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Making the Transient Eternal: On the Stone Effigies of *xiuhmolpilli* among Central Mexican Cultures

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The land was plunged in darkness. Not a single light was visible in the valley below. Instead, the stars above shone brightly in the night sky. The priests waited anxiously for the appearance of a distinctive constellation on the eastern horizon. Then, suddenly, they could glimpse it and avidly set to drilling a fire in the hollowed out cavity of a man who had been slain as part of the ritual preparations. Everything had been planned meticulously, down to the last detail. Even the name of the person who had been ritually dispatched was chosen according to a range of features. Most important of these was its inclusion of the element *xiuh*, here understood in the sense of "year." There was no room for error. The fate of the world hung in the balance. If the priests managed to light the fire by igniting the kindling in the chest cavity, then this new fire would ward off the eternal night that threatened to engulf the world. Failure would mean unleashing the *tzitzimimeh*, stellar entities that would lead the earth back to primordial darkness. And finally, they could see a glimmer, a little ember, then the acrid smell of smoke. The fire took hold and was fed kindling and thereafter the distinctive bundles of reeds, known as *xiuhmolpilli*, "year-bundles." These held 52 reeds, each stalk symbolizing a year that had passed since the last new fire ceremony. With the fire now a small bonfire, priests dressed in the guise of the *xiuhcoatl*, "fire-snakes," personifications of meteors and stellar light, lighted torches, and solemnly bore these proxies of the new fire to the central precinct of the Aztec,[1] in their capital Tenochtitlan (Figure 1). There the brazier of Huehueteotl, the old fire god was re-ignited, and from there this one pure fire was distributed to the other temples and then to the smaller neighborhood shrines of the capital and the new fire was spread far and wide across the realm, down to each individual household. To share in

[1] Much as with everything in Mesoamerica, this term requires some clarification. The term is an ethnonym that is generally used to designate the civilization that flourished in the central Mexican highlands during the Postclassic. It is in this more traditional sense and usage that the term is used here. Nonetheless, what is Aztec in English is now Mexica in Spanish, creating an uneasy co-existence between the terms, especially as these do have different ranges and refer to different peoples. Thus whereas Mexica may better refer to many or most of the Nahuatl-speaking populations of the Valley of Mexico (but not all), Aztec is a term that refers to peoples who saw themselves as originating from the mythic homeland of Aztlan. Both terms are thereby inherently mismatched, and will be subject to revisions in definition and usage in the future.

Figure 1. The New Fire ceremony as celebrated at the summit of the Cerro de la Estrella, overlooking the Valley of Mexico (painting © Felipe Dávalos).

this fire, its light, and its transformative properties, turning cold into warmth, night into light, and produce into food, was to be a member of Aztec society.

Whereas this précis is evidently dramatized and imaginative, it derives from the extant descriptions of the last such rite, conducted in AD 1507, precisely twelve years before the arrival of the Spaniards to central Mexico. These descriptions give a sense of the ceremony that was known as the *xiuhmolpilia* among the Aztec and help to emphasize the importance of this ritual to the societies inhabiting the Valley of Mexico. Given the extensive symbolism and the active participation of all members of society, it is not an exaggeration to say that this was *the* ritual of paramount significance. The last such ceremony was held at the summit of the Cerro de la Estrella, a minor volcanic peak at the southern end of the Valley of Mexico. Much archaeological evidence now suggests that comparable rituals were held at this location centuries before, and the Aztec ceremony was really an appropriation of an earlier, more localized, ritual (Helmke and Montero 2016:55-65; Nielsen and Helmke 2018:95-98). In fact, the temple used for the 1507 ceremony was not only refurbished for that event, and for three prior events, but appears to have been already founded in the Epiclassic (c. AD 750–950) (see Pérez Negrete 2002, 2003). As such, the temple at the summit of the Cerro de la Estrella could have witnessed a dozen or so New Fire ceremonies over the course of six centuries (Helmke and Montero García 2016:63). This makes the New Fire ceremony an ancient custom of the cultures of the Valley of Mexico, which has deep roots, and which as we will see can be traced back to the rituals of Teotihuacan in the Classic period (c. AD 200–550).

In the scholarly literature it is known as the New Fire ceremony, but the Aztec referred to this ritual as the *xihuitl molpia* or *xiuhmolpilia*, "the binding of the years" (see Molina 1571:159v; Sahagún 1953:25), and at other times as the *toxiuhmolpilia*, "our years are bound" (Sahagún 1961:25). In the Florentine Codex, Fray Bernardino de Sahagún and his informants describe the ritual as taking place when "thirteen-year [cycles] had four times made a circle" as well as "when one by one the four year signs had each reigned thirteen years and when fifty-two years had passed" (Sahagún 1961:25), each emphasizing different aspects of the calendrical computations.

And then there were the bundles themselves, which were set alight in the bonfire lit at the summit of the Cerro de la Estrella. With the passing of each year fire priests bound the long slender culm of a reed with rope. It is this action that was known as the *xiuhmolpilia*, "the binding of the years" since each reed symbolized a year elapsed, and when this bundle comprised 52 reeds, the calendar had run

its course and was therefore nearing once again its point of inception. With the incineration of these bundles, a previous cycle vanished into nothing—wiping the slate clean as it were—and enabling the initiation of a new count. Despite the symbolic importance of these bundles, which were maintained for the better part of a person's life, these were designed from the onset to perish in the fire, creating an uneasy and paradoxical contrast between the ephemeral nature of counted time and its sudden disappearance, in contrast to the fluidity of time yet uncounted. It therefore may come as a surprise that the Aztec are known to have created stone skeuomorphs of these bundles of reeds, making durable that which from its very nature was designed to be ephemeral. These stone simulacra thereby preserve in material and tangible form, in perpetuity, that which was but temporal and transient.

In this paper we present the stone effigies of such *xiuhmolpilli*, starting with the well-known examples from Aztec culture in the Postclassic, before examining the earliest known example, recovered archaeologically at the site of Teotihuacan. Together these demonstrate the longevity of this tradition, spanning more than a millennium from the Classic to the Postclassic. The salient gap in the record between the earliest and the latest examples is startling, but we are now able to introduce a highly important sculpture that in essence is the missing link in this sculptural tradition—an Epiclassic *xiuhmolpilli*. To better contextualize this key sculpture, we introduce and describe all the analogous specimens first, before describing its context, iconography, and glyphic notation. We then go on to discuss the implications of this finding and the light that it sheds on the New Fire ceremony, calling into question some of the more established assumptions about this rite.

Frozen in Stone: The Aztec *xiuhmolpilli*

Remarkable examples of stone skeuomorphs are known, bearing boldly the date of the New Fire ceremony when they were burned and reduced to ashes. To date, at least eight complete skeuomorphs of *xiuhmolpilli* are known for the Aztec, showing that this type of sculpture was of extreme importance to their ritual conceptions. Whereas some of these are rendered rather naturalistically as bundles of reeds and are not further embellished, others are much more elaborate affairs. The more simple and undecorated examples of *xiuhmolpilli* include the smaller of the two (Figure 2a), found cached within the altar decorated by skulls and crossed long bones, discovered by Leopoldo Batres in 1900 at the excavations of the Calle de las Escalerillas (now the Calle Guatemala) in Mexico City (Batres 1902). The *xiuhmolpilli* that is on display at the Museo Xolotl in Tenayuca is likewise rendered rather simplistically as a bundle, although the middle section exhibits two small cylindrical holes, of unknown function (Figure 2b). Another *xiuhmolpilli*, on display in the National Museum of Anthropology in Mexico City, is only adorned with a stylized flower at its center (Figure 2c).

Among those *xiuhmolpilli* that bear glyphic inscriptions, these are generally confined to recording a date. The larger of the two *xiuhmolpilli* from the altar of Calle de las Escalerillas is decorated with a single large date at its center, which can clearly be read as *se mikis* or "One Death" (Figure 2d). Interestingly, a *xiuhmolpilli* from a private collection in Michoacan is also distinguished by precisely the same date (Punzo Díaz in prep.). Together, the two *xiuhmolpilli* may suggest that a New Fire ceremony was performed on that date. This is further supported by the beautifully carved *xiuhmolpilli* which not only bears the date "One Death" on one circular extremity, but also the date *se tekpatl* "One Flint" on the other circular end (Figure 2e). Furthermore, the middle of this *xiuhmolpilli* also bears the date *ome akatl* or "Two Reed," neatly enclosed within a square frame, indicating that this is a year-bearer date, naming the particular year when this New Fire ceremony was celebrated. From this, we suspect that the "One Death" and "One Flint" dates may specify when the New Fire ceremony was held, but unfortunately this does not provide us with a real historical date as it is impossible to have a day with the coefficient of 1 in a *trecena* with a different name (all *trecenas*—or periods of thirteen days—are named after the first day of the trecena). Given these parameters, and based on stylistic features, it has been suggested that this *xiuhmolpilli* may been sculpted to commemorate the last New Fire ceremony of 1507 (McEwan and López Luján 2009:173; Pasztory 1983:165). The same framing of paired dates "One Death" and "One Flint" is also seen flanking the sculpted throne known as the *Teocalli de la Guerra Sagrada* or "Teocalli of Sacred Warfare" (see Caso 1927; Pasztory 1983:165-168). On that sculpture, the interpretation of these calendrical notations is that they supply the calendrical names of supernatural entities that are represented in the upper portion of the throne, with the date "One Death" corresponding to the deity Tezcatlipoca and the date "One Flint" to Huitzilopochtli (as this was the day upon which the Aztec began their migration) (Umberger 2022). Other ethnohistoric sources provide the same calendrical names for these deities, and as such, these may work on a purely onomastic level, but it is intriguing that we find the same pairing on the aforementioned *xiuhmolpilli*. Perhaps these dates could be read and understood on multiple levels, both specifying the particular day and trecena within a given year, as well as naming some of the salient tutelary deities that were thought to preside over this ritual. This is an intriguing possibility and would certainly go a long way to explaining the patterning of glyphs rendered on the *xiuhmolpilli*.

Figure 2. Aztec *xiuhmolpilli*: (a) plain specimen (smaller *xiuhmolpilli* from the altar of the Calle de las Escalerillas); (b) specimen at the Museo Xolotl; (c) example with a flower; (d) inscribed with the date "1 Death" (larger *xiuhmolpilli* from the altar of the Calle de las Escalerillas); (e) attributed to the reign of Moteuczoma Xocoyotl; (f) with the glyph for *Panquetzaliztli*; (g) in the collections of the Fundación Televisa (photographs by Christophe Helmke and A. Iván Rivera Guzmán, with the exception of *e* after Solís Olguín 2002:241 and *g* after McEwan and López Luján 2009:172).

Another inscribed *xiuhmolpilli* bears the date "2 Reed" within its square frame, and to its side is a glyph representing a banner (Figure 2f). This compound of signs may serve to render the name of the *veintena*, or month, during which the New Fire ceremony was held, with the banner serving to cue the name of the month *Panquetzaliztli* or "the raising of the banners." This was the fifteenth month of the solar year and this interpretation is in keeping with earlier analyses of this sculpture (Caso 1967:134).

Finally, we also have an example of a *xiuhmolpilli* that was rendered as a rectangular block, rather than a circular bundle. This *xiuhmolpilli* is now in the collections of the Fundación Televisa, and it is said that it survived the Spanish conquest by being hollowed out and recycled as a baptismal font (McEwan and López Luján 2009:172) (Figure 2g). The third author has had the opportunity to carefully study and photograph this monument and finds that it may not have been hollowed out during the early Colonial period, but may instead have been used as a box to contain ritual paraphernalia, which better explains its original block form. Aside from its form, this *xiuhmolpilli* is also distinguished by two glyphic notations, one bearing the calendrical date "2 Reed," naming the year when the New Fire ceremony took place, and the other the date *nawi olin* or "4 Movement." This latter date provides the name of the current, fifth sun, and is thereby an era date, showing how the New Fire ceremony was conceived of as an important event within a greater temporal dimension. These dates thereby commemorate the New Fire ritual for which this *xiuhmolpilli* was fashioned, but presented in such a manner that it could have been used for any New Fire ceremony, as long as it took place in years named "2 Reed." The final detail of this *xiuhmolpilli* is that the individual reeds are not just rendered as such, but are in fact tipped with feathers at one end, indicating that these are presented as arrows or as darts with fletching. This is an interesting feature and probably goes back to the manner in which the day sign "Reed" is represented, since it sometimes just represents a plain reed, but more often it is juxtaposed with a dart butt, presumably because these were made out of precisely this straight and lightweight material. There may also be a linguistic motivation for the overlap, with the words for "dart" and "reed" being synonymous (see Molina 1571:Fol. 1v).

Antecedents: Teotihuacan

Whereas these many examples show that the practice of fashioning skeuomorphs of reed bundles was a well-established one among the Aztec, there is in fact evidence that this can be traced back to the Classic, based on sculptures discovered at Teotihuacan. This type of continuity has become increasingly clear, especially in the past few decades. As such we find that Late Postclassic Aztec culture, including central religious beliefs and ritual practices alongside systems of visual communication (iconography and writing), had its roots not only in the Postclassic and Epiclassic cultures of the central Mexican highlands, but that several of these traits can ultimately be traced back to the Classic period, and to Teotihuacan in particular (e.g., Carrasco et al. 2000). Not only was there a great deal of cultural continuity, but there is also evidence that the Aztec themselves actively sought to reinforce their affiliation with the ruined city through annual pilgrimages, informal excavations, and the removal of artifacts back to Tenochtitlan, where some were even cached in the Templo Mayor (López Luján 1989; López Luján and de Anda Rogel 2019). Furthermore, the Aztec were actively copying Teotihuacan sculpture and architecture, developing a remarkable neo-Teotihuacano, or quite literally, Neoclassical style (Olmedo 2002).

The Sun Pyramid at Teotihuacan played a central role in Aztec origin myths narrating the birth of the sun and hence the beginning of structured calendrical time. As we have suggested elsewhere, the name Teotihuacan itself is also probably best translated as "Where the sun came into being" (Nielsen and Helmke 2018:83-87), clearly evoking this myth and tying it to this particular place. Excavations also suggest that at least part of the rituals carried out at the Sun Pyramid were associated with pyrolytic rites and New Fire ceremonies, implying that the much later Aztec myth evolved from local Teotihuacan ritual practices, collective remembrances, and a local understanding of the pyramid. This is made clear by the reliefs found by Leopoldo Batres at the Adosada platform, at the base of the Sun Pyramid, which refer to New Fire and *xiuhmolpilli* bundles (Batres 1906; Fash et al. 2009:206-207; von Winning 1979). Based in part on this evidence, William Fash, Alexandre Tokovinine, and Barbara Fash have suggested that in Classic Mesoamerica, the Adosada platform (and perhaps in extension thereof the entire Sun Pyramid) was known as the House of New Fire (Fash et al. 2009; see also Nielsen and Helmke 2018:80-83). For example, when Early Classic Maya scribes referred to the structure, they did so by a logogram made up of two crossed bundles (Fash et al. 2009:210-220). Whether these are meant to represent bound bundles of reeds, sticks, or darts is unclear (Bíró 2020; Nielsen 2006), but what is of particular interest here is that these specifically resemble a cylindrical stone sculpture found at the Sun Pyramid (see Berrin and Pasztory 1993:173, Cat. no. 8) (Figure 3a).

The sculpture, strangely omitted in the work by Fash and his colleagues, is intimately comparable to the Late Postclassic Aztec skeuomorphs of *xiuhmolpilli* bundles, and with the characteristic stylized flames at either end, it evokes the images of fire priests holding lit *xiuhmolpilli* bundles (see Nielsen 2006; Jansen and Pérez

a

b

Figure 3. (a) The stone skeuomorph of a *xiuhmolpilli* found around the Pyramid of the Sun at Teotihuacan (photograph © Instituto Nacional de Antropología e Historia, after Robb 2017:292, Cat. 90). (b) A group of dignitaries gather around the *xiuhmolpilli* of Teotihuacan, in 1910 at the inauguration of the first site museum (photograph © Colección Archivo Casasola – Fototeca Nacional del INAH, catalog number 35870).

Jiménez 2017:397-416; Nielsen and Helmke 2018:79, Fig. 4.2.). Made of volcanic stone, it measures 45 x 13.4 cm and has been dated according to its style to the Classic period (Berrin and Pasztory 1993:173) and more recently to AD 150–650 (León Velasco 2010:326) and AD 200–550 (Robb 2017:292), indicating that it cannot be unequivocally associated with any of Teotihuacan's chronological phases. Given our understanding of the sculpture's stylistic traits we would suggest that it dates to AD 300–550. Currently housed in the Museo Nacional de Antropología e Historia (MNA 9-6361; INAH 10-393505), the exact find spot of the sculpture is uncertain, but it was reportedly encountered "near the Pyramid of the Sun" sometime in the early twentieth century (Díaz Oyazarbal 1993:173). A photograph from the inauguration of Teotihuacan's first site museum in 1910 shows the object on display, surrounded by dignitaries such as Porfirio Díaz, Justo Sierra, and Leopoldo Batres (Figure 3b). The exhibition was dominated by sculptures and reliefs derived from the excavations by Batres of the Sun Pyramid, including those of the Adosada platform and a structure located on the platform surrounding the pyramid, known as the House of the Priests. Thus, in all likelihood, the stone skeuomorph of the *xiuhmolpilli* was found by Batres in excavations at one of these locations. What is perhaps most essential to our discussion here, is that together with the New Fire reliefs, the stone bundle provides ample evidence of New Fire rituals in central Mexico in the Classic period (Nielsen and Helmke 2018; von Winning 1979).[2]

Unlike the later Aztec skeuomorphs, the Teotihuacan stone bundle did not bear a calendrical date, but there is evidence suggesting that already at this early point, the same type of ritual calendar as that employed by later Epiclassic and Early and Late Postclassic cultures was already in use (Caso 1962, 1967; Helmke and Nielsen 2011:3-20, 2021:44-46; Nielsen and Helmke 2021). At Epiclassic Cacaxtla and Xochicalco year-signs were marked in various ways, the "Reed" sign frequently appearing with braziers and flames, strongly suggesting that New Fire rituals were celebrated in those specific

[2] Delving even further back in time, the practice of bundling reeds and sticks together, either with a very pragmatic or a more ritual motivation, can be traced back to the Archaic period. This is made clear by the remarkable discovery of small bundles of sticks which have been miraculously preserved in the dry caves of the Tehuacan Valley of Puebla (MacNeish 1967:155–165). During excavations at these caves, during the 1960s, under the direction of Richard MacNeish, much material evidence was found for early domestication and incipient sedentary life in Archaic Mesoamerica. Of particular relevance is the manner in which these sticks were bound together "by two-ply Z-twist cord twined in an over-two, under-one pattern" (MacNeish 1967:155). The use of cords and textiles to bind such bundles together is something that is also preserved in the stone skeuomorphs, as we will see in the specimen to follow.

years (Helmke and Nielsen 2011:12-20; see also Helmke and Montero 2016). Hitherto, the strongest single piece of evidence for Epiclassic New Fire rituals is the inscribed boulder found in the vicinity of Xochicalco (Sáenz 1967; Smith and Hirth 2000:44-45) (Figure 4). The carving on the surface of the boulder shows a fire drill, with flames emerging from the stick and board that are used to produce fire. The resemblance between this depiction and fire drills in Aztec iconography is remarkable. What had been missing in terms of documenting the New Fire celebrations in the Epiclassic period—and thus establishing a clear link between the stone bundle from Teotihuacan and the Mexica stone *xiuhmolpilli*—is another stone effigy of a *xiuhmolpilli* from the Epiclassic. This is precisely what we introduce below.

The Missing Link: An Epiclassic *xiuhmolpilli*

Background and Context

In September of 2022, the authors of this paper paid a visit to the Catholic church of San Lucas Evangelista,[3] in the delegación de Iztapalapa in the southern part of Mexico City. The purpose of this trip was to formally document an important Epiclassic monument and to register this monument with the Registro de Monumentos Históricos, a division of the Instituto Nacional de Antropología e Historia.

The earliest records of the church and religious precinct at this location date to 1664, based on extant baptismal records. Other more partial records, however, indicate that a chapel at this location was already performing baptisms in the sixteenth century, which accords well with the foundation dates of other nearby churches, such as those dedicated in 1525 (Iglesia de la Inmaculada Concepción, Coyoacan), 1555 (Convento de San Marcos Apóstol de Mexicaltzingo), 1560 (Convento de San Juan Bautista, Coyoacan), 1607 (Convento de San

a

b

Figure 4. Two views of the inscribed boulder from the outskirts of Xochicalco that commemorates an Epiclassic New Fire ceremony: (a) the boulder as displayed today (photograph by Christophe Helmke); (b) as found in situ with carving emphasized by chalk lines (after Sáenz 1967: Foto 2).

[3] Formally the church was named San Lucas Evangelista del Castillo del Pueblo de Atlalilco de Iztapalapa. The first author visited the church in 2019 to initiate the documentation process, and it was agreed to return at a later date to do just that. This was, however, thwarted by the global Covid-19 pandemic and we thus had to postpone our work by two years.

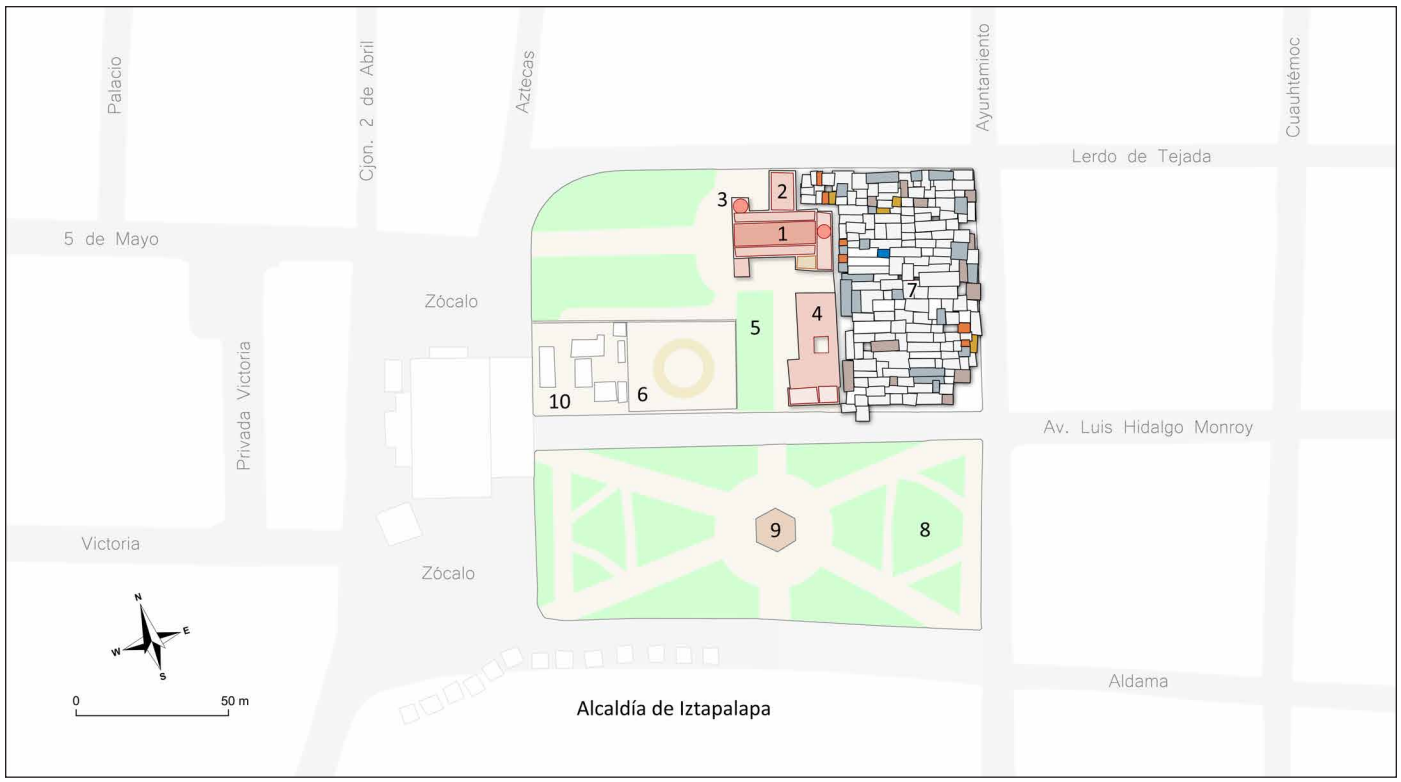

Figure 5. Map of the parroquía de San Lucas Evangelista of Iztapalapa and its immediate environs: (1) the church of San Lucas Evangelista, known locally as *el templo*; (2) the chapel of Our Lady of Guadalupe; (3) the belfry; (4) the curial house; (5) the sculpture garden; (6) the old corrida, which now serves as a round pen for horse training; (7) the old market or *tianguis*; (8) the Jardín Cuitláhuac; (9) the central gazebo (*quiosco*) within the gardens; (10) possible location of the Precolumbian ballcourt (map by Christophe Helmke, based on satellite imagery © INEGI).

Juan Evangelista de Culhuacan), and 1608 (Convento de Santa Martha Acatitla, Iztapalapa).

The greater religious precinct of San Lucas Evangelista covers a rectangular space measuring c. 152 m (east-west) by 88 m (north-south) (Figure 5). One can surmise that this is a partial subdivision of a once larger precinct, originally square in shape, which measured c. 154 m on a side, and which once included the Jardín del Cuitlahuac that adjoins the church precinct to the south, facing onto the alcaldía and local government buildings. The religious precinct is known locally as the parish of San Lucas Evangelista, and includes the old market (or *tianguis*) of Iztapalapa and the church itself (known as a *templo*) which is dedicated to Saint Luke the Evangelist—traditionally viewed as one of four ascribed authors of the canonical gospels (including the Gospel of Luke and the Acts of the Apostles). As we will see, there is a series of monuments in this precinct, all of which ably speak of the importance of this area in Precolumbian times. We would even go so far as to venture that the plot and dimensions of the precinct coincide with and cover the remains of a Precolumbian sacred precinct, comparable to that known for the Aztec capital Tenochtitlan. Given that Culhuacan had its own sacred precinct (once located in proximity to the ex-convent of San Juan Evangelista), the present evidence suggests the existence of another comparably-sized precinct at Iztapalapa, and may also indicate that this was the ritual precinct of another distinct city-state, one presumably integrated into the hegemony of the Triple Alliance in the Late Postclassic.

The church is built in Baroque architecture, typical of central Mexican New Spain, with an imposing façade that is embellished in a sober neoclassical style with paired Corinthian-inspired columns, set in two superimposed registers (see Kubler 1948) (Figure 6a). The ground plan is approximately 38 m long by 17 m wide, and is dominated by a large nave (Figure 6b). The width includes two colonnaded aisles running in parallel to the nave, with even barrel vaults, supported by six large, square piers.[4] All visible building work is constructed of dark volcanic stone, exhibiting vesicular

[4] The clergy of the parish relate that the eight different patron saints along the sides of the aisles are patrons of the eight barrios of neighborhoods that together comprise the parish of San Lucas Evangelista, which is considered the mother church of Iztapalapa.

textures from the air bubbles trapped within the igneous matrix. The extant doors of the church were carved in highly detailed Novohispanic woodworking and floral motifs and date to the Colonial period. Examination of the ground plan of the church suggests that it was originally constructed as an elongated nave, following a basilical plan. Thereafter additions and alterations were made, including the addition of an imposing northern transept nave (measuring 10 m wide by 15 m long), used as a separate chapter dedicated to Our Lady of Guadalupe. Subsequently, the ground plan was altered again, to incorporate the sacristy (vestry) directly to the apse, to the south and south-east of the altar. At some point in the mid-1800s, a belfry (measuring 7 x 7 m) was added to the northwestern corner of the church, thereby expanding the ground plan of the church. In 1875 the interior walls of the church were decorated with frescoes by Anacleto Escutia, of which only parts now survive in isolated sections.

At some point in the 1910s Guillermo Kahlo (the father of Frida Kahlo) visited the church and took photographs of it, which are preserved to this day (Figure 6c). These photographs were taken as part of a larger documentation effort by the government of Mexico to undertake the first catalog of historical monuments. Important modifications to the architecture of the church were made in 1928, 1951, and 1978, with the thick outer walls remaining from the original construction.

Following the significant earthquake of 1957 (7.9 magnitude), the church fell partly into disuse and was not used as a place of worship for another decade. In 1977, the altar was fully restored and

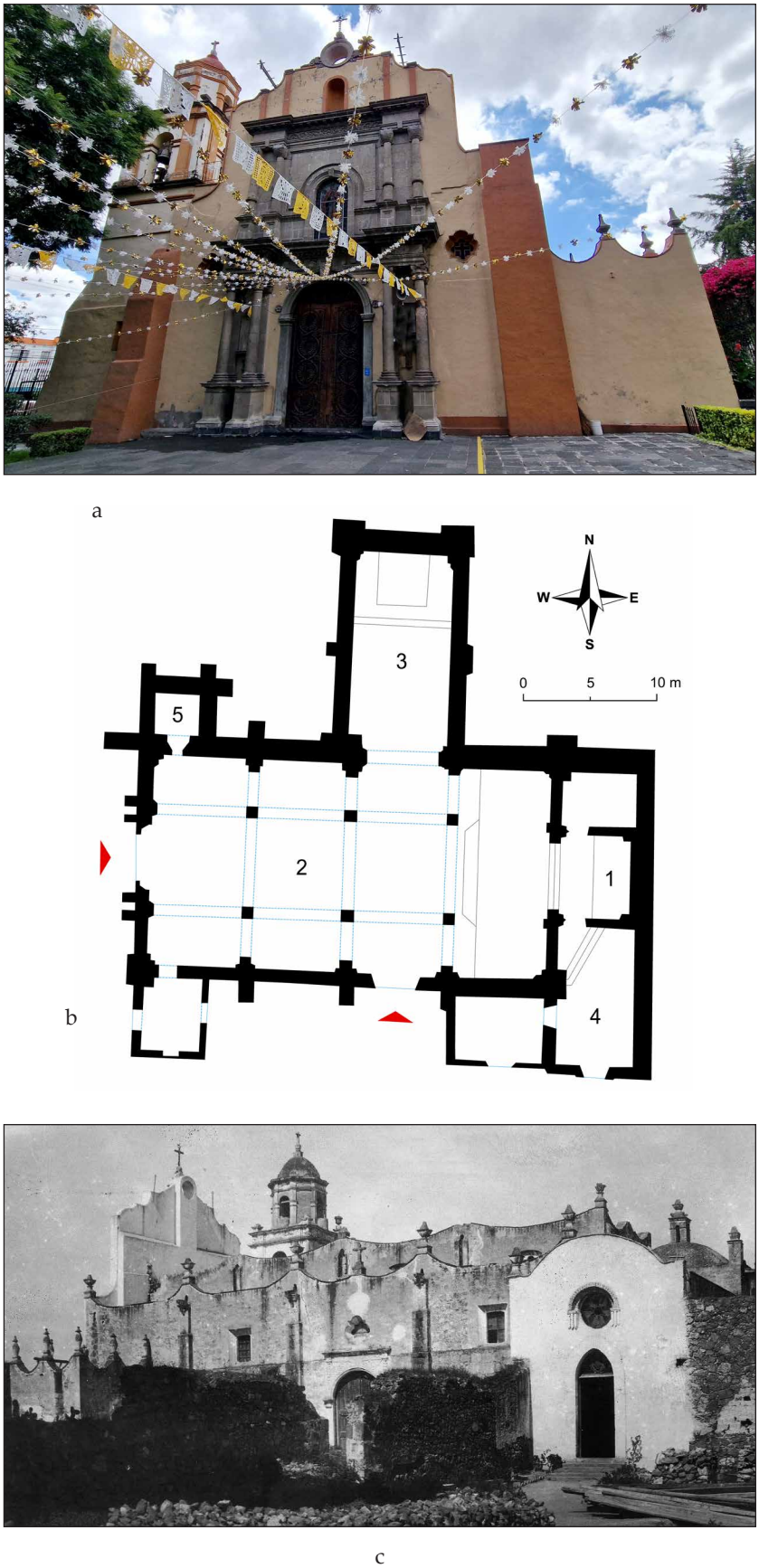

Figure 6. The church of San Lucas Evangelista: (a) the façade (photograph by Christophe Helmke); (b) plan of the church (by Christophe Helmke, based on survey by INAH; legend: [1] altar, [2] nave, [3] chapel dedicated to Our Lady of Guadalupe, [4] sacristy (vestry), [5] belfry—note also the main western entrance and the lateral southern entrance); (c) the southern façade of the church (photograph by Guillermo Kahlo © Fototeca Nacional del INAH, catalog number 611734).

a

b

c

reconsecrated and in the 1980s the old curial house attached to the south of the church was fully demolished, owing to the extensive fragmentation and collapse brought about by the earthquake of 1985 (8.0 magnitude). Following this, in the late 1980s a new curial house was built and most of the Precolumbian monuments and spolia that were uncovered or displaced during the demolition were either reintegrated into the walls of the curia, within the belfry of the church, or placed outside, to form what could be called a sculpture garden.

The displaced Precolumbian monuments include two ballcourt rings, of relatively large diameter with a narrow central perforation. Both discs are carved and one represents the silhouette of a hunched and kneeling figure that has been incised onto the large planar surface, undoubtedly representing a captive (Figure 7a). The other disc is embellished on the narrow side with the head of what may be a reptilian entity with prominent fangs and a lolling tongue (Figure 7b). These have been remounted in the walls of the atrium of the new curial house in 1999, as part of the work of archaeologist Carlos Salas Contreras. The two rings indicate the presence of a Precolumbian ballcourt in the immediate vicinity. The western end of the lane that separates the church grounds from the gardens seems just the right place. Nearby sites with other ballcourt rings include Coyoacan, Xochimilco, Tlahuac, and Culhuacan (see Barrois 2006; Taladoire 2019). In addition to these, a Late Postclassic chacmool is displayed in the sculpture garden (Figure 7c) that is stylistically analogous to those known for the fifteenth and sixteenth centuries (López Austin and López Luján 2001). Together these monuments suggest that the parroquía of San Lucas Evangelista was established squarely onto an earlier Precolumbian ritual precinct.

In addition to these Late Postclassic monuments, there is an additional Epiclassic monument (Folch González et al. 2015; Turner 2016:202-204, Fig. 4.70). This is the monument that most interests us here, which is a stone effigy of a *xiuhmolpilli* that was reset as a spolia in the winding stair of the belfry. The monument is made of black basalt, possibly from the bedrock at the Cerro de la Estrella, or perhaps from basalt from the bed of Xochimilco. As mounted, the bundle has been recycled to form a column, which is completed by a Romanesque capital that has been mounted at the top (Figure 8a). At first sight this placement may appear to be a resetting that dates to the seventeenth century, but knowing that the belfry was first constructed in the nineteenth, this is evidently a later addition. Furthermore, discussions with the custodians suggest that this placement took place in the 1980s, following the dismantlement of the curial house and the extensive restoration of the church undertaken at that time. Together, this evidence would suggest that

Figure 7. Postclassic monuments found at San Lucas Evangelista: (a) ballcourt ring with incised kneeling captive; (b) ballcourt ring with carved serpentine entity; (c) chacmool in the sculpture garden (photographs by Christophe Helmke).

the *xiuhmolpilli* was either originally mounted in the architecture of the curial house but was displaced following the dismantlement of the original building, or that the monument was a chance find made during the dismantlement, and perhaps was even found amidst the original foundations. At present, we have not been able to ascertain which of the two scenarios is correct.

The Epiclassic Monument

The monument is cylindrical in form and has a total length of 202 cm and a diameter of 33 cm. The carving covers 156 cm of the total length, leaving a 46 cm plain band at its base, which we interpret as its plain butt. As we will see, the iconography and the composition of the monument suggest that it was originally designed to be displayed in an erect manner, with the lowermost uncarved portion of the base mounted into an architectural surface. The exterior of the monument is finely carved, and in addition to securing measurements and basic photographs, the registration also entailed a complete photogrammetric documentation. The resulting model (Figure 8) provides a detailed documentation of the monument and its sculptured surface. Unfortunately, due to the manner in which it was mounted into the stairwell, we were not able to determine if the superior part of the monument was also carved. Furthermore, at least one quarter and as much as one third of the circumference of the sculpture is concealed, since it was mounted up against the southern wall of the belfry. In terms of surface area, only about 62% remains visible, as the remainder is mortared into nineteenth-century architecture.

A complete rollout of the sculptural program was produced using a geometric cylindrical unwrapping filter in Meshlab, which also served as the template upon which we produced our line drawing of the sculpture (Figure 9). These reveal that the monument once depicted as many as 16 parallel staves, although now only parts of 11 are still visible. These were not just depicted as the elongated and smooth culms of

Figure 8. Snapshot of the 3D model produced with Agisoft Metashape, with radiance scaling render and orthographic camera settings (photography and modelling by Christophe Helmke).

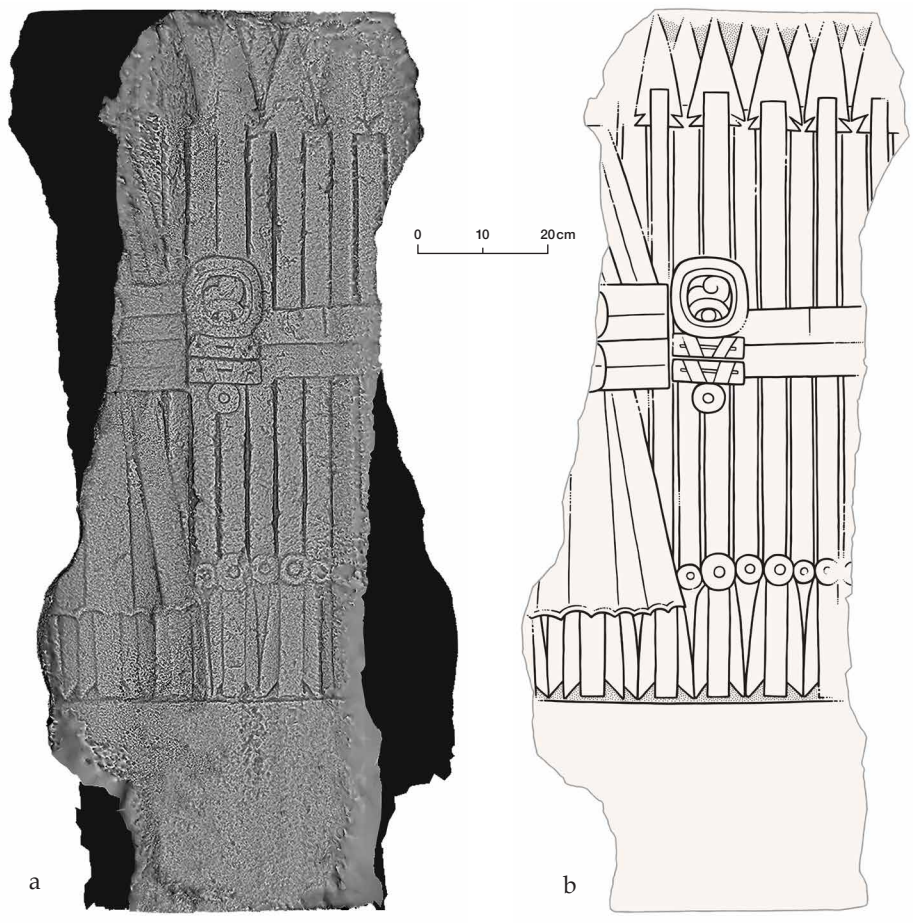

Figure 9. (a) A roll-out of the shell of the 3D model of the Epiclassic monument (using a geometric cylindrical unwrapping filter); (b) drawing of the Epiclassic sculpture (model by Christophe Helmke; drawing by Nicolas Latsanopoulos and Christophe Helmke).

reeds as in the other skeuomorphs known to date, but are instead rendered as upright projectiles, the hafted dart heads clearly visible at what would have been the top of the *xiuhmolpilli*. At present five of these dart heads are still visible on the exterior of the bundle. To give a sense of a multitude of overlapping darts, parts of the hafted dart heads are also perceptible in the gaps between those rendered in the foreground. These are not just short spears or darts, such as those that were typical of Classic period Teotihuacan, but are evidently fletched as arrows. This shows the evolution of armaments during the Epiclassic, with the appearance of fletched darts and arrows in Mesoamerica at the start of the period. Just above the fletching are circular elements, one for each arrow, and as many as six of these are still perceptible. The circular items may function as beads or *chalchihuites*, and thereby serve to impart the darts with aquatic connotations. Tightly binding these arrows together into a bundle is a pair of what appear to be cloth ribbons, tied together at the middle of the bundle. On one side, the two parallel strips of cloth are perceptible and on the other there are four, where the cloth was doubled over in two large and superimposed knots, which are now only partly perceptible. Below these two knots, the four strips of cloth partly drape sideways down the bundle, as if wafting in the breeze.

Just to the side of the knots is a large glyphic notation, involving a date, wherein the day sign is the logogram known as the "Reptile Eye" (see Caso 1961; von Winning 1987:73-78). Based on the context and incidence of that sign in central Mexican writing, we have elsewhere argued that this sign must function as the calendrical sign "reed" in the ritual 260-day calendar (Helmke and Nielsen 2011:9-20, 2021:39-40, 45-46). That this is a calendrical notation is made clear by the cartouche that encloses the logogram and the numerical coefficient of two bars and a dot for "11" that is placed directly below. This follows the precedent and practices of central Mexican writing from at least Teotihuacan onwards, where day signs were written within cartouches and the numerical coefficients were systematically placed beneath (Helmke and Nielsen 2011:9-20, 2021:44, 54; Prem 1973). That this is a named year is therefore beyond doubt and presages the examples produced among the Aztec. Together we read this as the date "11 Reed" which names the year when a New Fire ceremony was held and when the original bundle, upon which this sculpture is modeled, was ritually incinerated. The style of the glyph on the bundle and the manner in which the numeral is written are both squarely Epiclassic, which makes the stylistic dating of this monument rather secure, although it remains unclear where it may date within the range of the eighth to the tenth centuries. Thus, this is the earliest sculpture in central Mexico to function both as a skeuomorph of a *xiuhmolpilli* and to bear the date of the New Fire at which it was reduced to ashes.

Bundling it all Together

A Look at Cacaxtla

As we have seen, one of the remarkable features of the Iztapalapa *xiuhmolpilli* is that it is so clearly comprised of bundled arrows or darts, and not plain reeds or staves as we have seen in the Classic specimen from Teotihuacan or in the Late

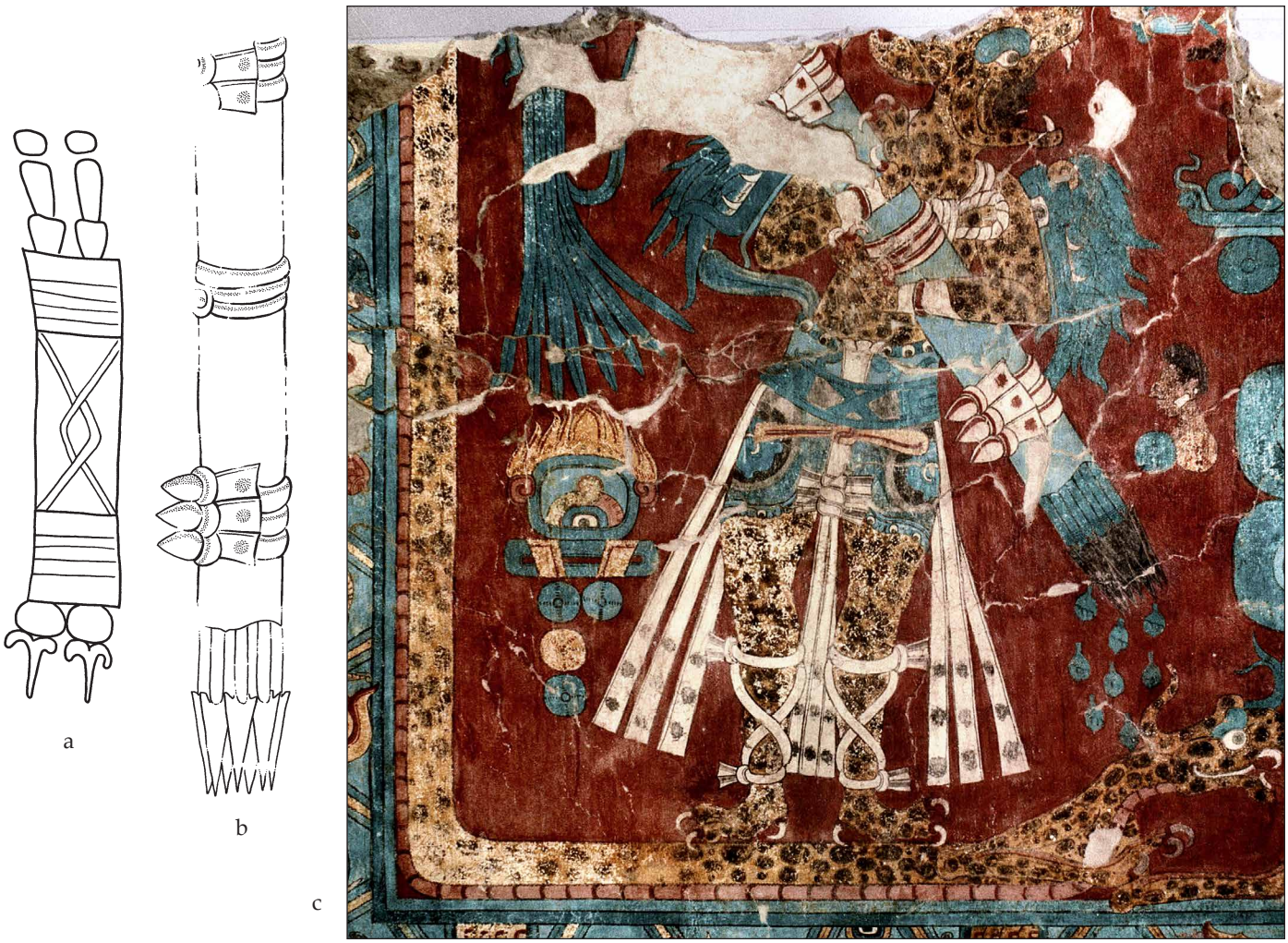

Figure 10. Bundles of darts in central Mexican imagery: (a) detail of an incised Teotihuacan tripod (drawing by Christophe Helmke, after Séjourné 1966:Fig. 94); (b) detail of the northern mural of Cacaxtla, Structure A, see *c* (drawing by Christophe Helmke); (c) the northern mural of Structure A at Cacaxtla, showing a figure bracing a bundle of darts as part of a New Fire ceremony (photograph by Merle Greene Robertson).

Postclassic examples from Tenochtitlan. As such, it immediately brings to mind another well-known Epiclassic example of a set of bundled arrows. This example is represented in the murals of Cacaxtla, in Tlaxcala (Figure 10). There, the jaguar-skin-clad individual in the mural rendered on the north portico of Structure A holds a large wrapped bundle of darts (Brittenham 2015:189-191; Foncerrada de Molina 1993:54, Pl. 7). The bundle is carried diagonally across the person's chest, thus mirroring the individual on the opposing south portico who clasps a large bicephalic ceremonial bar (Helmke and Nielsen 2014:19-21). From the points of the darts, which are pointed downwards, large drops of blue-colored liquid, presumably water, spill towards the ground (hence playing on one of the recurring themes in the iconography of Cacaxtla, namely the analogy between blood and water as primordial life-bearing fluids). At Cacaxtla, the bundle is wrapped in what appears to be a large piece of cloth or paper and is held together by three rows of knotted cloth strips. These are the same types of knots as those seen on the side of the *xiuhmolpilli* at Iztapalapa. In fact, the manner in which the bundle of darts is cradled in the mural at Cacaxtla and the manner in which the Iztapalapa *xiuhmolpilli* was displayed are highly comparable, suggesting that we are looking at comparable conceptions and ritual paraphernalia. Likewise, there may be more symbolic connections, with the large drops of water at Cacaxtla perhaps being somehow connected to the *chalchihuites* that are rendered on the darts of the *xiuhmolpilli* at Iztapalapa.

While most researchers might only describe the Cacaxtla bundle as a set of darts, in 1986 Carolyn Baus de Czitrom already insightfully interpreted it as a *xiuhmolpilli* bundle, used in the celebration in the year

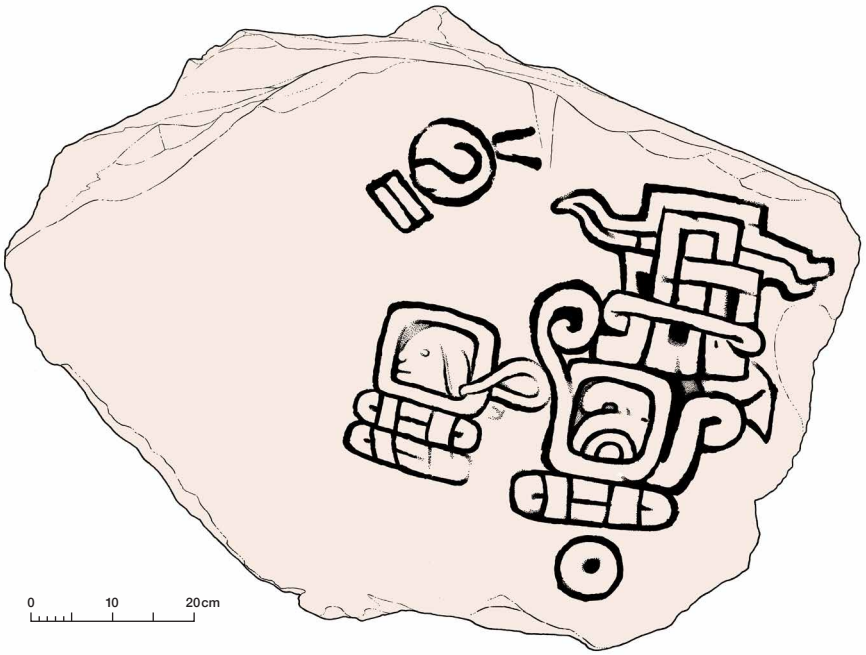

Figure 11. Petroglyphic Panel 11 at the Cerro de la Estrella showing Epiclassic calendrical records commemorating a series of New Fire ceremonies (drawing by Christophe Helmke).

"9 Reptile Eye" (Baus de Czitrom 1986:514-515)—corresponding to "9 Reed" as we have touched upon above. Thus, whereas this was a plausible postulate, with the discovery of the *xiuhmolpilli* at Iztapalapa, this can now be confirmed as a viable reading of the imagery. Based on this evidence we can see that during the Epiclassic there is a conceptual overlap between the reeds that were bound together into the bundles burned at the New Fire ceremony and the darts that were used in war. In part, this may be motivated by the materials that were used to produce the shaft of the darts, which should be lightweight to serve as projectiles propelled over large distances. This is certainly also implied by the appearance of fletching on these darts, in stark contrast to the short spears and atlatl darts that were used during the foregoing Classic period. This conceptual overlap between "reed" and "arrow" is not only present in imagery and depictions of these ritual objects, but it is precisely also during this period that the so-called Reptile Eye sign for "reed" begins to be phased out and enter into obsolescence and a new sign begins to be introduced. Not at all coincidentally, the new "reed" sign that appears in the latter part of the Epiclassic represents none other than a dart butt, replete with fletching (Helmke and Nielsen 2022, 2023:Fig. 3.8). It is from this sign that the sign for *acatl* "reed" derives in Aztec writing.

The Dates of New Fire Ceremonies

The evidence afforded by the petroglyphs of the Cerro de la Estrella and the *xiuhmolpilli* of Iztapalapa together provide conclusive evidence that the Reptile Eye sign is indeed "reed" and that it was on days that were named as such that the New Fire ceremony was conducted. As such, this is one of the main points of continuity from the Classic—via the Epiclassic—to the Postclassic and in fact all the way until 1507. The petroglyphs in question embellish a large basaltic boulder at the southwestern flanks of the Cerro de la Estrella. This and another boulder frame the mouth of a small cave, suggesting that caves played an integral role in New Fire ceremonies (Helmke and Montero García 2016; Montero et al. in press). The petroglyphic panel records a series of Epiclassic glyphs, including the date "6 Reed" (written with a Reptile Eye glyph), which is tellingly surmounted by a year-sign headdress and smoke scrolls, with evident connotations to the New Fire ritual (Helmke and Nielsen 2011:17, Fig. 11) (Figure 11). At a later time, another date was added to the boulder, this time written in a simpler style and recording the date "10 Reed" (Helmke and Montero García 2016:69-77; Montero et al. in press). Together these dates provide solid written evidence for the celebration of New Fire ceremonies at the Cerro de la Estrella in the Epiclassic.

However, it should be noted that the coefficient in these dates is variable, and this is something that requires further commentary. Reading the Colonial sources one gains the impression that the New Fire ceremony was held, immutably, every 52-years and that it was thereby always held on precisely the same date, in years named "2 Reed." However, all the evidence that we have been able to garner instead indicates that the one point of commonality and the one point of uniformity was that the years in which New Fire ceremonies were celebrated were named "Reed," but that the coefficient was liable to change. Thus the *xiuhmolpilli* of Iztapalapa records the date "11 Reed," whereas the other Epiclassic references in the rock art of the Cerro de la Estrella record, as we have seen, the dates "6 Reed" and "10 Reed." Likewise, the clearest record of a New Fire ceremony in the glyphic corpus of Cacaxtla is that which we have already mentioned with the murals of Structure A, where the date is given as "9 Reed" (Foncerrada de Molina 1993:123, 137-139). Interestingly, precisely the same date appears in the corpus of Xochicalco, where it is likewise topped by small flames indicating that this is a reference to a New Fire ceremony (Helmke

Table 1. Overview of the dates associated with New Fire ceremonies according to Late Postclassic and early Colonial codical sources.

source	1171–1178	1194–1195	1245–1247	1299	1351	1403	1455	1507
Codex Aubin	—	2 Reed	2 Reed	2 Reed	2 Reed	2 Reed	2 Reed	2 Reed
Codex Mendoza	—	—	—	—	2 Reed	2 Reed	2 Reed[1]	2 Reed
Codex Telleriano-Remensis	—	—	1 Rabbit	—	—	2 Reed	2 Reed	2 Reed
Codex Vaticanus 3738	—	2 Reed	2 Reed?[2]	—	2 Reed	2 Reed	2 Reed	2 Reed[3]
Codex Boturini[4]	—	2 Reed	2 Reed	2 Reed	2 Reed	—	—	—
Codex Azcatitlan[5]	New Fire		—		—	New Fire	New Fire	New Fire

[1] This New Fire ceremony is only partially recorded in the codex.

[2] It is unclear if the intended date is "1 Rabbit" or "2 Reed."

[3] The Codex Vaticanus appears to provide a reference to an additional New Fire ceremony held in the sacred precinct, in the year "8 Reed" or 1487, the year after the accession of Ahuizotl (r. AD 1486–1502)—possibly as part of a dedicatory event.

[4] There are no clear anchors for these dates, and as such these are here provided in keeping with the Codex Aubin (following Johansson K. 2007).

[5] The exact dates are not specified but can be reconstructed based on placements in particular regnal periods.

and Nielsen 2011:17, 2023:55). At Xochicalco, this date is repeated as many as six times in the famed reliefs of the Pyramid of the Feathered Serpent (Nielsen and Helmke 2023; Smith and Hirth 2000:59-65). The repetition of the same date at Cacaxtla and Xochicalco confirm their coevalness and shows that these independent city-states each commemorated this important New Fire ceremony on the same date. Whereas it is difficult to pin down with certainty when this event took place, given the stylistic date of the murals of Structure A (which we estimate as c. AD 730–849; see Helmke and Nielsen 2014:21-28) and assuming uniformity in the calendrical system employed in the central Mexican highlands, this date could refer to either AD 747 or 779. Given the importance of this date and the manner in which it is featured in the composition of the Pyramid of the Feathered Serpent, we consider it plausible that this important building was built to commemorate this event, or was at least dedicated in time for this date (Nielsen and Helmke 2023). Another reference to a New Fire ceremony is recorded on the aforementioned boulder sculpture encountered on the outskirts of Xochicalco, which records the event by representing a flaming fire-drill, atop the year date "1 Rabbit," and the date "2 Snake," naming either a specific day or perhaps a trecena (Saénz 1967; see also Helmke and Montero García 2016:74-75).

The Teotihuacan skeuomorph of the *xiuhmolpilli* unfortunately does not bear any inscription, nor a date, but we can likewise see that dates involving the Reptile Eye glyph also predominate in the written corpus at the site (Nielsen and Helmke 2021). This may be due to the fact that such important New Fire dates were recorded preferentially, thereby increasing the incidence of the sign in the calendrical notations documented to date (see Helmke and Nielsen 2021:39-40).

In the sources of the Colonial period, we have multiple references to New Fire ceremonies and most of the codices concur on the date of the New Fire ceremonies (Table 1). Thus, in addition to the famed New Fire ceremony of 1507, which was celebrated on the date "2 Reed," in the codices we see regular references to even earlier New Fire ceremonies, including those of 1455, 1403, and 1351. But beyond these the sources differ significantly. In the Codex Telleriano-Remensis we also find a reference to an early New Fire ceremony in 1246, at a time when the Aztecs are represented as skin-clad nomads wandering the wilderness (Quiñones Keber 1995:58). In a rejoinder to the boulder sculpture of Xochicalco, this New Fire ceremony is said to have taken place on the date "1 Rabbit." Interestingly, the Codices Aubin, Telleriano-Remensis, and Boturini all agree on the location of the first New Fire, as each name Coatepec for this location (Johansson K. 2007:35-37). A comparable quasi-mythic New Fire ceremony is also recorded in the Codex Vaticanus 3738 (Loubat 1900:Fol. 66v), on the date "2 Reed" which is equated to 1194. This event is paired off with a depiction of Chicomoztoc, the legendary place of emergence of humanity, showing the close symbolic correlation between the notions of the first fire and that of the New Fire, as an emulation of this primordial hearth (Helmke and Montero García 2016:89). An even earlier, mythic reference is also found in the Codex Azcatitlan, where we see Huitzilopochtli himself conducting a fire-drilling, an event that is dated to sometime between 1171 and 1178 (although the specific named year is not marked) (Graulich and Barlow 1995:8). The same codex does not appear to record another New Fire ceremony before one in the reign of Huitzilihuitl, which is said to have taken place at Tecpayocan, and then another during the reign of Moteuczoma Ilhuicamīna, which took place at Chapultepec (Graulich and Barlow 1995:35). Likewise, the New Fire of 1507 is properly placed within

the reign of Moteuczoma Xōcoyōtl and recorded as taking place at the Huizachtepetl (an alternate name for the Cerro de la Estrella). The Codex Aubin is remarkable for its regularity, always assigning the same date and interval to the New Fire ceremony, with clearly named locations being Coatepec (1195), Itzcoatepec (1247), Tecpayocan (1299), and Chapultepec (1351), which differs from the toponyms found in other sources in terms of their timing and sequence. For instance, although the Codex Boturini does not record the last New Fire ceremony, it does list four sequential events and provides their locations as Coatepec, Tecpayocan, Huitztepec, and Chapultepec (Figure 12), without any deviations in the named year when these New Fire ceremonies are said to have taken place.

Thus there appears to be considerable agreement between the different sources on the dates when these ceremonies were celebrated. And yet, other sources also record that at times the New Fire ceremony could be moved to coincide with another important event, such as the accession of a Tlahtoani, or supreme Aztec ruler, or were shunted to more propitious times, in years of misfortune, famine, and military defeat (see Diel 2008:37; Elson and Smith 2001:170; Hassig 2001:114). Burr Cartwright Bundage (1972:134) in this connection remarks that the New Fire ceremony that should have been held in 1454 was delayed by one year, owing to great famine. To this we should also add the Postclassic *xiuhmolpilli* that clearly records the date of "1 Reed," which thereby shows another contemporaneous example of deviation with regards to the coefficients. This *xiuhmolpilli* also bears, besides its year notation, a glyph that represents a banner topped with feather streamers, providing the name of the month that is read as *panquetzaliztli*. We surmise that this specifies the name of the month during which the New Fire ceremony was held. This is of great interest, since it allows us to suggest that at least that one particular New Fire ceremony was held sometime between the 7th and 26th of December, agreeing with the suggestions and correlations between the Julian and Aztec calendar offered by Alfonso Caso (1967).

Interestingly, the Precolumbian monuments that we have presented and reviewed above show little coherence when it comes to the coefficient of the dates, and this broadly contradicts the picture provided by the codical sources that were prepared during the early Colonial period, in the wake of the Spanish Conquest. Thus, whereas the codices paint a picture of uniformity that is projected as many as two centuries into the past, the actual Precolumbian monuments provide a rather different, more heterogeneous picture.

On the face of it, we conclude that variability in the coefficient of the date of New Fire ceremonies was actually the norm, with all of the following dates being recorded: "1 Reed," "2 Reed," "6 Reed," "7 Reed," "8 Reed," "9 Reed," "10 Reed," and "11 Reed" (Figure 13). Given this variability, we thereby cannot postulate that the New Fire ceremony was held squarely, unflinchingly, and conventionally every 52 years. Interestingly, in this regard we should note a segment in the Codex Chimalpahin (1997:78-79) which states "there was a binding of the years: Nine or Two Reed [in] the ancient ones' year count." As such, it would now appear that this

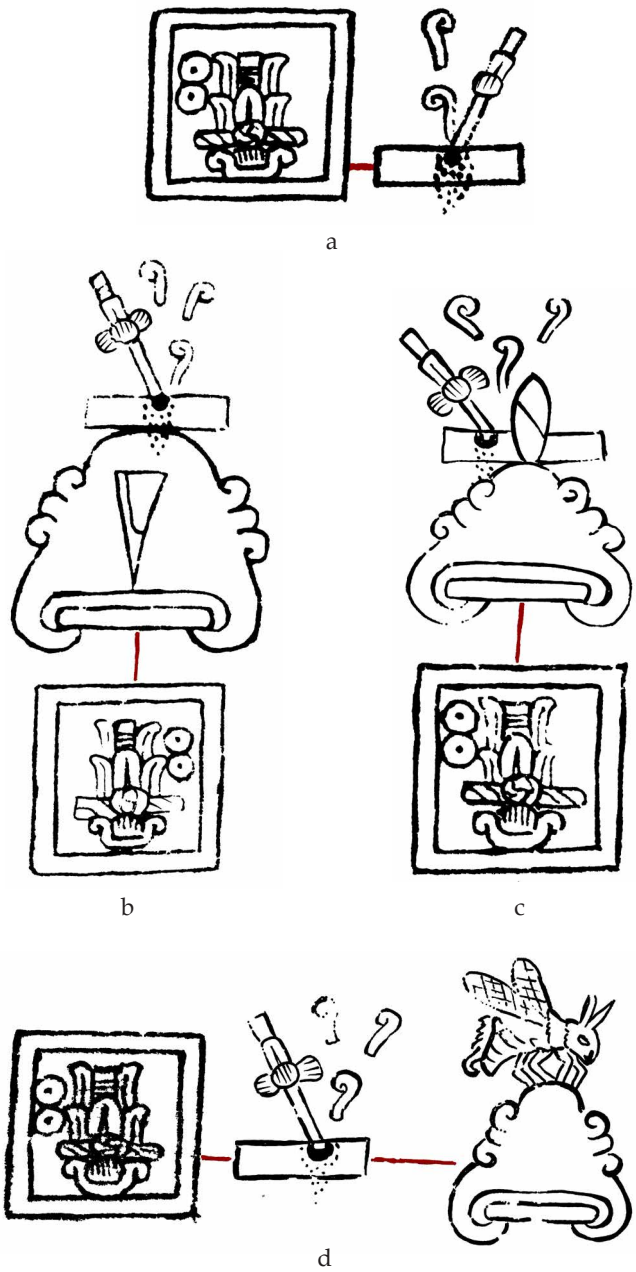

Figure 12. The four New Fire ceremonies listed in the Codex Boturini (drawings by Christophe Helmke). Celebrated at: (a) Coatepec (p. 6), (b) Huitztepec (p. 10), (c) Tecpayocan (p. 15), and (d) Chapultepec (p. 19).

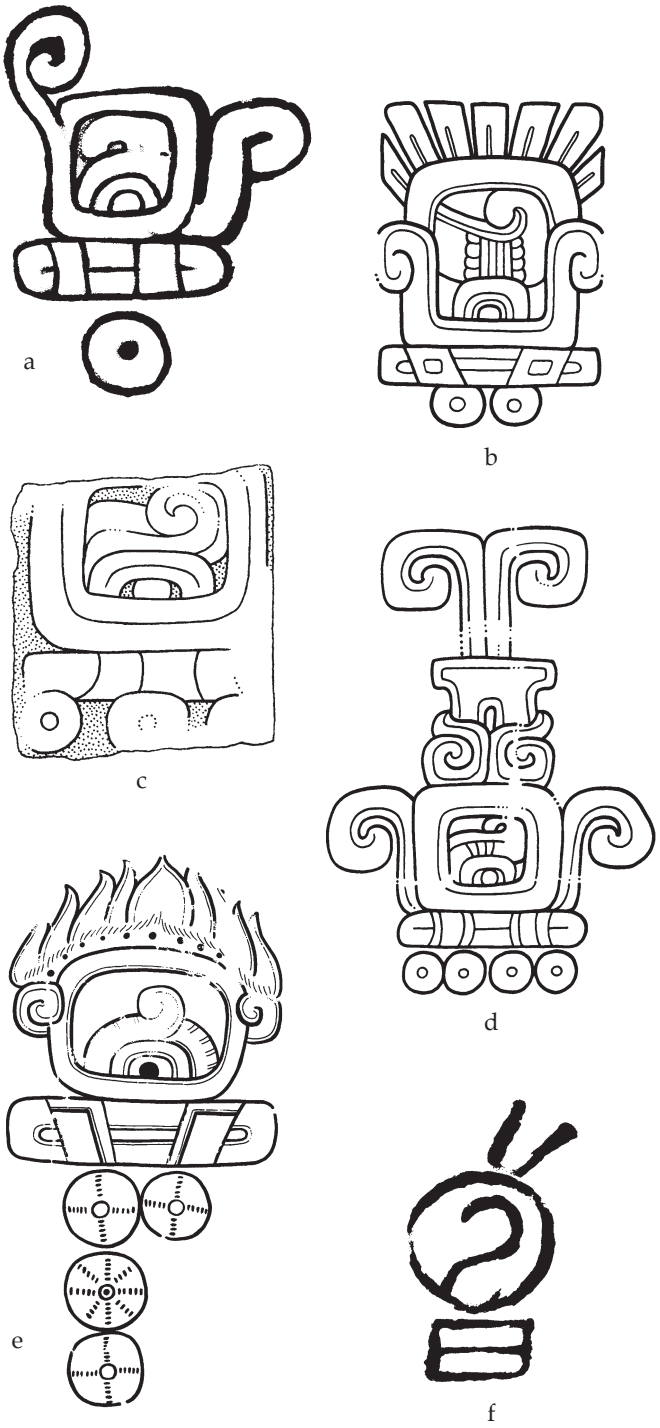

Figure 13. Examples of Precolumbian glyphic notations recording New Fire dates with the Reptile Eye glyph and differing numerical coefficients, ranging from 6 to 10: (a) Petroglyphic Panel 11, Cerro de la Estrella; (b) Stela 1, Xochicalco; (c) Sculpture fragment, Structure B, Tula; (d) Pyramid of the Feathered Serpent, Xochicalco; (e) Northern pier, Structure A, Cacaxtla; (f) Petroglyphic Panel 11, Cerro de la Estrella (drawings by Christophe Helmke).

is an idealized notion that has taken hold in the scholarship surrounding this event, on the basis of some of the earliest European and ethnohistoric sources, which did their best to convey a ritual event that they had never witnessed and which had transpired twelve years before Europeans ever even set foot in central Mexico.

In this connection, let us now return to the detailed description of the New Fire ceremony provided in Nahuatl by Fray Bernardino de Sahagún and his informants in the Florentine Codex (López Austin 1963), which was completed sometime around 1569, which is to say more than six decades after the last New Fire ceremony. It is also in this description that the New Fire ceremony is compared to the Christian vigil that is held on the eve of Easter, and that Sahagún perhaps inadvertently, or even deliberately, introduces the notion of "new fire." This notion was drawn from Catholic liturgy (from the Latin *novem hunc ignem sanctífica*, "blessed be this new fire") to describe the Native American ceremony, which in Nahuatl is consistently referred to as *xiuhmolpilia*, "the binding of the years" (Helmke and Montero García 2019:116-118). Drawing an analogy between the Easter vigil and the *xiuhmolpilia* ceremony, may have acted as a heuristic device, wherein Sahagún was grappling to explain ritual observances that were foreign to him, describing these in terms that could be more easily comprehended by his catholic readership.

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