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Chapter 3:
The Writing System of Epiclassic Central Mexico

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Of the many Pre-Columbian writing systems known in Mesoamerica, the hieroglyphic script used by the cultures of the Epiclassic period in central Mexico is among the least well known. Undoubtedly, this obscurity is brought about by the fact that this writing system remains undeciphered to this day. Contributing to this situation is the limited number of texts that comprise the known corpus of this writing system. The size of the corpus is directly affected by the temporal extent of the writing system since it is restricted to the Epiclassic (c. AD 650–1000), a relatively short, but important transitional period between the fall of centralized urban states of the preceding Early Classic (c. AD 250–650) and the ensuing rise of states in the Postclassic (c. AD 1000–1521). Much like the Epiclassic itself, the script of that period is an intermediate phase of the writing system that was employed in the central Mexican highlands for more than a millennium. As such the Epiclassic script derives in large measure from the writing system employed at Early Classic Teotihuacan and—although there are signs of discontinuity—the Epiclassic writing system also contributes to the development, conventions and sign inventory of the Postclassic writing system of the Aztec. Remarkably, the earliest scientific documentations of Epiclassic texts were made more than two centuries ago as attested by the works of Prussian naturalist and explorer Alexander von Humboldt (1810: 37–41, pl. IX) as well as the Mexican historian Antonio Peñafiel (1890). Nevertheless, the recognition of the Epiclassic script as an internally coherent writing system only took place relatively recently and can be attributed to the seminal work of the eminent Mexican scholar Alfonso Caso (1962) and the American art historian Janet C. Berlo (1989). To this day, no complete signary has been compiled and candidate languages remain to be clearly established. As such, it should be clear that the study of Epiclassic writing is still very much in its infancy and the present chapter serves only to provide a synthetic summary of the current state of knowledge, highlighting lacunae, recent progress and future prospects.

Geographic Distribution

The writing system of the Epiclassic is found at a series of sites in a rather compact area of the central Mexican highlands (Figure 3.1). The vast majority of these sites are located in and around the Valley of Mexico in relative proximity to the large urban centers of the Early Classic and Postclassic, including Teotihuacan, Cholula and Tenochtitlan (see Parsons et al. 1983; Wolf 1976). The largest and most important Epiclassic sites are found outside of the Valley of Mexico proper within an arc of 60 to 80km, and include Cacaxtla in Tlaxcala—with its famed polychromatic murals that show elements of and influence from Maya iconography (e.g. Brittenham 2008; Foncerrada de Molina 1980, 1993; Helmke and Nielsen 2013a, 2014a), Chichicalco in Morelos—that boasts the largest corpus of Epiclassic writing (e.g. Caso 1962; de la Fuente et al. 1995; López Luján et al. 1995; Sáenz 1967; Smith 2000a, 2000b; Smith and Hirth 2000), Teotenango in the State of Mexico—an acropolis fortress that is known for its significant monuments (e.g. Álvarez 1983; Piña Chan 1973), and Tula in Hidalgo—which also exhibits an earlier Epiclassic occupation and contemporaneous monuments (e.g. de la Fuente et al. 1988: 202–203; Nicholson 1971: Fig. 26).

These and the other capitals of Epiclassic city-states were established in strategic positions at the summit of hills in a clear break with the settlement patterns of the preceding and ensuing periods, where settlements were established in broad plains and valleys. In addition to their impregnable locations, these sites also exhibit high terraced hillsides, defensive walls and wide trenches cut into bedrock, features that betray both the high incidence of warfare during the Epiclassic and the strategic importance of these sites (Alvarado León and Garza Tarazona 2010; Baird 1989; Finegold 2012; González Crespo et al. 1995: 224, Fig. 3; Hirth 1989, 1995).

Located in proximity of the aforementioned places are other archaeological sites including Xinanteccatl within the crater of the Nevado de Toluca, located 18km west of Teotenango, where a wonderful Epiclassic stela has been found (Helmke et al. 2013: 93–94; Luna et al. 2009: 70–73) (Figure 3.2a), as well as the settlement of Tetlama that lies just 3km north of Chichicalco. That the latter settlement is built upon an archaeological site is suggested by the presence of Epiclassic monuments within the local churchyard, one that was registered there in 1929—before being moved to the Museo.
Regional Cuauhnahuac (Angulo 2001: 105)—the other, a recently discovered Epiclassic stela (Figure 3.2b) and a series of carved facing stones incorporated as spolia within the perimeter wall of the same church (Helmke et al. 2019: 79-82). Within the Valley of Mexico proper, Epiclassic writing is restricted to the Cerro de la Estrella (Helmke and Nielsen 2011: 17, 51 n. 8-9, 2013b: 385; Montero García 2002: 185, 198, 208) and the neighbouring site of Xico (Peñafiel 1890: 293; Seler 1904: 160, Fig. 69), within what would be the altepeme' of Colhuacan and Chalco, respectively.

Further afield is the prominent monolith at Maltrata in Veracruz (208km to the southeast) (Medellín Zenil 1962; Schávelzon 1982), as is the site of El Cerrito in Querétaro (184km to the northwest) where fragmentary panels have recently been discovered (Valencia Cruz and Bocanegra Islas 2013: 115-116) (Figure 3.3), and a carved panel from Acatlan de Guerrero (185km to the southwest) has also been recently reported (Rodríguez Cano 2013). Fascinating are the examples of Epiclassic writing found at the site of Chichen Itza in Yucatan (over a thousand kilometres to the east) and the interactions these imply (e.g. Kepecs 2007; Smith 2007). There we find Epiclassic glyphs naming individuals as aliens in a Maya world, both by means of foreign writing and the language encoded in these glyphs (Schele and Mathews 1998: 252, Fig. 6.50; see also Morris et al. 1931: 311, Fig. 231, Plate 59W) (Figure 3.4a-c). In addition, the corner panels of Structure 2D4 at Chichen Itza were embellished with calendrical notations rendered in distinctive Epiclassic style (Desmond 2008; Ruppert 1952: 21; Seler 1902: 693) (Figure 3.4d-e). Whereas the distribution of these sites in part marks the extent of Epiclassic culture, in many ways the outlying sites may also have functioned as military and trading outposts to exploit resources in foreign lands.

Corpus and Media

The relatively short duration of the Epiclassic has resulted in a corpus that is decidedly modest, especially when compared to that of the other writing systems of Mesoamerica. Accounting for a definition of “text” is imperative, since it greatly influences the resulting quantification. The definition of “text” adopted here is of a glyphic record that is provided on a discrete entity, such as an artefactual object, monument, mural, or architectural unit, irrespective of the length of the original text or the degree of preservation, with the

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1 The extensive site of Cantona in Puebla (173km to the east) is another important Epiclassic site and although a carved panel and carved architectural elements have been found there (García Cook and Zamora Rivera 2010), these predate the Epiclassic and at present no written texts have been unearthed. Another site that may also exhibit Epiclassic texts is the Cueva del Tígre or Palancares in Veracruz (508km to the southeast), where at least two red-painted glyphic passages have recently been discovered (Erik Velásquez García, pers. comm. 2012; Iván Rivera Guzmán, pers. comm. 2020).
proviso that buildings can record multiple texts. By this definition, a single glyph on a sherd inevitably represents part of a text, as do the eroded traces of painted glyphs in a mural. On equal footing, but using examples from other Mesoamerican writing systems, the 617 glyph blocks of the three hieroglyphic panels in the Temple of the Inscriptions at Palenque thereby form one continuous text, as do the 676 glyph blocks of the Codex Mendoza that are arranged over 56 pages.\footnote{The figures for the Codex Mendoza include all glyphic compounds written on pages rendered in traditional codical format, but exclude the 194 calendrical notations written in the margins as well as the pages written exclusively with European script.}

Based on the published literature a tentative total of 71 Epiclassic texts can be provided (Table 1). In contrast, and using the same definition, the written corpus of the Maya may encompass a little under 2200 texts from 144 different sites (see Helmke 2009: 555).\footnote{This number should be contrasted to the figures provided by other scholars, including the estimate of 5 000 texts offered by Stephen Houston (1989: 22) or the 15 000 suggested by Felix Kupprat and Hugo García Capistrán (pers. comm. 2015).}

From the above tabulation, it is clear that a substantial portion of Epiclassic texts (c. 19%)—as with all Mesoamerican writing systems—are found on...
freestanding monolithic monuments, especially stelae (Figure 3.2) and bifacial trapezoidal monuments that are typical of the period (Figure 3.5). Texts, however, predominate on architectural elements, including panels, stucco facades, carved masonry facades, and glyphic treads (c. 56%). When painted, texts were executed as murals on stuccoed walls, benches and on hieroglyphic stairs (c. 14%). Interestingly, the number of glyphic elements rendered as petroglyphs on natural stone outcroppings and boulders is also noteworthy (c. 7%) and confirms the transitional nature of Epiclassic writing, especially considering the relative dearth of glyphic rock art in the Early Classic and its importance in the Postclassic (see Galindo Trejo et al. 2002: 260-261, Fig. 3; Krückerberg 1969; Olivier and López Luján 2010: 81, Figs. 25-26; Pasztory 1983: 124-134; Rivas Castro 2005: 219, 223, Fig. 18). Although few unprovenanced texts are positively identified as Epiclassic, some monuments are known (e.g. Helmke and Nielsen 2011: 3, 13, Fig. 8, 2013b: 385, 395, Fig. 7.8; Urcid 2007).

In contrast to other Mesoamerican cultures—such as the Maya and Teotihuacan—the use of portable objects as supports for texts are extremely rare (c. 4%) and include the sherd of a vase found at Cacaxtla (López de Molina and Molina Feal 1986: Lám. 109b; Helmke and Nielsen 2013b: Fig. 7.2l), a ceramic plaque and a stuccoed travertine vase from Xochicalco (González Crespo et al. 1995: 263, Fig. 23; Sáenz 1963: 13-21). That being said, the sample may be highly biased by poor preservation since the distinct possibility remains that a large quantity of texts were once rendered on perishable materials including textiles and codices. Whereas archaeological examples of codices have not been recovered, depictions subsist, including a mural at Teotihuacan that renders a ritual specialist bearing an elongated object clearly marked with an early form of the logogram for ‘day, feast’ (see de la Fuente 1995c: 87, Fig. 8.5) (Figure 3.6a), functioning as the logogram \( \text{ILWI} \) in Nauahtl, in much the same way as Aztec codices are marked a millennium later (see Thouvenot 1987: 289-290; see also Díaz, this volume) (Figure 3.6b). In addition, we may have a similar scene at Xochicalco, painted on the masonry bench within Structure K2 at the northern end of the eastern ballcourt (Nielsen et al. 2021: 255-264), suggesting that codices were one of the principal repositories of knowledge throughout Pre-Columbian Mesoamerica. In sum, whereas there may once have been an abundance of codices throughout the Epiclassic, the remaining number of texts is extremely limited, a feature that inherently imposes limitations to the potential decipherment of the writing system.

**Figure 3.3**: Fragmentary glyphic panels at the site of El Cerrito in Queretaro. a) Panel recording the calendrical notation ‘8 Pinwheel’ besides a swathe of feathers; b) Individual brandishing an elaborate staff paired with a calendrical notation ‘10 Eagle’. c) Fragmentary panel with the calendrical notation ‘2 Movement’ (drawings by Christophe Helmke).
Figure 3.4: Examples of Epiclassic writing at the site of Chichen Itza, Yucatan.

a)-c) Foreign individuals bearing names written with Epiclassic writing, represented in the bas-reliefs of the Lower Temple of the Jaguar, including ‘Reptile Eye’, ‘7 Glyph A’, and ‘5 Glyph A’ (drawing by Linda Schele © David Schele, courtesy of the Los Angeles County Museum of Art).

d)-e) Panels from Structure 2D4, which represent bundle signs that are topped by a so-called “trapeze and ray” year sign, juxtaposed by the coefficient 13 and a halved star (drawing after Seler 1902: Fig. 15, p. 693; photograph © Michel Zabé, courtesy of the Archivo Fotográfico “Manuel Toussaint”, Instituto de Investigaciones Estéticas, UNAM).
At present, we are unable to identify examples of Epiclassic writing that occur outside of the limits of the eponymous period itself. Nevertheless, the precursor of the Epiclassic script is clearly the dominant writing system that was in use at Teotihuacan (Taube 2000, 2011; Helmke and Nielsen 2021). Similarly, the Epiclassic script has also contributed to several key features of the ensuing writing system of the Postclassic Aztec, including a range of logograms (Figure 3.7). As such, we may slowly be able to speak of a greater central Mexican writing system, wherein three major phases are recognized, each represented by temporally restricted manifestations of the same writing system rather than a commensurate number of wholly distinct and independent writing systems (see also Berlo 1989: 19). Important shared features pertaining to this broad scribal tradition will be mentioned, below.

In keeping with Mesoamerican writing systems, most Epiclassic texts are accompanied by calendrical notations—in the ritual calendar that compares to the toonalpoowalli of the Aztec. Thus, there is a great prospect that these calendrical notations will eventually serve to anchor the dedicatory and narrative dates of texts. For the time being, however, much remains to be done before the calendar is completely understood and anchored to the Julian calendar, not the least since there is disagreement as to the identity of calendrical signs (e.g. Helmke and Nielsen 2011: 6-12, 2013b: 389-394; Urcid 2012: 856-860; Urcid and Domínguez 2013: 643-646) (Figure 3.8). Potential anchors are afforded by the calendrical notations that may commemorate New Fire ceremonies (see Sáenz 1967: 18-19, 1968: 188-190; Smith and Hirth 2000: 44-45, Fig. 3.21). Most prominent among these are dates involving the day sign dubbed “Reptile Eye”—which may well record years named after the 13th day ‘reed’, in the set III year-bearer system—including examples from Xochicalco, Cacaxtla, Tula, and the Cerro de la Estrella (de la Fuente et al. 1988: 202-203, n. 147; Helmke and Nielsen 2011: 12-20, 2013b: 394-401; Helmke and Montero García 2016; Seler 1904: 138-139, Fig. 4; Smith 2000a: 61-64, 2000b: 85) (Figure 3.9). Based on present evidence the shared dates at Xochicalco and Cacaxtla appear to represent contemporaneous ritual observances at both sites (see Helmke and Montero García 2016: 73-74). The shifting coefficients remain to be properly accounted for and is at odds with Postclassic practices since New Fire ceremonies were traditionally held on the fixed date ‘2-Reed’ (e.g. Anderson and Dibble 1953: 25-32; Broda de Casas 1969: 25, 28; Caso 1967: 134-140). As a result, one wonders if the coefficients represent cumulative
statements of sequential events during the Epiclassic, especially since an Aztec example is known, which is a copy of an Epiclassic antecedent (Broda de Casas 1969: 28–29; Caso 1967: 15; Pasztory 1983: 111, Fig. 53) (Figure 3.10).

That being said, the temporal distribution of Epiclassic texts can be realized on the basis of the archaeological and stylistic analyses of the supports that bear them. Thus, ceramic and carbon dating of associated strata and architectural phases serve to date the associated texts. Nevertheless, at present the archaeological dating is not sufficiently refined to allow us to segregate the earliest from the latest texts and to begin coherent palaeographic analyses. At Xochicalco, for instance, the excavations within the monumental epicentre have failed to reveal any concrete evidence of an Early Classic occupation, thereby leading to the conclusion that the site was founded in the Epiclassic (González Crespo et al. 2007, 2008) and making its monuments
The presence of Epiclassic texts at Tula, including one that was recycled in the core of the famed Str. B (de la Fuente et al. 1988: 202-203, n. 147) (Figure 3.9c) confirms the Epiclassic occupation of the site, especially in the portion of the site known as Tula Chico, perhaps during the latter facet of the Epiclassic (Fournier and Bolaños 2007; see also Nicholson 1971: Fig. 26). At Cacaxtla, a series of carbon assays have been used to anchor the relative chronology afforded by the architectural stratigraphy to between AD 680 and 830 (Moreno Juárez et al. 2005; Brittenham 2008: 198-250; see also López de Molina and Daniel Molina Feal 1986). Independently of the stratigraphic and radiometric dating, the authors have elsewhere proposed a series of stylistic datings for the murals of Structures A and B, spanning from AD 692 to 810, by cross-referencing iconographic elements to securely-dated examples in the Maya area (Helmke and Nielsen 2013a, 2014a). These ranges correspond well to the whole of the Epiclassic period and as such, the datings of the texts are well established, until their calendrical content can be unlocked to their fullest potential.

**Graphic Characteristics**

Epiclassic writing shares a large number of graphic features and underlying principles with other Mesoamerican scripts especially those of western Mesoamerica, most notably that of Teotihuacan and of the Aztec. As such, even though Epiclassic writing remains undeciphered at present, we are able to identify several such features, the most salient of which are presented here.

Signs in Mesoamerican writing in general have a figurative origin and Epiclassic writing is no exception. This apparent graphic transparency has often mislead researchers since both logograms and phonograms can be highly figurative. As such, the degree of figurativeness in no way serves to distinguish sign types from one another, not the least since signs can be polyvalent and serve as phonograms in one context and as logograms in another. Furthermore, signs are often used exclusively for their phonetic value, according to the rebus principle (meaning that a sign is understood independent of its visual characteristics), thereby disassociating the semantic referent from the utterance cued by the graphic sign. In addition, even the signs that appear to be abstracted or stylized all stem from figurative referents in the tangible world.

From the well-understood writing systems of the Maya and Aztec it is clear that signs can be represented in three basic graphic forms, namely as so-called geometric forms, as head variants and as full-figure glyphs (see Zender 1999: 47-48). Whereas all signs can theoretically be rendered in all of these forms without alteration of their function or reading, convention
Figure 3.8: The calendrical signs of Epiclassic writing.
Each sign represents a named day in the sequence of twenty that forms the basis of the 260-day calendar in use during the Epiclassic. General meanings and placement in the veintena sequence are provided below each sign. Some duplication can be noted and are due to diachronic paleographic features as well as regional variation in the script. On the lowest line is a selection of day signs rendered outside of cartouches. Missing are 'wind' [2], and 'grass' – 'tooth' [12] (drawings by Christophe Helmke).
Figure 3.9: Possible records of New Fire ceremonies involving the “Reptile Eye” glyph with varying coefficients. 


Figure 3.10: Aztec copy of an original Epiclassic sculpture commemorating a New Fire ritual. The bar-and-dot coefficient is rendered in typical Epiclassic fashion and below the day sign, as are the stylized flames in the background. The anachronistic day sign has been rendered in Aztec writing to record the date ‘2 Reed’, the typical date for the commemoration of New Fire rituals at the end of the 15th and start of the 16th century (photograph by Christophe Helmke).
dictates that some signs are more frequently rendered as either geometric forms or head variants—full-figure glyphs being quite rare in all cases. The same conventions appear to be applicable to central Mexican writing in general and for the Epiclassic where good examples are found for a possible warrior-priest title (see Helmke and Nielsen 2011: 23-28, 2013b: 404-410) (Figure 3.11).

Figure 3.11: Examples of a warrior-priest title found in Epiclassic texts, written in three basic graphic forms, including a)-b) geometric, c) head-variant and d) full-figure. a) Cacaxtla, Structure B; b) Xochicalco, Pyramid of the Feathered Serpent; c) Piedras Negras, Stela 8; and d) Teotenango, carved boulder (drawings by Christophe Helmke).

Another graphic principle that is widespread throughout Mesoamerica is that of pars pro toto, wherein a larger object or entity can be reduced to its single most diagnostic element. Thus, at Cacaxtla ‘deer’ can be represented by its antler (Figure 3.12c-d), at Xochicalco ‘house’ is represented by its decorative merlon, known as an almena (Figure 3.12a-b), and at Teotihuacan a headdress—denoting an exalted title and associated office—is represented by its distinctive tassel (Helmke and Nielsen 2011: 9, 2013b: 392-393; Helmke et al. 2013: 93; Millon 1988) (Figure 3.12e-f).

Glyph compounds, or blocks, are less squared than those of Maya or Isthmian writing, and in this sense show much greater affinity with other central Mexican writing systems. Nevertheless, calendrical signs mostly occur within squared cartouches with rounded corners. This is one of the many palaeographic attributes that demonstrates that Epiclassic writing is an integral and intermediate phase of a greater central Mexican writing system, since the same signs are represented...
in circular cartouches at Teotihuacan and in perfectly square cartouches among the Aztec (Figure 3.13).

Numerals are typically written with a combination of bars and dots, the former representing '5' and the latter units of '1', and combinations of up to '13' are attested in the corpus of Epiclassic writing, as these relate to the toonalpoowalli. As such, the Epiclassic script maintains a widespread feature of Mesoamerican writing systems of the Classic period, but at the same time also anticipates features of later Aztec and Mixtec writing, since Epiclassic numerals are also represented by a series of dots in excess of five, or as odd combinations of dots and bars (Helmke and Nielsen 2011: 3-6, 2013b: 385-389) (Figure 3.14). This underscores the transitional nature of Epiclassic writing and is another trait demonstrating the continuity and graphic evolution of signs within central Mexico.

Glyphic notations are characteristically terse and often times reduced to a single calendrical notation or a combination of signs that together label a person or a place with its name. As such, the verbal complex in Epiclassic writing, and in western Mesoamerica in general, is greatly deemphasized and reduced to an absolute minimum. This is not to say that verbal statements do not exist, but when present they appear to record an uninflected verbal root that serves to qualify the iconographic scene they accompany. This stands in strong contrast to the writing systems of eastern Mesoamerica where we see long linear textual sequences recording language and a thriving verbal complex, although abbreviation and even underspelling are also prevalent features.

Figure 3.12: Examples of the pars pro toto principle in central Mexican writing. A house and its almena: a) Xochicalco, Stela 2, b) Xochicalco, Lápida de los cuatro glifos (P1). A deer and its antler: c) Cacaxtla, Structure A, d) Cacaxtla, Structure B. A tasseled headdress and its distinctive tassel: e)-f) Teotihuacan, Techinantitla murals (drawings by Christophe Helmke).

Figure 3.13: The graphic evolution of day sign cartouches in central Mexican writing from the Early Classic to the Early Colonial period. a) Early Classic, tecalli statuette from Teotihuacan; b) late Teotihuacan graffito incised within a ceramic vessel; c) Epiclassic day sign on Lápida L3 of Xochicalco; d) Aztec date as recorded in the Codex Boturini (drawings by Christophe Helmke).
When more than two glyph blocks appear, a small blank space is introduced between them to segregate two different words, thereby betraying syntactic categories. Thus, calendrical notations, anthroponyms, titles, toponyms and in the rare cases that verbal elements are recorded, these all tend to be written as separate glyph blocks. That being said, unlike other writing systems, no distinct separator signs were developed or used in central Mexico, and all glyphs were written in scriptio continua.

Considering the many points of commonality just outlined it should be clear that Epiclassic writing—despite its distinctive traits and parameters—has essentially the same workings and operated as any other writing system in Mesoamerica. Whereas no complete signary of Epiclassic writing exists at present, initial work in tabulating the number of signs employed in this writing system suggests that there were c. 150 signs in use at any given time during the Epiclassic (Helmke and Nielsen 2011: 1, 2013b: 383-384). This can be contrasted to Teotihuacan writing where c. 200 signs were used (Langley 2002: 299-301), Maya writing where anywhere between 300 and 400 signs were used in any given period (Knorozov 1958: 289; Mathews and Biró 2008) and Aztec writing where c. 450 signs were most commonly used (Cases Martín and Lacadena García-Gallo 2013). Since the number of signs employed in a script in part betrays what type of writing system it is (i.e. logographic, syllabic, alphabetic) (see Coe 1992: 32-43; Daniels and Bright 1996: 142-143, 155) and knowing that Aztec and Maya writing are mixed logophonetic writing systems, it should thus be clear that the central Mexican writing systems of the Epiclassic and Early Classic were likewise logophonetic. This is an important working hypothesis that guides on-going and future investigations, and leads us to the next question, the current state of decipherment.

State of Decipherment

Remembering that Epiclassic writing has only recently been identified as a writing system at all (Caso 1962; Berlo 1989) and that a complete corpus and signary are still lacking, the state of decipherment is evidently in its infancy. However, by putting Epiclassic writing in a wider perspective, some useful observations can be advanced. In general terms, the shared features of Mesoamerican writing systems just outlined, imply a common descent from the earliest writing system developed in Mesoamerica (e.g. Justeson 1986; Justeson et al. 1985: 31-37; Lacadena 2011; Marcus 1976; Rodríguez Martínez et al. 2006; Saturno et al. 2006; Stuart et al. 2022). More specifically, the features that Teotihuacan and Epiclassic writing have in common evidently imply that the latter descends from the former, in much the same way that some of the features and signs of Aztec writing can be traced back to Teotihuacan, via the Epiclassic (Helmke and Nielsen 2011, 2013b, 2013c, 2014b; Nielsen and Helmke 2011, 2014; Taube 2000, 2011). Despite this continuity there are also salient signs of discontinuity, especially in realm of the phonograms of Aztec writing.

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Figure 3.14: Unusual combinations of bars and dots demonstrating the transitional nature of Epiclassic writing. 
\[a\] Cacaxtla, Structure A, North Jamb; \[b\] Cacaxtla, Structure A, North Pier; \[c\] Xochicalco, R18; \[d\] Xochicalco, Pyramid of the Feathered Serpent, AW1; \[e\] Xochicalco, Pyramid of the Feathered Serpent, BS3; and \[f\] Xochicalco, Pyramid of the Feathered Serpent, BS1 (drawings by Christophe Helmke).
since most of these signs are absent from the Epiclassic and Teotihuacan corpus. This observation has several important implications: 1) That the graphically transparent Aztec phonograms were likely developed by means of acrophony late in the history of central Mexican writing, 2) which in turn implies a break with the past as well as language shift and/or replacement and 3) that the signs that have existed throughout the course of central Mexican writing system, despite their graphic evolution, are logograms.

All of these conclusions provide important parameters for current research and despite the strides that have been made in recent years, the low quantity of Epiclassic texts, coupled with the absence of clear bicscripts greatly frustrates decipherment efforts. Despite these complications, some tantalizing evidence exists for a limited number of bicscripts involving Teotihuacan writing (Helmke 2014), which have already begun to support the decipherment process and among other things have clarified beyond a doubt the logogram for ‘mountain’ in Teotihuacan writing (Helmke and Nielsen 2013c; see also Helmke and Nielsen 2014b).

Furthermore, whereas it may seem premature to discuss reading order for an undeciphered writing system, some tentative comments can nevertheless be made. Much as with most figurative hieroglyphic writing systems, individual signs employed in Epiclassic writing faced towards the start of the sentence, thereby betraying their underlying orientation and reading order. Unlike Maya and Isthmian writing, however, the internal reading order of glyph blocks in central Mexican writing systems does not follow strict rules since ample artistic provisions were made for graphic combinations. Whereas the convention of the Tetzcoco scribal school of Aztec writing (see Lacadena 2008) was generally from bottom to top and from the middle outwards, the same principles do not appear to have been conventional in the Epiclassic and Early Classic. As such, readers have to identify all the constituent parts before concluding as to the most likely and intended combination, or reading. In much the same way, the reading order of linear arrangements of glyphs does not appear to conform to a standard. Thus, the linear sequences on the frontal friezes of the Pyramid of the Feathered Serpent appear to be read as horizontal rows, both apparently from left-to-right (Figure 3.15). Similarly, at Cacaxtla, the text of the hieroglyphic stair of the Red Temple also appears to be read as a horizontal row (Helmke and Nielsen 2011: 29-41, 2013b: 411-420), but the texts adorning the piers of Structure A are read from top-to-bottom in asymmetrical columns (Helmke and Nielsen 2011: 41-45, 2013b: 420-422) (Figure 3.16). The texts that span over the four sides of the three glyphic stelae at Xochicalco, in turn, appear to be read in boustrophedon from bottom-to-top on the front and rear sides and in the opposite directions for the lateral sides (Figure 3.17) (Helmke and Nielsen 2011: 45, 2013b: 422; Pasztory 1976; Sáenz 1961, 1964; Smith 2000b: 85), thereby preserving a reading order that can be traced back to Teotihuacan, and which subsisted until the

**Figure 3.15:** Linear sequences of glyphs recorded on the Pyramid of the Feathered Serpent at Xochicalco. a) North frieze, West facade, AW1; b) South frieze, West facade, AW4 (drawings by Christophe Helmke).
In identifying the reading order of linear texts it has been found that most clauses start with what has been called an “enclosure sign”, that names and titles occur medially (with names preceding titles), that toponyms, if present, follow and that clauses are closed by calendrical dates. This structure is quite regular and is repeated in the texts of Cacaxtla and Xochicalco and finds analogies in Early Classic examples from Teotihuacan. On the whole it is thus possible to begin outlining the basic word order of the language recorded in Epiclassic writing and interestingly it seems to be verb-initial, conforming to the basic word order of

Figure 3.16: Asymmetrical columns of glyphs recorded on the piers of Structure A at Cacaxtla. a) North pier; b) south pier (drawings by Christophe Helmke).

In addition to determining the basic word order of linear texts, certain combinations of signs can also be partially read. In large measure, this is based on a fundamental and underlying feature of the language encoded in the glyphs. When a single sign occurs it must, by necessity, function as a logogram in order to be able to convey a linguistically viable unit. Similarly, when two glyphs occur in a single compound, it is most likely that these also represent logograms, wherein one qualifies the other. Considering calendrical notations, the numerals thereby function as the qualifiers of the named time unit, in much the same way that toponyms refer to a particular physiographic feature coupled with at least one qualifier. In these instances, whereas the phonetic values of the logograms remain unknown, it is possible to propose what can be called semantic decipherments wherein the identity of the two signs is elucidated. This tentative process has been very productive and has yielded favourable results, especially since the candidates for phonograms in Epiclassic writing are few.

Calendrical notations aside, promising semantic decipherments have been made for toponyms and titles in Epiclassic writing. For instance at Cacaxtla one of the glyph blocks in the linear text on the northern pier of Structure A, represents the head of a captive associated with a numeral formed by two disks. As such...
it is not difficult to read this segment as ‘two-captives’, undoubtedly serving as a martial title for the feline-canine warrior represented on the same pier (Helmke and Nielsen 2011: 44, 2013b: 421; Helmke 2020: 40, Fig. 8e; see Guerrero Martínez 2013: 497-500). Similar count-of-captive titles are in fact known for the Classic Maya (Stuart 1985) and were the basis for promotion among Aztec warrior orders (Berdan and Anawalt 1992: fols. 63v-65r).

As for place names, a prominent toponym that can be translated as ‘guajolote-mountain’ has been identified in the texts of Cacaxtla and Xochicalco (Figure 3.18a-b). Since this toponym predominates at Xochicalco it seems likely that it provides the ancient name of this city (Sáenz 1968: 191; Garza Tarazona 2002). As a result, the references to this place at Cacaxtla may refer to a bellicose encounter between the two sites resulting in the capture of a series of high-standing ritual specialists from Xochicalco (Helmke and Nielsen 2011: 30; Nielsen and Helmke 2015; Nielsen et al. 2021). By means of analogy to the way place names were recorded in Aztec codices it seems possible that two additional toponyms can be identified in the corpus of Xochicalco, including one that bears resemblance to Ahuilizapan (Figure 3.18c-d) and another that is similar to Huitzilapan or Huitzilapan (Figure 3.18e-f) (Berlo 1989: 32-33, 39; Helmke et al. 2019: 70, Fig. 10e-f).

In addition, the prominent clay almenas (decorative merlons) that once graced the roof of Structure 7 in the palatial acropolis of Xochicalco and which represent fanciful avian figures (de la Fuente et al. 1995: 109), undoubtedly served to name the structure that they
once adorned (Figure 3.19a). This would follow a practice that can be traced back to Teotihuacan and continued well into the Postclassic. The jagged crest of feathers on the brow and the long sinuous tail feathers on the almenas at Xochicalco indicate that these birds were meant to depict the resplendent quetzal (Pharomachrus mocinno), alien birds of the cloud forests of eastern Mesoamerica. Most interestingly of all is their attitude, beak below and tail feathers above, indicating these birds are in a diving posture. This combination of features recalls the name of a great mountain recorded in the Maya texts of Palenque, which was named yehmal k’uk’, or ‘descending quetzal’ (see Stuart and Houston 1994: 31, Fig. 34) as well as the accession name of the Aztec ruler Cuauhtemoc (/kʷaaw-temoo-ok/) ‘descending-eagle’ (León-Portilla 2001) and the headdress of the fire deity Xiutecuhtli that bore a descending cotinga (Cotinga amabilis) (Cobean et al. 2012: 169; Taube 1992a: 125-126, Fig. 67). These onomastic analogies suggest that a palatial structure at Xochicalco once bore the name ‘descending-quetzal house’ and finds close correspondences to the glyphic compound represented on the stuccoed travertine bowl found in a cache within the Pyramid of the Feathered Serpent (Figure 3.19b) (Sáenz 1963: 13-21).

As such, whereas much remains to be done in terms of a successful phonetic decipherment of Epiclassic writing and despite the obvious impediments posed by a small corpus, continued work may yield phonetic readings of signs. The comparative approach to Mesoamerican writing systems and initial attempts at semantic decipherments are beginning to bear fruit and each new text discovered greatly assists in the process of decipherment.

**Candidate Languages**

One of the most rudimentary means of establishing language candidates is to consider the spatial distribution of a given writing system and to compare
that to the areal distribution of certain language groups. For Maya hieroglyphic writing this approach is highly illustrative, since more than 96.6% of sites exhibiting glyphic texts are found within the Maya heartland, as defined by the maximal distribution of Mayan languages at the time of European contact (e.g. Kaufman 1994). Looking closer at this distribution one can also see that 88.4% of sites with Maya texts are in areas where languages of the greater-Tzeltalan and Yukatekan branches thrived, an observation that has since been independently borne out by epigraphic research (Houston et al. 2000; Lacadena and Wichmann 2002). Furthermore, considering also that Aztec writing was predominantly utilized to record Nawatl, one can come to the conclusion that particular writing systems in Mesoamerica were bound to particular language families— an observation that in large measure is also valid for other parts of the world.

On the basis of this premise one can thus examine the distribution of sites exhibiting Epiclassic writing and compare it to the distribution of Mesoamerican languages at the time of European contact in the sixteenth century. In so doing, one can see that the vast majority of Epiclassic sites are found in the Central Nawa heartland, even the sites of Maltrata and Cantona are found in the Eastern Nawa area, in much the same way as Acatlan de Guerrero, which is located in the Western Nawa area. Excluding Chichen Itza as an outlier, the only disturbances to this picture are brought about by the site of Teotenango that is in the midst of the Matlazinca area, whereas Xochicalco is in proximity to the Mazahua and Ocuitect languages, and El Cerrito is in the middle of the Pame area. As such, two great language candidates emerge for Epiclassic writing, namely an early form of Nawatl, and one or several of the Oto-Pamean languages of the Western Branch of Oto-Manguean languages. Interestingly, this conclusion duplicates earlier efforts wherein basic word order was elucidated by means of structural analyses, yielding comparable results (Helmke and Nielsen 2011: 422-425).

Nevertheless, we have to recall that the Epiclassic began nearly a millennium before the Spanish Conquest and thus, while this exercise is instructive it is by no means a fail-safe way to establish language candidates. Not the least since we know that the central Mexican highlands have witnessed a high degree of population movement and linguistic interactions in antiquity and that the area is a borderland between several prominent language families. As a result, it could very well be that the whole of the Epiclassic area was once populated by peoples speaking a group of closely related Oto-Pamean languages, keeping in mind that most linguists consider Nawatl to be an intrusive language that arrived later on the scene, although the chronology is still the subject of thorny debates (see Dakin 2003; Davletshin 2012; Hill 2001; Kaufman 2001; Nielsen and Helmke 2011: 345-349). Assessing the geographic distribution of languages stratigraphically it seems patent enough that Nawatl is a later addition and resembles a wedge, driven between the Western and Eastern Oto-Manguean languages. Considering the great time-depth of the separation between the two branches one is left to wonder whether Nawatl could have been in Mesoamerica at such an early date and that its arrival and propagation were directly responsible for the great division of the Oto-Manguean languages.

Recent work on Epiclassic writing has also begun to identify regional scribal practices and we are now in position to be able to suggest that there was an eastern and a western variant. It is unclear whether this variation is brought about by the writing system being used by two different languages of the same family, or dialects of the same language. The latter seems plausible since the differences are on par with the dialect differences identified for Classic Maya texts (Lacadena and Wichmann 2002). For the Epiclassic we can note the difference by which year bearers were marked, since the convention of appending small tumlines to named days in the toonalpoowalli is restricted to sites in the western area, including Xochicalco, Tetlama, Teotenango and the Cerro de la Estrella, but is not found at Cacaxtla, nor Tula (see Caso 1962: 71-73; Helmke and Nielsen 2011: 13-15, 2013b: 394-397; Nicholson 1966). In addition, one can note the different names attributed to some of the days, including the “foot” sign (Glyph K) that is found in the west and which may well substitute for the day sign ‘dog’ seen at Cacaxtla, which is conspicuously absent from the western Epiclassic sites. In much the same way the day sign ‘rabbit’ is well attested in the west, but in the east one finds a halved star sign (see Helmke and Nielsen 2011: 9, Fig. 2I). Thus, whereas these features are few and subject to sampling, these are consistent in their distribution, suggesting isoglosses bundling around Cacaxtla, Tula and El Cerrito as representatives of an eastern Epiclassic regional tradition and segregated from the western Epiclassic sites (see Figure 3.1). That these areas follow and are partially defined by a prominent physiographic feature, the Sierra Madre Oriental, is all the more suggestive since it is precisely along...
such natural barriers that dialectal variations tend to develop.

Returning to the question of language candidates, we are actually quite fortunate to have certain glyphic elements that appear to reflect linguistic elements. First among these is the positioning of the numeral qualifiers that accompany calendrical notations and other expressions, including titles. In Epiclassic writing these are consistently written below, in keeping with the convention devised at Teotihuacan, as well as reflecting the practice of contemporary and earlier texts of Oaxaca (although in the latter case dots appear above bars, rather than below). The practice of writing numerals below day signs can in fact be traced back to a Middle Formative example rendered on an incised ceramic vessel from Tlapacoya in the central Mexican highlands (Niederberger 1987: 551, 2000: 186, Fig. 9b), demonstrating the antiquity of this scribal practice. This stands in contrast to the numerals used in Isthmian and Maya script that are usually represented in front or above, in keeping with the syntax of Mije-Sokean and Mayan languages wherein numbers precede the noun that they qualify (Justeson et al. 1985: 40-42). Thus, if the Epiclassic calendrical notations reflect the basic word order of a particular language then one must conclude that these texts record an Oto-Manguean language, since these are the only languages in Mesoamerica wherein numerals can follow the item the qualify without affecting a semantic change, or entailing a shift from cardinal to ordinal function (Justeson et al. 1985: 40, 42, 45-46; Morales Lara 2006: 51-52).

However, the 16th day sign of the toonalpoowalli, ‘vulture’ is written at both Xochicalco and Teltlma with the head of an eagle wearing a necklace (see Figure 3.8). This spelling immediately recalls the Nawatl name for this day, which is koska-l’uawtli ‘necklace-eagle’ an endocentric compound for ‘vulture’ (Broda de Casas 1969: 13; Thouvenot 1987: 349-350). Whereas it is possible that a similar construction existed in an earlier Oto-Pamean language, review of the modern languages make it clear that ‘eagle’ and ‘vulture’ are designated by discrete terms and that neither involve a lexeme for ‘necklace’ or ‘jewel’. The Otomí and Matlatzinca names for the 16th day, are another point of departure, since they involve the lexemes ‘sun’ or ‘god’ and are unrelated to the Nawatl names (Cas o 1967: Cuadro IX, 219-221, 228-229). Similarly, the “foot” glyph of western Epiclassic writing, which may represent the 10th day and substitute for ‘dog’ in eastern Epiclassic writing, may involve a rebus that cues one of the known day names. Based on present evidence, however, it seems that Nawatl, Oto-Pamean and even Mayan languages all agree as to the identity of the 10th day, since all name it ‘dog’ (Cas o 1967: Cuadro IX, 219, 228-229). The near equivalence between ok ‘wild dog, coyote’ and oak ‘foot’ in Classic Mayan is remarkable in this instance (Kaufman 2003: 349-350, 597), and early examples at Tikal (Bu. 48 and Stela 31) (Shook and Kidder 1961) show the head of a feral dog, in an outline that resembles a human leg. Another comparable example involves the 8th day, known as ‘rabbit’ in central Mexico that makes numerous appearances in western Epiclassic writing, but being glaringly absent in the eastern tradition. Instead, at Cacaxtla, we see a halved star sign, as though setting at the horizon and thereby serving as a close analogue to the 8th day sign of Maya writing, read as lamaah ‘diminishment, descent’, which is also represented by a star, at times partially hidden behind a stylized eyelid (Helmke and Nielsen 2011: 8, 9, Fig. 21, 50 n. 5). These examples help to align the day signs of Epiclassic writing and draw equivalences to day signs of Maya writing, although we suspect that these reflect local traits, outside of and unmotivated by a Maya linguistic environment.\footnote{As such, it bears remembering that the day names that are available for study were recorded after the Spanish conquest and it is entirely possible that Oto-Manguean calendrical names changed under Aztec influence (such as is seen in the names of the months in Otomi that appear to be literal translations from Nawatl) and conversely that Nawa-speakers could have calqued certain day names from earlier Oto-Manguean ones (see Cas o 1967: 222-224).}

Still other rebuses may be found in other day signs, such as the use of a loincloth as the main diagnostic element of the day sign nicknamed “Glyph A” (Cas o 1962: 60-61; Taube 2011: 82-84), the use of the “shallow basin” sign with certain calendrical notations and toponyms (see Helmke and Nielsen 2011: 20-22, 2013b: 401-403) and the “twisted root” sign with place names (Taube 1992b: 69-70, Fig. 13, 2000: 9; Nielsen and Helmke 2008: 461). Since rebuses can only be resolved in one particular language it is hoped that the examples just enumerated will be the focus of future research and may one day be resolved, thereby providing a solid candidate language, in much the same way as structural analyses have been used to identify basic word order (see Helmke and Nielsen 2011: 44-48, 2013b: 422-425), thereby providing encouraging leads.

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References Cited:


Dakin, Karen 2001 Análisis iconográfico de algunos monolitos del Museo Regional Cuahñáhuac. Espacio y tiempo del Museo Regional Cuahñáhuac, Palacio de Cortés, edited by Lorenza del Río de Icaza and Fernando Hidalgo Domínguez, pp. 98-123. Instituto Nacional de Antropología e Historia & Consejo Nacional para la Cultura y las Artes, Mexico, D.F.


Western Mesoamerican Calendars and Writing Systems

Tributo a Jaime Litvak King, edited by Paul Schmidt Schoenberg, Edith Ortiz Díaz and Joel Santos Ramírez, pp. 155-166. Instituto de Investigaciones Antropológicas, UNAM, Mexico, D.F.

Finegold, Andrew

Foncerrada de Molina, Marta
1980 Mural Painting in Cacaxtla and Teotihuacan

Fournier, Patricia and Victor H. Bolaños
2007 The Epiclassic in the Tula Region Beyond Tula

Garza Tarazona, Silvia
2002 El nombre de Xochicalco antes del siglo XVI:

García Cook, Ángel and Mónica Zamora Rivera
2010 Sobre una laja grabada de Cantona: ubicación temporal y ambiental.

Gelindo Trejo, Jesús, Matthew Wallrath Boller and Alfonso Rangel Ruiz

González Crespo, Norberto, Silvia Garza, Beatriz Palavicini and Claudia Alvarado

González Crespo, Norberto, Silvia Garza, Beatriz Palavicini and Claudia Alvarado

González Crespo, Norberto, Silvia Garza Tarazona, Hortensia de Vega Nova, Pablo Mayer Guala and Giselle Canto Aguilar

Guerrerro Martínez, Fernando
2013 La presencia del felino en la pintura mural de Cacaxtla. La Pintura Mural Prehispánica en México V, Cacaxtla, Tomo III, edited by María Teresa Uriarte Castañeda and Fernanda Salazar Gil, pp. 479-515. Instituto de Investigaciones Estéticas, Universidad Nacional Autónoma de México, Mexico, D.F.

Helmke, Christophe G.B.

Helmke, Christophe and Ismael Arturo Montero García

Helmke, Christophe and Jesper Nielsen

Helmke, Christophe and Ismael Arturo Montero García
2013b La escritura jeroglífica de Cacaxtla. La Pintura Mural Prehispánica en México IV, Centro de México, Tomo II, edited by María Teresa Uriarte and Fernanda Salazar Gil, pp. 383-425. Instituto de Investigaciones Estéticas, Universidad Nacional Autónoma de México, Mexico, D.F.

Helmke, Christophe and Jesper Nielsen
2013a La iconografía de Cacaxtla bajo la influencia maya: Identidad, procedencia y datación. La Pintura Mural Prehispánica en México IV, Centro de México, Tomo II, edited by María Teresa Uriarte and Fernanda Salazar Gil, pp. 363-381. Instituto de Investigaciones Estéticas, Universidad Nacional Autónoma de México, Mexico, D.F.

Helmke, Christophe and Jesper Nielsen

Helmke, Christophe and Jesper Nielsen


Helmke, Christophe, Jesper Nielsen, Cecilia Leni and Amisadai Navarrete Campos


Helmke, Christophe, Jesper Nielsen and Ángel Iván Rivera Guzmán


Hill, Jane H.


Hirth, Kenneth G.


Houston, Stephen D.


Houston, Stephen, John Robertson and David Stuart


Justeson, John S.


Justeson, John S., William M. Norman, Lyle Campbell and Terrence Kaufman

1985 The Foreign Impact on Lowland Maya Language and Script. Middle American Research Institute, Publication 53, Tulane University, New Orleans.

Kaufman, Terrence


2001 The history of the Nawa language group from the earliest times to the sixteenth century: some initial results. Unpublished manuscript.


Kaufman, Terrence and John Justeson


Kepecs, Susan D.


Knorozov, Yuri V. (trans. by Sophie D. Coe)


Krickeberg, Walter


Lacadena, Alfonso


2011 On the origin and nature of Mesoamerican writing systems. Paper presented at the 16th European Maya Conference. Institute of Cross-cultural and Regional Studies, University of Copenhagen, Copenhagen, 10 December.

Lacadena, Alfonso and Sören Wichmann

2002 The Distribution of Lowland Maya Languages in the Classic Period. La organización social entre los mayas: Memoria de la Tercera Mesa Redonda de Palenque, Vol. II, edited by Vera Tiesler, Rafael Cobos and Merle Greene Robertson, pp. 275-319. Instituto Nacional de Antropología e Historia, Mexico, D.F. & Universidad Autónoma de Yucatán, Mérida.

Langley, James C.

2002 Teotihuacan Notation in a Mesoamerican Context: Likeness, Concept and Metaphor. Ideología y política a través de materiales, imágenes y símbolos: memoria de la Primera Mesa Redonda de Teotihuacan, edited by María Elena Ruiz Gallut, pp. 275-301. UNAM & INAH, Mexico D.F.

León-Portilla, Miguel


López de Molina, Diana and Daniel Molina Feal


López Luján, Leonardo, Robert H. Cobean and Alba Guadalupe Mastache F.


Medellín Zenil, Alfonso 1962 El monolito de Maltrata, Veracruz. Delegación Iztapalapa, Mexico D.F.


Niederberger, Christine 1987 *Paléopaysages et archéologie pré-urbaine du Bassin de Mexico*. 2 vols. Centre d’études mexicaines et centraméricaines, Mexico, D.F.


Piña Chan, Román 1973 *Teotenango, segundo informe de exploraciones arqueológicas*. Dirección de Turismo del Gobierno del Estado de México, Mexico D.F.


Rodríguez Martínez, María del Carmen, Ponciano Ortíz Ceballos, Michael D. Coe, Richard A. Diehl, Stephen D. Houston, Karl A. Taube and Alfredo Delgado Calderón
Ruppert, Karl
Sáenz, César A.
Saturno, William A., David Stuart and Boris Beltrán
Schele, Linda and Peter Mathews
1992b The Temple of Quetzalcoatl and the Cult of Sacred War at Teotihuacan. RES: Anthropology and Aesthetics, Nr. 21: 53-87.
Schávelzon, Daniel
1982 El monolito de Maltrata, Veracruz. Las representaciones de arquitectura en la arqueología de América, Volumen I (Mesoamérica), pp. 277-281. Universidad Nacional Autónoma de México, Mexico D.F.
Shook, Edwin M. and Alfred Kidder, II
Smith, Virginia
Smith, Virginia and Kenneth G. Hirth
Stuart, David
Thouvenot, Marc
Urcid, Javier
2013 La Casa de la Tierra, la Casa del Cielo: los murales en el Edificio A de Cacaxtla. La Pintura Mural Prehispánica en México IV, Centro de México, Tomo II, edited by María
Teresa Uriarte and Fernanda Salazar Gil, pp. 609-675. Instituto de Investigaciones Estéticas, Universidad Nacional Autónoma de México, Mexico, D.F.

Valencia Cruz, Daniel and Alicia Bocanegra Islas
2013 El Cerrito: Santuario prehispánico de Querétaro. Talleres Gráficos, Poder Ejecutivo del Estado de Querétaro, Mexico, D.F.

von Humboldt, Alexander

Wolf, Eric (ed.)

Zender, Marc Uwe