3

The Mesoamerican Calendar

The codices of the so-called Borgia Group, which are named after the codex that is considered its finest example (see listing in the Appendix), offer an unadulterated window into ritual, divinatory, and calendrical knowledge as it was practiced in Mesoamerica before the arrival of the Europeans. Today, all pre-Hispanic religious manuscripts are housed in European collections, where they arrived in the first decades after the conquest as gifts and objects of curiosity for ecclesiastical and political dignitaries throughout the continent. It is unknown how many more manuscripts of this kind circulated in Mesoamerica. The extent of the deliberate physical destruction of Indigenous knowledge on the part of the friars cannot ultimately be quantified. Many other specimens may have been forgotten and destroyed over time once they were hidden to spare them from Spanish and missionary fury. Lack of provenance notwithstanding, it is quite remarkable that the few surviving manuscripts of the Borgia Group form a very consistent corpus in terms of both calendrics and iconography. Nowotny (1961) was the first to conduct a comprehensive study of the manuscripts as a whole based on calendrical concordances, upon which iconographic similarities are largely based. Colonial manuscripts that feature religious content, such as the Codices Borbonicus, Telleriano-Remensis, and Tudela, also focus on the Mesoamerican calendar and related iconography, although in a much simpler manner, which likely reflects the limited knowledge of ancient religion and calendrics on the part of the lay Indigenous informants who contributed to their creation. This chapter focuses on the Mesoamerican calendar, especially its different configurations, in the pre-Hispanic religious manuscripts. An in-depth analysis of the calendar’s functioning and use is essential to gain an accurate understanding of the pictorials.

3.1. The tonalpohualli

The 260-day calendar is one of the diagnostic characteristics of Mesoamerican civilizations, as was first recognized by Kirchhoff (1943). The earliest archaeological record of it dates to the Formative Period in the sixth century BCE, and its use extends to the present, albeit restricted to Indigenous communities in southern Mexico and Guatemala. Mazatec diviners, as noted in previous chapters, no longer rely on the 260-day count, although German ethnologist Wilhelm Bauer (1908) documented the use of a twenty day-sign calendar in the region in the early twentieth century. Thus, in my field work, I could not account for the use of the 260-day count in divination. Instead, I largely relied on a study by Paul van den Akker (2018), a colleague from the Faculty of Archaeology at Leiden University, who conducted extensive field work in the Maya K’iche’ community of Momostenango. Paul’s knowledge of the intricacies, functioning, and logic of the calendar, known as chol’ q’ij in K’iche’, was gained through his training and collaboration with don Rigoberto Itzep Chanchavac, a K’iche’ ajaq’ij (diviner) from Momostenango.

Spanish friars extensively discussed the use and characteristics of the ancient Mexican calendar in their writings. Most notably, Bernardino de Sahagún (1950–1982, bk. 4) devoted an entire book of his great opus to “judicial astrology or art of divination.” Figure 3.1 is an illustration from the appendix at the end of the book, where Sahagún explains to the reader the table that the diviner, whom he refers to with the Nahua term tonalpohuque, used to count days and make prognostications. Tonalpohuque literally means “those who count the days,” from the words tonal (day) and pohualli (to count). Tonalpohualli is the word for calendar, as the “count of days.” The table combines twenty day signs (Fig. 3.2) and thirteen numerals, which are consecutively counted to yield a unique and fixed sequence of 260 days. Beginning on 1 Crocodile (Cipactli in Nahua), the count reaches 13 Reed (Acatl), at which point the numeral starts again from one with 1 Jaguar (Ocelotl), reaching 7 Flower (Xochitl), then 8 Crocodile. After 260 days, both the thirteen-day period and the twenty day signs return to the initial position of 1 Crocodile. It should be noted that, in contemporary communities such Momostenango, where the tzolkin (as the tonalpohualli is known among Mayanists) remains in use, no fixed day functions as the first in the calendar; rather, the count seamlessly and endlessly continues. By contrast, in the ancient manuscripts, the count almost always appears to begin with day 1 Crocodile, although the diviner could easily start counting from any point in their chart.

In Sahagún’s table, numerals are indicated with Arabic numbers, while Indigenous documents, such as the codices of the Borgia Group, utilize a dot for a unit to reach a maximum of thirteen dots. Although a complete and unequivocal date can only be given with a combination of a day sign and a number, numbers in the ancient manuscripts are often omitted and implicit in the progressive count of day signs. Dots are often used to indicate a period or lapse of time between signaled day signs. As also remarked by Mayanists (Aveni 2011), such a use of numbers in Mesoamerican calendrics indicates that intervals and lengths of time between events were at least as important as the time when the events occurred. Replacing dots with Arabic numerals, as Sahagún did in his table, erases this important aspect of Mesoamerican time reckoning and philosophy.
Among contemporary Maya K’iche’ diviners, it is generally understood that day signs, which are assigned a name, indicate the quality and character of the day, also referred to as ajaw (Lord), while numerals indicate the quantity or intensity of the day sign (Akker 2018, 32–38). To appreciate the relationship between day signs and numerals, one can read the rows of numbers in Figure 3.1, which are each assigned to one of the twenty day signs. While a sign recurs every twenty days, the numeral assigned to it waxes and wanes in intensity over the course of 260 days. If the day is 1 Crocodile, it will be 8 Crocodile after twenty days, 2 Crocodile after twenty more days, 9 Crocodile after sixty days, and so on. Periods dictate not only the quality of a day but also its intensity in a way that is not incremental but rather pendular.

Sahagún explained that intervals of thirteen days formed a block; this is usually referred to in Spanish as a treceña, which derives from the word for thirteen in Spanish (trece). The first day of the treceña, which is assigned the numeral 1, functions as the ruler (usually referred to as “regent” in the literature) of the entire period. The first treceña, 1 Crocodile, is followed by 1 Jaguar, 1 Deer, 1 Flower, and so on until the twentieth treceña, 1 Rabbit, which completes the 260-day count with the day 13 Flower. The twenty treceñas of the tonalpohualli (13 × 20 = 260) constitute only one of the calendar’s possible partitions, but they are indeed an important one and usually referred to as tonalamatl (book of days; see Fig. 5.1, 5.2, and 6.7). This term is somewhat a misnomer because it specifically indicates the actual pictographic manuscript employed by the diviner, as amatl means “paper.” The depiction of the twenty treceñas is the only presentation of the tonalpohualli found in the ancient books (the Codices Borgia, pp. 61–70, and Vaticanus B, pp. 49–68) that shows striking iconographic similarities to its counterpart in colonial religious manuscripts (e.g., the Codices Borbonicus, pp. 3–20; Telleriano-Remensis, ff. 8r–24r; and Tudela, ff. 98v–124r). Continuity in iconography related to the treceñas from ancient to colonial times indicates the
The Mesoamerican Calendar

widespread use of this particular chronological division of the tonalpohualli in Mesoamerica for the prognostication of fate and destiny, which is indeed the topic of Sahagún’s fourth book of the Florentine Codex.

Beginning with Nowotny (1961), modern studies have focused on other possible divisions of the tonalpohualli that are uniquely found in pre-Hispanic manuscripts. This has given rise to important considerations on comparable iconography and content in the Borgia Group codices (e.g., Anders and Jansen 1993, Anders, Jansen, and Loo 1994, Boone 2007). The arithmetic of the 260-day calendar generates patterns in which numbers and periods of four and five are favored (13 × 4 × 5 = 260), aside from the basic twenty-trecena division (13 × 20 = 260). Furthermore, the numbers four and five were symbolically attached to cardinal directions. In the case of a partition into four periods (65 × 4 = 260), each period of sixty-five days was assigned to a cardinal direction, usually in the following order: east, north, west, and south. In the case of the fifty-two-day partition (52 × 5 = 260), a fifth direction was added: the center. A complete count must be reached by the end of the specific periodization employed, as also seen in Sahagún’s table, to include every possible calendrical occurrence. Usually, a single theme, such as agricultural fertility, marriage, birth, travel, or pilgrimage, was treated in each periodization of the manuscript. A section that includes a single theme and periodization is sometimes referred to as an “almanac” (Boone 2007). After consulting with a diviner, the client would know how to take proper action according to the day of the planned activity or when a specific event occurred. Babies were assigned birth dates as names, and body parts were attached to specific day signs, which shows other possible uses of the tonalpohualli as depicted in the books consulted by diviners.

To exemplify the complex but coherent arrangements of the calendar and its images in the Borgia Group manuscripts, I analyze pages 12–13 of the Codex Cospi (Fig. 3.3) in the following paragraphs. As explained by Nowotny (1961, § 16) and Anders, Jansen, and Loo (1994, 257–265), the two pages present four comparable scenes in which a character brings an offering to a temple. On each page, there are two gods, temples, and related offerings in contrasting colors; one is bright and yellow, while the other is dark and black. Inside each bright and yellow temple, there is a colorful bird singing a “flowery chant,” as indicated by the green and yellow volute emerging from its mouth. By contrast, in each dark temple sits an owl, a nocturnal predatory animal that emits a dark smoke. On the one hand, the two bright and yellow characters can be identified as gods or priests with the attributes of Tonatiuh, the sun god, and Cinteotl, the god of the harvest, on pages 12 and 13, respectively. The two dark characters, on the other hand, exhibit the iconography of Itzlacoliuhqui and Mictlantecuhtli, the god of the underworld, and are engaged in an act of self-sacrifice by perforating their ears. The offerings brought by the god-priests in their censers are also of an opposing nature: while the smoke emanating from the censers of the bright Tonatiuh and Cinteotl has attributes of flowers and jewels, Itzlacoliuhqui’s and Mictlantecuhtli’s offerings consist of stones and bones that emanate a heavy black smoke.

The calendar count of this quadripartite sequence assigns specific portions of the tonalpohualli to each god, temple, and offering by dividing the 260-day calendar into five blocks of thirteen days each. The thirteen-day period is not painted; rather, the diviner had to implicitly count it, evincing the correct partition upon reading the sequence of days on the left-hand side of the images. The first five days in the top left image, for example, are Crocodile, Reed, Serpent, Movement, and Water. A knowledgeable diviner would have known that the sequence is based on a consistent lapse of fifty-two days between each consecutive day depicted. Given that fifty-two is a multiple of thirteen, every day in that sequence has the same numeral, which

![Figure 3.2. The twenty day signs according to the Codex Borgia, reading from bottom right to top left. Humboldt 1816–1824.](image-url)
Mesoamerican Codices

is the reason it was not explicitly written. The table underneath depicts the days Jaguar, Death, Flint, Dog, and Wind, each of which occurs thirteen days after the day sign in the same position above (i.e., 3 Jaguar occurs thirteen days after 3 Crocodile, and so on). The next table is on the bottom of page 13 and shows the day signs Deer, Rain, Monkey, House, and Eagle. The last block of trecenas is at the top of page 13 and depicts the day signs Flower, Grass, Lizard, Vulture, and Rabbit. When presented in this manner, the calendar can be read in different ways. For example, if the diviner reads one trecena in the first scene, such as 1 Crocodile, they could proceed to the next consecutive trecena that begins in the same position in the following scene (i.e., 1 Jaguar) or jump ahead fifty-two days in the following trecena of the same block (see also Boone 2007, 75–78, for an explanation of a similar partition of the tonalpohualli in the Codex Fejérváry-Mayer, pp. 33–34).

When iconography and calendrics are analyzed together, it becomes clear that the opposition between light and darkness and between life and death is dynamic. God-priests, their offerings, temples, and presiding birds are interchangeable, as the movement between them is circular rather than one-directional. Seasonality and the corresponding movement of the sun or other planets and stars were readily superimposed on the progressive count of days, and the dimensions of time and space could not be separated. The back-and-forth movement across time and space could also be performed in a different manner without necessarily following a specific spatial-temporal path. These complex presentations of the tonalpohualli are commonly found in pre-Hispanic manuscripts but rarely found in colonial religious documents, which only focus on the twenty trecenas, as previously mentioned.

3.2. The xihuitl

The simplified rendition of the tonalpohualli found in colonial sources has led scholars to believe that two calendars were in use in Postclassic central Mexico: the tonalpohualli, which consisted of twenty trecenas of thirteen days, and the xihuitl (“year” in Nahuatl), the solar or civic year that roughly corresponded to a cycle of 365 days. The latter is composed of so-called veintenas, eighteen periods of twenty days, which culminated in a festival from which the name of the veintena was derived (see Appendix). At the end of the eighteenth twenty-day period, five more days were counted; they were referred to as nemontemi (wasted days) because no ritual activities were performed. Thus, the total count reached 365 (18 × 20 + 5 = 365), approximating the solar year. The veintena calendar is sometimes referred to as cempoallapohualli (count of twenty), although colonial sources rarely used this term (Bustamante García and Díaz Rubio 1983, Doesburg 1996, 106, Johansson 2005). The term “cempoallapohualli” hints at the mathematics of the Mesoamerican count, which employed a base-twenty numeral system.

Mexican scholar Díaz Álvarez (2009, 2013, 2018) recently challenged the assumption that two separate time reckoning systems were in use in late pre-Hispanic central Mexico, basing her critique on an examination of sixteenth- and seventeenth-century sources. She argued that the separation and indeed dichotomy between divinatory and historical time, tonalpohualli and xihuitl, largely corresponded to a Western understanding of time that not only operated at the time of conquest but still holds true today. The systematization of the Mexican solar calendar into veintenas, in Díaz’s view, was based on the