phonetic complement /*ni*/] — *compound* glyph blocks with *suppressed* left sign (Example #2)
- **CHUM[TUN-*ni*]** [TUN-*ni* infix inside the CHUM glyph] — *infixation* (Example #3)
- **CHUM-TUN** [conflation of both signs] — *conflation*: merging of the diagnostic traits of two distinct signs into one (Example #4)



Example #1



Example #2



Example #3

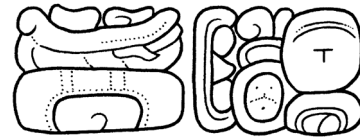


Example #4

Any one of the arrangements above can occur in any text and more than one can be used in a single text. The reason for this is both economic and artistic: sometimes the scribe might have run out of space, and sometimes variations were used to avoid repetition or *graphemic tautology* (see also the variations with logograms and phonetic complements below).

²⁹ Square brackets [...] are used in *transcriptions* to designate infixes or words (and in epigraphic analysis to indicate reconstructed sounds).

In the following example, the metaphorical death statement of Itzamnaaj B’ahlam, the king of Yaxchilan, and Lady Pakal, his mother, is recorded in the same monument in two different (but parallel) ways, with the latter being compressed to cover a space of one glyph block instead of two:



K’A’-yi u-?[u]sак-ik’-li
k’a’ay u...?[u]sak ik’[i]l
k’a’-ay-∅ u-? [u-]sak-ik’-il
 wither-MPAS-3SA 3SE-? [3SE-]white-wind-POS
 “It got withered, his/her ?, his/her white wind/breath”
 (Yaxchilan, Lintel 27: A2-B2)



K’A’-yi-u-sак-?-ik’
k’a’ay u...?[u]sak ik’
k’a’-ay-∅ u-? [u-]sak-ik’
 wither-MPAS-3SA 3SE-? [3SE-]white-wind
 “It got withered, his/her ?, his/her white wind/breath”
 (Yaxchilan, Lintel 27: F2)

In addition, different signs of equal phonetic value might be used variably throughout a text, again for aesthetic reasons. It is due to such interchangeability that signs of unknown value can be deciphered if the case is made that it equates another glyph of known value.



ya-YAXUN-B’ALAM
Yaxuun B’a[h]lam
 (YAX: Lnt. 21: D7)



ya-YAXUN-B’ALAM-ma
Yaxuun B’a[h]lam
 (YAX: Lnt. 30: G2)



ya-YAXUN-B’ALAM
Yaxuun B’a[h]lam
 (YAX: HS2: Step VII: Q6)



ya-xu-ni B’ALAM
Yaxuun B’a[h]lam
 (YAX: St. 12: D4-C5)



b'a-ka-b'a
b'a[ah]kab'
 (K2914)



b'a-ka-b'a
b'a[ah]kab'
 (YAX: Lnt. 2: Q1)

Patterns like these stumped early efforts at decipherment and are thus important to understand. Consequently, such patterns are explored in the following section.

5.4. LOGOGRAMS

The Maya writing system is a mixed, or *logosyllabic*, system, utilizing both **logograms**, and **phonetic** signs. Logograms are signs representing meanings and sounds of complete words. In the two examples below, the word for mountain, or *witz*, is written in two different ways, but both of them read *witz*. The one on the left is a (head variant) logogram, and the one to the right is a logogram with a *phonetic complement* (see the chapters below) attached to it.



WITZ
witz
 "mountain"

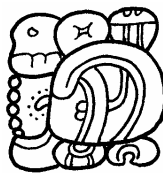


wi-WITZ
witz
 "mountain"

As a rule, the more frequently a given word is present in the hieroglyphic corpus, the more variations it appears to have. A revealing case is that of the word *ajaw* or "lord" which offers dozens of different variations, including:



AJAW



a-AJAW-wa



AJAW



AJAW-wa

5.5. SYLLABLES (PHONETICISM)

The Maya writing systems uses, besides logograms, also phonetic signs in expressing syllables, or more precisely: *syllabograms*. These syllables can either work as CV (consonant-vowel) syllables, or C(V) sounds (the sound of the consonant without the sound of the accompanying vowel). As a rule, the last vowel of the last syllable in a given word drops out (and as always, there are exceptions to this rule). Thus, the word for mountain, *witz*, can be written phonetically with two syllables, **wi** and **tzi**. Since the last vowel is discarded (due to the harmony principles), the word reads **wi-tz(i)** > *witz*.



← **wi**

← **tzi**

5.6. PHONETIC COMPLEMENTS

A phonetic complement is a sign that "helps" the reading of the logogram. It is a pronunciation "assistant" in cases when the main sign has more than one possible reading. Phonetic complements are very common in the Maya script, and they have also played a major role in the modern decipherment of the Maya writing system. Phonetic complements, which cued ancient Maya readers, also cue modern readers thereby facilitating the reading of ambivalent logographic signs.



In the example to the left, the syllable **wi** (shaded sign) works as a phonetic complement for the logogram **WITZ**. The presence of the prefixed syllable **wi** therefore informs us that the word represented by the logogram also begins with the phonetic value **wi**...

In the example below, the syllable **ki** (shaded sign) is attached to the zoomorphic logogram to provide the final sound **...-k** of the word *Chaahk* (instead of another reading of a similar head in the word *Kalo'mte'*), distinguished on the basis of its phonetic complement; in this case a **ma** syllabic sign.



CHAK-ki
Chaahk
name of deity



KAL(OM)-ma-TE'
Kalo'mte'
exalted royal title

5.7. SEMANTIC DETERMINATIVES AND DIACRITICAL SIGNS

A semantic determinative is a sign that provides the reader with the correct meaning of graphically identical glyphs, which have more than one possible meaning. Semantic determinatives, however, are without phonetic value (cf. Zender 1999: 14). The most oft-cited example of a semantic determinative in the Maya script are the cartouches and pedestals that frame so-called 'day signs.'

Diacritical markers are signs without phonetic values that assist the reader in expressing the intended pronunciation of a sign or word. Good examples of diacritical marks in Latin-based languages are the 'cedilla' of the French word *façade*, as well as the many accents occurring in other European writing systems.

In the ancient Maya writing system, another, more common diacritical sign is represented by a pair of small dots. The most common position of this diacritic is at the upper or lower left-hand corners of syllabic signs (for an example, see '*kakaw*' in the dictionary towards the end of this volume). This diacritic is known as a "syllabic doubling sign", and as the name implies, serves to double the phonetic value of the adjacent sign. Thus, for example, a **ka** syllabogram is read *kak(a)*, or a **le** sign read *lel(e)* when marked with the pair of dots. In glyphic transcriptions the presence of this diacritic is marked with a number 2 in a position where it occurs in association with a syllabogram or logogram – usually superfixed and prefixed as ²**ka** or ²**le** (using the examples cited above), although all four positions are possible:

$$\begin{array}{ccc} 2 & \mathbf{X} & 2 \\ 2 & & 2 \end{array}$$

Detailed research reveals that these two dots serve to double the value of syllables / syllabograms, exclusively. In the rare instances where

this diacritic marks logograms, it is apparently meant to double value of syllabograms that occur towards the end of internal reading order of glyphic collocations (that is at the bottom or right-hand side of collocations). Consequently the favored position of this diacritic is at the beginning of glyphic collocations. This positioning serves to cue the reader that doubling occurs within that specific glyph block.

5.8. POLYVALENCE: POLYPHONY AND HOMOPHONY

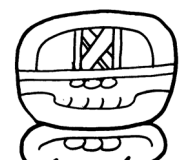
One more confusing feature in the Maya writing system is *polyvalence*. Actually, this feature is found in every single language in the world, but what makes it knotty in the case of the Maya script, is that it adds to the complexity of the system for an untrained eye. *Polyphony* (or *homography*) means that a given sign has different sound values, and thus may be read differently (although written the same way). In the Maya writing system, words (or sounds) that are read *tuun* and *ku*, can both be written in the same manner. *Homophony*, on the other hand, means that different signs represent the same phonetic value, as in a syllable or word. In the Maya script, the words for snake, four, and sky are pronounced in the same manner (*chan* or *kan* depending on the language) but they are all written using different signs:



CHAN
chan
"snake"



CHAN
chan
"four"



CHAN-na
chan
"sky"

All of the above might appear rather peculiar and foreign to most people that are used to operate with Latin alphabet. However, our system also consists of letters and signs (logograms) that might appear alien to an eye untrained to Latin alphabet. Also, especially in the case of languages with unsystematic (and less phonemic) orthographies (such as English and French), the varying pronunciation of identical letters causes problems with speakers of other languages.

An enlightening example is the sequence of letters <ough> that can be pronounced in nine different ways, as in the following sentence (which includes all of them): “*A rough-coated, dough-faced, thoughtful ploughman strode through the streets of Scarborough and after falling into a slough, he coughed and hiccoughed*”. Another revealing example is that of letter “x” which is pronounced in various ways in the following examples:

| letter: | pronunciation: | example: |
|---------|----------------|-----------------------|
| X | /s/ | ‘xenophobia’ |
| X | /ks/ | ‘excel’ |
| X | /gz/ | ‘exist’ |
| X | /kris/ | ‘Xmas’ |
| X | /kros/ | ‘Xing’ |
| X | /ten/ | ‘(Roman numeral) ten’ |

Other meanings for the letter “x” are, for example, the following:

| | |
|---|---------------------------------|
| X | number 10 |
| X | 24th letter in the alphabet |
| X | unknown quantity |
| X | multiplication sign |
| X | negation (e.g. no smoking) |
| X | pornographic (X-rated) |
| X | location of place, object, etc. |
| X | signature of an illiterate |

Other “logograms” in our system:

@ £ \$ % & ? ! + § © € ♀ ♂ ®

Additionally, in English³⁰ there are dozens of homographs, and hundreds of homophones. Consider the following examples:

homographs:

- *conduct* [ˈkɒndəkt] (a standard of personal behavior) — *conduct* [kənˈdʌkt] (to manage, control, or direct)
- *minute* [ˈmɪnɪt] (a unit of time and angular measurement) — *minute* [maɪˈnjuːt] (of very small size or importance)

homophones:

- *buy* — *by* — *bye*
- *cite* — *sight* — *site*
- *right* — *rite* — *wright* — *write*
- *who’s* — *whose* — *hoos* — *hoose* (verminous bronchitis of cattle)
- *weather* — *whether* — *wether* (a castrated male sheep)

³⁰ The examples given here are based on Hobbs 1999.

5.9. NUMBER OF KNOWN HIEROGLYPHS

One of the most common questions to epigraphers concerns the number or percentage of deciphered hieroglyphs. The answer is somewhat more complex than one might expect. First of all, we have to consider what we mean by “deciphered”. If we were to calculate the number of hieroglyphs whose *phonetic value* we know, the total would be around 80 percent. On the other hand, if we were to estimate the number of signs whose *meaning* is securely attested, the number is considerably lower, around 60 percent. The problem lies in the fact that there are a number of hieroglyphs in the script whose:

- phonetic value is known but the meaning escapes decipherment (more commonly in the case of fully phonetically written signs)
- meaning is known but the phonetic value is uncertain, vague, or not known at all
- phonetic value and meaning are only partly known (for example a word standing for a ritual that was performed before adulthood)
- phonetic value and meaning are only partially known, or not at all

Yet another problem is that of what we mean by saying that the meaning of a particular hieroglyph is known. The meaning of a single hieroglyph or a set of hieroglyphs in a sentence might be known³¹ but the profound contextual significance and implications of the word and sentences need to be checked against all other possible sources, such as ethnology, archaeology, iconography, and present day manifestations of the Maya culture(s). In a word, Maya epigraphy at its best is a multi- and interdisciplinary branch of learning heavily based on linguistics but taking into account all possible sources and academic disciplines.

On the whole, in all its complexity, the Maya hieroglyphic system is merely one way to make a spoken language visible, and to quote the late Yuri Knorozov: “I believe that anything invented by humans can be deciphered by humans” (Kettunen 1998a).

³¹ A further distinction is made between a *gloss* and a *translation*: a gloss provides a reading for an isolated hieroglyph whereas an accurate translation takes into account the syntax and semantics in the sentence.

5.10. GRAMMAR

5.10.1. WORD ORDER

The word order in the Maya hieroglyphic texts, and in the modern Maya languages alike, usually follows the verb-object-subject (VOS) pattern (unlike English which usually employs SVO-constructions). However, very often in the hieroglyphic texts the object is missing or omitted, and clauses usually begin with a date, giving us a typical formula of Maya texts: date-verb-subject. Dates can often take up the major part of the texts, verbs only one or two glyph blocks in each sentence, and personal names with titles can be as lengthy as the titles of European monarchs.

5.10.2. VERBS

There are approximately one hundred known verbs in the Maya script with about one dozen grammatical affixes. Almost all the verbs are written in the third person (he/she): **u-** (before words starting with a consonant) or **y-** (before words starting with a vowel (see chapter on pronouns below).

Most verbs typically relate the deeds of ancient lords that have already taken place, by the time these are recorded. However, the controversy still remains on whether the Classic Maya language employed tense (e.g. past, present, future) and/or aspect (e.g. completive, incompletive) that would be demonstrable in the inscriptions.

According to some linguists the Classic Maya language was a non-aspectual system with no opposition in completive and incompletive. According to others, there was no tense *and* no aspect, and, as suggested by others, there was no tense *or* no aspect. Some verbal affixes also indicate other possible principles, such as the system of employing deictic enclitics. The interested reader is recommended to consult e.g. Bricker (2000b), Houston (1997), and Wald (2000). See also the Glossary of Linguistic Terminology (towards the end of this volume) for further information.

The grammar of Maya hieroglyphs is rather complex and cannot be adequately discussed in this volume. To explore this matter further it might be suitable to turn into the bibliography at the end of this book, or to attend a specialized

grammar workshop of Maya hieroglyphic writing. However, a concise account on grammar is to be found in Appendix K: Notes on Classic Maya Grammar.

5.10.3. NOUNS AND ADJECTIVES

Nouns in the Classic Maya language can be divided into two categories, depending on whether they are derived from another lexical category (i.e. word class / part of speech) or not. In the former case, the traditional linguistic term is a “derived noun”. In the latter case, we speak of “primary nouns”. Derived nouns are either derived from verbs or adjectives, or from other nouns.

In many languages, including Classic Maya, it is often difficult to make a distinction between nouns and adjectives. In point of fact, this distinction is not always implemented. Moreover, in the Classic Maya language, both nouns and adjectives can form stative expressions with absolutive pronouns. As the most common pronoun (or, more correctly, *pronominal affix*) in the Maya hieroglyphic script is the third person singular pronoun, and as the absolutive form of this pronoun is a zero morpheme (i.e. an unmarked/unrealized suffix), stative expressions are formally identical to nouns (or adjectives). In practice this means that, for example, the word *ch'ok* can be a noun, adjective and an entire sentence:

- (1) *ch'ok*: child, (a) youth (n.)
- (2) *ch'ok*: young, little (adj.)
- (3) *ch'ok*: “he is young” or “he is a child”
(*ch'ok-Ø* [young-3SA] / [child-3SA])

Although it is difficult to make a distinction between nouns and adjectives in Maya languages, the treatment of these two lexical categories differs from each other in at least three ways: (1) adjectives cannot be possessed; (2) adjectives cannot act as an argument of a verb; (3) adjectives cannot stand alone, i.e. they need to be followed by a noun or to construct a stative expression with an absolutive pronoun.

In addition to the division between primary nouns and derived nouns, Maya languages make a distinction between nouns that are inherently deemed to be possessed and those that are not (absolutive). Besides the fact that any noun can be possessed by attaching an ergative pronoun (pronominal affix) in front of it, there is a set of

nouns (such as kinship terminology, the names of body parts and certain items of regalia) that are deemed to be inherently possessed, in Maya languages. If these nouns are expressed in “unpossessed” form, they require a special suffix to indicate the absolutive state (or case) of the noun.

The suffixes of absolutive nouns in Classic Maya are $-\emptyset$, $-aj$ and $-is$, whereof the zero morpheme $-\emptyset$ is used to mark unpossessed nouns, while suffix $-aj$ marks nouns that designate countable units (of clothing, jewelry, etc.) that are worn by people. Suffix $-is$, on the other hand, is used exclusively with nouns that designate body parts (see Zender 2004: 200-204). Examples:

| Stem: | Absolutive: | Possessive: |
|---------------------------|---------------------------------|-------------------------------------|
| <i>pakal</i> “shield” | <i>pakal-∅</i> “a shield” | <i>u-pakal</i> “his/her shield” |
| <i>tu’p</i> “earflare” | <i>tu’p-aj</i> “an earflare” | <i>u-tu’p</i> “his/her earflare” |
| <i>o’hl</i> “heart” | <i>o’hl-is</i> “a heart” | <i>y-o’hl</i> “his/her heart” |
| <i>k’ab’</i> “hand” | <i>k’ab’-is</i> “a hand” | <i>u-k’ab’</i> “his/her hand” |

In addition to primary nouns (all examples above), new nouns can be created from other nouns, verbs, and adjectives. These derived nouns take, among others, the following suffixes: $-lel$ and $-il$ (abstractivized nouns), $-o’l$ and $-aj$ (nouns derived from transitive verbs), $-e’l$ (nouns derived from intransitive verbs), $-iil$, $-u’l$, $-al$, $-ol$, and $-nal$ (toponymic suffixes), and $-ib’$, $-ab’$, $-uub’$, $-ol$, and $-il$ (instrumental suffixes).

Abstractivizing suffixes turn nouns into abstract concepts; for example, the word *ajaw* or “lord” turns into “lordship” when suffixed with a $-lel$ -abstractivizer. With the instrumental suffixes $-ib’$, $-ab’$ and $-uub’$ verbal roots can be transformed into nouns that describe the action of the verb. For example, a noun can be created out of the intransitive verbal root *uk’* (“to drink”) with an instrumental suffix $-ib’$, with the outcome *uk’ib’* or literally “drink-implement”, i.e. drinking cup.

In Classic Maya, adjectives precede nouns, and they are constructed in the following manner: noun + V_1l suffix (i.e. noun + a vowel that corresponds the vowel of the noun stem + l). For example, an adjective created from the word

kakaw (“cacao / chocolate”) is *kakawal* (“chocolaty”). In the same manner the word *chan* (“sky” or “heaven”) turns into *chanal* (“heavenly” or “celestial”), the word *k’ahk’* (“fire”) into *k’ahk’al* (“fiery”) and the word *k’uh* (“deity” or “god”) into *k’uhul* (“godly” or “holy”).

Along with a myriad of other nouns, personal names accompanied with titles are very common in the Maya script. Titles can provide us with information on the hierarchies and political alliances in ancient Maya society. Besides titles, also parentage expressions are relatively common in Maya inscriptions, which allow detailed reconstructions of regal dynasties. They are invaluable for the reconstruction of royal lineages at many Maya sites.³²

5.10.4. PRONOUNS

There are two sets of pronouns (or, more properly, *pronominal affixes*) in the Maya languages. The first is usually called set A pronouns while the second is set B pronouns. Set A (ergative) pronouns are used as the subject of transitive verbs and the possessors of nouns. Set B (absolutive) pronouns are used as the objects of transitive verbs and the subjects of intransitives. In English this would mean (set A) that instead of saying “he goes” one would say “goes-him”, or instead of “his house” one would say “he-house”. In Classic Maya this means that the pronoun in sentences like *utz’ihb’* (“[it is] his/her writing”) and *utz’apaw* (“he/she inserted/ planted it”), is the same /u-/ , but in the first example it is the possessor of a noun, and in the second the subject of a transitive verb.

Besides the third person mentioned above, there are a few rare examples of first person singular ergative pronouns (**in-/ni-**), second person singular ergative pronouns (**a-**), and first person singular absolutive pronouns (**-een**) in direct quotations in the Classic period ceramic texts, and from inscriptions occurring in secluded areas of Copan and Piedras Negras (Stuart 1996, Stuart 1999, Stuart, Houston, and Robertson 1999: II-17-22), which may have been of restricted access in antiquity (Helmke 1997).

³² For further information, consult e.g. Martin and Grube 2000.

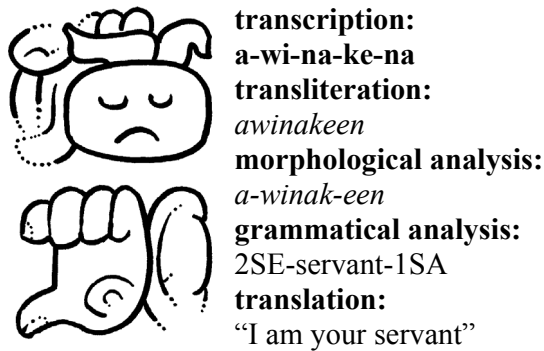


Figure 6: Direct quotation from Panel 3, Piedras Negras

| | absolutive pronouns: | ergative pronouns: |
|-------------|-----------------------------|---------------------------|
| 1.sg | <i>-een</i> | <i>in-</i> |
| 2.sg | <i>(-et?)</i> | <i>a- / aw-</i> |
| 3.sg | <i>-Ø</i> | <i>u- / y-</i> |
| 1.pl | <i>-o'n</i> | <i>ka-</i> |
| 2.pl | <i>(-ox?)</i> | <i>i-</i> |
| 3.pl | <i>-o'b'</i> | <i>u- / y- ...(-o'b')</i> |

Figure 7: Classic Maya absolutive and ergative pronouns

5.11. TYPICAL STRUCTURE AND CONTENT OF THE TEXTS

5.11.1. MONUMENTAL INSCRIPTIONS

It is clear now that the content of monumental inscriptions is primarily historical. The focus of these public texts is almost exclusively on important events of particular dynasties. The most common occurrences in the inscriptions consist of royal activities, such as accessions, war, capture, various ritual activities, birth, death, heir-designations, royal visits, and the like. Quite frequently the histories represented in the public art were limited to momentous events in the lives of the elite, and linked with powerful historical or supernatural beings.

The inscriptions on more public monuments, like stelae and altars, deal primarily with historical events and with issues which were deemed acceptable for the scrutiny of the public. The inscriptions in more restricted areas, such as the carved lintels or panels inside temples, deal with limited or more ritual information reserved exclusively for a specific audience.

5.11.2. PORTABLE ARTEFACTS

The inscriptions on portable artefacts, like shell, bone, jadeite beads, etc. are – logically – a lot shorter than the texts on the monuments. Many small artefacts just state the owner and the name of the object; for example (see Figure 8): *ub'aak jasaw t'ochawaan? k'uhul mutu'l ajaw ochk'in kalo'mte' umijinil nu'n ujol chaahk k'uhu'l mutu'l ajaw* (“this is the bone of Jasaw, *t'ochawaan?*, divine Mutu'l king, west *kalo'mte'*, the child of Nu'n Ujol Chaahk, divine Mutu'l king”), but some have lengthier texts with verbal clauses. These simple statements of ownership are sometimes referred to as ‘name-tagging’.

5.11.3. CERAMICS

The texts on ceramic vessels range from simple clauses and name-tagging to dynastic lists of kings, and lengthy verbal clauses. A common feature in the texts of ceramic vessels is the so-called Primary Standard Sequence (PSS) – usually written along the rim of the vessel, but sometimes written vertically or diagonally in columns along the body of vessels.

The PSS is actually a complex and highly formulaic name-tag usually starting with a so-called **focus marker** glyph (a.k.a. the initial sign). The function of this type of glyph is to indicate where a text begins as the beginning and end of the texts usually meet at the same point (since most vessels are circular).



Figure 8: Carved bone from Burial 116, Tikal (TIK MT-44); Drawing by Christophe Helmke (based on drawing by Annemarie Seuffert)

Other typical glyphic collocations present in the PSS include reference to the manner in which the pot was dedicated (i.e. the introductory section), the contents of the vessel (e.g. *kakaw* (cocoa), or *ul* (atole, maize gruel), the type of the vessel (i.e. the vessel type section), and its owner or the artist who painted or carved the text/iconography into it. Vessel types include for example *uk'ib'*, “drinking cup”, *jaay*, “bowl”, *lak*, “plate”, and *jawa[n]te'*, “tripod plate”.³³

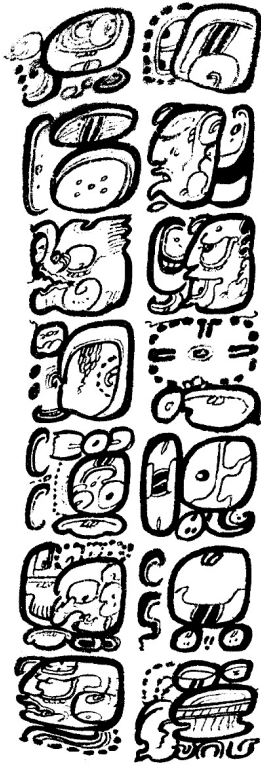


Figure 9: Late Classic bichrome *jawante'* plate
(adapted after a photograph by Justin Kerr
[MS file #1421])

5.11.4. CODICES

A special class of Maya texts is found in the Post-Classic codices (sg. codex). Instead of recording historical events, like many of the monumental inscriptions, the content of these texts is more esoteric, astronomical, and calendrical, information presented in the form of almanacs and prophecies. Four of them have survived the subtropical weather and 16th Century Spanish bonfires to present day: the codices of Dresden, Madrid, Paris, and Grolier.

Dating the codices has been a problem ever since they were (re)discovered, and no agreement as to their age has been established to date. Determining the age of the codices has been based on stylistic grounds (based on both iconography and epigraphy), astronomical and calendrical data, linguistics, and radiocarbon dating.

Most scholars (see Vail 2002) agree on the assumption that the Dresden Codex is the oldest of the four surviving codices and that the Paris Codex can be fairly accurately given a date somewhere around the middle of the 15th century, but the chronological order of the two remaining codices (Madrid and Grolier) has demonstrated a large number of variance.

Regarding the dating of the Paris Codex, Love (1994: 13 and 2001: 443) proposes an approximate date of 1450 based on stylistic resemblance to the stone monuments at the Late Postclassic site of Mayapan and to the art style of the eastern coast of Yucatan before the Conquest. Also, considering the fragility of paper, paint and plaster in a tropical environment, Love suggests that the codices confiscated by the Spaniards were probably produced quite close to the time of initial contact, even though the texts themselves were copied from earlier, more ancient sources (Love 1994:8).

The date of the Madrid Codex is commonly held to be somewhere around 15th century (see e.g. Graff and Vail [2001]). Contrary to general consensus, Michael Coe has proposed a much later date for the Madrid Codex in a presentation in the XXIst Maya Hieroglyphic Forum at the University of Texas in 1997. The conclusions were published in Coe and Kerr (1998: 181) with the assertion that “[...] fragments of European paper with Spanish writing are sandwiched or glued between layers of bark paper [...] the Western paper appears not to have been a mere repair, but to have been incorporated in the codex during its manufacture. Thus the Madrid would necessarily be later than the conquest of Yucatán, probably even post-1624, and could have been made at Tayasal, which did not fall to the Spaniards until 1697.”

The existence of European paper was previously noticed by Ernst Förstemann and Ferdinand Anders, but neither of them perceived the European layer to occur between the Maya layers

³³ For further information on texts on ceramics, consult e.g. Reents-Budet 1994. See also Table I.

of the codex. In November 2003 we had a chance to visually inspect the Madrid Codex with other scholars during the 8th European Maya Conference, held in Madrid. Observing the disputed Page 56 of the codex it became clear that the European layer (or layers) of paper in the codex were placed on top of the original Maya bark paper layers. As a result, the argument that the codex is of Postconquest origin – based on assumption that the layers of European paper forms an integral part of the layers of Maya bark paper – is no longer tenable.

As with the date attributed to the Grolier Codex, Coe and Kerr (1998: 175) propose that the codex is the oldest Maya codex based on the radiocarbon dating ($AD\ 1230 \pm 130$) of the paper used in the codex. In contrast, Milbrath (1999: 6) believes that the Grolier Codex is probably the latest of the four codices and that it may be Postconquest in date. Even though some scholars believe that the Grolier Codex is a forgery, most researchers now consider it to be authentic (for a comprehensive treatise, see Carlson 1983). According to Grube (2001: 129) the authenticity of the Grolier Codex can no longer be disputed based on the fact that the paper dates back to the Preconquest times and that the codex contains a functional Venus calendar. However, this assertion still requires further validation (Nikolai Grube, personal communication 2004).



**Figure 10: Page 8 from the Grolier Codex
(after Coe and Kerr 1998: Fig. 134)**

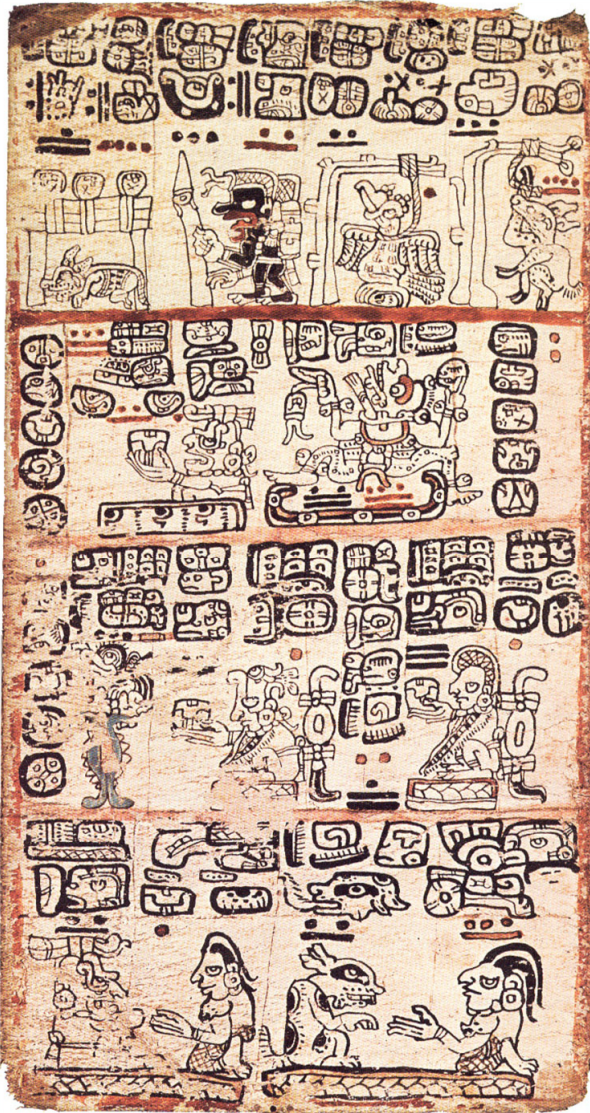


Figure 11: Page 91 from the Madrid Codex (after *Codex Tro-Cortesianus (Codex Madrid) 1967*)



Figure 12: Bottom of the page 56 from the Madrid Codex (rotated 90 degrees counter-clockwise and flipped horizontally) showing Latin text (after *Codex Tro-Cortesianus (Codex Madrid) 1967*)



Figure 13: Page 9 from the Dresden Codex
(after Förstemann 1880)



Figure 14: Page 6 from the Paris Codex
(after *Codex Peresianus (Codex Paris)* 1968)

COMMON CLASSIC MAYA VESSEL TYPE GLYPHS









| Examples of Glyphic Collocations | Analyses |
|---|--|
|  | <p>yu-k'i-b'i-la? <i>yuk'ib'[i]l?</i> <i>y-uk'-ib'-il?</i> 3SE-drink-INST-REL</p> |
|  | <p>yu-UK'(-b'i) <i>yuk'(ib')</i> <i>y-uk'-ib'</i> 3SE-drink-(INST)</p> |
|  | <p>u-ja-yi <i>ujaay</i> <i>u-jaay</i> 3SE-'bowl'</p> |
|  | <p>u-ja-wa-TE' <i>ujawa[n]te'</i> <i>u-jaw-an-te'</i> 3SE-face.up-(stative)-INST</p> |
|  | <p>u-la-ka <i>ulak</i> <i>u-lak</i> 3SE-'plate'</p> |
|  | <p>u-WE'-ma / u-WE'-b'i <i>uwe'em / uwe'[i]b'</i> <i>u-we'-em / u-we'-ib'</i> 3SE-eat-AG/INST</p> |
|  | <p>u-po-ko-lo che-e-b'u <i>upokol che'b'u[l] / che'e'[h]b'</i> <i>u-pok-ol che'b'-ul / che'e'hb'</i> 3SE-wash-INST quill/brush</p> |
|  | <p>yu-b'i? <i>yuub'?' / yu[i]b'</i> <i>y-uub' / y-u-ib'</i> 3SE-uub'?' / u-(INST?)</p> |
|  | <p>ya-k'u-tu-u <i>ya[h]k'(u)tu'</i> <i>y-ahk'(u)-tu'</i> 3SE-give-INST</p> |

Table I: Common Classic Maya vessel type glyphs (drawings by Christophe Helmke)

APPENDICES

APPENDIX A: ASSORTED TEXTS

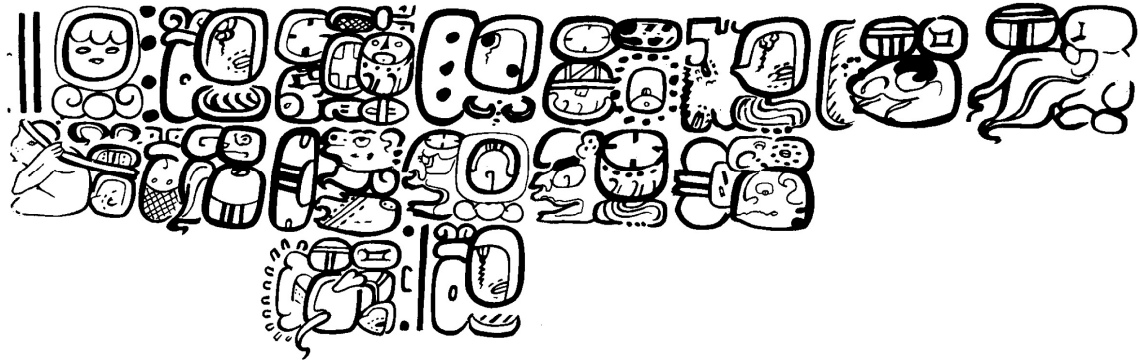


Figure 15: Drawing 82, Naj Tunich, Guatemala (drawing by Andrea J. Stone [in Stone 1995: fig. 7-29])

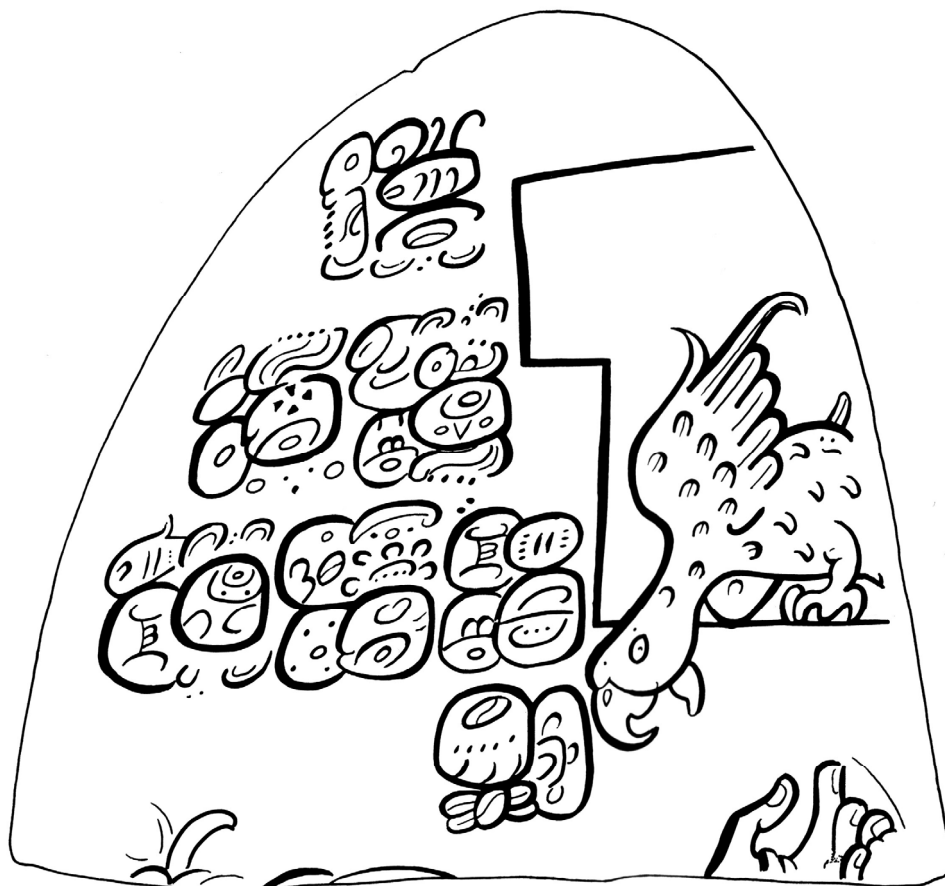


Figure 16: Unprovenienced incised shell (drawing by Peter Mathews)

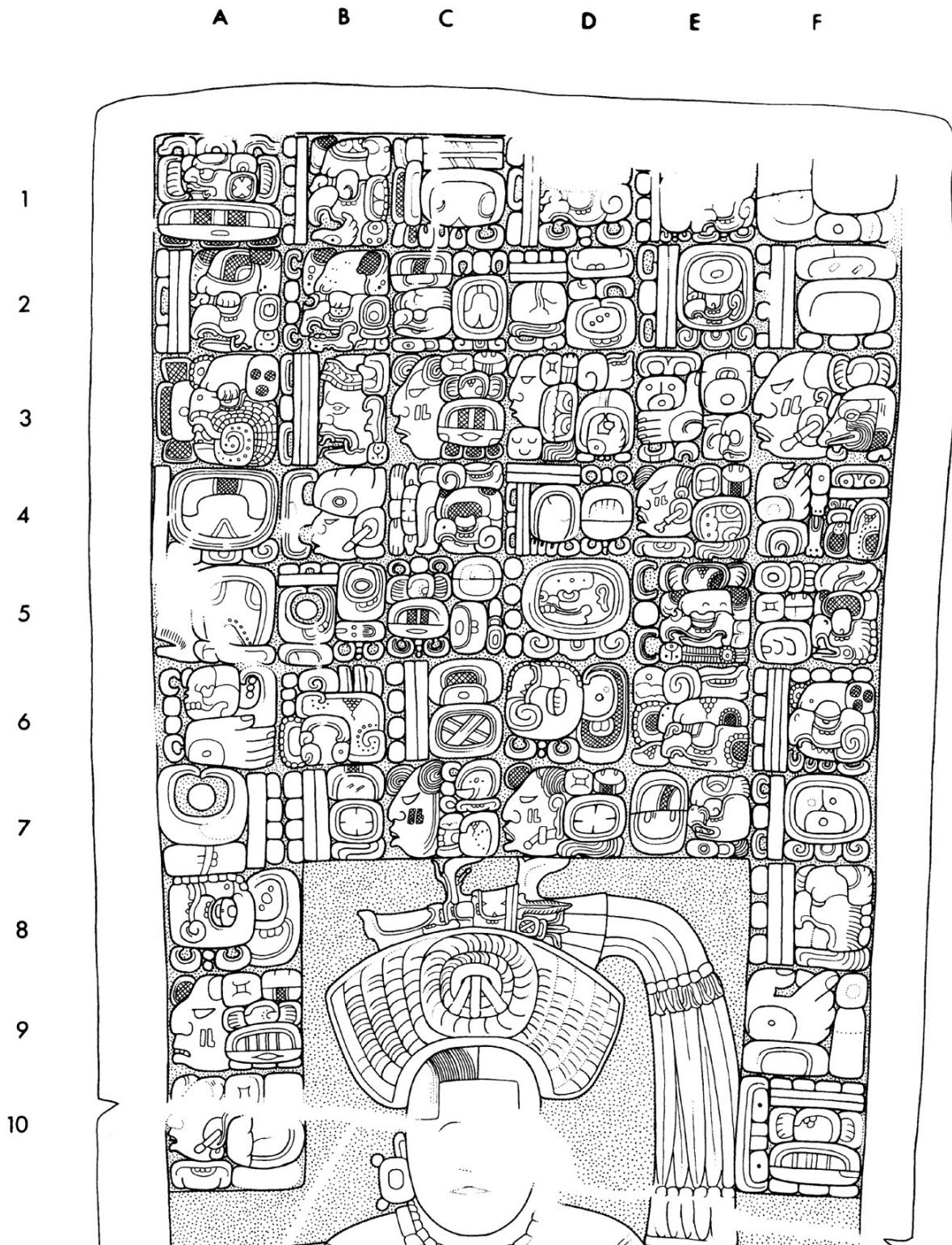


Figure 17: Inscription on back of Stela 3 (upper part), Piedras Negras, Guatemala (drawing by David Stuart [in Stuart and Graham 2003: 9:27])



Figure 18: Stela 4 (A1-B5), Ixtutz, Guatemala (drawing by Harri Kettunen based on a photo by Jyrki Talvitie)

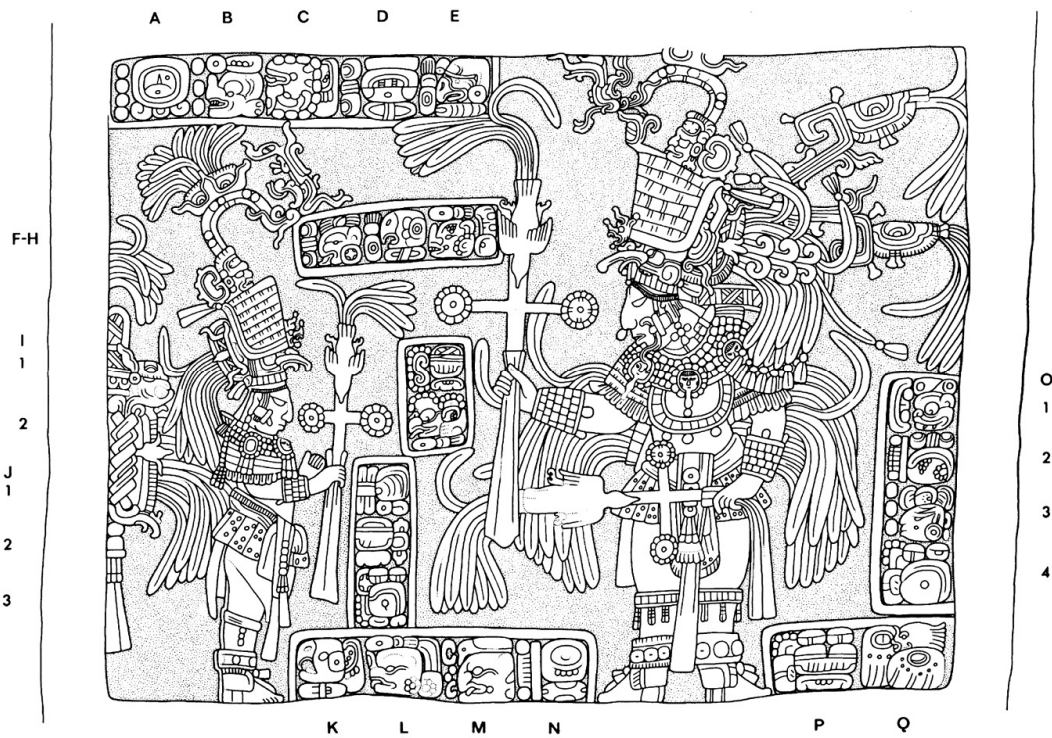


Figure 19: Lintel 2, Yaxchilan, Mexico (drawing by Ian Graham [in Graham and von Ew 1977: 15])

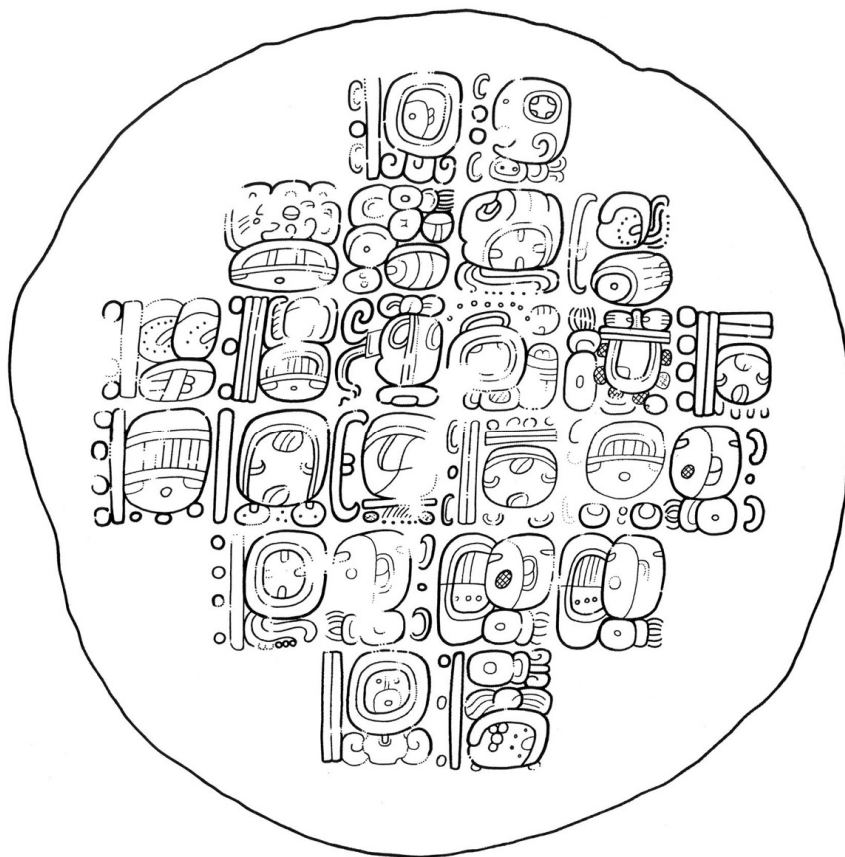


Figure 20: Ballcourt Marker 4, Caracol, Belize (drawing by Nikolai Grube)

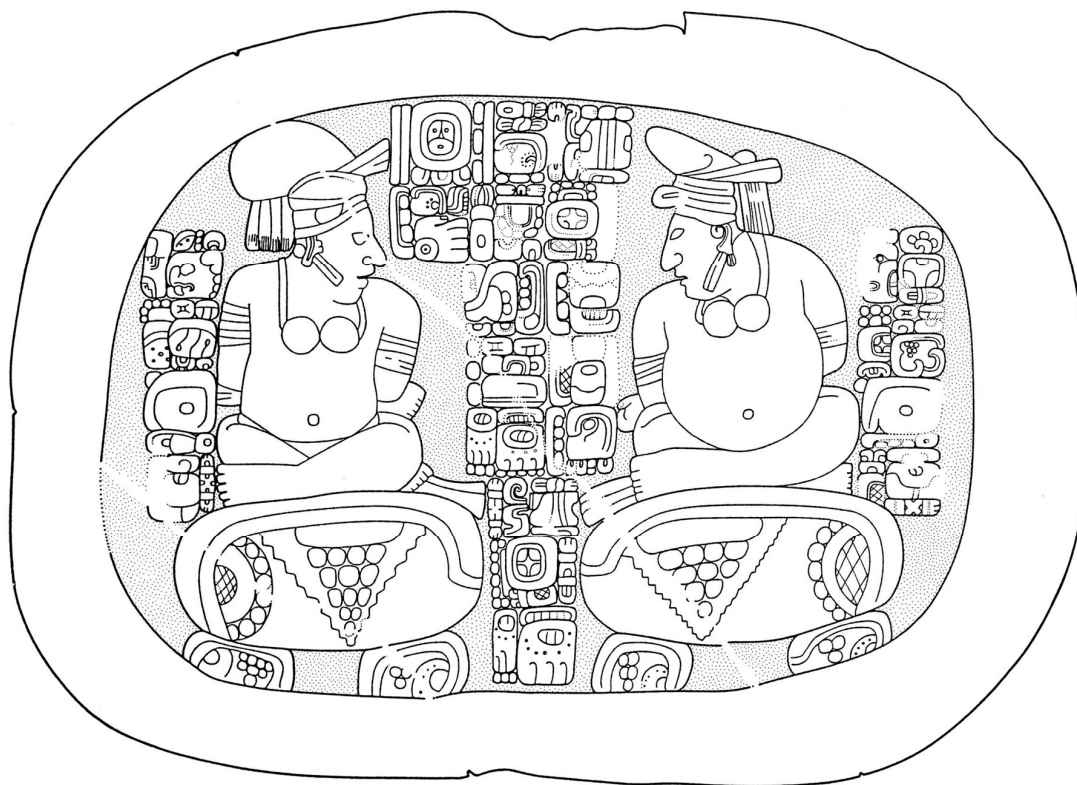


Figure 21: Altar 23, Caracol, Belize (drawing by Arlen Chase, Diane Chase, and Nikolai Grube, with minor modifications)

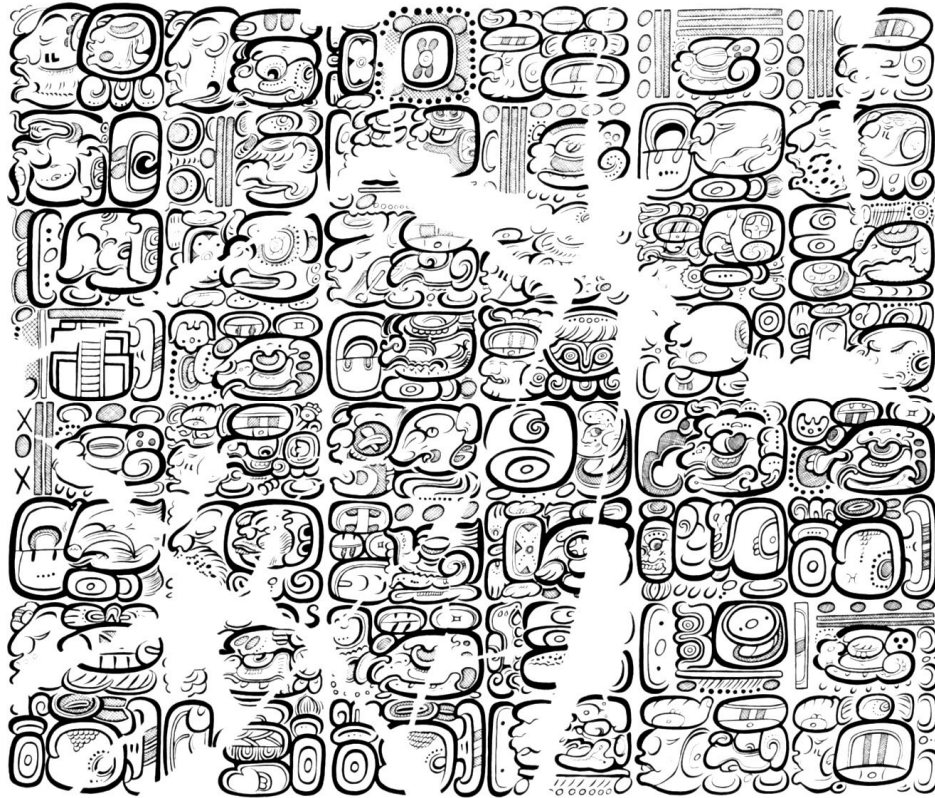


Figure 22: Panel of 96 Glyphs (A1-F8), Palenque, Mexico
(drawing by Simon Martin [in Miller and Martin 2004: Fig. 43])

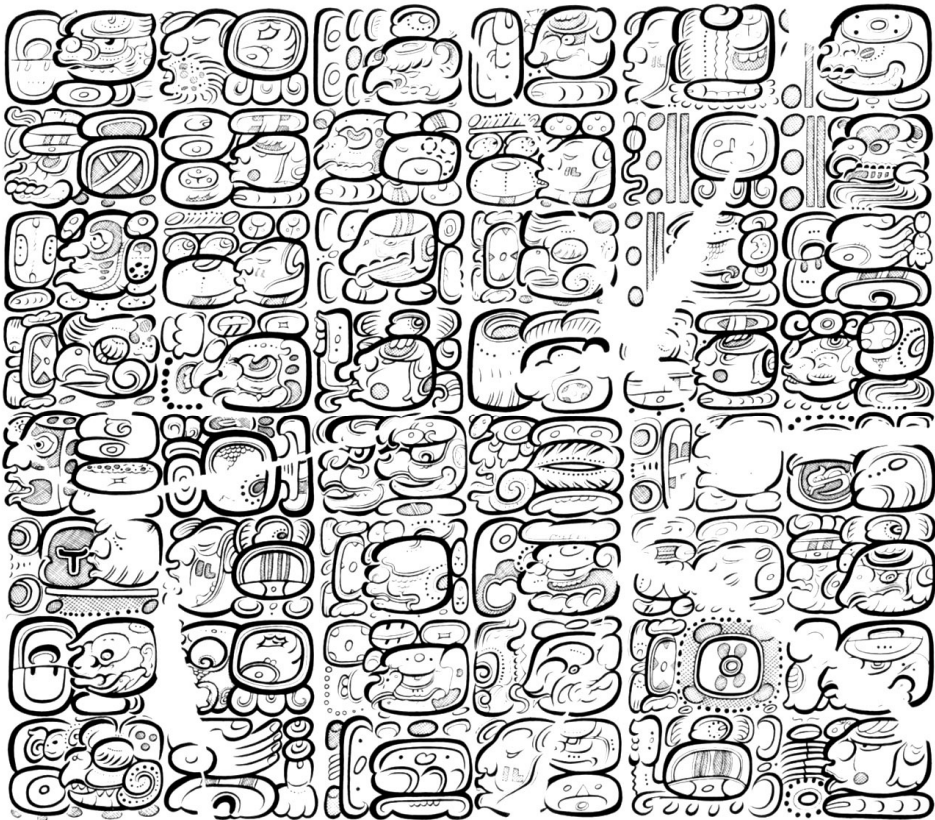


Figure 23: Panel of 96 Glyphs (G1-L8), Palenque, Mexico
(drawing by Simon Martin [in Miller and Martin 2004: Fig. 43])



Figure 24: Unprovenienced jadeite celt, the “Leiden Plaque”
(drawing by Linda Schele [in Schele 1990: 78])

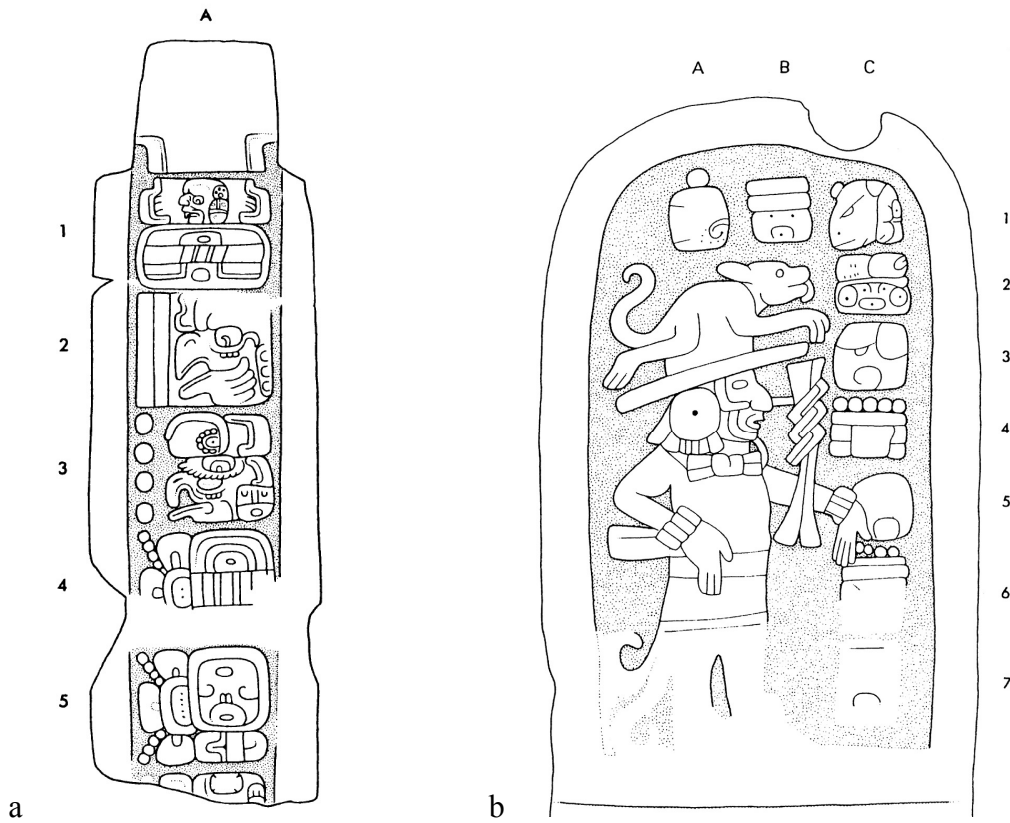


Figure 25: (a) Monument 101, Tonina (drawing by Ian Graham and Peter Mathews [in Graham and Mathews 1996: 2:125]); (b) Stela 6, Itzimte, Mexico (drawing by Eric von Euw [in von Euw 1977: 4:17])

APPENDIX B: TITLES



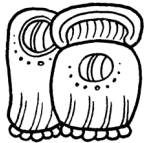
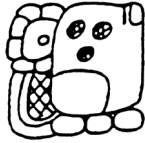




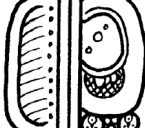

| | | | | |
|---|---|---|--|---|
|  |  |  |  |  |
| AJAW <i>Ajaw</i> “Lord” (royal title) | a/AJ-WINAK-B'AK <i>Aj Wina[a]k B'a[a]k</i> “He of 20 (many) captives” | b'a-ka-b'a <i>B'a[ah]kab'</i> “Head / First of the Earth” | ch'a-ho-ma <i>Ch'aho'm</i> “Man(?)” | ch'o-ko <i>Ch'ok</i> “Youth” |
|  |  |  |  |  |
| KAL?-ma-TE' <i>Kalo'mte'</i> (exalted royal title) | ke-KELEM <i>Kelem</i> “Youth?” “Strong?” | K'INICH <i>K'inich</i> “Sunny” (name of a deity) | sa-ja-la <i>Sajal</i> “Noble”? | a/AJ-TZ'IB'-b'a <i>Aj Tz'ihb'</i> “Writer” “Painter” |

Table II: Common royal titles

APPENDIX C: RELATIONSHIP GLYPHS







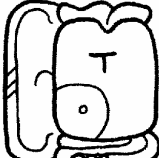

| | | | |
|---|---|--|---|
|  |  |  |  |
| yu-ne <i>yune[n]</i> child of father | u-1-TAN-na <i>uju'nta[h]n</i> child | y-AL <i>yal</i> child of mother | u-MIJIN? <i>umijiin?</i> child of father |
|  |  |  |  |
| su-ku-WINIK-ki <i>suku[n] winik</i> elder brother | yi-tz'i-ni <i>yihtz'iin</i> younger brother | yi-cha-ni <i>yichaan</i> maternal uncle | ya-AT-na <i>yatan</i> spouse? |

Table III: Relationship glyphs

APPENDIX D: CLASSIC MAYA EMBLEM GLYPHS









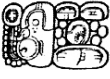



























| | | | | | |
|---|----------------------|---|---------------------------|---|------------------------------|
|  | Altar de Sacrificios |  | Lacanha |  | Río Azul |
|  | Altun Ha |  | Lakamtuun |  | Sacul |
|  | B'ital |  | Maasai |  | Sak Tz'i' |
|  | Bonampak |  | Machaquila |  | Seibal |
|  | Calakmul |  | Motul de San Jose-Bejucal |  | Tamarindito-Arroyo de Piedra |
|  | Cancuen |  | Nakum |  | Tikal-Dos Pilas |
|  | Caracol |  | Naranjo |  | Tonina |
|  | Chinikiha |  | Nim Li Punit |  | Uaxactun |
|  | Comalcalco? |  | Palenque-Tortuguero |  | Ucanal |
|  | Copan |  | Piedras Negras |  | Wa-Bird |
|  | El Chorro |  | Pipa' |  | Xultun |
|  | El Perú |  | Pomona |  | Yaxchilan |
|  | Itzan |  | Pomoy |  | Yaxha |
|  | Ixkun |  | Pusilha |  | Yootz |
|  | Ixtutz |  | Quirigua | | |

Figure 26: Classic Maya Emblem Glyphs (adapted from Martin and Grube 2000: 19)

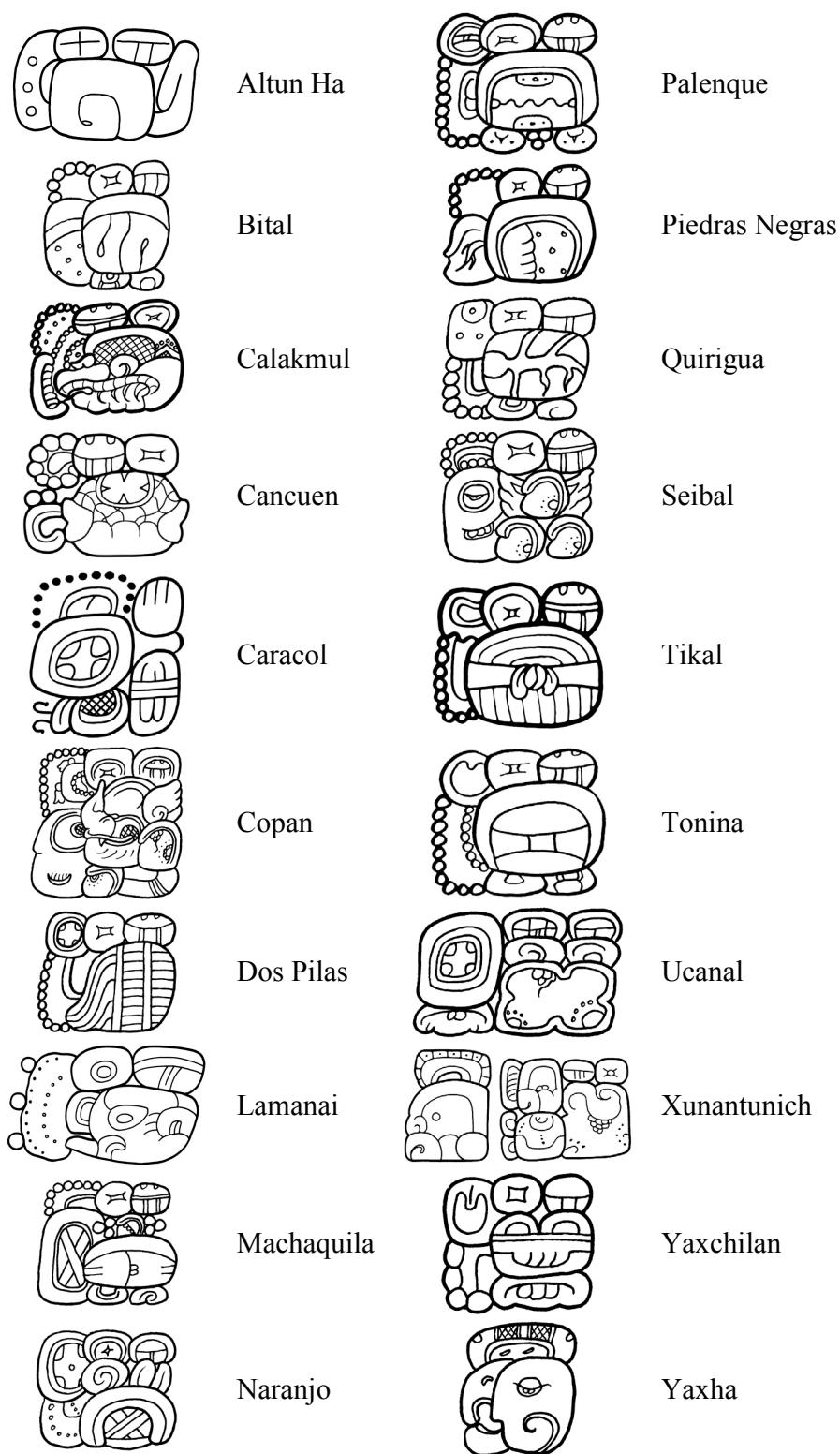


Figure 27: Selected Classic Maya Emblem Glyphs (drawings of the Emblem Glyphs of Altun Ha, Caracol, Lamanai and Xunantunich by Christophe Helmke)

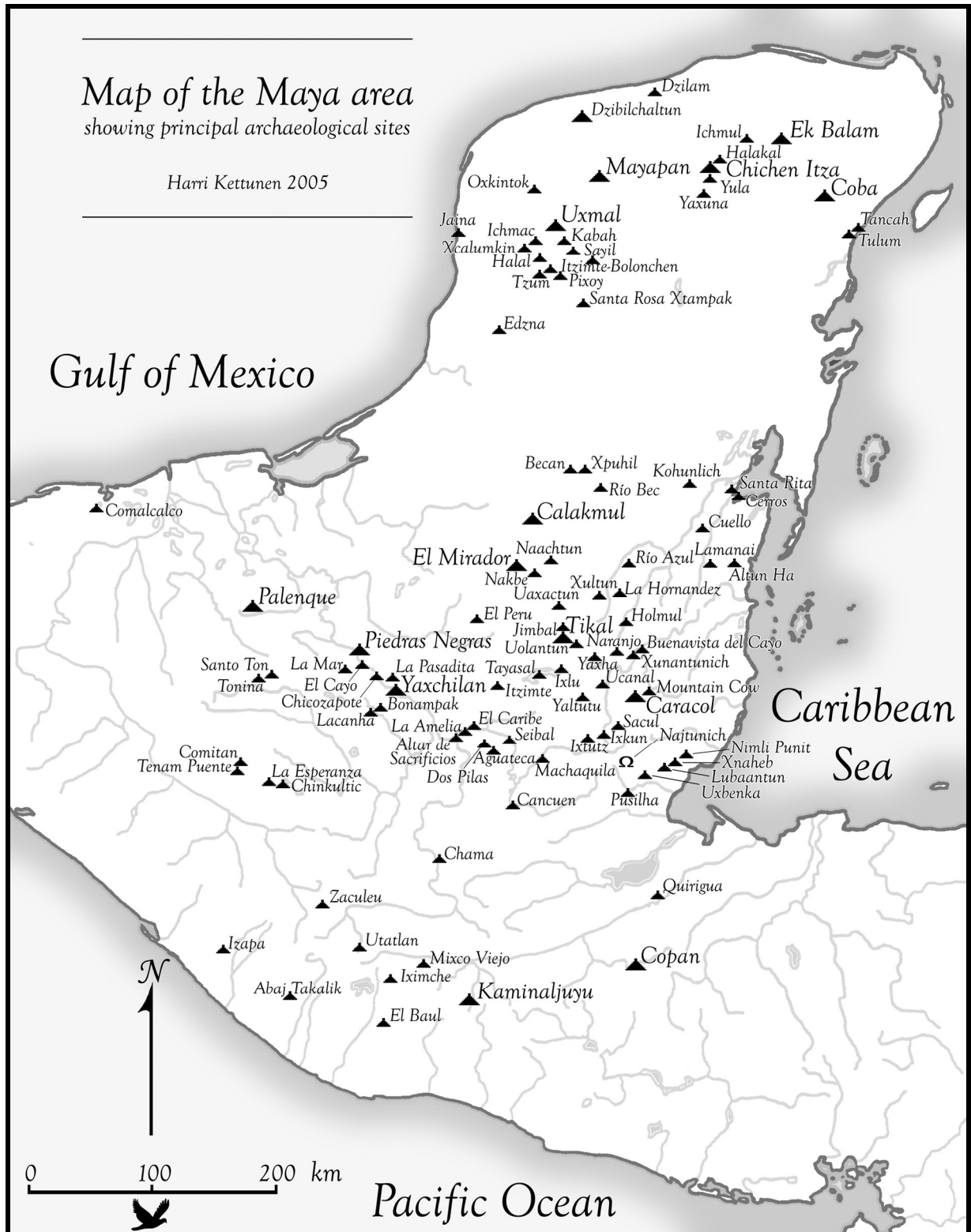


Figure 28: Map of the Maya area showing principal archaeological sites

APPENDIX E: NOTE ON THE CALENDAR

The Maya calendrical system is a rather complex arrangement with a number of overlapping systems. Usually the dates recorded in the inscriptions cover major parts of the texts. Fundamentally, the Maya calendrical system is twofold: it records linear time from a (mythological) zero point (13th of August 3114 BC) onwards (Long Count), and cyclical time with (basically) two calendrical cycles (the Calendar Round, comprised of the Tzolk'in [260 days] and the Haab' [365 days]).

MATHEMATICS³⁴

The Classic Maya mathematical system is a vigesimal (base twenty) positional system that was employed throughout Mesoamerica during the Precolumbian times (instead of the common Western decimal [base ten] system). In practice this means that the position shift is made at twenty rather than ten:

| Vigesimal system: | | | Decimal system: | | |
|-------------------|-----------|------------------------|-----------------|---------|-------------------|
| Position: | Value: | Numbers: | Position: | Value: | Numbers: |
| 20^0 | 1 | 0 – 19 | 10^0 | 1 | 0 – 9 |
| 20^1 | 20 | 20 – 399 | 10^1 | 10 | 10 – 99 |
| 20^2 | 400 | 400 – 7 999 | 10^2 | 100 | 100 – 999 |
| 20^3 | 8 000 | 8 000 – 159 999 | 10^3 | 1 000 | 1 000 – 9 999 |
| 20^4 | 160 000 | 160 000 – 3 199 999 | 10^4 | 10 000 | 10 000 – 99 999 |
| 20^5 | 3 200 000 | 3 200 000 – 63 999 999 | 10^5 | 100 000 | 100 000 – 999 999 |
| etc. | etc. | etc. | etc. | etc. | etc. |

Table IV: Vigesimal vs. decimal system

In Maya calendrical calculations, however, the Haab' coefficient breaks the harmonic vigesimal rule being a multiplication of 18 times 20 rather than 20 times 20. With this exception to the rule the Maya were approximating the closest possible number of days to the solar year (as well being a figure divisible by 20), thereby reaching a compromise of 360 days³⁵.

Vigesimal system applied for calendrical calculations³⁶:

| Formula: | Value (days): | Numbers (days): |
|--|---------------|------------------------|
| 1 or 20^0 | 1 | 0 – 19 |
| 20 or 20^1 | 20 | 20 – 359 |
| 18 X 20 or 18×20^1 | 360 | 360 – 7 199 |
| 20 X 18 X 20 or 18×20^2 | 7 200 | 7 200 – 143 999 |
| 20 X 20 X 18 X 20 or 18×20^3 | 144 000 | 144 000 – 2 879 999 |
| 20 X 20 X 20 X 18 X 20 or 18×20^4 | 2 880 000 | 2 880 000 – 57 599 999 |
| etc. | etc. | etc. |

Table V: Applied vigesimal system for calendrical calculations

³⁴ Examples of mathematical calculations will be provided during the workshop.

³⁵ The Haab' coefficient (360 days) in the Long Count calendar is not to be confused with the Haab' calendar (365 days) in the Calendar Round (see below).

³⁶ It should be noted here that the coefficient examples in this table run beyond the standard number of coefficients found in most Long Count dates (the first five are/were sufficient to record historical time).



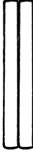














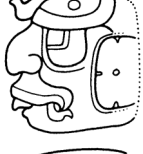

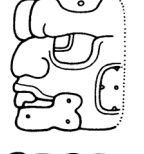


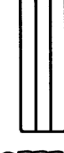




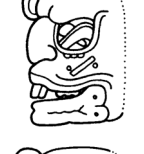


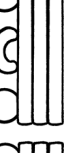
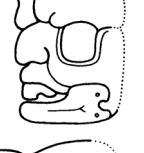


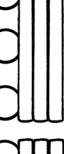





| Classic N ^o : | Classic Maya: | Notational variants: | Head variants: | Classic N ^o : | Classic Maya: | Notational variants: | Head variants: |
|-----------------------------|------------------|---|---|-----------------------------|------------------|---|---|
| 0 | mih |  |  | 10 | laju'n |  |  |
| 1 | ju'n |  |  | 11 | b'uluk |  |  |
| 2 | cha' |  |  | 12 | lahcha' |  |  |
| 3 | ux |  |  | 13 | uxlaju'n |  |  |
| 4 | chan |  |  | 14 | chanlaju'n |  |  |
| 5 | ho' |  |  | 15 | ho'laju'n |  |  |
| 6 | wak |  |  | 16 | waklaju'n |  |  |
| 7 | huk |  |  | 17 | huklaju'n |  |  |
| 8 | waxak |  |  | 18 | waxaklaju'n |  |  |
| 9 | b'olon |  |  | 19 | b'olonlaju'n |  |  |

Table VI: Classic Maya numerals from zero to nineteen (drawings of the head variants by John Montgomery)

TZOLK'IN AND HAAB'

The Tzolk'in is a cycle of 260 days, made up of the permutation of 13 numbers with twenty named days. The Haab' is a (vague) solar year of 365 days, made up of 18 named "months" of 20 days each, with 5 extra days added on at the end of the year. The first day of the Tzolk'in is "1 Imix". The next day is "2 Ik'", the next "3 Ak'b'al", and so on, until after 260 different combinations "1 Imix" occurs again.³⁷



| | | | | | | | | | | | | | |
|----------|----|----|----|----|----|----|----|----|----|----|----|----|----|
| Imix | 1 | 8 | 2 | 9 | 3 | 10 | 4 | 11 | 5 | 12 | 6 | 13 | 7 |
| Ik' | 2 | 9 | 3 | 10 | 4 | 11 | 5 | 12 | 6 | 13 | 7 | 1 | 8 |
| Ak'b'al | 3 | 10 | 4 | 11 | 5 | 12 | 6 | 13 | 7 | 1 | 8 | 2 | 9 |
| K'an | 4 | 11 | 5 | 12 | 6 | 13 | 7 | 1 | 8 | 2 | 9 | 3 | 10 |
| Chikchan | 5 | 12 | 6 | 13 | 7 | 1 | 8 | 2 | 9 | 3 | 10 | 4 | 11 |
| Kimi | 6 | 13 | 7 | 1 | 8 | 2 | 9 | 3 | 10 | 4 | 11 | 5 | 12 |
| Manik' | 7 | 1 | 8 | 2 | 9 | 3 | 10 | 4 | 11 | 5 | 12 | 6 | 13 |
| Lamat | 8 | 2 | 9 | 3 | 10 | 4 | 11 | 5 | 12 | 6 | 13 | 7 | 1 |
| Muluk | 9 | 3 | 10 | 4 | 11 | 5 | 12 | 6 | 13 | 7 | 1 | 8 | 2 |
| Ok | 10 | 4 | 11 | 5 | 12 | 6 | 13 | 7 | 1 | 8 | 2 | 9 | 3 |
| Chuwen | 11 | 5 | 12 | 6 | 13 | 7 | 1 | 8 | 2 | 9 | 3 | 10 | 4 |
| Eb' | 12 | 6 | 13 | 7 | 1 | 8 | 2 | 9 | 3 | 10 | 4 | 11 | 5 |
| B'en | 13 | 7 | 1 | 8 | 2 | 9 | 3 | 10 | 4 | 11 | 5 | 12 | 6 |
| Ix | 1 | 8 | 2 | 9 | 3 | 10 | 4 | 11 | 5 | 12 | 6 | 13 | 7 |
| Men | 2 | 9 | 3 | 10 | 4 | 11 | 5 | 12 | 6 | 13 | 7 | 1 | 8 |
| Kib' | 3 | 10 | 4 | 11 | 5 | 12 | 6 | 13 | 7 | 1 | 8 | 2 | 9 |
| Kab'an | 4 | 11 | 5 | 12 | 6 | 13 | 7 | 1 | 8 | 2 | 9 | 3 | 10 |
| Etz'nab' | 5 | 12 | 6 | 13 | 7 | 1 | 8 | 2 | 9 | 3 | 10 | 4 | 11 |
| Kawak | 6 | 13 | 7 | 1 | 8 | 2 | 9 | 3 | 10 | 4 | 11 | 5 | 12 |
| Ajaw | 7 | 1 | 8 | 2 | 9 | 3 | 10 | 4 | 11 | 5 | 12 | 6 | 13 |

Table VII: Organization of successive Tzolk'in dates

In the Haab' calendar each "month" stays in place for twenty days. The first Maya month is Pop, the day after "1 Pop" is "2 Pop", then "3 Pop", and so on, until after 365 days "1 Pop" reoccurs. The beginning of the month was called the "seating" of the month, and after 19 days Pop is completed and the next month (Wo) is "seated".³⁸

CALENDAR ROUND

The Calendar Round (CR) date records a specific date by giving both its Tzolk'in and its Haab' positions, e.g. "6 Etz'nab 11 Yax" (which follows by "7 Kawak 12 Yax", "8 Ajaw 13 Yax", "9 Imix 14 Yax", etc. Since 260 and 365 have a common factor of 5, the minimal time it takes for a particular Calendar Round date to repeat is (260 x 365) / 5, or 18980 days, or 52 x 365 days (= approximately 52 years).

³⁷ See Day Names (Tzolk'in Calendar) below.

³⁸ See Month Names (Haab' Calendar) below.

LONG COUNT

The Long Count is a linear³⁹ calendar with a (mythological) starting point in year 3114 BC in the Gregorian calendar (13th of August, according to the modified GMT [Goodman-Martínez-Thompson] correlation constant [584285]). The Long Count calendar resembles our linear calendar with the exception that in the Christian calendar time is computed in *years* whereas in the Maya Long Count time is reckoned in *days*. The Long Count has, therefore, advantages over our system as regards to precision in recording time using only one calendrical system. However, as has been noted, the Maya were keen on employing a number of overlapping calendrical systems to specify a given date in a moment in time⁴⁰. See the section **How to Convert Maya Long Count Dates to Gregorian Dates** for further information.

INITIAL SERIES

The Initial Series (IS) is a standard calendrical notation, which on an archetypal Maya monument comprises the opening segment of a text. This section is introduced by the Initial Series Introductory Glyph (ISIG), the Long Count (LC), and the Calendar Round (CR). Besides recording the point in time of the first event in the text, the Initial Series also serves as an anchor date for later dates in the monument (recorded thereafter by Distance Numbers).

SUPPLEMENTARY SERIES

A set of usually six or seven glyphs are repeatedly incorporated between the Tzolk'in and the Haab' calendars in lengthy monumental Maya texts with Initial series. This group of hieroglyphs is known as the Supplementary Series⁴¹ consisting, for example, of a cycle of 9 days (glyph G) which together with glyph F probably refers to a particular ritual that took place on the recorded date, and a set of glyphs known as the Lunar Series dealing with lunar information (the number of elapsed days since the last new moon [glyphs E and D], the position of a given lunation within a cycle of six lunations [glyph C], the epithet of the lunation or possibly the direction of the rising or setting moon [glyph X], and the modifier ["the young name of"] for it [glyph B], and the number of days [29 or 30] of the current lunation [glyph A]).

DISTANCE NUMBERS

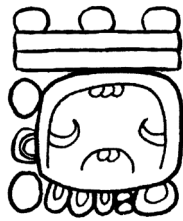
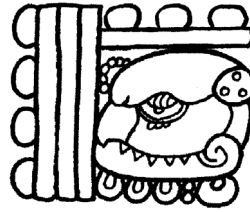
Distance Numbers (DN) are the intervals between dates in the Maya inscriptions. They are always recorded in reverse order from that of the Initial Series dates. First comes the record of days (*k'in*), then 20 day periods (*winik*), then 360 day "years" (*haab'*), and then 20 vague years (*winaakhaab'* ["k'atun"]), etc.

Usually the *k'in* and *winik* coefficients are written in the same glyph, where they are both "glued" to the *winik* sign. Both of them can occupy either the left side or the top of the *winik* sign. However, the *winik* coefficient only takes the same space horizontally or vertically as the *winik* sign, whereas the *k'in* coefficient occupies the whole extent (length or vertical space) of the remaining glyph block. A worthy piece of advice is to look at the upper left corner of the glyph block: whatever number occupies that position is the coefficient of the *k'in* period.

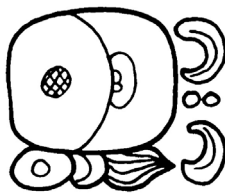
³⁹ Even though the Long Count calendar of 13 b'ak'tuns (pih or pik) is a linear calendar, the Maya probably perceived time as being cyclical in nature. Furthermore, the Long Count calendar can be regarded as a continuation or a recurrence of the previous calendar (or creation), and thus cyclical in nature.

⁴⁰ For a revealing example, explore Lintels 29-31 from Yaxchilan.

⁴¹ The hieroglyphs in the Supplementary Series were labeled by early Maya scholars in reverse order from that of their position in the text (due to the fact that the glyphs towards the end of the Series were more consistent than the glyphs in the beginning): G, F, E, D, C, B, A. Later discoveries have added three more glyphs to the inventory: glyphs Z, Y, and X.

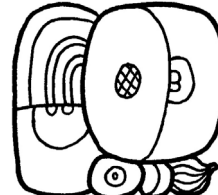
**13, 2-WINIK-ji-ya**13 days (and)
2 “months” of 20 days**19, 8-WINIK-ji-ya**19 days (and)
8 “months” of 20 days

Distance Numbers are usually followed by either “Anterior Date Indicators” (ADI) or “Posterior Date Indicators” (PDI), since they precede an earlier date and a later date, respectively. Now that these signs can be read phonetically, their temporal attributes can be understood in semantic terms based on assessments of their respective grammatical affixes. Thus, the ADI reads *u[h]tiiy* (**u-ti-ya**), “it had come to pass” and the PDI reads *iu[h]ti* (**i-u-ti**), which stands for “and then it happened”.

**u-ti-ya***u[h]tiiy**uht-i-Ø-iy*

happen-IV-3SA-ADV.CLT

“happened (ago)”

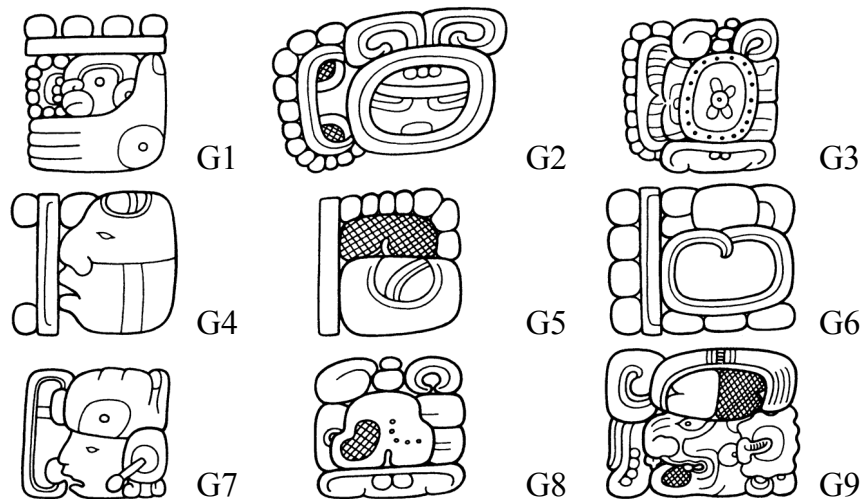
**i-u-ti***iu[h]ti**i-uht-i-Ø*

CONJ-happen-IV-3SA

“(then) happened”

POSSIBLE HAAB' COEFFICIENTS FOR THE TZOLK'IN DAY NAMES

| Tzolk'in: | Possible Haab' coefficient: | | | |
|-----------|-----------------------------|----|----|----|
| Ajaw | 8 | 13 | 18 | 3 |
| Imix | 4 | 9 | 14 | 19 |
| Ik' | 5 | 10 | 15 | 0 |
| Ak'b'al | 6 | 11 | 16 | 1 |
| K'an | 7 | 12 | 17 | 2 |
| Chikchan | 8 | 13 | 18 | 3 |
| Kimi | 4 | 9 | 14 | 19 |
| Manik' | 5 | 10 | 15 | 0 |
| Lamat | 6 | 11 | 16 | 1 |
| Muluk | 7 | 12 | 17 | 2 |
| Ok | 8 | 13 | 18 | 3 |
| Chuwen | 4 | 9 | 14 | 19 |
| Eb' | 5 | 10 | 15 | 0 |
| B'en | 6 | 11 | 16 | 1 |
| Ix | 7 | 12 | 17 | 2 |
| Men | 8 | 13 | 18 | 3 |
| K'ib' | 4 | 9 | 14 | 19 |
| Kab'an | 5 | 10 | 15 | 0 |
| Etz'nab' | 6 | 11 | 16 | 1 |
| Kawak | 7 | 12 | 17 | 2 |

“LORDS OF THE NIGHT” (CYCLE OF 9 DAYS)**Table VIII: Lords of the Night (drawings by John Montgomery)****AN EXAMPLE OF THE CORRELATION OF THE LONG COUNT, TZOLK'IN, AND HAAB' CALENDARS AND THE LORDS OF THE NIGHT**

| | | | |
|--------------|------------|----------|-----|
| 9.8.19.17.14 | 10 Ix | 17 Sip | G3 |
| 9.8.19.17.15 | 11 Men | 18 Sip | G4 |
| 9.8.19.17.16 | 12 Kib' | 19 Sip | G5 |
| 9.8.19.17.17 | 13 Kab'an | 0 Sotz' | G6 |
| 9.8.19.17.18 | 1 Etz'nab' | 1 Sotz' | G7 |
| 9.8.19.17.19 | 2 Kawak | 2 Sotz' | G8 |
| 9.9.0.0.0 | 3 Ajaw | 3 Sotz' | G9 |
| 9.9.0.0.1 | 4 Imix | 4 Sotz' | G1 |
| 9.9.0.0.2 | 5 Ik' | 5 Sotz' | G2 |
| 9.9.0.0.3 | 6 Ak'b'al | 6 Sotz' | G3 |
| 9.9.0.0.4 | 7 K'an | 7 Sotz' | G4 |
| 9.9.0.0.5 | 8 Chikchan | 8 Sotz' | G5 |
| 9.9.0.0.6 | 9 Kimi | 9 Sotz' | G6 |
| 9.9.0.0.7 | 10 Manik' | 10 Sotz' | G7 |
| 9.9.0.0.8 | 11 Lamat | 11 Sotz' | G8 |
| 9.9.0.0.9 | 12 Muluk | 12 Sotz' | G9 |
| 9.9.0.0.10 | 13 Ok | 13 Sotz' | G1 |
| 9.9.0.0.11 | 1 Chuwen | 14 Sotz' | G2 |
| 9.9.0.0.12 | 2 Eb' | 15 Sotz' | G3 |
| 9.9.0.0.13 | 3 B'en | 16 Sotz' | G4 |
| 9.9.0.0.14 | 4 Ix | 17 Sotz' | G5 |
| 9.9.0.0.15 | 5 Men | 18 Sotz' | G6 |
| 9.9.0.0.16 | 6 Kib' | 19 Sotz' | G7 |
| 9.9.0.0.17 | 7 Kab'an | 0 Sek | G8 |
| 9.9.0.0.18 | 8 Etz'nab' | 1 Sek | G9 |
| 9.9.0.0.19 | 9 Kawak | 2 Sek | G1 |
| 9.9.0.1.0 | 10 Ajaw | 3 Sek | G2 |
| 9.9.0.1.1 | 11 Imix | 4 Sek | G3 |
| 9.9.0.1.2 | 12 Ik' | 5 Sek | G4 |
| 9.9.0.1.3 | 13 Ak'b'al | 6 Sek | G5 |
| 9.9.0.1.4 | 1 K'an | 7 Sek | G6 |
| ... | ... | ... | ... |

HOW TO CONVERT MAYA LONG COUNT DATES TO GREGORIAN DATES

1. Multiply the numbers in the Long Count calendar by units given in the table below (center column).
2. Add the number of days together. If the Maya Long Count date is, say, 9.15.6.14.6 (9 “b’ak’tuns”, 15 “k’atuns”, 6 “tuns”, 14 “winal”, and 6 “k’in”): do the following calculations:

| Long Count number: | multiplied by: | result: |
|--------------------|----------------|-----------|
| 9 | 144 000 | 1 296 000 |
| 15 | 7 200 | 108 000 |
| 6 | 360 | 2 160 |
| 14 | 20 | 280 |
| 6 | 1 | 6 |
| Maya day number: | | 1 406 446 |

3. Add the GMT-correlation constant (584 285) to the Maya day number to give its corresponding Julian Day Number (JDN):

| MDN: | GMT: | JDN: |
|-----------|---------|-----------|
| 1 406 446 | 584 285 | 1 990 731 |

4. From this JDN, the nearest *smaller* JDN (in the table below) is then subtracted:

| year: | JDN: | year: | JDN: |
|-------|-----------|-------|-----------|
| 1 | 1 721 060 | 1100 | 2 122 827 |
| 100 | 1 757 585 | 1200 | 2 159 351 |
| 200 | 1 794 109 | 1300 | 2 195 876 |
| 300 | 1 830 633 | 1400 | 2 232 400 |
| 400 | 1 867 157 | 1500 | 2 268 924 |
| 500 | 1 903 682 | 1600 | 2 305 448 |
| 600 | 1 940 206 | 1700 | 2 341 973 |
| 700 | 1 976 730 | 1800 | 2 378 497 |
| 800 | 2 013 254 | 1900 | 2 415 021 |
| 900 | 2 049 779 | 2000 | 2 451 545 |
| 1000 | 2 086 303 | | * |

Julian Day Numbers (JDN) for January 1st in the Gregorian calendar (years AD 1—2000).

| JDN #1 | JDN #2 | remainder: |
|-----------|-----------|------------|
| 1 990 731 | 1 976 730 | 14 001 |

5. Calculate the number of (365 day) years and days in the remainder number:

| remainder: | days in a (vague) year: | result: |
|------------|-------------------------|----------------------|
| 14 001 | 365 | 38 years 131 days |

6. Take into account the leap days (one every fourth year) and leap centuries (those that are divisible by 400 (i.e. AD 400, 800, 1200, 1600, 2000, etc.) and subtract the number of leap days between AD 700 (closest smaller JDN) and 738 (700 + the division result above):

| Closest smaller JDN: | division result: | leap days to be subtracted: | final result: |
|----------------------|----------------------|-----------------------------|-----------------------|
| 700 | 38 years 131 days | -9 days | 738 years 122 days |

Here the division is 38 years divided by 4 – for which we obtain 9,5. Counting only whole days we thus obtain 9 days to subtract. Maya Long Count date 9.15.6.14.6 corresponds, therefore, to the 122th day of the year AD 738; i.e. May 2nd AD 738.

A SHORTCUT GUIDE FOR THE CONVERSION OF MAYA LONG COUNT DATES TO GREGORIAN DATES⁴² (for Maya date 9.15.6.14.6)

Add together the “b’ak’tuns” (9), “k’atuns” (15), “tuns” (6), “winals” (14), and “k’ins” (6) (=1 406 446), divide the result by 365 ($\approx 3\ 853,28$) and subtract 3 115 (3114 + year zero) from it (=AD738).



⁴² The calculation below offers a ± 1 year rough estimate of a given Long Count date to be utilized in working out the overall time period of a given monument (if knowing the precise Gregorian date is not essential in that particular context).

PERIOD NAMES






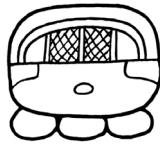








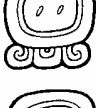




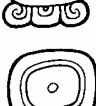
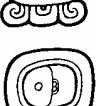




| New orthography: | Classic Maya: | Old orthography: | Period length: | Rendition of signs: head variants & basic forms: | |
|------------------|---------------|------------------|----------------|--|---|
| k'in | k'in | kin | 1 day |  |  |
| winal | winik | uinal | 20 days |  |  |
| tun | haab' | tun | 360 days |  |  |
| k'atun | winaakhaab'? | katun | 7 200 days |  |  |
| b'ak'tun | pih/pik | baktun | 144 000 days |  |  |

Table IX: Period names for Long Count dates and Distance Numbers

DAY NAMES (TZOLK'IN CALENDAR)

Imix-Ok

| New orthography: | 16th Century Yukatek: | Classic Maya: | Rendition of signs: | |
|------------------|-----------------------|---------------|---|---|
| Imix | Imix | Ha'? |  | |
| Ik' | Ik | Ik' |  | |
| Ak'b'al | Akbal | Ak'ab'? |  | |
| K'an | Kan | O'hl? |  | |
| Chikchan | Chicchan | ? |  |  |
| Kimi | Cimi | Cham? |  |  |
| Manik' | Manik | ? |  | |
| Lamat | Lamat | Ek'? |  |  |
| Muluk | Muluc | ? |  |  |
| Ok | Oc | ? |  |  |

DAY NAMES (TZOLK'IN CALENDAR)

Chuwen-Ajaw

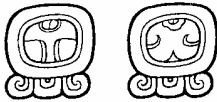








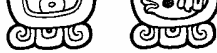
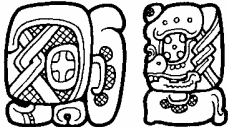




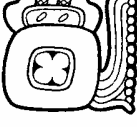



| New orthography: | 16th Century Yukatek: | Classic Maya: | Rendition of signs: |
|------------------|-----------------------|---------------|---|
| Chuwen | Chuen | ? |  |
| Eb' | Eb | ? |  |
| B'en | Ben | ? |  |
| Ix | Ix | Hix? |  |
| Men | Men | Tz'ikin? |  |
| Kib' | Cib | ? |  |
| Kab'an | Caban | Kab'? |  |
| Etz'nab' | Etz'nab | ? |  |
| Kawak | Cauac | ? |  |
| Ajaw | Ahau | Ajaw? |  |

Table X: Day names: Tzolk'in calendar (drawings by Mark Van Stone [Coe and Van Stone 2001])

MONTH NAMES (HAAB' CALENDAR)

Pop-Yax

| New orthography: | 16th Century Yukatek: | Classic Maya: | Rendition of signs: |
|------------------|-----------------------|---------------------------|---|
| Pop | Pop | ? |  |
| Wo | Uo | Ik'at, Wooh(iil) |  |
| Sip | Zip | Chakat |  |
| Sotz' | Zotz' | Suutz' |  |
| Sek | Tzec | Kase'w, Kuse'w |  |
| Xul | Xul | ? |  |
| Yaxk'in | Yaxkin | Yaxk'in |  |
| Mol | Mol | Mol, Molo'l, Molo'w |  |
| Ch'en | Ch'en | Ik' siho'm |  |
| Yax | Yax | Yax siho'm |  |

MONTH NAMES (HAAB' CALENDAR)

Sak-Wayeb'




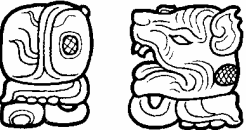
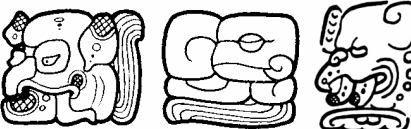




| New orthography: | 16th Century Yukatek: | Classic Maya: | Rendition of signs: |
|------------------|-----------------------|---------------------|--|
| Sak | Zac | Sak siho'm |  |
| Keh | Ceh | Chak siho'm |  |
| Mak | Mac | Mak |  |
| K'ank'in | Kankin | Uniw, Uniiw |  |
| Muwan | Muan | Muwaan, Muwan |  |
| Pax | Pax | Pax, Paxiil |  |
| K'ayab | Kayab | K'anasiiy |  |
| Kumk'u | Cumku | ? O'hl |  |
| Wayeb' | Uayeb | Wayhaab' Kolajaw |  |






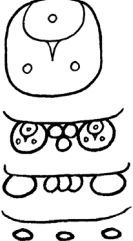

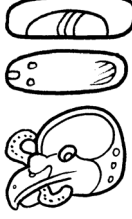


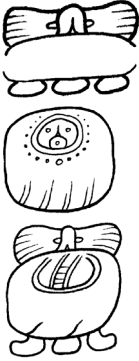


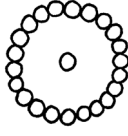


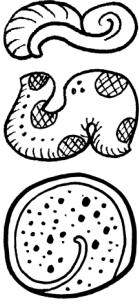
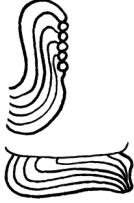
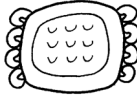
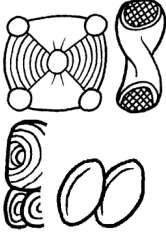




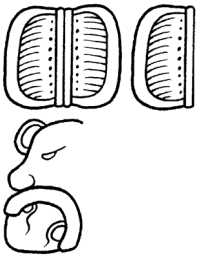
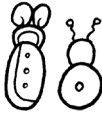

Table XI: "Month" names: Haab' calendar (drawings by Mark Van Stone [Coe and Van Stone 2001])⁴³

⁴³ With the exception of the 2nd "Wo" sign (after Kerr n.d. [K6751]) and the 3rd "Muwan" sign (after a drawing by Nikolai Grube [CRC BCM3: D3]).

APPENDIX F: SYLLABLE CHARTS

| | a | e | i | o | u |
|-----|---|---|---|---|---|
| ' | | | | | |
| b' | | | | | |
| ch | | | | | |
| ch' | | | | | |
| h | | | | | |
| j | | | | | |
| k | | | | | |

Table XII: Syllable charts

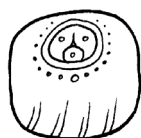
| | a | e | i | o | u |
|----|---|---|---|--|---|
| k' |  |  |  |  |  |
| l |  |  |  |  |  |
| m |  |  |  |  |  |
| n |  |  |  |  |  |
| p |  | |  |  |  |
| s |  | |  | |  |

| | a | e | i | o | u |
|-----|---|---|---|---|---|
| t | | | | | |
| t' | | | | | |
| tz | | | | | |
| tz' | | | | | |
| w | | | | | |
| x | | | | | |
| y | | | | | |

Note these potentially confusing syllabic signs:



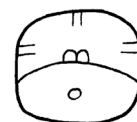
b'a



ma



lo



te



b'u



mu



ku



pi



b'u



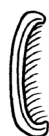
mu



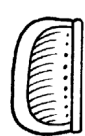
mu



yo



ka



sa



ni



wi




la



ma

APPENDIX G: THE LANDA ALPHABET

de las partes otro, y assi viene a hazer un infinitum lo no se podria ver en el siguiente exemplo. Lo, quiere decir la co y caaac con el, para escribir la con sus caracteres aniendo los nosotros bebo entender que son dos letras lo escribia ellos con tres pñuendo a la aspiracion de la h, la vocal, que antes de si trae, y en esto no hareran ningun sentido si quisieren ellos de su curiosidad. Exemplo. 

despues al cabo le pegan la parte junta. ha. que quiere decir agna porq la baeb' tiene a. h. ante de si lo ponen ellos al principio con a. y al cabo desta manera  Tambie lo escriben a partes, de la via y otra ma  Merayo no putiera aqui mi tratura dello sino por dar cuenta entera de las cosas desta gente. Mamhah' quiere decir no quiero, ellos lo escriben a partes desta manera. 

Signese en a, b, c. 

| | | | | | | | | | |
|----------|----------|----------|----------|-----------|-----------|-----------|-----------|----------|----------|
| | | | | | | | | | |
| <i>c</i> | <i>t</i> | <i>e</i> | <i>h</i> | <i>i</i> | <i>ca</i> | <i>h</i> | <i>l</i> | <i>l</i> | <i>p</i> |
| | | | | | | | | | |
| <i>m</i> | <i>n</i> | <i>o</i> | <i>o</i> | <i>pp</i> | <i>cu</i> | <i>ku</i> | <i>xp</i> | <i>x</i> | <i>k</i> |

 De las letras que aqui faltan carece esta lengua y tiene otras añadidas de la maestra para otras cosas q las ha menester y ya no usan para nada de sus caracteres especialmente la gente moça q au aprendido los nros

Figure 29: The Landá Alphabet (adapted after Coe and Kerr 1998: 228)

APPENDIX H: TRANSCRIPTIONS⁴⁴ OF CLASSIC MAYA PHONEMES

Consonants:

| | bilabial | alveolar | palato- alveolar | palatal | velar | uvular | glottal |
|---------------------------|----------|----------|---------------------|---------|-------|--------|---------|
| stops/ plosives: | | | | | | | |
| unglottalized | p | t | | | k | | ʔ |
| glottalized ⁴⁵ | pʔ | tʔ | | | kʔ | | |
| bʔ | bʔ | | | | | | |
| affricates: | | | | | | | |
| unglottalized | | tz | ch | | | | |
| glottalized ⁴⁵ | | tzʔ | chʔ | | | | |
| fricatives/ spirants | | s | x | | | j | h |
| liquids/ approximants | | l | | | | | |
| nasals | m | n | | | | | |
| semivowels | w | | | y | | | |

Table XIII: Classic Maya consonants

Vowels:

| | front | central | back |
|--------------|-------|---------|------|
| high (close) | i | | u |
| mid | e | | o |
| low (open) | | a | |

Table XIV: Classic Maya vowels

⁴⁴ These transcriptions are neither phonemic nor phonetic. Instead they represent the orthographies used in Maya epigraphy that are based on the new official alphabets for the Guatemalan Maya languages (*Acuerdo Gubernativo numero 1046-87* [23rd of November 1987]) and its modification (*Acuerdo Gubernativo numero 129-88* [2nd of March 1988]), and its subsequent publication (*Lenguas Mayas de Guatemala: Documento de referencia para la pronunciación de los nuevos alfabetos oficiales*). See also the chapter “Note on the Orthography”.

⁴⁵ These can also be labeled as *ejective stops*.

APPENDIX I: ARTICULATION ORGANS AND PLACES⁴⁶

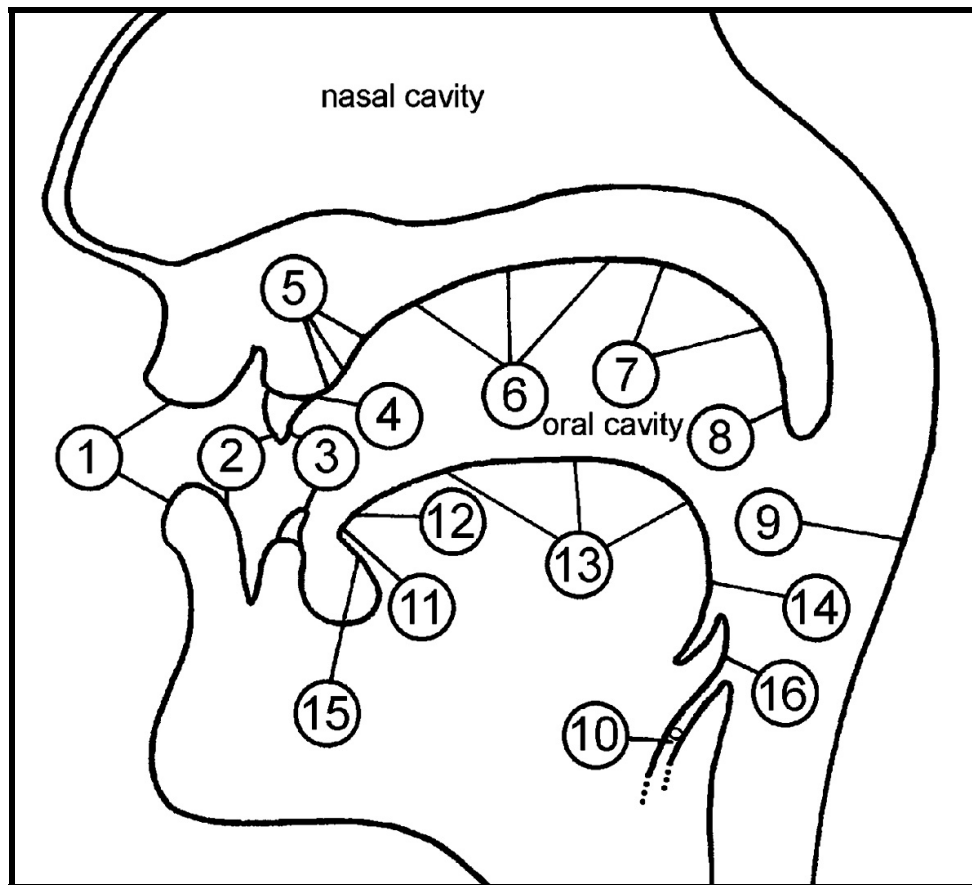


Figure 30: Articulation places

| | articulation organs: | Latin terminology: | articulation places: |
|----|-----------------------------|------------------------------|-----------------------------|
| 1 | lips | <i>labium, pl. labia</i> | bilabial |
| 2 | lower lip & upper teeth | | labiodental |
| 3 | teeth | <i>dens, pl. dentes</i> | interdental |
| 4 | back side of teeth | | postdental (dental) |
| 5 | alveolar ridge | <i>alveolus, pl. alveoli</i> | alveolar |
| 6 | hard palate | <i>palatum durum</i> | palatal |
| 7 | soft palate | <i>velum</i> | velar |
| 8 | uvula | <i>uvula</i> | uvular |
| 9 | pharynx | <i>pharynx</i> | pharyngeal |
| 10 | larynx | <i>larynx</i> | laryngeal |
| 11 | tip of the tongue | <i>apex</i> | apical |
| 12 | blade of the tongue | <i>lamina/ corona</i> | laminal/ coronal |
| 13 | dorsum of the tongue | <i>dorsum</i> | dorsal |
| 14 | root of the tongue | <i>radix</i> | radical |
| 15 | underblade | <i>subdorsum</i> | subdorsal |
| 16 | epiglottis | <i>epiglottis</i> | epiglottal |

Table XV: Articulation organs and places

⁴⁶ Based partly on Iivonen, Horppila, Heikkonen, and Rissanen 2000 with modifications.

APPENDIX J: SYNHARMONIC VS. DISHARMONIC SPELLING, UNDERSPELLED SOUNDS, AND RECONSTRUCTED GLOTTAL FRICATIVES IN MAYA HIEROGLYPHIC WRITING

The following is heavily based on the foundation work done by Houston, Robertson, and Stuart (1998, 2000), Lacadena and Wichmann (2004), and on the workshop *Classic Maya Grammar* directed by Alfonso Lacadena and Marc Zender at the 6th European Maya Conference, Hamburg, Germany, December 5th–7th, 2001. All possible misinterpretations are ours, not theirs.

EXPLANATION OF ABBREVIATIONS:

| | |
|-----|------------|
| C | consonant |
| V | vowel |
| ABS | absolutive |
| ERG | ergative |

Since the pivotal study of phoneticism in Maya hieroglyphic writing by Knorozov (1952) until the latter part of 1990's, the existence of disharmony (disharmonic spelling arrangements) in the Maya script was noticed but left more or less as an open question. In 1980's, the issue was taken under scrutiny by linguists, and some promising results were achieved. However, no overall satisfying pattern was found to explain all the arrangements until late 1990's and during the past couple of years. In 1998 Houston, Robertson, and Stuart proposed that the disharmonic spellings in the Maya script indicate the presence of preconsonantal glottal fricatives (/h/) as well as complex vowels including: long vowels (VV), glottal stops (ʔ), glottalized vowels (Vʔ) and rearticulated glottalized vowels (VʔV).

In their original proposal, Houston, Stuart, and Robertson (1998) suggested that there is no distinction made between vowel length, glottalization, and preconsonantal /h/ by means of disharmonic spellings, and that the existence of these three phonemic features are to be reconstructed historically:

| | | |
|--|-------------------|-------------------------------|
| CV ₁ C / CV ₁ -CV ₁ > | CV ₁ C | } + historical reconstruction |
| CV ₁ C / CV ₁ -CV ₂ > | CVVC | |
| CVʔC | | |
| CVhC | | |

A later modification by Lacadena and Wichmann (2004) points toward an interpretation that complex vowels (complex syllable nuclei) “were distinguished from short vowels in the script [... and] that vowel length and glottal stops were clearly distinguished from one another in the orthography”. Lacadena and Wichmann (2004: 103) also proposed that “neither disharmonic nor harmonic spellings indicate a preconsonantal /h/”. While the preconsonantal /h/ existed in Classic Maya (e.g. as a necessary and integral part of passive verbal constructions, see below), in the process of decipherment it must be reconstructed on the basis of historical linguistics.

The rules governing harmonic and disharmonic spelling arrangements as modified by Lacadena and Wichmann (2004) are as follows:

| | | |
|--|-------------------|---|
| CV ₁ C / CV ₁ -CV ₁ > | CV ₁ C | |
| CV ₁ C / CV ₁ -CV ₂ > | CVVC | (V ₁ = a, e, o, u; V ₂ = i) |
| CV ₁ C / CV ₁ -CV ₂ > | CVVC | (V ₁ = i; V ₂ = a) |
| CV ₁ C / CV ₁ -CV ₂ > | CVʔ(V)C | (V ₁ = e, o, u; V ₂ = a) |
| CV ₁ C / CV ₁ -CV ₂ > | CVʔ(V)C | (V ₁ = a, i; V ₂ = u) |

Table of different arrangements with examples:

| Arrangement: | Outcome: | Example: | Transliteration: | Translation: |
|--------------|----------|-------------------|--------------------|-----------------|
| CAC / Ca-Ca | CaC | la-ka | <i>lak</i> | plate |
| CAC / Ca-Ci | CaaC | b'a-ki | <i>b'aak</i> | captive |
| CAC / Ca-Cu | Ca'(a)C | b'a-tz'u | <i>b'a'tz'</i> | howler monkey |
| CEC / Ce-Ce | CeC | te-me | <i>tem</i> | throne |
| CEC / Ce-Ci | CeeC? | ke-ji | <i>keej</i> | deer |
| CEC / Ce-Ca | Ce'(e)C | ne-na | <i>ne'[h]n</i> | mirror |
| CIC / Ci-Ci | CiC | wi-tzi | <i>witz</i> | mountain |
| CIC / Ci-Cu | Ci'(i)C | chi-ku | <i>chi'k</i> | coati |
| CIC / Ci-Ca | CiiC | yi-tz'i-na | <i>yi[h]tz'iin</i> | younger brother |
| COC / Co-Co | CoC | yo-po | <i>yop</i> | leaf |
| COC / Co-Ci | CooC | xo-ki | <i>xook</i> | shark |
| COC / Co-Ca | Co'(o)C | o-la | <i>o'[h]l</i> | heart |
| CUC / Cu-Cu | CuC | k'u-hu | <i>k'uh</i> | god |
| CUC / Cu-Ci | CuuC | mu-chi | <i>muuch</i> | toad |
| CUC / Cu-Ca | Cu'(u)C | b'u-la | <i>b'u'ul</i> | bean |

Table XVI: Examples based on harmony rules

One of the (rare) disharmonic patterns in the script is that of CEC / Ce-Cu which is not included in Table XVI above. Lacadena and Wichmann (2004) propose that this pattern most likely does not belong to the sphere of harmony rules but is rather another example of underspelling.⁴⁷ Thus there are two possible outcomes for the following arrangements:

| | | | | |
|-------------|---------|----------------|--|---------------------|
| CEC / Ce-Cu | Ce'(e)C | che-b'u | <i>che'[eh]b'?</i> / <i>cheb'u[l]?</i> | quill, brush |
| ” | ” | te-mu | <i>te'm?</i> / <i>temu[l]?</i> | seat, bench, throne |

Examples of exceptions to the “normal disharmonic spelling rules” (=underspellings):

| Arrangement: | Outcome: | Example: | Transliteration: | Translation: |
|--------------|----------|----------------|--------------------|-------------------|
| CAC / Ca-Ce | ? | B'AK-ke | <i>b'a[a]ke[l]</i> | child |
| VCAC / Ca-Ce | ? | AJAW-le | <i>ajawle[l]</i> | lordship, kingdom |
| CAC / Ca-Co | ? | ch'a-ho | <i>ch'aho['m]</i> | man |
| CEC / Ce-Cu | ? | e-b'u | <i>e[h]b'u[l]</i> | stair |
| CEC / Ce-Co | ? | | *not attested* | |
| CIC / Ci-Ce | ? | | *not attested* | |
| CIC / Ci-Co | ? | ti-ho | <i>tih[']</i> | (a toponym) |
| COC / Co-Ce | ? | o-ke | <i>o[o]ke[l]</i> | foot |
| COC / Co-Cu | ? | | *not attested* | |
| CUC / Cu-Ce | ? | u-ne? | <i>une[n]?</i> | baby |
| CUC / Cu-Co | ? | | *not attested* | |
| CUC / Cu-Ca | ? | tu-pa | <i>tupa[j]</i> | earspool |

Table XVII: Examples of underspelled words

⁴⁷ Moreover, Wichmann reasons that “Possibly a scribe was playing with the conventions and introduced *e-u* as a rule, but we have to consider the possibility that there is a suffix *-u[l]* in play. It is too much to sacrifice the simplicity of the system when there's so few examples and when they could involve underspelled suffixes.” (personal communication, 2002).

The following sounds are frequently underspelled towards the end of words and in the case of consonant clusters (-C# and -CC-): /l/, /m/, /n/, /h/, /j/, and /ʔ/. Examples of words with underspelled sounds at the end of the word include: **b'i** > *b'i[h]* (“road”), **chi** > *chi[j]* (“deer”), **sa-ja** > *saja[l]* (title), **tz'u-nu** > *tz'unu[n]* (“hummingbird”), **a-u-ku** > *a[j]uku[l]* (proper name), and **YAX-a** > *Yaxa[ʔ]* (“Yaxha” [toponym]). Examples of words with underspelled sounds in –CC- surroundings (consonant clusters/ double consonants) include: **ja-wa-TE'** > *jawa[n]te'* (“tripod plate”), **b'u-ku** > *b'u[h]k* (“clothes”), **xo-TE'** > *xo[l]te'* (“staff”), and **ko-ha-wa** > *ko[ʔ]haw* (“helmet”), i.e., /l/, /m/, /n/, /h/, /j/, and /ʔ/ sounds are underspelled if they precede another consonant.

The variety of different spelling arrangements of a same word serves as a hint towards the interpretation of underspellings. For example, on Lintel 10 (see below) at Yaxchilan the name of a captive (*A[h]kul Mo'*) is written in four different ways:





| | | | |
|---|---|--|---|
|  |  |  |  |
| B3a | C3b | F4a | F8 |
| a-AK-MO' <i>A[h]k[ul] Mo'</i> <i>Ahkul Mo'</i> | AK-ku-lu-MO' <i>A[h]kul Mo'</i> <i>Ahkul Mo'</i> | a-[ku?]lu-MO' <i>A[h]kul Mo'</i> <i>Ahkul Mo'</i> | a-[ku?]lu-MO'-o <i>A[h]kul Mo'</i> <i>Ahkul Mo'</i> |

Table XVIII: An example of varying spelling of the name *Ahkul Mo'* from Lintel 10, Yaxchilan

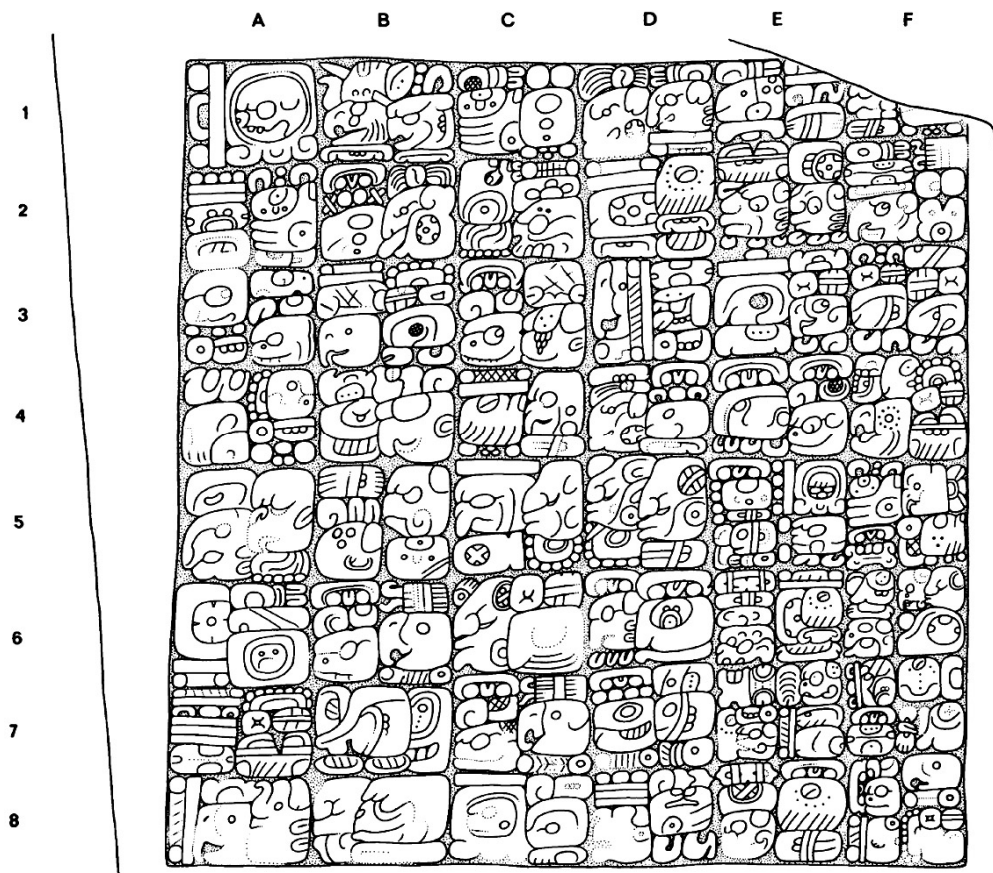


Figure 31: Lintel 10, Yaxchilan, Mexico (drawing by Ian Graham [Graham and von Euv 1977: 31])

From year 1998 onwards it has become evident that different spelling arrangements yield dissimilar results in pronunciation, as seen in the set of examples below:

| Transcription: | Transliteration pre-1998: | Transliteration post-1998: | Translation: |
|-----------------------|--------------------------------------|---------------------------------------|-------------------------|
| b'a-ki | <i>b'ak</i> | <i>b'aak</i> | bone, captive |
| b'a-ka | <i>b'ak</i> | <i>b'ak</i> | bone, captive |
| b'a-ku | <i>b'ak</i> | <i>b'a'[a]k</i> | youth, cf. CH'OK |
| B'AK-ke | <i>b'ak</i> | <i>b'aake[l]</i> | child |
| B'AK-ke-le | <i>b'akel</i> | <i>b'a[a]kel</i> | human or animal bone |

Table XIX: Different spelling arrangements yielding contrasting results in articulation

It should be noted here that the spelling rules explained above are under constant modifications by the above mentioned scholars and new adjustments are made annually. Furthermore, there is also disagreement on the basic principles of the spelling rules in the field of Maya epigraphy and, consequently, readers of this volume are advised to follow the current debate and to read forthcoming articles and publications relating to the issue⁴⁸.

⁴⁸ One of the focal issues and main problems regarding the spelling rules is the partial disagreement of (historical) linguistic data and reconstructed spelling rules. There are a number of examples in the linguistic corpus that seem to contradict the rules described above and different scholars have distinct solutions to these dilemmas. Without going too deeply into the issue, one example is provided here since it also helps to understand a *prima facie* anomaly in the Classic Maya – English Dictionary presented towards the end of this volume. As a rule, as noted above, synharmonic spelling of a given word should produce a short vowel. However, there are a few instances where linguistic evidence points towards a different outcome. For example, the word for ‘star’ in Greater Lowland Maya is *eeq’ according to Kaufman (2003) and the reconstructed form in Classic Maya should be *eek’. However, when the word is spelled syllabically in the script the arrangement is e-k’e producing a word with a short vowel: *ek’*. The reasons behind these anomalies and the disagreements between the different ‘schools’ of spelling rules are yet to be resolved but most likely a better understanding of the spoken vs. written language of the Ancient Maya is to be achieved in the near future.

APPENDIX K: NOTES ON CLASSIC MAYA GRAMMAR

The following is mainly based on the workshop *Classic Maya Grammar* directed by Alfonso Lacadena and Marc Zender at the 6th European Maya Conference, Hamburg, Germany, December 5th–7th, 2001, and on the workshop *Maya Verbs in Hieroglyphic Texts* directed by Robert Wald at the XXVIth Linda Schele Forum on Maya Hieroglyphic Writing at The University of Texas at Austin, March 11th–16th, 2002, and, furthermore, on Lacadena 2000, Wald 1994, and Wald 2000.

Due to the fact that Maya hieroglyphic writing evolved both in time (during 1500 years) and space (in different areas), changes in grammar are apparent:


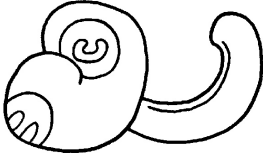
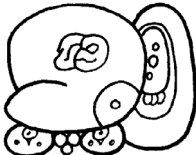
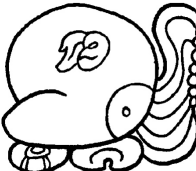
| Rendition: | Language: | Transcription: | Transliteration: | Translation: |
|---|-----------------------------------|----------------------------|------------------------------------|--------------|
|  | ? (Late Preclassic) | CHUM? | <i>chu[h]m?</i> chuhm?-Ø | he/she sat |
|  | ? (Early Classic) | CHUM-ja | <i>chu[h]m[a]j</i> chu-h-m-aj-Ø | he/she sat |
|  | Eastern Ch'olan (Classic) | CHUM[mu]- la-ja | <i>chumlaj</i> chum-l-aj-Ø | he/she sat |
|  | Western Ch'olan (Late Classic) | CHUM[mu]- wa-ni | <i>chumwaan</i> chum-waan-Ø | he/she sat |

Table XX: Examples of grammatical changes in time and space: *chum-*

In Eastern Ch'olan the phrase “he/she acceded to power” (or “he/she sat into the lordship” or “was seated in the kingdom”) is *chumlaj ti ajawil* (or *chumlaj ti ajawlil*) whereas in Western Cholan the phrase is *chumwaan ta ajawlel*.



| Rendition: | Language: | Transcription: | Transliteration: | Translation: |
|---|------------------------------|------------------|-------------------------------|----------------|
|  | ? (Late Preclassic) | HUL-ye | <i>hul[ee]y</i> hul-eeey-Ø | he/she arrived |
|  | Eastern Ch'olan (Classic) | HUL-li-ya | <i>huliiy</i> hul-iiy-Ø | he/she arrived |

Table XXI: Examples of grammatical changes in time: *hul-*

CLASSIC MAYA VOICE SYSTEM

| Voice: | Transcription: | Transliteration: | Translation: |
|---------------|-----------------------|-------------------------|---------------------|
| active | u-TZUTZ-wa | <i>utzutzuw</i> | he/she finished it |
| passive | TZUTZ-tza-ja | <i>tzu[h]tzaj</i> | it was finished |
| mediopassive | TZUTZ-yi | <i>tzutz[uu]y</i> | it got finished |
| antipassive | TZUTZ-wi | <i>tzutz[uu]w</i> | he/she finished |
| participial | TZUTZ-li | <i>tzutz[uu]l</i> | finished |

Table XXII: Classic Maya voice system

AN ANALYSIS OF CVC TRANSITIVE VERBS:

| Voice: | active: | passive: | mediopassive: | antipassive: |
|------------------------------------|--|----------------------|--------------------------------|---------------------|
| Transcription: | u-chu[ku]-wa | chu-ka-ja | chu[ku]-yi⁴⁹ | chu-ku-wa(?) |
| Transliteration: | <i>uchukuw</i> | <i>chu[h]kaj</i> | <i>chukuuy</i> | <i>chukuw</i> |
| Morphological segmentation: | <i>u-chuk-uw-Ø</i> | <i>chu[-h]k-aj-Ø</i> | <i>chuk-uuy-Ø</i> | <i>chuk-uw-Ø</i> |
| Morphological analysis 1: | 3SE-capture-THM ⁵⁰ -3SA | capture-PAS-THM-3SA | capture-THM-3SA | capture-THM-3SA |
| Morphological analysis 2: | ERG-CV ₁ C-V ₁ w-ABS | CVhC-aj-ABS | CVC-Vy-ABS | CVC-Vw-ABS |
| Syntactic roles: | subject-verb-object | verb-object | verb-object | verb-object |
| Semantic roles: | agent-verb-patient | verb-patient | verb-agent | verb-patient |
| Translation: | he captured him | he was captured | he got captured | he captured |

Syntactic roles (e.g. subject and object) are morphosyntactical whereas semantic roles (e.g. agent, patient, and instrument) are conceptual:

| Sentence: | Syntactic role: | Semantic role: |
|--------------------------|--------------------------------|---------------------------------|
| Alfonso opened the door. | Alfonso=subject door=object | Alfonso=agent door =patient |
| The key opened the door. | key=subject door =object | key=instrument door =patient |
| The door opened. | door =subject | door =patient |

⁴⁹ Not attested.

⁵⁰ THM= thematic suffix.

TRANSITIVE VERBS: (CVC)

(1) ACTIVE: ERG-CVC-V₁w-ABS

In the active voice, the agent is the subject of the verb, whereas the patient is the object of the verb.

u-chu-ku-wa
uchukuw
u-chuk-uw-Ø
 “he/she seized...”

Example: *uchukuw Aj Ukul? Yaxuun B’ahlam*
 “Yaxuun B’ahlam seized Aj Ukul”

In the active voice of transitive verbs the root is preceded by the third-person pronoun **u-** (“he/she/it”), and followed by the syllabic sign **wa** which points to the **-Vw** thematic suffix for active transitive constructions. The **-Vw** represents a vowel resonating the vowel of the verbal root; examples: **u-chok-ow** (“he/she threw it”); **u-tz’ap-aw** (“he/she inserted/planted it”); and **u-but’-uw** (“he/she buried it”). However, in the Maya script the *graphemic* suffix of transitive verbs in active voice is constantly marked with a **wa** syllabogram regardless of the vowel of the verbal root⁵¹.

(2) PASSIVE: CVhC-aj-ABS⁵²

In the passive voice, the patient becomes the subject of the verb and the agent is either completely removed or hidden in an oblique (indirect) phrase/clause.

tzu-tza-ja
tzu[h]tzaj
tzu[-h]tz-aj-Ø
 “it is finished”

chu-ka-ja
chu[h]kaj
chu[-h]k-aj-Ø
 “he/she/it was seized”

Example: *chuhkaj Aj Ukul? (ukab’ijiy Yaxuun B’ahlam)*
 “Aj Ukul? was seized (by the doing of Yaxuun B’ahlam)”

⁵¹ It remains unclear whether the thematic suffix for active transitive constructions is $-Vw$ or $-V'w$. On the matter Lacadena and Wichmann (2005: 32) state that “The glottal is not straightforwardly reconstructible, but we do note that Chontal has a glottal in its corresponding morpheme $-e'$. This suffix could have developed from $-V_1'w$ by a replacement of the harmonic vowel with e and by a loss of the w . Even if a glottal stop in the thematic suffix is not reconstructed for proto-Mayan there is still a possibility that it could have been present in proto-Ch’olan as an innovation in this group.” In the current volume the thematic suffix for active transitive constructions is marked as $-Vw$ and thus contradicting the harmony rules introduced in Appendix J. It should be noted here that the harmony rules do not seem to apply uniformly to all verbal cases. Ancient scribes were – and modern epigraphers are – faced with a challenge in the absence of the **wu** syllabogram which is needed if a word ending in $-uw$ is to be rendered (based on harmony rules). Consequently, the harmony rules do not appear to be seamless. The Maya writing system in general is not a sterile and mechanical apparatus (no more than any other writing system in the world) and it should not be forced to fit a fixed pattern of linguistic theory.

⁵² Note that the (reconstructed) infix **-h-** is the true passivizer, and the **-aj** suffix is solely thematic and derivational (detransitivizer).

(3) MEDIOPASSIVE: CVC-Vy-ABS

In the mediopassive voice (middle voice), the agent is completely deleted and is to be understood only in general terms (if indeed at all). The patient becomes the subject of the verb. In other terms, the verb in the mediopassive voice has stative meaning, and the agent (or actor) is not expressed.

TZUTZ-yi*tzutzuyu**tzutz-uuy-Ø*

("got finished")

chu-ku-yi*chukuuy**chuk-uuy-Ø*

("got caught/seized")

Example: *chukuuy Aj Ukul*
"Aj Ukul got caught/seized"

(4) ANTIPASSIVE: CVC-VVw-ABS (Early Classic)
CVC-Vw-ABS (Late Classic)

Antipassive voice is a voice in ergative-absolutive languages, like the Maya languages, in which a noun phrase has absolutive case instead of the "normal" ergative case. A noun phrase normally having absolutive case is marked as an oblique or an indirect object. The verb in antipassive constructions has formal characteristics of intransitive verbs in Maya languages. In Maya hieroglyphic writing there are three distinct types of antipassive constructions: (a) absolutive antipassive, (b) object-incorporating antipassive, and (c) agent-focusing antipassive. All of them delete the patient, and therefore leave the agent as the subject of the verb. Antipassives can only be made from transitive verbs (root transitives or derived transitives), and they are all distinguishable morphologically by the absence of the ergative pronoun **u-** and the presence of characteristic suffixes.

TZUTZ-wi*tzutzuw**tzutz-uuw-Ø*

("he/she finished")

TRANSITIVE VERBS: (non-CVC)**ACTIVE VOICE:** ERG-VERB-V-ABS**yi-IL-a***yila**y-il-a-Ø*

("he/she saw [it]")

u-TZ'IB'-b'a*utz'i[h]b'a**u-tz'i[h]b'-a-Ø*

("he/she wrote/painted [it]")

PASSIVE VOICE: VERB-n-aj-ABS**tz'i-b'i-na-ja***tz'i[h]b'naj**tz'i[h]b'-n-aj-Ø*

("[it] is painted")

This construction (save the reconstructed **-h-**) is the one to be found on innumerable texts on Maya polychrome ceramics (note that **-n-** is the true passivizer of non-CVC constructions).

INTRANSITIVE VERBS

Intransitive verbs are verbs that do not have a direct object, i.e., verbs that do not need an object or verbs that cannot have an object are intransitive verbs. In Classic Maya intransitive verbs are derived either from a verbal root or from a noun.

ROOT INTRANSITIVES: CVC-i-ABS**hu-li***huli**hul-i-Ø*

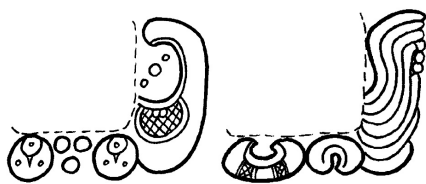
("he/she arrived")

DERIVED INTRANSITIVES: NOUN/ADJ-Vj (-aj/-iij)-ABS**AK'-ta-ja***a[h]k'taj**a[h]k't-aj-Ø*("he/she danced") < *ahk'ot* ("dance") with /o/ syncopated**K'AL HUN-na-ja***k'al hu'naj**k'al hu'n-aj-Ø*"he/she was crowned" < *k'al hu'n* ("crowning")

pi-tzi-ja*pitzij**pitz-ij-Ø*“he/she played ball” < *pitz* (“ballgame”)**WITZ-ja/ wi-tzi-ja***witzij**witz-ij-Ø*“it got piled up” < *witz* (“mountain”)**POSITIONALS**

CVC-l-aj-ABS (Eastern Ch’olti’an)

CVC-waan?-ABS (Western Ch’olan)



Positional verbs refer to physical states or positions, such as standing, sitting, kneeling, hanging, lying down, leaning, bending, and bowing, that human beings, animals, and inanimate objects can assume (Bricker 1986: 29; Lacadena and Wichmann 2002b).

CHUM[mu]-la-ja*chumlaj**chum-l-aj-Ø*

(“he/she sat”)

CHUM[mu]-wa-ni*chumwaan**chum-waan-Ø*

(“he/she sat”)

Along with positionals, there is a class of verbs can be *derived* from positionals: the *-b’u* causative. E.g. *pat-laj* “got made” > *u-pat-b’u* “he/she made it” > *u-pat-b’u-uuj* “he/she has made it”.

INCHOATIVES

CVC-aj-ABS

CVC-Vn-ABS

Inchoative verbs are verbs of “becoming”. They refer to change in the subject, be it accidental, temporary, or permanent. All inchoative verbs are derived from nouns or adjectives.

AJAW-ni*ajawaan**ajaw-aan*

(“he became king” / “she became queen”)

AFFECTIVES**(CVC) CVC-l-aj-ABS**

Affectives are verbs based on phenomena such as bright lights, loud noises, intense smells, and onomatopoeitic sounds.

b'a-la-ja*b'a[j]laj**b'a[j]-l-aj-Ø*

("hammering")

STATIVE PARTICIPLES**CVC-Vl-(i)-ABS**

Stative participles are not really verbs, but rather stative adjectives, in any of the Cholan languages.

ha-ma-li-ya*hamliiy**ham-l-iiy-Ø⁵³*

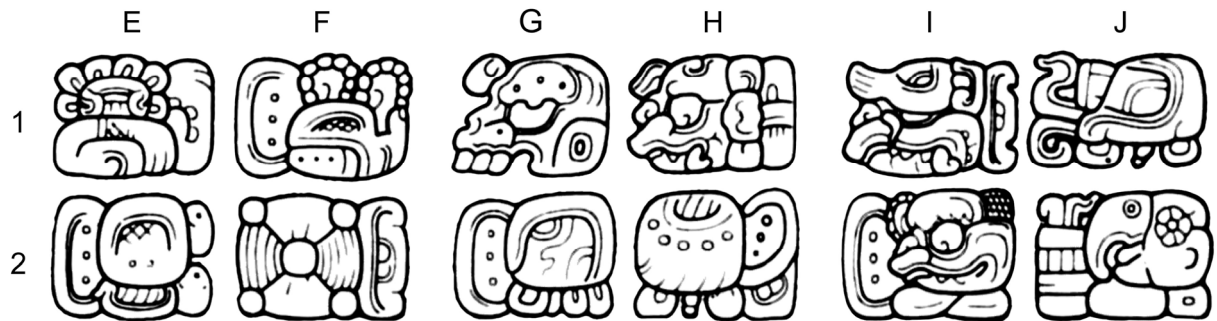
("[it] was in an opened state")

⁵³ "[...] **ha-ma-li-ya** gives *ham-l-iiy*; underlying it would be *hamaliiy*, but the second /a/ gets lost because the stress is on the final syllable." (Søren Wichmann, personal communication, 2002).

APPENDIX L: AN EXAMPLE OF HIEROGLYPHIC ANALYSIS

TRANSCRIPTION, TRANSLITERATION, LINGUISTIC ANALYSIS, AND DIFFERENT STAGES AND VERSIONS OF TRANSLATING A SELECTED PASSAGE (E1 – J2) OF HIEROGLYPHIC STAIR 4, STEP 5, DOS PILAS, PETEN, GUATEMALA

GLYPHIC CLAUSE:



(drawing by Stephen Houston)

TRANSCRIPTION:

E1: ju-b'u-yi / F1: u-to-k'a / E2: u-pa-ka-la / F2: nu-na / G1: JOL / H1: CHAK-ki /
G2: u-KAB'-[jij]ya / H2: b'a-la-ja / I1: CHAN-na / J1: K'AWIL-la / I2: u-CHAN-nu / J2: TAJ-MO'-o

TRANSLITERATION:

*jub'uuy / uto[o]'k' / upakal / nu'n / [u]jol / cha[ah]k /
ukab'jiiy / b'ajlaj / chan / k'awiil / ucha'n / taj[al] mo'*

MORPHOLOGICAL SEGMENTATION:

*jub'-uuy-Ø / u-too'k' / u-pakal / nu'n / u-jol / chaahk /
u-kab'-Ø-jiiy / b'aj-l-aj-Ø / chan / k'awiil / u-cha'n / taj-al / mo'*

MORPHOLOGICAL ANALYSIS:

*down-THM-ABS / 3SE-flint / 3SE-shield / mediation? / 3SE-skull / (theonym) /
3SE-oversee-ABS-ADV.CLT / hammer-AFT-THM-ABS / sky / (theonym) / 3SE-guardian / torch-REL / macaw*

TRANSLATION I:

“got downed, (the) flint, (the) shield of ‘mediation? (is the) head of Chaahk’;
(it is the) overseeing of ‘K’awiil who hammers (in the) sky’, (the) guardian of ‘Torchy Macaw’.”

TRANSLATION II:

“The flint and the shield of Nu’n Ujol Chaahk got toppled;
it was overseen by B’ajlaj Chan K’awiil, the ‘guardian’ of Tajal Mo’.”



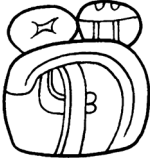

TRANSLATION III:

“The army of Nu’n Ujol Chaahk was toppled by B’ajlaj Chan K’awiil, the captor of Tajal Mo’.”

TRANSLATION IV:

“Nu’n Ujol Chaahk was defeated by B’ajlaj Chan K’awiil.”

CONCISE CLASSIC MAYA— ENGLISH DICTIONARY

| hieroglyph ⁵⁴ : | transcription ⁵⁵ : | transliteration ⁵⁶ : | translation ⁵⁷ : | alternative spellings ⁵⁸ : |
|--|-------------------------------|---------------------------------|---|--|
|  | a/AJ | <i>a</i> <i>aj</i> | (1) phonetic sign (2) neutral or male prefix ⁵⁹ | |
|  | AHIN | <i>ahiin</i> | (1) caiman (n) (2) lizard (n) | AHIN-na, a-hi |
|  | AJAW ⁶⁰ | <i>ajaw</i> <i>ajaaw?</i> | (1) lord (n) (2) king (n) | AJAW-wa, a-AJAW, a-AJAW-wa, a-ja-wa |
|  | AJAW-le | <i>ajawle[l]</i> | (1) lordship (n) (2) kingship (n) (3) kingdom (n) | AJAW-le-le, AJAW- ² le |

⁵⁴ A given sign represented in this column is only one possible version of different spellings to be found in the Maya hieroglyphic corpus. For example the word for “lord” or *ajaw* can be rendered in the following ways: **AJAW**, **a-AJAW**, **AJAW-wa**, **a-AJAW-wa**, and **a-ja-wa**. Use of different graphic forms, furthermore yields dozens of possible combinations, each representing distinct collocations (see **alternative spellings** in the rightmost column and see also chapter 5.4. Logograms). The arrangement of this dictionary is based on alphabetical order of *transliterations*. When a particular hieroglyph is usually or always preceded with a possessive pronoun *u-/y-*, it is placed in parentheses: e.g. *(y-)uk'ib'*. The alphabetical order thus follows the *stem* of the word rather than the most common (inflected or derived) appearance in the corpus.

⁵⁵ This is a **broad** transcription that excludes analyzed/interpreted sounds (vowel length, glottal stops, and /h/'s [preconsonantal velar fricatives]) that are not inbuilt/inherent parts of hieroglyphs but were, conversely, indicated by harmony rules, grammatical inflection, and in the case of underspellings, provided by the native reader [see page 57 onwards].


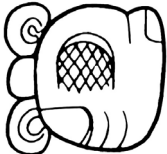









⁵⁶ This is a **narrow** transliteration including reconstructed sounds (marked by [square brackets]) based either on historical, internal, or paleographic evidence.

⁵⁷ This is really a **gloss** rather than translation (a gloss is a short general translation of a word or morpheme which does not take into account the context in which it occurs). Nonetheless, when several well-attested meanings exist, these are sorted (in the order of numerical ascendancy) from the most literal to the most figurative. The latter do (to a certain degree) take into consideration the various meaning that the contexts of wordscan potentially imbue them with. Abbreviations of grammatical category follow the expression in (parentheses): adj: adjective, adv: adverb, cn: composite noun, cop: copula, dem: demonstrative pronoun, ip: independent pronoun, iv: intransitive verb, ivd: intransitive verb (derived), n: noun, ncl: numeral classifier, num: numeral, part: particle, poss: possessive prefix, prep: preposition, prpo: pronominal (absolutive) postfix, prpr: pronominal (ergative) prefix, pv: positional verb, sp: stative participles, top: toponym, tv: transitive verb, tvd: transitive verb (derived).


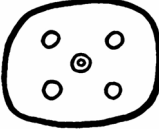







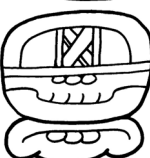

⁵⁸ The alternative spellings are based on Boot n.d., Lacadena and Wichmann 2004, Lacadena and Zender 2001, and Lacadena (personal communication, 2003).





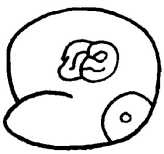
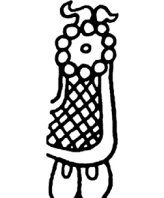




⁵⁹ A prefix, proclitic, or classifier denoting person, agent, doer, office, causer, characteristics, or male sex.








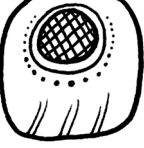



⁶⁰ See page 16 for different variations of the *ajaw* sign.

| hieroglyph ⁵⁴ : | transcription ⁵⁵ : | transliteration ⁵⁶ : | translation ⁵⁷ : | alternative spellings ⁵⁸ : |
|---|-------------------------------|---|---|---|
|  | AK | <i>a[h]k</i> | (1) turtle (n) | a-ka, a-ku |
|  | (y)a-k'a | <i>(y)a[h]k'-</i> | (1) to give (tv) | ya-AK' |
|  | AK'-ta | <i>a[h]k'ot</i> <i>a[h]k'ta-</i> | dance (n) to dance (ivd) | a-AK'-ta |
|  | (y)a-k'u-tu-u | <i>(y)a[h]k'tu'</i> <i>(y)a[h]k'utu'</i> | (1) 'give-thing' (n) (2) gift (n) | |
|  | (ya-)AL | <i>(y)a[h]l</i> | (1) (mother's) son (n) | ya-AL-la, ya-la |
|  | (y)a-AT-na | <i>(y)atan</i> | (1) companion (n) (2) spouse? (n) (3) wife? (n) | (ya-) ATAN |
|  | B'AH b'a | <i>-b'aah</i> <i>-b'a[(a)h]</i> <i>-b'a[aj]</i> | (1) image / portrait (n) (2) self (n) (3) phonetic sign | b'a-hi, b'a-hi-ja |
|  | b'a-ki | <i>b'aak</i> | (1) bone (n) (2) captive (n) | B'AK, B'AK-ki |
|  | b'a-ku | <i>b'a'k</i> | (1) child (n) (2) youth (n) ⁶¹ | |
|  | B'ALAM | <i>b'a[h]lam</i> | (1) jaguar (n) | B'ALAM-ma, b'a-la-ma |
|  | b'a-ka-b'a | <i>b'a[ah]kab'</i> | (1) "head of the land" (2) "first of the earth" (n) (title) | b'a-KAB', b'a-ka-KAB', B'AH-ka-b'a |




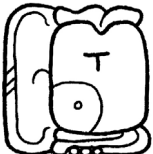








⁶¹ This is an Early Classic equivalent of *ch'ok* (see below).












| hieroglyph ⁵⁴ : | transcription ⁵⁵ : | transliteration ⁵⁶ : | translation ⁵⁷ : | alternative spellings ⁵⁸ : |
|---|-------------------------------|--|---|---|
|  | b'a-tz'u | <i>b'a'tz'</i> | (1) howler monkey (n) | |
|  | b'i B'IH | <i>b'i[h]</i> <i>b'i[j]</i> <i>b'ih</i> <i>b'ij</i> | (1) phonetic sign (2) road (n) | b'i-ji, b'i-hi |
|  | b'u-ku | <i>b'u[h]k</i> | clothes (n) | |
|  | b'u-la | <i>b'u'ul</i> | bean (n) | |
|  | CHAK-ki | <i>Chaa[h]k</i> | (1) Chaahk (n) (name of a deity) | CHAK, cha-ki |
|  | CHAK | <i>chak</i> | (1) red (adj) (2) great (adj) | cha-ka? |
|  | CHAM-mi | <i>cham</i> | to die (iv) | CHAM |
|  | CHAN-nu | <i>cha'[a]n</i> | (1) master (n) (2) owner (n) (3) guardian (n) | CHAN-na, cha-CHAN, cha-CHAN-nu, cha-nu |
|  | CHAN KAN | <i>chan</i> | (1) snake (n) (2) sky (n) (3) four (nr) | CHAN-na, cha-CHAN, cha-na, ka-KAN |
|  | CHAN-na | <i>chan</i> | (1) sky (n) (2) snake (n) (3) four (nr) | CHAN, cha-CHAN, cha-na |
|  | CHAN | <i>chan</i> | (1) four (nr), (2) sky (n) (3) snake (n) | |






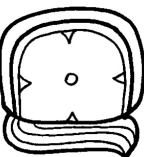



| hieroglyph ⁵⁴ : | transcription ⁵⁵ : | transliteration ⁵⁶ : | translation ⁵⁷ : | alternative spellings ⁵⁸ : |
|---|-------------------------------|---|--|---|
|  | CHAPAT | <i>chapa[ʼh]t</i> <i>chapa[ah]t</i> <i>chapa[h]t</i> <i>chapat</i> | (1) centipede (n) (2) name of supernatural creature | cha-pa-ta, cha-CHAPAT-ti, CHAPAT-tu, cha-pa-tu |
|  | che-e-bʼu | <i>cheʼe[h]bʼ</i> <i>cheʼbʼu[l]</i> | (1) quill (n) (2) brush (n) | che-bʼu |
|  | CHOK | <i>chok-</i> | (1) to scatter (tv) (2) to sow | CHOK-ka, CHOK-ko, choʼ-ka, choʼ-ko |
|  | chu-ka | <i>chuk-</i> | (1) to seize (tv) (2) to capture (tv) | chu-ku |
|  | CHUM[mu] | <i>chum-</i> | (1) to sit down (pv) (2) to be seated (pv) | CHUM |
|  | chʼa-ji | <i>chʼaaj</i> <i>chʼaah</i> <i>chʼaj</i> | (1) drops (n) (2) incense (n) (3) blood? (n) (4) maize? (n) | chʼa-ja, chʼa-ha, cha |
|  | chʼa-ho-ma | <i>chʼahoʼm</i> | (1) “man”? | CHʼAHOM-ma, chʼa-ho |
|  | CHʼAK-ka | <i>chʼak-</i> | (1) to cut (tv) (2) to chop (tv) (3) to decapitate (tv) | CHʼAK |
|  | CHʼAM-KʼAM | <i>chʼam-</i> <i>kʼam-</i> | (1) to take (tv) (2) to grasp (tv) (3) to receive(tv) | CHʼAM, CHʼAM-ma, chʼa-CHʼAM, chʼa-ma kʼa..?? |
|  | chʼa-CHʼAMAK | <i>chʼamak</i> | (1) fox (n) | chʼa-ma-ka, CHʼAMAK |




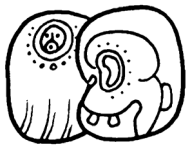






| hieroglyph ⁵⁴ : | transcription ⁵⁵ : | transliteration ⁵⁶ : | translation ⁵⁷ : | alternative spellings ⁵⁸ : |
|---|-------------------------------|---|--|---|
|  | CH'AY? | <i>ch'ay?</i> | (1) to be defeated / to be destroyed? (3) to set, to go down (iv) | |
|  | CH'EN-na | <i>ch'e'n</i> | (1) cave (n) (2) hollow (n) (3) well (n) | CH'EN |
|  | ch'o-ko | <i>ch'ok</i> | (1) youth (n) (2) sprout (n) (3) youngster (n) | CH'OK-ko |
|  | (y)e-b'e-ta | <i>eb'e't</i> <i>eb'et</i> | (1) messenger (n) | ye-b'e-te |
|  | e-b'u | <i>e[h]b'</i> | (1) stair (n) (2) scaffold (n) | e-EB', EB'-b'u, e-b'a, ye-b'u, ye-b'a |
|  | EK' | <i>ek'</i> <i>eek'</i> ⁶² | (1) star (n) | e-k'e |
|  | EL-K'IN-ni | <i>elk'in</i> | (1) east (n) | EL-K'IN |
|  | HA' | <i>ha'</i> | (1) water (n) (2) body of water (n) (3) lake (4) river | HA-a, [h]a |
|  | ha-i | <i>ha'i'</i> | (1) this (ip) | |
|  | HAB' | <i>ha[a]b'</i> | (1) 'year' (n) (i.e. 360 days) | HAB', HAB'[b'i] |
|  | ha-ma | <i>ham</i> | (1) open (sp) | |











⁶² See footnote 48.




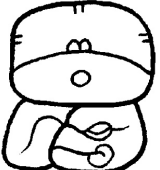







| hieroglyph ⁵⁴ : | transcription ⁵⁵ : | transliteration ⁵⁶ : | translation ⁵⁷ : | alternative spellings ⁵⁸ : |
|---|-------------------------------|---|---|---|
|  | HIX | <i>hi[i]x</i> | (1) jaguar (n) (2) jaguarundi? (n) | hi-HIX |
|  | HUN | <i>hu'n</i> <i>hu'un</i> | (1) book (n) (2) paper (n) (3) headband (n) (4) diadem | HUN-na, hu-na |
|  | HUL | <i>hul-</i> | (1) to arrive (<i>to</i> a place) (iv) | HUL-li, hu-li |
|  | (y)i-cha-ni | <i>(y)ichaan</i> | (1) maternal uncle (n) (2) mother's brother (n) | |
|  | (y)i-chi-NAL-la | <i>(y)ichnal</i> | (1) with (2) in the company of (cop?) | yi-chi-NAL, yi-chi-na-la |
|  | (y)i-tz'i-ni | <i>(y)i[h]tz'iin</i> <i>(y)i[h]tz'in</i> | (1) younger brother (n) | i-tz'i, yi-tz'i-na |
|  | IK' | <i>ik'</i> | (1) air (n) (2) wind (n) (3) breath (n) | |
|  | IK' | <i>ik'</i> | (1) black (adj) | |
|  | IL | <i>il-</i> | (1) to see (tv) (2) to witness (tv) | IL-la, i-la |
|  | ITZAMNAJ?-ji | <i>Itzamnaaj</i> | (1) Itzamnaaj (n) (name of a deity) | i-ITZAMNAJ |
|  | IX IXIK na | <i>ix</i> <i>ixik</i> <i>na</i> | (1) female/feminine classifier (2) woman (n) (3) lady (n) (4) mother (n) | i-xi IXIK-ki |
|  | ja-yi | <i>jaay</i> <i>jay</i> | (1) bowl (n) | ja-ya |










| hieroglyph ⁵⁴ : | transcription ⁵⁵ : | transliteration ⁵⁶ : | translation ⁵⁷ : | alternative spellings ⁵⁸ : |
|---|-------------------------------|--|---|---|
|  | ja-na-b'i | <i>janaa[h]b'</i> | (1) a type of flower (n) | JANAB' , ja-NAB' |
|  | ja-wa-TE' | <i>jawa[n]te'</i> | (1) 'tripod plate' (n) | ja-TE' |
|  | JOL | <i>jol</i> <i>jo'?</i> <i>joloom?</i> | (1) head (n) (2) skull? (n) | JOL-lo , JOL-li (?) , JOL-le (?) , JOL-mi |
|  | ju-lu | <i>jul</i> | (1) spear (n) (2) to pierce (tv) | |
|  | (u)-1-TAN-na | <i>(u)junta[h]n</i> <i>(u)juunta[h]n</i> <i>(u)ju'nta[h]n</i> <i>(u)hunta[h]n</i> | (1) cherished one (n) (2) beloved (n) | JUN?-TAN , JUN?-ta-na , JUN?-TAN-ni |
|  | KAB' CHAB'? | <i>kab'</i> <i>kaab'</i> <i>chab'?</i> <i>chaab'?</i> | (1) land (n) (2) earth (3) bee (n) (4) honey (n) | ka-b'a , KAB'-b'a , KAB'-b'i , CHAB'?-b'a , CHAB'?-b'i |
|  | 2ka-wa | <i>kakaw</i> | (1) cacao (n) | ka-ka-wa , ka-wa , ka-²ka-wa , ²ka-wa |
|  | KAL(OM)-ma-TE' | <i>kalo'mte'</i> | (1) kalo'mte' (n) (exalted regal title) | KAL(OM)-TE' , ka-lo-ma-TE' , ka-KAL(OM)-ma-TE' , ka-KAL(OM)-TE' |
|  | KAY CHAY | <i>kay</i> <i>chay</i> | (1) fish (n) | ka-ya |
|  | ke-KELEM ke-KELOM? | <i>kele'm</i> <i>kelo'm?</i> | (1) strong (adj) (2) youth (n) (3) rooster? (n) | ke-le-ma , ke-lo-ma , KELEM , KELOM? |
|  | KOHAW-wa | <i>ko'haw</i> | (1) headdress (n) (2) helmet (n) | ko-ha-wa , ko-o-ha-wa |

| hieroglyph ⁵⁴ : | transcription ⁵⁵ : | transliteration ⁵⁶ : | translation ⁵⁷ : | alternative spellings ⁵⁸ : |
|---|-------------------------------|---|--|---|
|  | K'AB'A' | <i>k'ab'a'</i> | (1) name (n) | K'AB'A'-a, k'a-b'a-a, k'a-b'a |
|  | K'AK' | <i>k'a[h]k'</i> | (1) fire (n) | K'AK'-k'a, k'a-K'AK', k'a-k'a, ²k'a |
|  | K'AN-na | <i>k'an</i> | (1) yellow (adj) (2) ripe (adj) | K'AN |
|  | K'AN-na | <i>k'a[h]n</i> | (1) bench (n) (2) seat (n) | |
|  | K'AWIL | <i>K'awiil</i> <i>K'awil</i> | (1) K'awiil (n) (name of deity) | K'AWIL-la, K'AWIL-li, K'AWIL-wi-la, k'a-wi-la |
|  | K'IN-ni | <i>k'in</i> <i>k'ihn?</i> <i>k'iin?</i> | (1) sun (n) (2) day (n) (3) light? (n) | K'IN |
|  | K'INICH | <i>k'i[h]nich</i> | (1) K'i(h)nich (Ajaw) (name of deity) | K'IN-ni-chi, K'IN-ni-hi-chi, [K'IN]chi-ni |
|  | K'INICH | <i>k'i[h]nich</i> | (1) title (sunny, hot or heated (adj)) | K'IN-ni-chi, K'IN-ni-hi-chi |
|  | K'UH | <i>k'uh</i> | (1) god (n) (2) deity (n) | k'u-hu, k'u |

| hieroglyph ⁵⁴ : | transcription ⁵⁵ : | transliteration ⁵⁶ : | translation ⁵⁷ : | alternative spellings ⁵⁸ : |
|---|-------------------------------|---------------------------------|--|---|
|  | K'UH | <i>k'uh[ul]</i> | (1) godly (adj) (2) divine (adj) (3) sacred (adj) | K'UH, K'UH-lu, K'UH-JUL?, K'UH-hu-lu |
|  | K'UH-tzi | <i>k'uuh tz</i> | (1) tobacco (n) | |
|  | la-ka | <i>lak</i> <i>laak</i> | (1) 'plate' (n) | la-ki, LAK? |
|  | ma-xi | <i>maax</i> | (1) spider monkey (n) | |
|  | MIJIN? | <i>miji[i]n?</i> | (1) child of father (n) | MIJIN-na |
|  | MO' | <i>mo'</i> <i>moo'?</i> | (1) macaw (n) | MO'-o, mo-o, mo-o-o |
|  | MUYAL-ya-la | <i>muyal</i> <i>muyaal</i> | (1) cloud (n) | MUYAL-li, mu-MUYAL |
|  | NAB' | <i>naa[h]b'</i> | (1) lake (n) (2) sea (n) (3) pool (n) (4) waterlily (n) | na-b'i, NAH-b'i, na-NAB'-b'a |
|  | NAL | <i>-nal</i> | (1) place (n) (2) maize (n) (3) 'milpa' (n) (locative suffix) | na-la |
|  | na-wa | <i>naw-</i> | (1) to present? (tv) | NAH-wa |

| hieroglyph ⁵⁴ : | transcription ⁵⁵ : | transliteration ⁵⁶ : | translation ⁵⁷ : | alternative spellings ⁵⁸ : |
|---|-------------------------------|---------------------------------|---|--|
|  | OCH-chi | <i>och-</i> | (1) to enter (iv) | OCH, o-chi |
|  | OCH-K'IN-ni | <i>ochk'in</i> | (1) 'sun-entry'? (n) (2) west (n) | OCH-K'IN |
|  | OL-la | <i>o'[h]l</i> <i>o'o[h]l</i> | (1) heart (n) (2) portal (n) (3) center (n) | o-la, OL, ² o-la, yo-OL-la |
|  | (y)o-OTOT-ti | <i>(y)otoot</i> | (1) house (2) home | OTOT, OTOT-ti, o-to-ti, yo-to-ti |
|  | pa-ka-la | <i>pakal</i> | (1) shield (n) | PAKAL, PAKAL-la |
|  | pi-b'i-NAH-a | <i>pib'naah</i> | (1) sweatbath, sauna (cn) | pi-b'i-NAH, pi-b'i-NAH-li |
|  | pi-tzi | <i>pitz</i> | (1) ballgame (n) (2) to play ball (tv) (3) ballplayer (n) | |
|  | sa-ja-la | <i>sajal</i> | (title) (n) | sa-ja |
|  | SAK | <i>sak</i> | (1) white (adj) (2) pure (adj) | SAK-ka |
|  | SIY? SIH? | <i>siy-</i> <i>sih-</i> | (1) to be born (iv[d?]) | |

| hieroglyph ⁵⁴ : | transcription ⁵⁵ : | transliteration ⁵⁶ : | translation ⁵⁷ : | alternative spellings ⁵⁸ : |
|---|-------------------------------|----------------------------------|---|---|
|  | su-ku-WINIK-ki | <i>suku[n] winik</i> | (1) older brother (n) | sa-ku-wi-WINIK-ki |
|  | TAN | <i>ta[h]n</i> | (1) center (n) (2) in (prep) (3) in the center of (prep) | TAN-na |
|  | TE' | <i>te'</i> <i>te'el</i> | (1) tree (n) (2) wood (n) (3) forest (n) | TE'-e, TE'-le, TE'-e-le |
|  | te-mu | <i>te'm?</i> <i>temul?</i> | (1) throne (n) | |
|  | ti TI | <i>ti-</i> | (1) in, at, on, to, with, by, for, as (prep) | |
|  | TOK' | <i>to[o]'k'</i> <i>tok'</i> | (1) chert, flint, chalcedony (n) | to-TOK', to-k'a, TOK'-k'o, to-k'o |
|  | TUN | <i>tuun</i> <i>tun?</i> | (1) stone (n) (2) year (n) | TUN, TUN-ni, tu-TUN, tu-TUN-ni, tu-ni |
|  | tu-pa | <i>tu[u]'p</i> <i>tupa[j]</i> | (1) earspool (n) (2) earflare (n) | tu-pa-ja, TUP, tu-TUP, tu-pi |
|  | TZAK | <i>tzak-</i> | (1) to conjure (tv) | |
|  | TZUTZ | <i>tzutz-</i> | (1) to end (tv) (2) to complete (tv) (3) to finish (tv) | ² tzu, tzu-tza |
|  | TZ'AK | <i>tz'ak-</i> | (1) to count (tv) (2) to put in order (tv) (3) to increase (tv) | TZ'AK-ka, TZ'AK-a, |

| hieroglyph ⁵⁴ : | transcription ⁵⁵ : | transliteration ⁵⁶ : | translation ⁵⁷ : | alternative spellings ⁵⁸ : |
|---|-------------------------------|---------------------------------|---|--|
|  | tz'a-pa | tz'ap- | (1) to plant, to insert (tv) | |
|  | tz'i-b'i | tz'i[h]b'- | (1) writing / painting (n) | TZ'IB' |
|  | tz'i-b'a | tz'i[h]b'a- | (1) to write / paint (tvd) | |
|  | a/AJ-TZ'IB'-b'a | a[j] tz'i[h]b' | (1) writer, painter (n) | a/AJ-tz'i-b'a |
|  | u | u- | (1) he, she, it (prpr) (2) his, her, its (poss) | <i>(before words starting with consonants)</i> |
|  | u-ti | u[h]t- | (1) to happen, to occur (iv) | UH-ti |
|  | (y)u-ne | (y)une[n] | (1) child of father (n) | yu-²ne |
|  | WAY | way | (1) way (n) (2) nawal (n) (3) animal spirit companion (n) | WAY-ya, WAY-wa-ya, wa-WAY-ya, wa-ya |
|  | WINAK? K'AL | winaak? k'aal k'al | (1) twenty (num) | WINAK?-ki, K'AL-li, K'AL-la |

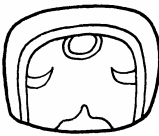




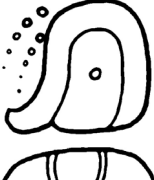



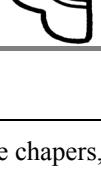
| hieroglyph ⁵⁴ : | transcription ⁵⁵ : | transliteration ⁵⁶ : | translation ⁵⁷ : | alternative spellings ⁵⁸ : |
|---|-------------------------------|---------------------------------|--|--|
|  | WINIK | <i>winik</i> | (1) person (n) (2) man (n) (3) 20-day period (n) | WINIK-ki, wi-WINIK-ki |
|  | wi-WITZ ⁶³ | <i>witz</i> | (1) mountain (n) (2) hill (n) | WITZ, wi-tzi |
|  | xa-MAN-na | <i>xaman</i> | (1) north (n) | xa-ma-MAN-na |
|  | XOK-ki | <i>xook</i> | (1) shark (n) | XOK |
|  | y(a) | <i>y-</i> | (1) he, she, it (prpr) (2) his, her, its (poss) | <i>(before words starting with vowels)</i> |
|  | y(e) | <i>y-</i> | (1) he, she, it (prpr) (2) his, her, its (poss) | <i>(before words starting with vowels)</i> |
|  | y(i) | <i>y-</i> | (1) he, she, it (prpr) (2) his, her, its (poss) | <i>(before words starting with vowels)</i> |
|  | y(o) | <i>y-</i> | (1) he, she, it (prpr) (2) his, her, its (poss) | <i>(before words starting with vowels)</i> |
|  | y(u) | <i>y-</i> | (1) he, she, it (prpr) (2) his, her, its (poss) | <i>(before words starting with vowels)</i> |
|  | YAX | <i>yax</i> | (1) blue/green (adj) (2) first (adj) | ya-YAX |

Table XXIII: Concise Classic Maya – English Dictionary⁶⁴⁶³ See chapters, 5.5. Syllables (Phoneticism), and 5.6. Phonetic Complements.

GLOSSARY OF LINGUISTIC TERMINOLOGY⁶⁵



absolute

Absolute is a grammatical category of NOUNS in ergative-absolutive languages that typically marks the PATIENT in a transitive sentence and the only ARGUMENT in an intransitive sentence. Furthermore, absolutive is less likely to be formally indicated on the noun than ERGATIVE case is.

accent

A term principally used to designate a change of pitch indicating that a particular element (e.g. a SYLLABLE) in an utterance is more prominent than others. The word is also used for *accent marks* in writing, and (in everyday language) for diverse accents of different speakers of the same language. See also STRESS.

active voice

Normal form of TRANSITIVE verbs declaring that the person or any other entity represented by the grammatical SUBJECT performs the action represented by the VERB.

adjective

A word that modifies a NOUN to indicate e.g. its quality (examples: *green, large, ripe, sacred, celestial, new*, etc.).

adverb

A word which modifies a VERB, an ADJECTIVE, another adverb, a phrase, a clause, or a sentence expressing a relation in reference to e.g. time, place, number, direction, affirmation, or denial (examples: *then, not, here, far, after, already*, etc.). A useful hint is that basically any word with lexical content that does not clearly fall into the categories NOUN, VERB, or ADJECTIVE is more often than not considered an adverb.

affix

Generally a dependent (bound) MORPHEME which can be added to a STEM or ROOT (as PREFIXES, SUFFIXES, or INFIXES) in the process of forming a complex word (e.g. in the word *disappointment* the prefix is *dis-*, and the suffix is *-ment*). In Maya hieroglyphs affixes can also work as **phonetic complements** or in the case of infixes also as complete words. Contrary to standard practice in linguistics, affixes are subdivided to prefixes (before), superfixes (above), subfixes (below), postfixes (after), and infixes (within) in Maya epigraphy due to the nature of the script.

⁶⁴ The following drawings are provided by Christophe Helmke: (y)a-k'u-tu-u, che-e-b'u, (u) ja-yi, ja-wa-TE', MUYAL-ya-la, SAK, and SIY.

⁶⁵ Based partly on Anttila 1972, Bickford and Tuggy (eds.) 2001, Bricker 1986, 1992, 2000b, Carr 1993, Don, Kerstens, and Ruys 1999, Iivonen, Horppila, Heikkonen, and Rissanen 2000, Kettunen 2002b, Kosunen and Väisänen 2001, Lacadena and Zender 2000, Loos, Anderson, Day, Jordan, and Wingate (eds.) 1999, and Nodine 1996. The entries are cross-referenced in the text in SMALL CAPITAL LETTERS. The graphemes are indicated by <angle brackets>, phonemes by /slashes/, and phonetic sounds by [brackets], i.e., for example, the letter "c" in the English word "can" is graphemically written as <c>, phonemically as /k/, and phonetically as [k^h].

affricate

A complex CONSONANT which is composed of a STOP followed instantaneously by a FRICATIVE. Both the stop and the fricative have generally the same place of articulation. For example the affricate [č] (or [tʃ]) as the grapheme (DIGRAPH) <ch> in the word “child” consists of an alveolar stop [t] followed by a palato-alveolar fricative [ʃ]. In Maya languages the affricates behave phonologically as units, and thus cannot be divided into two distinct PHONEMES, i.e. the phonemes in the TRANSITIVE VERB *tzutz* (to end, to complete) are /tʃ/, /u/, and /tʃ/, respectively, whereas in English the sequence of a STOP and a FRICATIVE (i.e. a sound phonetically comparable to affricates) can form two phonemes, as in the word “cats”: /k/, /æ/, /t/, and /s/. In the Classic Maya there are four affricates, the voiceless <tz> and <ch> (or [tʃ] and [č], respectively), and the glottalized <tzʷ> and <chʷ> (or [tʃʷ] and [čʷ], respectively).

alveolar

Alveolar sounds are produced by raising the tongue tip (*apex*) or tongue blade (*lamina/ corona*) towards the alveolar ridge. There are seven alveolar sounds (here graphemes) in the Classic Maya, namely: <t>, <tʰ>, <tz>, <tzʷ>, <s>, <l>, and <n>.

antipassive

Antipassive VOICE is a voice in ergative-absolutive languages (like the Maya languages) in which the AGENT of the sentence has ABSOLUTIVE case instead of the “normal” ERGATIVE case. A noun phrase normally having absolutive case can be marked as an indirect (or an oblique) object. The verb in antipassive constructions has formal characteristics of intransitive verbs in ergative-absolutive languages.

argument

A NOMINAL complement of a VERB (e.g. AGENT and PATIENT) which has a semantic role. Semantic roles differ from syntactic roles (e.g. SUBJECT and OBJECT) in a manner that they are conceptual whereas syntactic roles are morphosyntactical:

| Sentence: | Syntactic role: | Semantic role: |
|--------------------------|---------------------------------|------------------------------------|
| Joel opened the door. | Joel = subject door = object | Joel = agent door = patient |
| The key opened the door. | key = subject door = object | key = instrument door = patient |
| The door opened. | door = subject | door = patient |

In Classic Maya this difference can be seen e.g. in the following sentences:

| Sentence: | Syntactic role: | Semantic role: |
|--|---|--|
| <i>uchukuw Aj Ukul Yaxuun B'ahlam</i> (“Yaxuun B'ahlam captured Aj Ukul”) | Yaxuun B'ahlam= subject Aj Ukul=object | Yaxuun B'ahlam= agent Aj Ukul=patient |
| <i>chuhkaj Aj Ukul</i> (“Aj Ukul was captured”) | Aj Ukul=subject | Aj Ukul=patient |
| <i>chuhkaj Aj Ukul ukab'ijiy Yaxuun B'ahlam</i> (“Aj Ukul was captured by the doing of Yaxuun B'ahlam”) | Aj Ukul=subject Yaxuun B'ahlam= oblique object | Aj Ukul=patient Yaxuun B'ahlam= agent |

aspect

Grammatical category of VERBS or verbal phrases that characterizes the manner in which actions are related to the context internally. The most common aspects are:

- perfective (completive): presents a situation completed (finished) or as a complete whole
- habitual: presents a situation as being habitual, characteristic or repeated
- progressive (continuous): presents a situation as occurring before, after, and during some other situation
- imperfective (used without distinction for both habitual and continuous situations); presents a situation incompleted (unfinished)

All verbs do not have the same aspectual properties and they may, therefore, belong to different aspectual classes. It is still debatable whether aspect (or TENSE for that matter) is present in the Maya hieroglyphic writing.

assimilation

A process of fusing one sound to another to facilitate pronunciation. For example, the /n/ in the Yukatek word *chila'n* (interpreter) becomes /m/ before the word *b'alam* (jaguar), i.e. the /n/ *assimilates* in place of articulation to the following stop /b'/. The sounds are thus fused together in pronunciation to yield *chila'm b'alam* (or: /čila'mbalam/).

bilabial

Bilabial sounds are produced by using both lips. In Classic Maya there are five bilabial sounds: /p/, /p'/, /b'/, /m/, and /w/.

brackets

Brackets⁶⁶ [...] are used in epigraphic analysis to indicate reconstructed sounds and in *transcriptions* to designate infixed syllables or words. In linguistics, square brackets are also generally used for indicating PHONETIC sounds in contrast to PHONEMIC or GRAPHEMIC material (indicated by slashes /.../ and <angle brackets>, respectively), i.e. [t] simply means the *phonetic* sound 't', and /t/ represents the *phoneme* 't' (whether it is pronounced as [t] or as [t^h]).

case

Case is a grammatical category characterized by inflection and determined by the syntactic or semantic role of a noun or pronoun (traditionally the term *case* has been restricted to apply to only those languages which indicate certain functions by the inflection of nouns, pronouns, or noun phrase constituents)

causative verb

Causative verb is a verb with an argument that expresses the cause of the action expressed by the VERB: e.g. Christophe *had* Julie excavate a burial. In a certain class of verbs there is alternation between a causative reading and an INCHOATIVE reading: e.g.

inchoative: The vase *broke*
causative: Dan *broke* the vase

⁶⁶ This is *brackets* in standard American English and *square brackets* in British English.

clause

A verbal phrase formed together with a nominal or adverbial phrase. Clauses can either be independent or dependent: e.g., in the sentence “I know that you will enjoy deciphering Maya glyphs” the independent clause is “I know (that you will enjoy deciphering Maya glyphs)”, which contains the dependent phrase or clause “that you will enjoy deciphering Maya glyphs”.

clitic

A clitic is a grammatical element which has syntactic and semantic characteristics of a word but cannot occur freely (in SYNTAX) and, therefore, needs a “host” (i.e. a clitic is a bound MORPHEME). Clitics can also attach to inflected words, a fact that distinguishes them from AFFIXES. Clitics are divided into two classes: proclitics and enclitics; proclitics attach themselves before the host word, and enclitics attach themselves after the host. In Maya hieroglyphic writing there are a number of clitics. One of the most common is the temporal DEICTIC (en)clitic *-jiiy* (“ago”).

cocktail party effect

Binaural hearing (using both ears) helps us to separate interesting sounds from a background of irrelevant noise. In a Maya hieroglyphic workshop room where several conversations are taking place, one can focus on ergative patterns or temporal deictic enclitics and ignore discussions relating to leisure activities.

cognate

Sets of words are cognates (in related languages) if they derive from the same original word. Normally cognates have similar PHONOLOGICAL and SEMANTIC structures, but exceptions to this rule are numerous and can only be detected by historical linguistics. The word for “bee” and “honey” is *chab'* in Ch'ol, Ch'ontal, Ch'orti', Ch'olti', and Tzeltal; *kab'* in Yukatek, Lakandon, Itza', and Mopan; and *kaab'* in K'iche', Kaqchikel, and Tzutujil; but they all stem from Proto-Maya **kaab'*, and they are, therefore, *cognates* of a same word. The longer the distance of related languages is (in time and space) the more easily words of same origin tend to vary. For example, the word for “hundred” varies a great deal in different Indo-European languages through time and space: in Latin it is *centum*, in Greek *hekatón*, in Old Irish *cēt*, in Gothic *hund*, in Swedish *hundra*, in Tokarian *kānt*, in Spanish *ciento*, in Sanskrit *śatām*, in Lithuanian *šimtas*, and in Russian *sto*, but they are all cognates of Proto-Indo-European **km̥tóm*. Words also change semantically in different related languages, and also inside a language in time: for example, the word *nice* meant *stupid* and *foolish* in the late 13th century English. The word went through a number of changes including *extravagant*, *elegant*, *strange*, *modest*, *thin*, and *shy* ending up to its current meaning in the 18th century. Considering the history of Maya languages (and reconstructing Classic Maya or Proto-Maya languages) one has to consider both phonological and semantic changes in the languages that are not and were no more constant or stable than any other languages in the world.

consonant

One of the two significant classes of sounds (besides VOWELS). Consonants are produced by greater constriction or by a complete closure of the airstream in the speech organs than for vowels. The result is either friction or complete obstruction of the air. Generally consonants do not form syllables alone (without a vowel). In linguistics the capital letter C usually stands for a(ny given) consonant.

context dependence

Context dependence means that the interpretation (or translation) of an expression depends on the context in which it is used; be it literary, syntactical or otherwise.

contrast

Two sounds contrast (or the PHONETIC distinction is contrastive) if replacing one with the other (in an identical phonetic context) changes the meaning of a given word. For example, /l/ and /r/ are two distinctive PHONEMES in English: if you were to change the /l/ in “lock” to an /r/, you would get a different word, “rock” (in Japanese, for example, there is no distinction between these phonemes). Such pairs of words whose meaning can be contrasted on the basis of a phoneme are called MINIMAL PAIRS. In Classic Maya there existed phonemic distinctions that are less familiar among native English speakers. One of them is the opposition between (BI)LABIAL, dental/ALVEOLAR, and VELAR STOPS or PLOSIVES (i.e. /p/, /t/, and /k/) on one hand, and GLOTTAL stops or plosives (/pʼ/, /tʼ/, and /kʼ/) on the other (included is also the opposition between words with or without preconsonantal or inter-vowel glottal stops (ʼ). Consider the following examples: *kabʼ* (earth, land) and *kʼabʼ* (hand); *chan* (sky, snake, 4) and *chaʼn* (guardian). Another distinction is made between short and long vowels: *chak* (red, great) in contrast to *Chaa[h]k* (name of a deity). Yet another distinction is made between words with or without preconsonantal velar or glottal FRICATIVES: *kʼan* (ripe, yellow) and *kʼahn* (stair, bench). In the glyphic texts the vowel length and the preconsonantal velar and glottal fricatives are not directly detectable, and consequently they have to be reconstructed.

deictic pronoun

A pronoun whose reference must be fixed through the context of the utterance. See also DEIXIS below:

deixis

Elements in a language may have a reference which is dependent on the immediate (generally extralinguistic) context of their utterance. For example, personal and demonstrative PRONOUNS, spatial expressions (e.g. “here” and “there”), temporal expressions (e.g. “tomorrow” and “now”), tense (past, present, etc.), and gestures of the speaker are deictic expressions.

derivation

Derivation is a MORPHOLOGICAL practice by which a new word is produced (derived) from another word by affixation, resulting in a change of the meaning of the word. For example, the Classic Maya word (adjective) *chanal* (celestial) is derived from the word (noun) *chan* (sky). Traditionally derivation is distinguished from INFLECTION although it is not possible to make a clear distinction between the two. However, at least one difference exists: inflection is never subject to changes in category, while derivation typically is.

digraph

A set of two letters that form a single sound. The sound value of some digraphs is not easy to work out, but some are more predictable. As a matter of fact, the word “digraph” has a digraph <ph> (pronounced as [f]). In the customary transcription (and transliteration) of Maya hieroglyphs, there are four digraphs: <tz>, <tzʼ>, <ch>, and <chʼ> pronounced as [t^s], [t^{sʼ}], [č], and [čʼ], respectively).

ergative

Ergative is a grammatical category of NOUNS in ergative-absolutive languages that typically marks the AGENT in a transitive sentence and the only ARGUMENT in an intransitive sentence. Ergative case is more likely to be formally marked on the noun than ABSOLUTIVE case is.

ergative-absolutive case system

A term applied in linguistics for a situation in which one case marker or AFFIX is used to mark the only ARGUMENT (i.e. SUBJECT) of INTRANSITIVE verbs as well as the PATIENT of TRANSITIVE verbs, while

another case marker or affix is used for the agent of transitive verbs. The former case marker is called the absolutive (ABS), and the latter, the ergative (ERG). In Maya languages ergative pronouns (pronominal affixes) are used as subjects of transitive verbs and as possessive pronouns (possessors of nouns), whereas absolutive pronouns are used as the objects of transitive verbs and the subjects of intransitives. In Classic Maya this means that the pronoun (pronominal affix) in sentences like *utz'ihb'* (“[it is] his/her writing”) and *utz'apaw* (“he/she inserted/ planted it”), is formally the same /u-/, but in the first example it is the possessor of a noun (possessive pronoun), and in the second it is the subject of a transitive verb. In Maya languages ergative pronouns are attached to the root of the verb on its left side (before the verb) whereas the absolutive pronouns are attached to the right side of the verb (after the verb).

etymology

Etymology is the study of the historical origin of a word or other linguistic structures. For example, the etymology of the English word “cacao” is in the Spanish “*el cacao*” which was borrowed from Maya “*kakaw*” which is in itself a loanword from Mihe-Sokean languages (“*kakawa*”).

euphemism

A euphemism is an expression that is used in place of another expression that is considered to be unpleasant, disagreeable or offensive. For example, expressions like *he checked out*, *he kicked the bucket*, *he's six feet under*, and *he's pushing daisies* can be regarded as euphemisms for the concept of *dying*.

fricative

A sound formed by forcing air through a small cavity at the place of articulation. In Classic Maya there are four fricatives (here written as GRAPHEMES): <s>, <x> (pronounced as /š/), <j> (pronounced as <ch> in Scottish “Loch” or as <j> in Spanish “Juan”), and <h>.

gender

See NOMINAL CLASS.

glide

A sound produced more or less like a VOWEL but with the distributional properties of a CONSONANT. Glides are more commonly referred to as “semi-vowels” and classified also as approximants. In Classic Maya there are two glides (or semi-vowels): [j] and [w] (written GRAPHEMICALLY as <y> and <w>, respectively, and pronounced very much like the English phonemes /y/ and /w/ in words like “year” and “wine”).

gloss

A short general translation of a WORD or MORPHEME which does not take into account the context in which it occurs.

glottal

A sound produced by a constriction in the GLOTTIS (the air passage through the larynx or voicebox between the vocal folds). The two most common glottal sounds are the GLOTTAL stop (or glottal

plosive) [ʔ]⁶⁷ and the glottal FRICATIVE [h]. A glottal stop involves closure, followed by release, of the vocal cords, whereas a glottal fricative involves close approximation between the vocal cords. In a few English accents, the glottal stop can be heard in words like “bottle” [boʔl], and they often replace syllable final plosives, as in “Scotland” [skoʔlnd], but more commonly in any initial word in a sentence starting with a vowel, and in expressions such as “uh-uh” (colloquial phrase indicating a negative opinion or a refusal) and “oh-oh” (“oops”; colloquial expression referring to an element of surprise).

glottis

The aperture between the vocal folds.

grammar

The habitual method in which the basic elements of a language are interconnected to create more complex structures, thus enabling thoughts to be communicated according to clear, habitual and systematic configuration.

grapheme

A “default” letter in the alphabet or a symbol representing a syllable in a syllabary. For example, in the Maya script the symbol for the syllable **b’a** is a single grapheme regardless of the different forms in which it may be written. In Latin alphabet a grapheme is any given letter (or letters) with no direct correspondence to pronunciation. See also DIGRAPH.

homograph

A word written exactly the same way as another word with different meaning, and potentially different pronunciation, e.g. *minute* [ˈmɪnɪt] (a unit of time and angular measurement) and *minute* [mɪːnyüt] (of very small size or importance).

homophone

A group of letters or (in a broad sense of the definition) a word written differently from another word with same pronunciation, e.g. *right*, *rite*, *wright*, and *write*. Homophones can also be distinguished from homonyms in a sense that homophones represent a group of letters representing the same speech sound, whereas homonyms are words that have the same pronunciation as another, (usually) differently written, word.

ideographic

An ideographic orthography is a writing system that represents words and ideas without representing the sounds of a given language. In reality, there are no true ideographic writing systems in the world, and most writing systems employing *prima facie* ideographs are actually operating with logograms (i.e. word signs that do not always have a direct correlation or association with the targeted idea or entity in real life). Words “ideogram” (or “ideograph”) and “logogram” (or “logograph”) are sometimes used indistinguishably but currently the latter is favored in place of the former. A “pictogram” (or “pictograph”), on the other hand, is a sign representing factual and concrete objects or entities: a sign representing a realistic full-figure jaguar (or the head of the jaguar) would be

⁶⁷ The more appropriate symbol for the glottal stop is a character resembling a question mark but for typographical reasons the symbol < ʔ > is used here instead. This practice is also in keeping with the standards employed by Maya epigraphers generally as well as those formulated and set forth by Guatemalan government accords of 1987 and 1988 (see Note on Orthography at the beginning of this handbook).

pictographic (if it really denotes to a jaguar), but a sign representing a head of a toad is in effect a logogram if it denotes to the verb ‘to be born’.

idiom

An idiosyncratic multi-word expression with a fixed combination of elements recognized as a SEMANTIC unit and typically referring to a colloquial expression (for example “kick the bucket”, “spill the beans”, “hit the road”). The meaning of the idiom cannot usually be directly derived from its elements. See also EUPHEMISM.

inalienable noun

A noun which refers to something perceived as essentially and permanently possessed, and is thus compulsorily expressed as possessed. Kinship terms and body parts are traditionally inalienable nouns in Maya languages.

inchoative

An aspectual class of verbs that refers to “becoming”, “appearing” or “beginning”. Inchoatives express the beginning of a state or process, like harden (become hard), die (become dead) or break. They refer to a change in state in the subject, be it accidental, temporary, or permanent. In Maya languages all inchoative verbs are derived from NOUNS or ADJECTIVES.

inflection

One of the major types of MORPHOLOGICAL operations by which an AFFIX is added to a word. An inflectional affix adds a particular grammatical function to a word *without* changing the category of that word. Traditionally inflection is distinguished from DERIVATION.

intransitive

Intransitive verbal structures do not have a direct OBJECT, i.e. verbs that do not require or verbs that cannot have a direct object, are intransitive verbs (e.g. “sleep” and “die”).

labial

A sound which is produced by a narrowing or closure of the lips. The term is used to refer both to BILABIAL and to labiodental sounds. There are five (bi)labial sounds in the Classic Maya: [p], [p’], [b’], [m], and [w], and *no* labiodental sounds (involving a contact between the lower lip and upper front teeth, such as [f] and [v]).

lexeme

A term that is used to express the idea that INFLECTED forms of words (which are words themselves) are still variants of one single word. For example, the Finnish words “*käden*” (“hand’s”, “[that] of a hand”), “*kädellinen*” (“one with a hand”, “Primates”), “*käsitellä*” (“manipulate”), and “*käsin*” (“with hands”) are all “variants” of the lexeme “*käsi*” or “hand”.

lexical ambiguity

A type of ambiguity that arises when a word has multiple meanings. The Maya word *chan* (sky, four, snake) is often cited as an instance of lexical ambiguity. See also HOMOPHONE.

mediopassive

A VOICE that is used in certain languages like Latin, Ancient Greek, and in the Maya languages. In the mediopassive voice (middle voice), the agent is completely deleted and is to be understood only in general terms or not at all. Instead, the PATIENT becomes the SUBJECT of the verb. In the mediopassive voice the action of the subject is directed towards the subject itself; e.g. (in Classic Maya): *chukuuy Aj Ukul* (“Aj Ukul got captured”).

metaphor

A figurative expression which is not to be understood literally (but which refers to certain conceptual similarity), i.e. a metaphor employs an altered but similar concept to another concept or idea, e.g. “At this point I’m really *drained* and *burned up* trying to *absorb* linguistic data”.

metonymy

A routine in which one word (that is an attribute of another, more complex or an abstract word) is used to stand for another word or concept. For example, in the phrase “The *pen* is mightier than the *sword*” *pen* and *sword* represent writing/publishing and war/military force/violence, respectively. In a same manner, the word *crown* can refer to monarchy or to the royal house (a concept that has metonymic attributes as well) and *window table* can refer to the customers seated on a window table.

minimal pair

A set of two words or other structures which differ in meaning and which have only one difference in their sounds. See CONTRAST for further information.

mood

A cover term for one of the four INFLECTIONAL categories of VERBS (mood, TENSE, ASPECT, and modality). The most common categories are: indicative (statement), imperative (command), optative (wish), etc. It seems at present that the only mood in the Maya hieroglyphic texts is that of indicative.

morpheme

The smallest meaning-bearing unit (minimal grammatical unit), i.e. a word or a part of a word that cannot be divided into smaller meaning-bearing forms. Morphemes are generally either ROOTS or AFFIXES. For example, the word “intoxicated” has four morphemes: the prefix “in-“, the root “toxic”, and the suffixes “-ate” and “-ed”. A Classic Maya glyphic example of **chu-ka-ja** produces a transliteration of *chu[h]kaj* which can be divided into four morphemes: *chu[-h]k-aj-Ø* (*chuk*: to seize; -h-: passive marker of CVC transitive verbs; -aj: thematic suffix; and -Ø: third person absolutive pronoun [sign “Ø” represents a “ZERO MORPHEME”]).

morphology

A subfield in linguistics that is involved in the study of MORPHEMES, or the internal structure of words.

morphophonemic

Relating to the change of one PHONEME to another in particular surroundings. The presence of morphophonemic constructions (morphosyllables) in the Maya hieroglyphic writing system is still debatable. In this volume morphosyllables are not considered part of the description of the Maya writing system (as reconstructions presently favored by the European school of Maya epigraphers are an equally viable solution to the variant processes of transliteration). The reconstructive approach does not require the stipulation of phonetic reversal, a process which is no longer believed to have existed.

nasal

A feature which characterizes sounds that are produced by lowering the soft palate (velum), allowing the air to escape through the nose. In the Classic Maya language there are two nasal sounds (nasal consonants): [m] and [n].

nominal structure

Structures that are grammatically comparable to nouns. Nominal structures include noun STEMS, NOUNS, PRONOUNS, noun phrases and nominal clauses. They are the most fundamental categories for the construction of syntactic arrangements along with verbal structures.

nominal class

A general term indicating the fact that e.g. NOUNS, VERBS, and PRONOUNS can belong to different MORPHOLOGICAL classes. In quite a few languages nouns fall into two or three classes: masculine, feminine, and neuter, with each of them INFLECTED differently. In English there is no such distinction, and in the Maya languages the only ‘genderized’ grammatical class is that of male (masculine) and female (feminine) classifiers that are sometimes (rather inaccurately) referred to as agentives: *aj-* (masculine classifier), and *ix-* (feminine classifier). Neither of these actually refer to the male or female gender *per se*: the masculine classifier is actually a neutral classifier and it can be found attached to a number of plant and animal names and the feminine classifier can also work as a diminutive. However, when it comes to pronouns, the English language has gender in the third person pronouns (“he”, “she”, and “it”, “his”, “her”, and “its”) but some other languages such as Finnish or the Maya languages do not. In Classic Maya the pronoun *u-* (before words starting with consonants) and *y-* (before words starting with vowels) operate both for men and women (“he”, “she”, “it”, “his”, “her”, and “its”). In Maya languages, the gender of the person referred to in an utterance has to be indicated otherwise (if needed) stating the gender using classifiers (*aj-* / *ix-*) or nouns such as “man”, “father”, “woman”, “grandmother”, etc. This is also the case in Finnish – with the exception that not even masculine or feminine classifiers exist in the language. As a result, the gender of the person one is referring to has to be elucidated through oblique queries.

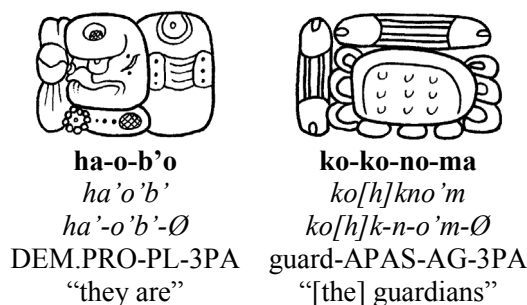
noun

One of the major lexical categories: a word that names an entity, whether a person, an object, an idea, or a place. Nouns can function as SUBJECTS or OBJECTS of a VERB.

number

A linguistic category of NOUNS and PRONOUNS that indicates the quantity of referred individuals. In the Classic Maya there are two numbers: SINGULAR (sg. or S) and PLURAL (pl. or P) whereof the singular is by far the most common with pronouns. Since the plural SUFFIX is optional in Maya languages (usually present only when the plural form needs to be emphasized), the absence of plural suffixes is observable also in the script. However, there are some cases in the corpus where the plural suffix *-o'b'* is marked for the demonstrative pronoun *ha'i'* (“that”) to yield *ha'o'b'* (“those”), as in the example below from Copan Temple 11⁶⁸:

⁶⁸ We wish to thank Marc Zender for pointing out this reference and providing the linguistic data for it.



Another plural suffix present in the script is that of *-taak*. Its use is limited to persons as in the word *ch'oktaak* (*ch'ok-taak*) or “youths”.

object

The element that typically refers to the PATIENT in a verbal clause. Verbs and clauses which have an object are TRANSITIVE – those which do not are INTRANSITIVE. In Maya languages objects usually precede SUBJECTS, i.e. the sentence *uchukuw Aj Ukul Yaxuun B'ahlam* would translate to “Yaxuun B'ahlam seized Aj Ukul” but in actuality it says: “Seized Aj Ukul(,) Yaxuun B'ahlam. Objects can be divided to direct and indirect objects.

oblique object

An oblique OBJECT is a grammatical relation whose characteristics and behavior are explainable more logically in semantic rather than syntactic terms. In the sentence “Vicky was bitten by a tick” the constituent “*by a tick*” is an oblique object

onomatopoeia

Onomatopoeia refers to sounds implied by the phonetic quality of the word, or an entity that produces a sound. Words such as “hiss” and “bomb” are Onomatopoeitic.

onomastics

A branch of SEMANTICS, which studies the etymology of proper names (see also TOPONYM).

onset

An onset is first part of the SYLLABLE preceding the VOWEL.

orthography

The manner in which the sounds of a given language are represented graphically in writing.

palatal

A sound which is produced by narrowing or closing the oral cavity by raising the tongue blade towards the hard palate. There was only one (pure) palatal sound [j] (graphemically <y>) and three palato-ALVEOLAR sounds [č], [č'], and [š] (graphemically <ch>, <ch'>, and <x>, respectively) in the Classic Maya language (based on the pronunciation of modern Maya languages).

participle

A nominal form of a verb. Participles can be characterized as being adjectivized verbal forms. They can also be inflected in cases and in some tenses (and also e.g. in passive): e.g.: (1) Phil is *writing*

hieroglyphs; (2) Phil has *written* hieroglyphs; (3) These hieroglyphs were *written* by Phil. In Ch'olan languages participles are often referred to as stative adjectives. One of the (stative) participles found in the Maya script is the term *hamliiy* (*ham-l-iiy-Ø*), which can be translated as “it was in an *opened* state”.

particle

A particle is a word that does not belong to one of the main classes of words. It is also invariable in form. Sometimes also PREPOSITIONS are regarded as particles. The following are examples of English particles: “well”, “oh”, “yes”.

passive

Passive VOICE is an INFLECTED (or DERIVED) form of a TRANSITIVE VERB in which the OBJECT of the transitive verb becomes the SUBJECT of the passive, i.e. it indicates that the subject is the patient or recipient of the action indicated by the verb. To follow the previous example (see OBJECT) the sentence *chu[h]kaj Aj Ukul* would translate to “Aj Ukul was seized”.

patient

One type of argument of a VERB. An argument is a patient if the action expressed by the verb is directed at or affects the referent of the argument.

person

A grammatical category indicating whether a NOMINAL includes the speaker and/or the hearer. The speaker is called *first person*, the hearer *second person*, and any third party *third person*. Both pronouns and verbs can be labeled as such: e.g. “we” is a *first person plural pronoun* and “goes” is a *third person singular verb*. Most Maya texts were written in *third person singular*.

phoneme

The smallest (contrastive) unit in the sound system of a language. A phoneme is a sound which differs from any other sound in a given language (see CONTRAST) producing distinct linguistic units. Distinctions between phonemes are called *phonemic distinctions* (instead of PHONETIC distinctions). Sounds that are pronounced in a different way are *phonetically* different, but if these sounds are not in contrast with each other, the difference is *allophonic*, not *phonemic*. To give an example, in the English language the /p/ sound in the word “pay” [p^heɪ] is *phonetically* distinct from the /p/ sound in “play” [pleɪ], because it is aspirated (in contrast to this, if an initial stressed fortis plosive /p, k, t/ is followed within the same syllable by any of the phonemes /l, r, w, j/, there is no aspiration). This difference is not phonemic, but *phonetic*, i.e. the sounds [p] and [p^h] are *allophones* and they differ from each other only because of the phonetic “surroundings”. See also MINIMAL PAIRS.

phonetics

The study of the sounds of language. Phonetics can be further divided into articulatory, acoustic, and auditory phonetics.

phonology

The study of how the sounds function and how they are organized in a given language.

phrase

A phrase is a SYNTACTIC structure that is composed of more than one word but lacks the SUBJECT-predicate organization that makes a complete CLAUSE.

plosive

A sound that is produced by a complete occlusion in the oral (vocal) tract. See also STOP.

plural

A class of grammatical forms indicating multiples of NOUNS or PRONOUNS. See NUMBER.

possessive

A grammatical case indicating ownership or a relation comparable to ownership. Many Maya words (such as body parts and kinship terms) are INALIENABLY (innately) possessed and cannot stand alone (see the dictionary). See also PRONOUN.

predicate

A segment of a CLAUSE expressing something about the SUBJECT (excluding the subject,)

prefix

Generally a bound MORPHEME (or AFFIX) joined to word on its left side (i.e. preceding the sign). In Maya epigraphy prefixes indicate GRAPHEMIC signs attached to the viewer's left of another sign.

pronoun

A word that can substitute for a NOUN or a noun phrase. Several types of pronouns are distinguished in grammars, including: *personal pronouns* (e.g. I, you, he, she), *possessive pronouns* (e.g. your, yours), *demonstrative pronouns* (e.g. this, that), *interrogative pronouns* (e.g. what, who), *reflexive pronouns* (e.g. myself, yourself), etc. Classic Maya pronouns indicate PERSON, but not GENDER. For example, the Classic Maya 3rd person singular ergative pronoun “*u*” can either mean “he”, “she”, or “it” (or “his”, “her”, “its”), and the gender can only be detected contextually. In the Classic Maya script there are three sets of pronouns: (1) personal pronouns, (2) POSSESSIVE pronouns, and rare occurrences of (3) demonstrative pronouns:




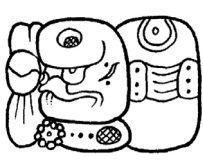
| personal and possessive pronouns: | | demonstrative pronouns: | |
|---|---|--|--------------------------------|
|  | u u “he, she, it, his, her, its” (before consonants) |  | ha-i ha'i “that” |
|  | ya ⁶⁹ y- “he, she, it, his, her, its” (before vowels) |  | ha-o-b'a ha'o'b' “those” |

Table XXIV: Examples of Classic Maya pronouns in the hieroglyphic texts

⁶⁹ This is only one (graphemic) example of prevocalic personal and possessive pronouns (the *ya*-sign is used with words starting with the vowel /a/). Others are *ye*, *yi*, *yo*, and *yu* with corresponding initial vowels (/e/, /i/, /o/, and /u/, respectively).

proto-

A prefixed word that suggests a supposed “ancestor” of related languages. For example, the ancestor of all the Maya languages is referred to as Proto-Maya, and the immediate ancestor of Tzeltalan languages as Proto-Tzeltalan. Comparative historical linguistics is a field engaged in determining what the proto-forms of a given language family were by analyzing series of COGNATE words in attested languages. Reconstructed proto-forms are marked with an asterisk (*) immediately before the word: e.g. *k'e'ŋ is a proposed Proto-Maya form of the Classic Maya word *ch'e'n* (“cave”).

root

The base form of a word, which cannot be further analyzed without losing the word’s identity. In Maya languages roots are monomorphemic STEMS that can either be free MORPHEMES (e.g. “sky”, “walk”, “you”) or bound morphemes (e.g. “in-”, “pre-”, “-ness”).

semantics

The study of meaning in language.

semivowels

The sounds [w], [j], [r], and [l], but more commonly only [w] and [j] are referred to as semivowels since they are not easily classified into the categories of CONSONANTS or of VOWELS. See also APPROXIMANTS.

sentence

A grammatical unit composed of one or more CLAUSES.

singular

A class of grammatical forms indicating only one NOUN or PRONOUN. See NUMBER.

stative verb

A VERB that expresses a state of affairs rather than action. For example, the verbs *be*, *have*, and *know* are stative verbs in English.

stem

Basic part of a word to which INFLECTIONAL AFFIXES can be attached. For example the stem of the Maya word *chanal* (“celestial”) is *chan* (“sky”). Similarly the stem of *k'ahk'al* (“fiery”) is *k'ahk'* (“fire”). A stem can be either monomorphemic (a.k.a. **root**) or polymorphemic (having more than one morphemes).

stop

A type of CONSONANT involving a complete obstruction (closure) of the passage of air at some point through the oral tract followed by a sudden release of the air. In Classic Maya there are eight stops: /p/, /t/, /k/, /' /, /p' /, /t' /, /k' /, and /b' /.

stress

The relative prominence of a unit of spoken language that is typically attributed to one syllable in a word. Normally a stressed syllable is pronounced by an increase in articulatory force and at a higher pitch. The stress in Maya words is typically in the last syllable.

subject

A NOMINAL element that refers to the “doer” i.e. the AGENT in the action of the VERB. Subjects can either be NOUNS, PRONOUNS or complex NOMINAL clauses. In Maya languages subjects follow verbs (and possible OBJECTS) in a verb-object-subject (VOS) order.

substantive

A broad classification of words that includes NOUNS and NOMINALS.

suffix

A bound MORPHEME (or AFFIX) which attaches at the end of a ROOT or STEM. See also PREFIX.

syllable

A minimal unit of organization for a sequence of sounds. Syllable usually comprises of a nucleus (typically a VOWEL or vowels) together with optional initial and/or final margins (typically CONSONANTS). Symbols C (consonant) and V (vowel) are used to express syllabic structures: e.g. the Classic Maya word “*ch’ahom*” would be transcribed using this notation as: CV.CVC (ch’a-hom). In contrast to standard method in linguistics, Classic Maya words are transcribed syllabically on the basis of GRAPHEMIC syllables, i.e. the distinction is made between *pronounced* syllables and *graphemic* syllables. The word *ch’ahom* is thus divided into three graphemic syllables (or syllabograms): **ch’a-ho-ma**, and it can be indicated using both sets of syllabic notations (graphemic and pronounced): CV.CV.CV → CV.CVC (or: CV-CV-CV → CVCVC).

syncope

The deletion of a segment in a word. For example, the Classic Maya INTRANSITIVE verb “to dance” is derived from the noun *ahk’ot* “dance” to produce *ahk’taj* < *ahk’ot* + *-aj* (the phoneme /o/ has thus been syncopated).

syntax

The study of the rules by which words are combined to form phrases, clauses, and sentences.

tense

A grammatical category, feature, or expression of the time of a situation relative to some other time (usually associated with verbs). Tense is traditionally classified into past, present, and future. It is still debatable whether tense (or ASPECT) is present in the Maya hieroglyphic writing.

toponym

A toponym is a NOUN (or a noun phrase) which is assigned to a geographic location. For example, *Belize*, *Pook’s Hill*, *Tikal*, *Leiden*, *Shite Creek*, *Koiransellaisenoja*, *Naughty Girl Meadow*, *Qaanaaq*, *Nunathloogagamiutbingoi*, *El Pueblo de Nuestra Señora la Reina de los Angeles de Porciúncula*, *Taumatawahakatangihangakoauauotamateaturipukakapiki-maungahoronukupokaiwhenuakitanatahu*, and *Li* are toponyms.

transitive

A verb or a verbal structure which has or requires a direct OBJECT.

velar

A sound produced with a constriction formed by raising the back of the tongue (*dorsum*) towards the soft palate (*velum*). There are two clear velar sounds in the Classic Maya: [k] and [kʰ], and one sound that is either velar or uvular: [x] (written graphemically as <j> and pronounced as in the Spanish name “Juan”) – not to be confused with the GRAPHEME <x>.

verb

A word that designates a situation, an event, or an action. Verbs can typically be inflected in, e.g., person, aspect, voice, and tense.

voice

A grammatical system of INFLECTIONS of a verb to indicate the relation of the SUBJECT of the VERB to the action which the verb expresses. There are four voices present in the Classic Maya language: ACTIVE, PASSIVE, mediopassive (or middle voice), and antipassive. For more information, turn into the grammar section on page 61.

voiced

A sound that is produced with a vibration of the vocal folds (vocal cords).

vowel

One of the two significant classes of sounds (besides CONSONANTS). Vowels are usually pronounced with relatively open configuration of the vocal tract without noticeable obstruction to the free flow of air through the mouth. In contrast to consonants, vowels can form syllables by themselves. There are five vowels (or ten if long vowels are regarded as a distinct set of vowels) in the Classic Maya language: /a/, /e/, /i/, /o/, and /u/.

word

The smallest unit of GRAMMAR which can stand alone as a complete utterance in both spoken and written language. Words are composed of STEMS together with optional AFFIXES.

zero morpheme

A zero morpheme (Ø) is a constituent representing an element at an abstract level but not realized in the utterance (i.e. it has no phonetic appearance in pronunciation nor a graphemic appearance in writing). A zero morpheme thus represents the absence of an expected morpheme. There are a number of zero morphemes in the Classic Maya language (and, consequently, also in the script). One of the most common is that of the third person singular absolutive (Set B) pronoun, as in the phrase *chumljaj* (“he/she sat down”) which can be divided into morphemes in the following way: *chum-l-aj-Ø* (verbal root + marker of a positional verb + thematic suffix + third person absolutive pronoun).

ABBREVIATIONS USED IN MORPHOLOGICAL SEGMENTATION AND ANALYSIS (ADAPTED TO MAYA LINGUISTICS)

Abbreviation: Explanation:

| | |
|------|------------------------------------|
| ∅ | zero morpheme |
| - | morpheme boundary |
| 1 | first person |
| 2 | second person |
| 3 | third person |
| 1S | first person singular |
| 2P | second person plural |
| 3SA | third person singular absolutive |
| 3SE | third person singular ergative |
| A | absolutive |
| ADJ | adjective |
| ADV | adverb |
| AFT | affective |
| APAS | antipassive voice |
| DEM | demonstrative pronoun |
| E | ergative |
| FCL | female/feminine classifier |
| INC | inchoative voice |
| INS | instrumental suffix |
| IV | intransitive verb |
| IVD | intransitive verb, derived |
| LOC | locative suffix |
| MCL | male/masculine/neutral classifier |
| N | noun |
| NCL | numeral/numerical classifier |
| NUM | numeral |
| P | plural |
| PAS | passive voice |
| PV | positional verb |
| REL | relational suffix |
| S | singular |
| SUF | suffix (for unidentified suffixes) |
| THM | thematic suffix |
| TV | transitive verb |

Other abbreviations:

| | |
|---|--|
| * | reconstructed word or morpheme (in historical linguistics) |
| * | incorrect word, clause, sentence, etc. (general) |
| C | (any) consonant |
| V | (any) vowel |

Abbreviations used in Maya epigraphy:

| | |
|------|------------------------------------|
| ADI | Anterior Date Indicator |
| CR | Calendar Round |
| DN | Distance Number |
| DNIG | Distance Number Introductory Glyph |
| EG | Emblem Glyph |
| IS | Initial Series |
| ISIG | Initial Series Introductory Glyph |
| LC | Long Count Calendar |
| MS | Main Sign |
| PDI | Posterior Date Indicator |
| PE | Period Ending |
| PSS | Primary Standard Sequence |
| SC | Short Count |



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WEB-PAGES GROUPED BY CATEGORY⁷⁰:

Essential wide-ranging pages with links to other pages⁷¹:

<http://www.wayeb.org>

<http://www.famsi.org>

<http://www.mesoweb.com>

Journals:

<http://www.journals.cup.org/bin/bladerunner?30REQEVENT=&REQAUTH=0&116000REQS UB==&REQSTR1=ATM>
(Ancient Mesoamerica)

<http://intarch.ac.uk/antiquity/>
(Antiquity)

<http://www.arqueomex.com/index.html>
(Arqueología Mexicana)

<http://www.journals.uchicago.edu/CA/>
(Current Anthropology)

<http://www.saa.org/Publications/LatAmAnt/latamant.html>
(Latin American Antiquity)

⁷⁰ To spare the reader the trouble of retyping these addresses, the www-links listed below are also to be found at http://www.helsinki.fi/hum/ibero/lam/files/maya_linkit.html (explanations in Finnish). Due to the temporary nature of web-pages one should bear in mind that some of the links listed below might not function after this handbook has been released. The authors do not take responsibility of the contents of the pages listed here.

⁷¹ See below for further information.

<http://www.mexicon.de/>
(Mexicon)

<http://www.nationalgeographic.com>
(National Geographic)

<http://www.mayadiscovery.com/ing/quees/quees.htm>
(Mundo Maya)

<http://www.res-journal.org/>
(Res)

<http://www.mayaresearch.com>
(Research Reports on Ancient Maya Writing)

<http://www.ucm.es/BUCM/canje/030117.htm>
(Revista española de antropología americana)

<http://www.yumtzilob.com/>
(Yumtzilob)

Articles:

<http://www.cc.ukans.edu/~hoopes/aztlan/>
(AZTLAN E-Journal)

<http://www.wayeb.org/indexresources.htm>
(List of numerous e-articles)

Web-dictionaries, web-grammars, and linguistics links:

<http://www.sil.org/americas/mexico/maya/chol-tumbala/S121a-Diccionario-CTU.htm>
(Ch'ol dictionary [Aulie & Aulie])

<http://www.utexas.edu/courses/stross/chorti/index.html>
(Ch'orti' dictionary [Wisdom])

<http://www.famsi.org/reports/bolles/bolles.htm>
(*Combined Dictionary-Concordance of the Yucatecan Mayan Language* [Bolles])

<http://maya.hum.sdu.dk/>
(*The Mayan Languages - A Comparative Vocabulary* [Dienhart])

<http://www.zapata.org/Tzotzil/>
(An on-line Tzotzil grammar [Haviland, Robinson & Gutierrez])

<http://www.ethnologue.com/>
(Links to Maya linguistics)

<http://www.languages-on-the-web.com/links/link-maya.htm>
(Links to Maya languages)

Conferences:

<http://www.wayeb.org/indexconferences.htm>
(Information on upcoming conferences)

Archaeological projects:

<http://www.wayeb.org/indexresearchoverseas.htm>
(Information on various archaeological projects)

<http://www.bvar.org/>
(*Belize Valley Archaeological Reconnaissance* and *Western Belize Regional Cave Project*)

<http://www.mayaresearchprogram.org/>
(*The Maya Research Program* (MRP), Blue Creek, Belize)

<http://www.bu.edu/lamilpa/>
(*La Milpa Archaeological Project* (LaMAP), La Milpa, Belize)

http://www.mesoweb.com/palenque/current_dig.html
(*The Group of the Cross Project*, Palenque, Chiapas, Mexico)

Universities and institutes associated with Maya studies:

See <http://www.wayeb.org/indexresearch.htm> for further information

Museums and private collections with Maya artefacts:

See <http://www.wayeb.org/indexresources.htm> for further information

Other links:

<http://www.angelfire.com/ca/humanorigins/writing.html#maya>
(An introduction to Mesoamerican writing systems)

<http://famsi.saiph.com:5000/dataSpark/mesobib>
(A bibliography related to Mesoamerican studies)

<http://weber.ucsd.edu/~dkjordan/arch/mexchron.html>
(On Mesoamerican chronology)

<http://www.famsi.org/>
(*The Foundation for the Advancement of Mesoamerican Studies, Inc.*: articles, reports, bibliographies, and pages on and by Justin Kerr, Linda Schele, and John Montgomery)

<http://homepage.mac.com/mayaglyphs/>
(Pages based on a workshop by Peter Mathews and Marc Zender)

<http://www.halfmoon.org>
(On calendrics)

<http://www.maya-archaeology.org/>
(On photography related to the research on Mesoamerica)

<http://www.michielb.nl/maya/astro>
(On Maya astronomy and mathematics)

<http://jefferson.village.virginia.edu/med/>
(*The Mayan Epigraphic Database Project, MED*)

<http://www.ukans.edu/~hoopes/506/Chronology.htm>
(On Mesoamerican chronology)

<http://members.tripod.com/~Ekbalam/Frame-Periods-e.html>
(An introduction to Maya culture)

<http://research.famsi.org/kerrmaya.html>
(Justin Kerr's *Maya Vase Database*)

<http://research.famsi.org/kerrportfolio.html>
(Justin Kerr's *Portfolio*)

<http://www.pauhtun.org/Calendar/tools.html>
(Calendar program)

<http://www.mesoweb.com/>
(Pages dedicated to Mesoamerican studies).

<http://www.famsi.org/montgomery/dictionary/>
(John Montgomery's glyph dictionary along with commentary by Peter Mathews)

http://www.utexas.edu/research/chaaac/the_texas_notes.html
(A selection of articles related to Maya studies)

<http://www.wayeb.org>
(*European Association of Mayanists*; links to other pages)

http://www.uady.mx/sitios/mayas/literatura_narrativa/index.html
(On Maya literature)

<http://famsi.saiph.com:7100/dataSpark/montgomery>
(*John Montgomery Drawing Archive*)

<http://www.upenn.edu/museum/Collections/mesoamericaframedoc1.html>
(A short introduction to the Ancient Maya)

<http://library.albany.edu/subject/codices.htm>
(Information on facsimiles of Mesoamerican codices in the university libraries)

<http://digital.library.northwestern.edu/codex/index.html>
(Downloadable version of Paris Codex by Northwestern University Library's Digital Media Services)



Figure 32: Detail from a Codex Style vase (Drawing by Harri Kettunen based on a photograph by Justin Kerr [Kerr file #2286])