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A Seasonal Calendar in the Codex Borgia

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Mesoamerica

Edited by
Anne S. Dowd and Susan Milbrath

FOREWORD BY E. C. KRUPP

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The Codex Borgia records a unique narrative from Central Mexico that has been studied by scholars for more than 100 years. At the turn of the last century, Eduard Seler ([1904–1909] 1963) wrote an extensive commentary on the Codex Borgia that continued to have an impact well into the late twentieth century after it appeared in a Spanish translation. He correctly identified Venus as the most important actor in the narrative on Borgia pages 29–46 (Milbrath 2007), but some recent studies have questioned his interpretation of the imagery as a Venus narrative, proposing instead that the eighteen-page sequence represents a mythological narrative of creation cosmology (Boone 2007).

This chapter explores a new interpretation of the narrative that builds on Seler's ([1904–1909] 1963) original findings, but also incorporates a detailed study of seasonal variations in the imagery of plants and animals and the Central Mexican festival calendar, as well as recent evidence from analysis of dated passages in the Codex Borgia. With this new approach it has become evident that the eighteen-page sequence refers to “real-time” astronomical events that are placed in a seasonal context using the annual festival cycle as a chronological framework (Milbrath 2007, 2013). Mythological events represented in these seasonal festivals evoke an ancient religious narrative, much like the annual cycle of rituals in the Christian church reenacting the birth and resurrection of Christ in the context of seasonal events (Milbrath 2013, 18, 107). Like religious calendars

worldwide, the Codex Borgia represents an annual cycle that combines mythohistoric religious beliefs and astronomy in the framework of the seasonal cycle. As noted by Michel Graulich (1981, 48–49), the *veintenas* (20-day “months”) reenact a complex mythological cycle, most notable in the festival of Panquetzaliztli, which annually dramatizes the myth of Huitzilopochtli’s birth. Pedro Carrasco (in Graulich 1981, 50) notes that the yearly cycle in relation to agriculture and other human activities was the major determinant of the Aztec world view and that “the festivals of the Aztec year were in perfect agreement with the solar year at the time of the Spanish conquest” (see also Carrasco 1976).

INTRODUCTION

The Codex Borgia originated in Puebla-Tlaxcala Valley, where Nahuatl was spoken, as it was in the nearby Aztec capital of Tenochtitlan (Milbrath 2013, 1–3). The seasonal cycle represented in the Borgia is set in the framework of the Central Mexican festival calendar, consisting of eighteen *veintenas* (20-day periods) and the Nemontemi period of 5 days, totaling 365 days. Central Mexican festival calendars share many elements, including festival names, ceremonies, and deities honored in specific festival periods.¹ Well-documented in Aztec codices of the Colonial period, the eighteen *veintena* festivals are of paramount importance in terms of seasonal imagery in Central Mexico (Broda de Casas 1969, 1982, 1983). Priests dressed as gods reenacted these seasonal festivals, but the gods themselves perform these rituals in representations of the festivals in Aztec codices and the Tlaxcalan Codex Borgia.

The *veintena* festivals in the narrative on Borgia 29–46 appear in an abbreviated form because the festival cycle serves primarily as a chronological framework for astronomical events featuring Venus and the Sun and Moon. Festivals similar to those pictured in Colonial Aztec sources are not easy to recognize in this context, but the central image on at least six pages (33, 37, 40, 44, 45, and 46) seem to depict a corresponding seasonal festival represented at an appropriate interval (Milbrath 2007, 2013, 30). Placing the eighteen-page narrative in the context of the annual cycle means that each page represents a 20-day *veintena*, except for page 31, which incorporates a 25-day period (the Izcalli festival and the Nemontemi). This chronological framework helps place the Codex Borgia narrative in relation to the seasonal cycle, which is also evident in a clear contrast between the rainy and dry seasons in the imagery, and seasonal flora and fauna that change throughout the sequence.

REAL-TIME ASTRONOMICAL EVENTS

Before analyzing the seasonal cycle, I would like to acknowledge that Anthony F. Aveni (1999) first explored the possibility that certain Borgia almanacs with calendar round dates (year sign with day sign) depict astronomical events that can be dated in historical context. He tested whether real-time astronomical events were recorded with calendar round dates in weather almanacs on Borgia 27–28. Victoria Bricker (2001) and Christine Hernández and Bricker (2004) carried this research further, focusing on the relationships between the dates and changing weather patterns. My own research, conducted with Chris Woolley, has demonstrated that weather patterns depicted on Borgia 27 are confirmed by climate data encoded in tree-ring records from Douglas fir in Puebla (Therrell et al. 2004; Therrell et al. 2006; Woolley and Milbrath 2011). Most recently, this research has integrated records from the Maya area (Bricker and Milbrath 2011).

Ethnohistorical sources record a drought followed by a plague of rats in 1506, the year 1 Rabbit in the Aztec calendar (Quiñones Keber 1995). Fifteenth-century tree-ring records from Puebla confirm this drought (Woolley and Milbrath 2011). Rats attacking maize during the 1506 drought are also shown in a 1 Rabbit year on Borgia 27 (figure 6.1, lower left). Thirteen years earlier, in the year 1 House, we see maize fields flooded by too much rain (figure 6.1, upper left), a weather pattern also apparent in tree-ring records for that year, 1493 (Woolley and Milbrath 2011). Moving back another thirteen years to 1480, the image on the upper right of Borgia 27 shows the year 1 Flint with a sunny sky and a single puddle of rainwater (figure 6.1, upper right). This suggests that seasonal rainfall ended abruptly, conditions that are confirmed by comparing early and late wood tree-ring records for that year (Woolley and Milbrath 2011). Our research also points out that these weather conditions can cause grasshoppers to morph into locusts, evoking the swarm of locusts attacking the maize in the image on Borgia 27 in the year 1 Flint. The year 1 Reed, pictured on the lower right of Borgia 27 as the first year in the 52-year cycle represented by the dates in the four quadrants of Borgia 27, shows robust maize sprouting from the Earth Monster in 1467. Reliable tree-ring records for Central Mexico currently do not extend back to 1467, but the imagery on Borgia 27 suggests that this year was ideal in terms of rainfall and maize yields.

The year 1467, recorded on Borgia 27, also corresponds to a sequence of events linking the cycles of Venus and the Sun and Moon. Venus was visible as the Morning Star throughout the growing season during the year 1 Reed (1467), the year represented with favorable conditions in terms of rainfall and the maize crop.² The last visibility of Venus as the Evening Star occurred in

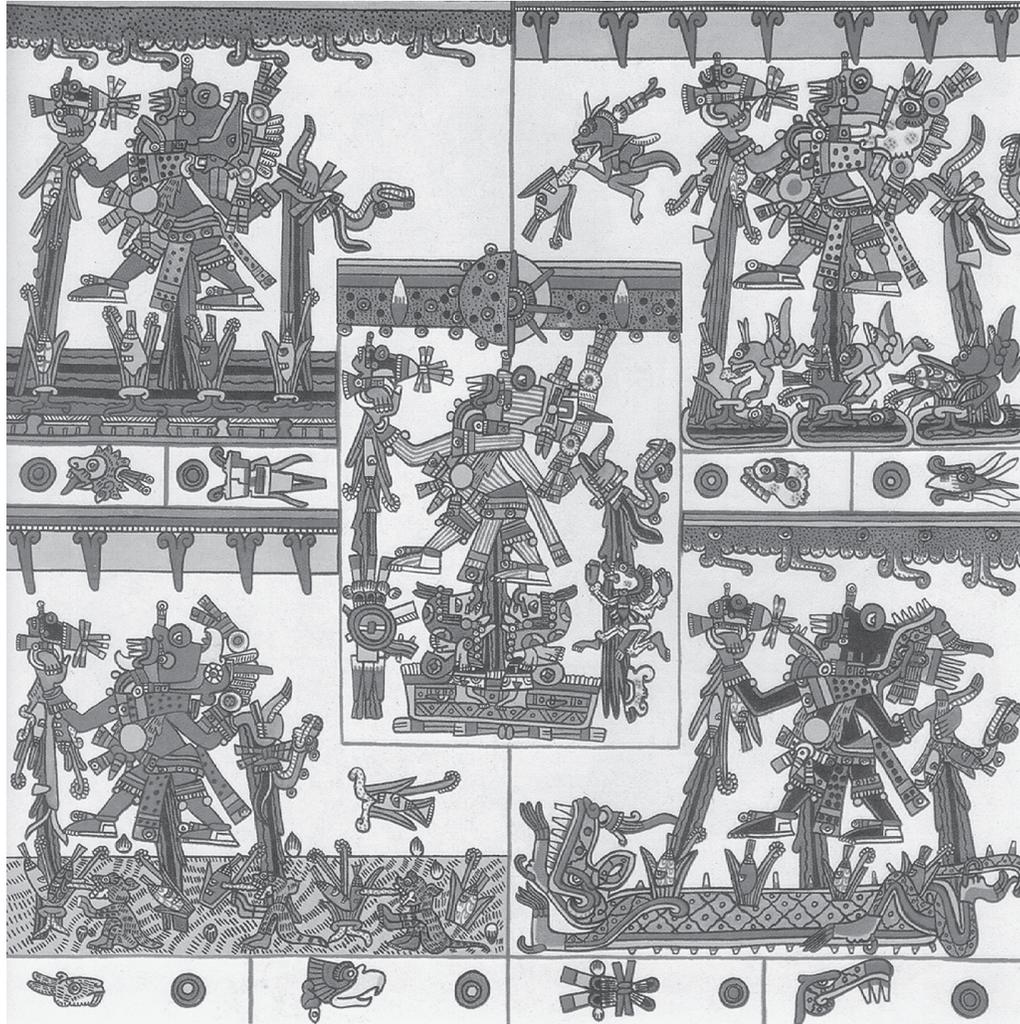


FIGURE 6.1. *Borgia 27 shows the cycle of 52 years, with changing weather affecting the fortune of the crops (after Byland 1993).*

March 1467, corresponding to the first date on table 6.1. The second occurrence of 1 Crocodile 1 Reed (260 days later) may actually be of equal or greater significance, for it marks the last visible Morning Star when the moon was full on the winter solstice.

SEASONALITY IN THE NARRATIVE ON BORGIA 29-46

Weather almanacs on Borgia 27-28 also serve as a preface for Borgia 29-46, which records a narrative sequence depicting Venus imagery in the context of the annual festival cycle and the seasonal cycle of plants, animals, and ritual

TABLE 6.1. Borgia 27 Julian Dates and Corresponding Astronomical Events

27 LR	1 Reed	1 Crocodile	Mar. 26, 1467	Venus E-last
27 LR	1 Reed	1 Crocodile (2nd)	Dec. 11, 1467	Winter solstice, full moon, and Venus M-last
27 UR	1 Flint	1 Death	Mar. 22, 1480	
27 UR	1 Flint	1 Death (2nd)	Dec. 7, 1480	Venus E-first
27 UL	1 House	1 Monkey	Mar. 19, 1493	
27 UL 1	1 House	1 Monkey (2nd)	Dec. 3, 1493	
27 LL 1	1 Rabbit	1 Vulture	Mar. 16, 1506	
27 LL 1	1 Rabbit	1 Vulture (2nd)	Dec. 1, 1506	Full moon

Source: Milbrath 2013, tables 2.5 and 3.1.

LL = Lower Left, LR = Lower Right, UL = Upper Left, UR = Upper Right; E-first = first visibility of the Evening Star; E-last = last visibility of the Evening Star; M-last = last visibility of the Morning Star.

activities during the year (Milbrath 2013). The seasonal patterning of the narrative analyzed here is based on an understanding of the chronological framework I developed over more than twenty years of research on the astronomical events and festivals portrayed on Borgia 29–46 (Milbrath 1989, 2000, 2007, 2013).

Study of the patterning of astronomical events indicates that the narrative on Borgia 29–46 begins with the disappearance of the Evening Star on January 2, 1496, during the festival of Atemoztli, the festival period corresponding to Borgia 29 (figure 6.2a). The narrative continues with the emergence of the Morning Star on page 30 (figure 6.2b). In fact, the sequence of eighteen pages shows all four phases of Venus, from its disappearance as Evening Star on Borgia 29 to its reemergence as Evening Star on Borgia 46, the last page in the sequence. A change in the alignment of the screenfold images on pages 29–46 indicates that these pages are read from top to bottom, and they all seem to form visual pairs that represent paired *veintenas*, labeled as *a* and *b* in figures 6.2–6.10 (see also Milbrath 2013, fig. 2.2). This pairing is evident through formal analysis, because the pages either have a similar format, as on pages 29–30, where both have a strong central circular design framed by a border (figures 6.2a, b), or they show narrative events that carry the action from one page to the next, as on Borgia 37–38, where pathways connect the two pages, or on Borgia 39–40, where the Earth Monster is spread out over two pages (figures 6.6a, b and 6.7a, b).

Although astronomical events dominate the imagery on Borgia 29–46, a number of festivals can be identified at appropriate intervals, assuming that

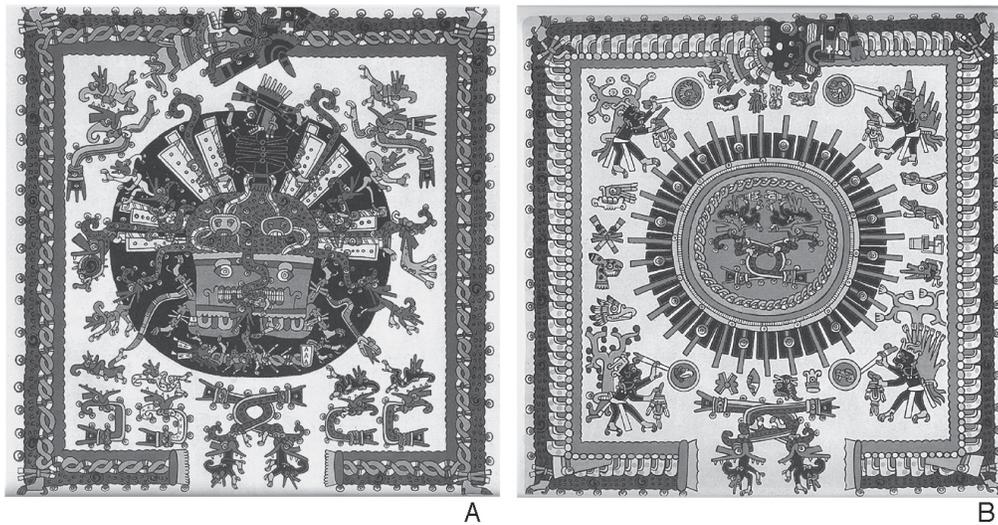


FIGURE 6.2. (a) *Left, Borgia 29, the first page of the eighteen-page narrative, depicts a skeletal Venus god on a container of burned ashes, symbolizing the disappearance of the Evening Star as during Atemoztli on January 2, 1496; (b) right, Borgia 30 shows a resplendent rayed disk with Ehecatl serpents, representing the reemergence of Venus as the Morning Star on January 12, 1496 (after Milbrath 2013, fig. 4.2).*

each page corresponds to the period of time represented by the eighteen festival periods, or *veintenas*, and the Nemontemi (Milbrath 2013).³ For example, page 31 references events in the festival of Izcalli, characterized by bathing rituals (figure 6.3a; Milbrath 2013, 24, plate 3). Borgia 32 refers to the festival of Cuahuitlehua honoring the Tlalocque, but these gods are shown in the border because the central image focuses on a decapitation scene that may embody an annual celebration of the origin of the gods, encoded in Central Mexican myths (figure 6.3b; Milbrath 2013, 80, plate 4). Representing a period that falls 20 days later, Borgia 33 depicts Xipe sacrificed on a round stone on a temple platform (figure 6.4a), recalling Aztec images of Tlacaxipehualiztli, the spring equinox festival in March (Boone 1983; Quiñones Keber 1995; Milbrath 2013, 26). Borgia 33 also shows the sacrifice of Tlaloc in front of the temple, a symbol of the lack of rainfall in March, a scene repeated on Borgia 34 during April (figure 6.4b; Milbrath 2013, plates 5–6). The seasonal cycle may also be referenced on Borgia 35, which shows the wind god mask at a time that the winds are becoming more prominent in late April to early May, but the main focus is on events involving Venus and the Moon (figure 6.5a; Milbrath 2013, plate 7). Borgia 36 features undulating Ehecatl-Quetzalcoatl serpents as symbols of the rising winds that bring rainfall in May during Toxcatl (figure 6.5b; Milbrath 2013, plate 8). According

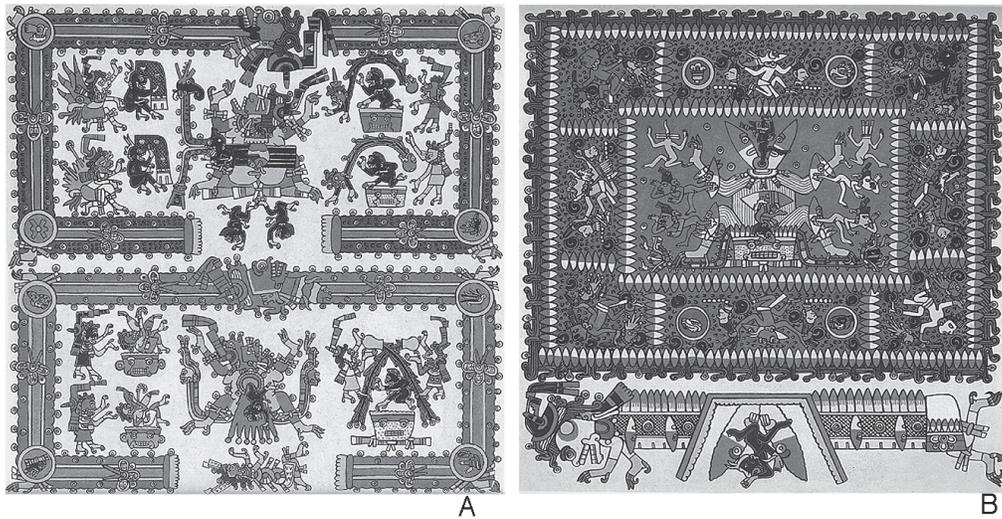


FIGURE 6.3. (a) Left, Borgia 31 depicts bathing rituals during the Izcalli festival in February; skeletal vegetation goddesses represent dormant plants and “dead” maize in the dry season; (b) right, Borgia 32 refers to the festival of Cuahuitlehua, honoring the Tlaloque (shown in border), with the central image focusing on a decapitation scene representing lunar imagery (after Milbrath 2013, fig. 4.3).

to the *Relaciones Geográficas*, the winds are notable at this time of year in Central Mexico because the prevailing winds change direction (Acuña 1986, 233–35).

In table 6.2, Borgia 36–44 cover a span from May through October, correlating with the rainy season (figures 6.5b–6.9b).⁴ These pages show seasonal imagery depicting bees, butterflies, hummingbirds, bats, and the flowers they feed on during the rainy season. Flowered temples and flowered borders appear only on Borgia 36, 37, 42, and 44, pages that correlate with the rainy season (Milbrath 2013, plates 8–16). In keeping with this seasonal patterning, on Borgia 44 a bat surrounded by hummingbirds pours flowery blood on a hummingbird avatar of Quetzalcoatl and a flowering tree sprouting from Xochiquetzal’s body (figure 6.9b). Bees and bee deities, butterflies, and hummingbirds all appear only on pages 36, 38, 40, and 44, representing the rainy season, when blooming flowers nourish these creatures (Milbrath 2013, plates 8, 10, 12, 16). There are variations in the representation of hummingbirds (*Trochilidae*) in the Borgia that warrant further study, for different species may be represented, as on Borgia 44, where four different hummingbirds surround the bat figure (figure 6.9b). Generally, there are two different patterns for hummingbirds in the Central Highlands, with resident hummingbirds breeding in the summer (rainy season) and withdrawing to the lowlands in the winter

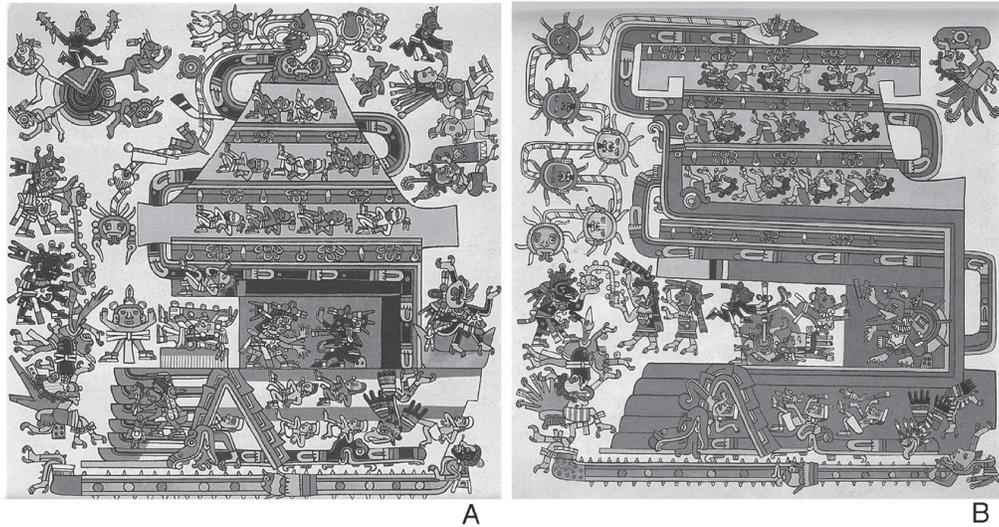


FIGURE 6.4. (a) Left, Borgia 33 illustrates the sacrifice of Xipe Totec in front of the temple during the festival of Tlacaxipehualiztli, correlating with the March equinox. Inside the temple, Black Quetzalcoatl represents Venus bestowing power on a god specifically representing the Morning Star, Tlahuizcalpantecuhtli (“Lord of Dawn”), at a time that the Morning Star had reached its maximum altitude. A fire serpent on the stairs and the sacrifice of rain god Tlaloc mark the height of the dry season in March. (b) Right, Borgia 34 repeats the sacrifice of Tlaloc and fire-serpent imagery on Borgia 33. The skeletal maize goddess on the upper right here and on the preceding page (33) represents maize in its underworld aspect during the dry season in April, and on the lower left a skeletal goddess with a sheaf of grass and war banners represents the death of grass in the dry season, the season of warfare (after Milbrath 2013, fig. 4.4).

(dry season); a second population of migrants from the north breed in North America and winter in Central Mexico (Howell and Webb 1995, 14, 391–92).⁵

Imagery of maize is also prominent only on pages correlating with the rainy season (Milbrath 2013, 31). Borgia 37 shows the first offering of green maize in June (figure 6.6a). On page 38 a giant maize cob represents the ripening maize fields in July (figure 6.6b). On page 43 a border of maize depicting the fields ready for harvest in October surrounds the central scene showing maize offered to nourish the gods (figure 6.9a). In contrast, during the dry season maize is “dead,” hence we see maize carried by death goddesses, deities who are also shown bearing other plants that are dead or dormant during the dry season (Byland 1993, 31, 33, and 34) (figures 6.3a, 6.4).

Fire-serpent images during March and April in the narrative on pages 33 and 34 correlate with the dry season, as do the fire serpents on page 46, a page

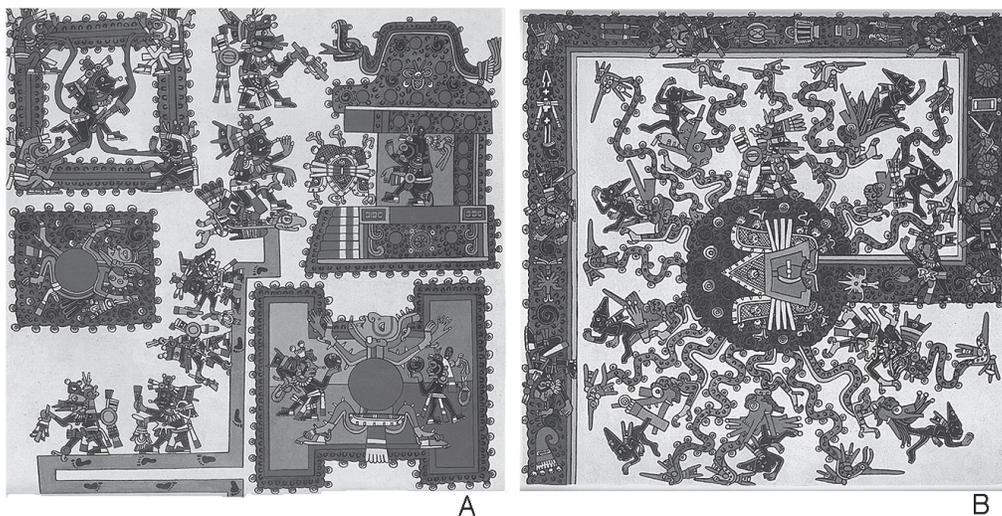


FIGURE 6.5. (a) Left, Borgia 35 depicts Stripe-Eyed Quetzalcoatl for the first time in the narrative, shown here on the ball court in May at a time when Venus was descending in the morning sky as the first rains begin; (b) right, Borgia 36 shows the rising winds represented by Ehecatl serpents during May, the first month of the rainy season, accompanied by flowers, butterflies, and hummingbirds associated with the rainy season (after Milbrath 2013, fig. 4.6).

corresponding to Panquetzaliztli in December (figures 6.4a, b and 6.10b; table 6.2). These serpents generally symbolize the dry season, but in one case the fire serpent appears as a sign of temporary drought (see below).

SEASONAL CEREMONIES IN BORGIA 29–46

Having outlined the seasonal plants and animals in the narrative, we can turn to a more detailed study of the seasonal cycle. The transition to the rainy season on Borgia 36 is apparent in imagery of starry Ehecatl serpents, representing night winds that rise up to bring the rain during the festival of Toxcatl at the onset of the rainy season in May (figure 6.5b; Milbrath 2013, plate 8). Borgia 36 depicts the primary deity honored in Toxcatl, Tezcatlipoca, a god whose dark mirror controlled rainfall (Nicholson 1971, table 4).⁶ Wearing an Ehecatl mask, Tezcatlipoca stands on a funerary bundle that emits wind serpents and rainy-season creatures, such as hummingbirds and butterflies, along with maize, flowers, and other plants that come to life with the onset of seasonal rainfall in May.

Page 37, the next page in the narrative, represents the period of Etzalcualiztli in June (figure 6.6a; Milbrath 2013, plate 9). This page refers to the seasonal

TABLE 6.2. Dates for Festivals in 1495–1496 and Their Relationship with Borgia 29–46

Page	Festival Number and Aztec Dates*	Named Festival in Nicholson (1971, table 4)
29	16th December 17–January 5	Atemoztli “Decent of Waters”
30	17th January 6–January 25	Tititl “Contraction?”
31	18th + 5 January 26–February 19	Izcalli + Nemontemi “Growth” + “Useless”
32	1st February 20–March 10	Cuahuitlehua “Raising of Poles”
33	2nd March 11–March 30	Tlacaxipehualiztli “Flaying of Men”
34	3rd March 31–April 19	Tozoztontli “Small Vigil”
35	4th April 20–May 9	Hueytozoztli “Great Vigil”
36	5th May 10–May 29	Toxcatl “Dry Thing?”
37	6th May 30–June 18	Etzalcualiztli “Eating of Etzalli”
38	7th June 19–July 8	Tecuilhuitontli “Small Feast Day of the Lords”
39	8th July 9–July 28	Hueytecuilhuitl “Great Feast Day of the Lords”
40	9th July 29–August 17	Miccailhuitontli “Small Feast Day of the Dead”
41	10th August 18–September 6	Hueymiccailhuitl “Great Feast Day of the Dead”
42	11th September 7–September 26	Ochpaniztli “Road-Sweeping”
43	12th September 27–October 16	Pachtontli “Small Pachtli”
44	13th October 17–November 5	Hueypachtli “Great Pachtli”
45	14th November 6–November 25	Quecholli “Precious Feathers”
46	15th November 26–December 15	Panquetzaliztli “Raising of Banners”

* The same festivals are known from Tlaxcala and Teotitlán del Camino in Oaxaca (Caso 1967, table 10; Paso y Troncoso 1905, 217–20). Dates given in the Julian calendar are for the Aztec years 1495–1496, adjusted from dates for 1519–1520 (Nicholson 1971, table 4). All the festival names are translations from Nicholson’s table 4, except for the term *Nemontemi*, which is from Durán (1971, 469).

festival honoring Tlaloc, when green maize was first available for consumption (Milbrath 2013, 22, 29). The rain god Tlaloc has not produced adequate rainfall, for his water pot issues flames rather than rain. This may be a sign that the rains are delayed this year. But rain is imminent because Tlaloc steps onto a stream of clouds, and, at the bottom of the page, the canine avatar of Xolotl carries the fire serpent into the underworld, indicating the drought has ended.⁷

Next, on page 38, we see an underworld aspect of Xolotl with a bald cypress tree, with a drum to signify that it is the “drum tree” (*ahuehuete*), here beginning to leaf out as the rainfall increases in late June (figure 6.6b; Milbrath 2013, 87). Xolotl reaches up with a digging stick to pierce Tlaloc, who offers his life blood to nourish the fields, symbolized by a giant maize cob, imagery appropriate to the festival of Tecuilhuitontli honoring Tlaloc (Milbrath 2013,

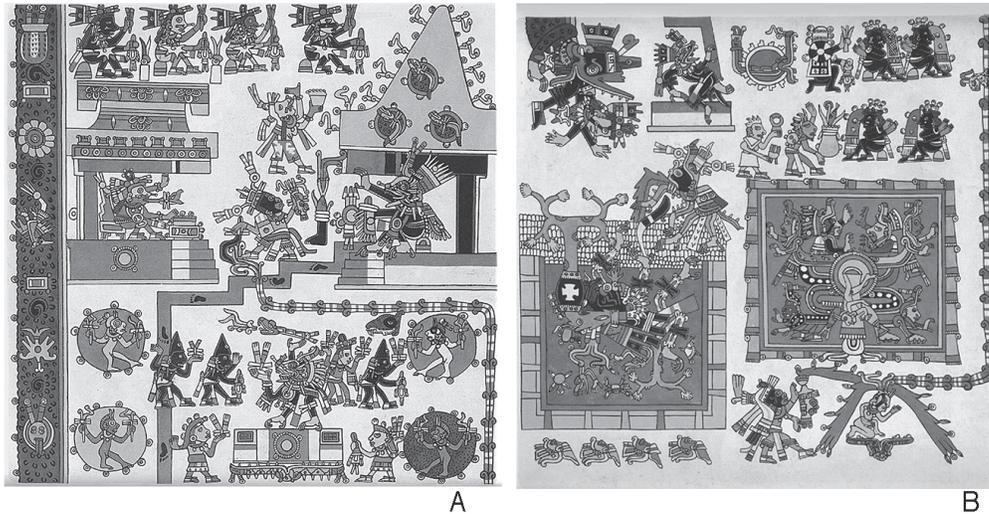


FIGURE 6.6. (a) Left, Borgia 37 depicts a flowered temple of the sun representing the summer solstice and Xolotl carrying the fire serpent into the underworld as a sign of the end of drought. The first green maize offering accompanies Tlaloc, who steps onto a cloud stream as the heaviest rains begin to fall. (b) Right, Borgia 38 represents Stripe-Eyed Quetzalcoatl descending as the Morning Star of the rainy season, with rainfall streaming up from Tlaloc's water jar to bathe the rainy-season Venus god. A newborn maize child represents maize maturing in the field, and a large maize cob represents the maize fields nurtured by Tlaloc, who offers his lifeblood to nurture the crop (after Milbrath 2013, fig. 4.7).

87–88, plate 10). Tlaloc reappears on the lower right of page 38, holding a Tlaloc-faced water jar that produces abundant rain. Another seasonal reference to maize on Borgia 38 is represented by a baby emerging with a maize cob, an image that shows the milpa has “given birth” to the principal maize crop in June.

On page 42, a solar god appears in a flowered temple at the fall equinox in September, repeating a scene shown on Borgia 37 at the summer solstice (figures 6.6a, 6.8b). This god may be the “flower prince,” Xochipilli, who is associated with flowers and butterflies and apparently depicts the sun during the rainy season in the Borgia narrative (Milbrath 2013, 50). The summer solstice and fall equinox bracket the period of heaviest rainfall, just as the winter solstice and spring equinox bracket the months with the least rainfall.

On Borgia 44, the hummingbird aspect of Quetzalcoatl is a seasonal manifestation of Venus, and the bat figure surrounded by hummingbirds also alludes to the rainy season (Milbrath 2013, 29–30). The central image shows Xochiquetzal with a flowering tree, which seems to allude to the mythic

origin of flowers (Boone 2007, 204). Study of the festival calendar suggests that Xochiquetzal's myth was reenacted annually in Hueypachtli, and her cult was the focus of special attention every eight years during the ceremony of Atamalqualiztli, which coincided with Hueypachtli during the time the Borgia calendar was created (figure 6.9b; Milbrath 2013, 29–30, 95, 119n49).⁸ Xochiquetzal is a lunar goddess linked with flowers, butterflies, and the rainy season, and her role as bride of the Sun God suggests she may represent the new moon “joined” with the sun (Milbrath 2013, 51–52). In the Borgia narrative Xochiquetzal seems to symbolize the new moon on page 44, for her torso is covered by a sun disk with radiant yellow rays, indicating the conjunction of the moon with the sun (Milbrath 2000; 2013, 94).

Page 45 depicts the hunting god Camaxtli, honored during Quecholli in November at the onset of the dry season, a time of war and hunting (figure 6.10a; Milbrath 2013, 30). Camaxtli holds a shield, a war banner, a dart thrower, and a net for carrying game. Behind him, war banners crown a tree with dark mirrors, symbolizing the dry season as a time of warfare. Dry-season imagery relating to warfare also appears on Borgia 29, which features a set of war banners in the month of December, after the main agricultural cycle has come to a close (figure 6.2a).

Sahagún mentions pulque consumption during a number of different months in book 2, which focuses on the *veintena* ceremonies, but since pulque had to be consumed when freshly made, there may have been an optimal time of year for consumption based on patterns of tapping the maguey. It is noteworthy that the only image of pulque in the Borgia sequence occurs on page 45, corresponding to the beginning of the dry season, the optimal time for pulque production (Carrasco in Graulich 1981, 50). According to Pedro Carrasco (1976, 280), the top was cut off maguey cactus, when it was “castrated” to tap the *agua-miel* used to make pulque during Pachtontli. This month dated to September 22 through October 11 in 1519, at the end of the rainy season (Milbrath 2013, table 2.3), so the image of a pulque jar full of pulque in the next month (Quecholli) seems highly appropriate in the Borgia sequence (figure 6.10a).

The yearlong narrative ends on page 46 during Panquetzaliztli (November 26–December 15 Julian; December 5–24 Gregorian; table 6.2), showing multiple images of the fire serpent and fire ceremonies characteristic of that festival (figure 6.10b). Quetzalcoatl drills a fire on Xiuhtecuhtli's fire serpent to fortify the sun in its journey through the underworld during the longest night of the year on the winter solstice.⁹ It is noteworthy that the winter solstice and spring equinox both are associated with fire-serpent imagery appropriate to the dry season (Byland 1993, 33, 46).

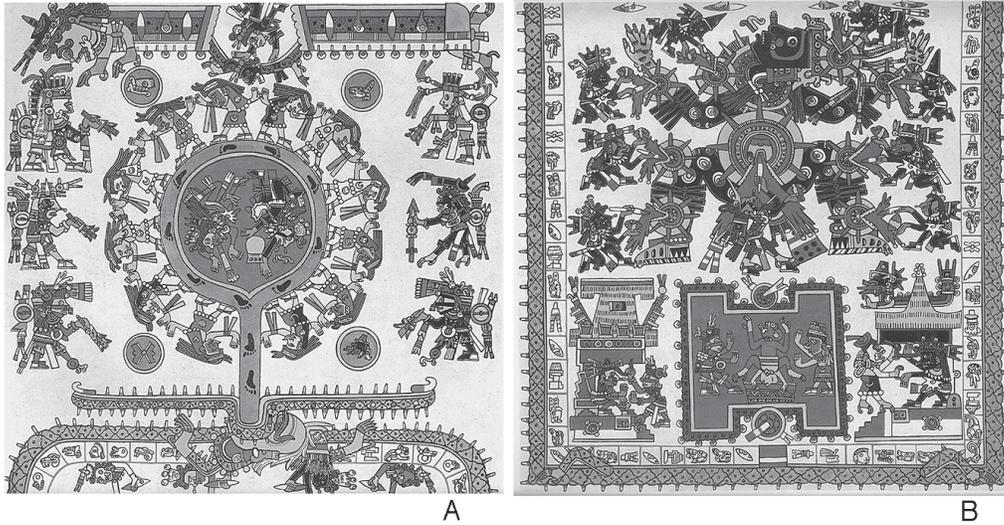


FIGURE 6.7. (a) Left, *Borgia 39* illustrates *Stripe-Eyed Quetzalcoatl* continuing his descent as *Venus* moves lower on the eastern horizon, following a path into the jaws of the *Earth Monster*. (b) Right, *Borgia 40* depicts *Stripe-Eyed Quetzalcoatl* temporarily drawn into the underworld when day turns to night during the total eclipse. He is the most prominent of the *Venus* gods attacking the *Sun* during the solar eclipse in August 1496 (after Milbrath 2013, fig. 4.8).

THE ROLE OF VENUS IN THE NARRATIVE

Images of *Venus* events and a solar eclipse help link *Borgia 29–46* specifically with the year 1496. Page 40 shows a solar eclipse with a pie wedge slice cut out of the sun, much like Aztec representations of solar eclipses (figure 6.7b). Testing all the Late Postclassic period eclipse dates recorded in ethno-historical sources relating to the period of the Aztec empire (A.D. 1300–1519) provides strong evidence that page 40 depicts a solar eclipse on August 8, 1496, the only total eclipse recorded in these Aztec sources (Milbrath 2007; 2013, 44). This eclipse image features multiple avatars of *Quetzalcoatl* attacking the *Sun* because *Venus* was seen alongside the *Sun* during the eclipse (Milbrath 2013, sky map 6).

Even though *Borgia 29–46* shows only one year, it depicts *Venus* in all four phases, beginning with the disappearance of the Evening Star in January 1496 and ending with its reappearance as the Evening Star in December 1496. The disappearance of the Evening Star during inferior conjunction on page 29 is symbolized by a skeletal *Venus* god on smoldering ashes in a *cuauhxicalli*, a vessel used for offering the hearts of sacrificial victims (figure 6.2a). This evokes a text in the *Anales de Cuauhtitlan*, which recounts how *Quetzalcoatl*

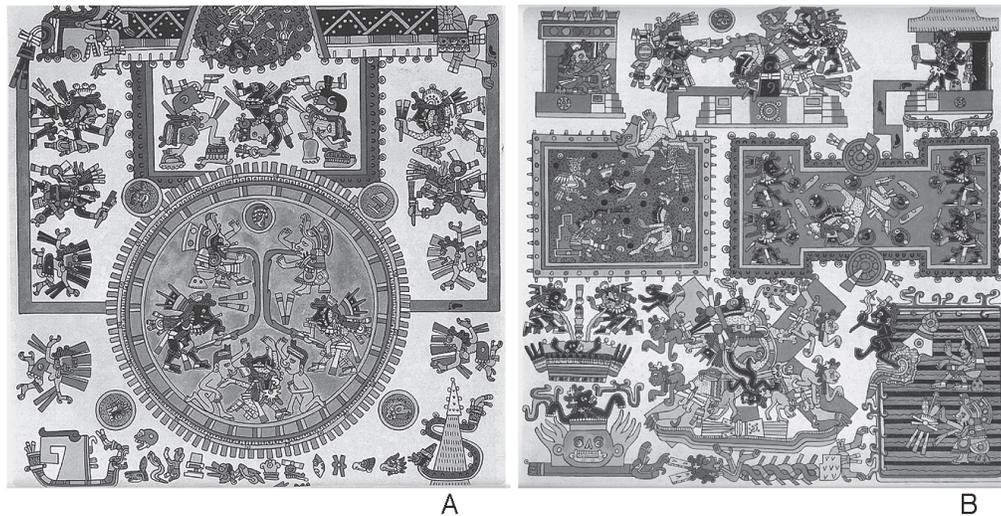


FIGURE 6.8. (a) Left, Borgia 41 portrays Stripe-Eyed Quetzalcoatl continuing his descent along the path that leads to a scene of bloodletting associated with the last visibility of the Morning Star, shown as a giant radiant disk at a time when the planet is especially brilliant near the horizon. (b) Right, Borgia 42 depicts a flowered sun temple housing a solar god (Xochipilli?) on the fall equinox and Stripe-eyed Quetzalcoatl as the sacrificer of a spotted Venus god, who tumbles into the underworld through a ball court that leads to the open jaws of the Earth Monster (after Milbrath 2013, fig. 4.9).

traveled from west to east and set himself on fire, spending eight days in the underworld before he emerged as Tlahuizcalpantecuhtli, the god of the Morning Star (Bierhorst 1992; Milbrath 2013, 16, 77). The skeletal Venus god and his burned ashes (or burned heart) represent a brief period of invisibility during inferior conjunction. Next we see a brilliant rayed disk on Borgia 30 representing Venus as it reemerges as the resplendent Morning Star in January 1496 (figure 6.2b).

On page 42 the planet's disappearance in superior conjunction is shown by a Venus god portrayed as a sacrificial victim who tumbles into the underworld through a ball court that leads to the gaping jaws of the Earth Monster (figure 6.8b). The long underworld sojourn in superior conjunction extends through Borgia 45, where we see the Morning Star in the guise of Camaxtli, the Tlaxcalan counterpart of Tlahuizcalpantecuhtli, but here in a skeletal aspect because the Morning Star is deceased (figure 6.10a). The last scene on the bottom of page 45 refers to Quetzalcoatl preparing to reemerge as the Evening Star. He wears a Venus glyph but is still "under wraps," covered by a funerary bundle framed by the decapitated heads of the deceased Morning Star. Here

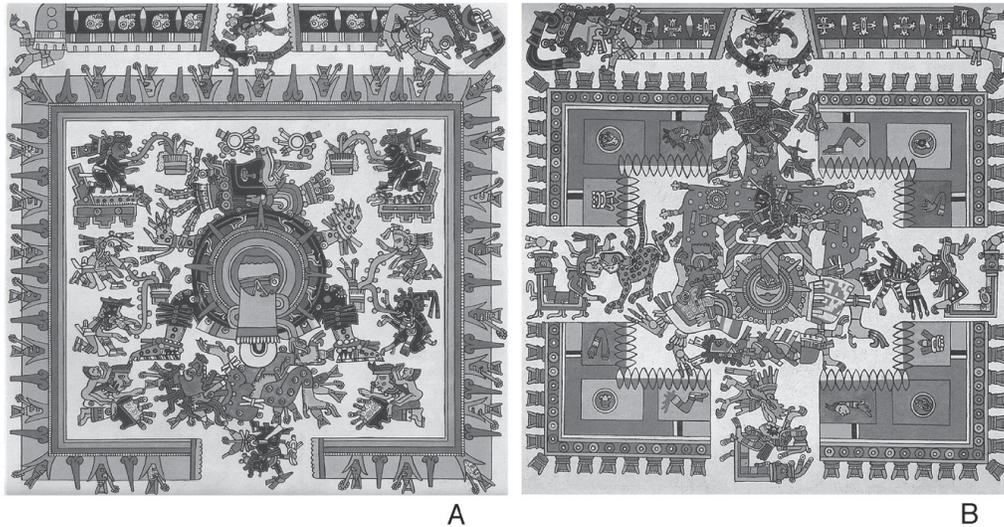


FIGURE 6.9. (a) *Left, Borgia 43 shows a border of solar rays alternating with ripe maize during October that is harvested as an offering to the gods inside the frame representing the realm of the sun. The central image shows the canine Xolotl, combined with Quetzalcoatl, here covered with a starry orb representing the moon, which is in turn covered by a sun disk to show conjunction with the Sun.* (b) *Right, Borgia 44 pictures a flowered border framing Xochiquetzal, who is covered with a solar disk to represent the new moon in conjunction with the sun. The hummingbird aspect of Quetzalcoatl and the bat god pouring blood are both rainy-season deities. The flowering tree alludes to the mythic origin of flowers celebrated as part of the seasonal cycle of festivals (after Milbrath 2013, fig. 4.10).*

Quetzalcoatl issues bloody diarrhea, symbolizing meteor showers visible to the west in the evening sky during November 1496 (Milbrath 2013, 96, plate 17). Then on page 46 we see Venus is transformed by fire, when Quetzalcoatl emerges from a boiling pot and drills a fire on the back of a fire serpent in his role as the newly visible Evening Star (figure 6.10b; Milbrath 2013, 98, plate 18).

In addition to its transformation in four different phases, the narrative also depicts the changing position of Venus in the sky over the course of a year. Wearing a headdress representing the rayed Venus orb, Black Quetzalcoatl is enthroned high atop a temple on page 33, where he gives his powers to Tlahuizcalpantecuhtli, the “lord of dawn” (figure 6.4a). They both share costume elements because they represent two different aspects of Venus, one specifically alluding to the Morning Star and the other embodying the planet itself. These paired Venus gods on Borgia 33 appear on the top of a pyramid temple in March of 1496, when Venus had reached its maximum altitude in the morning sky (February 27, 1496) (Milbrath 2013, 81).

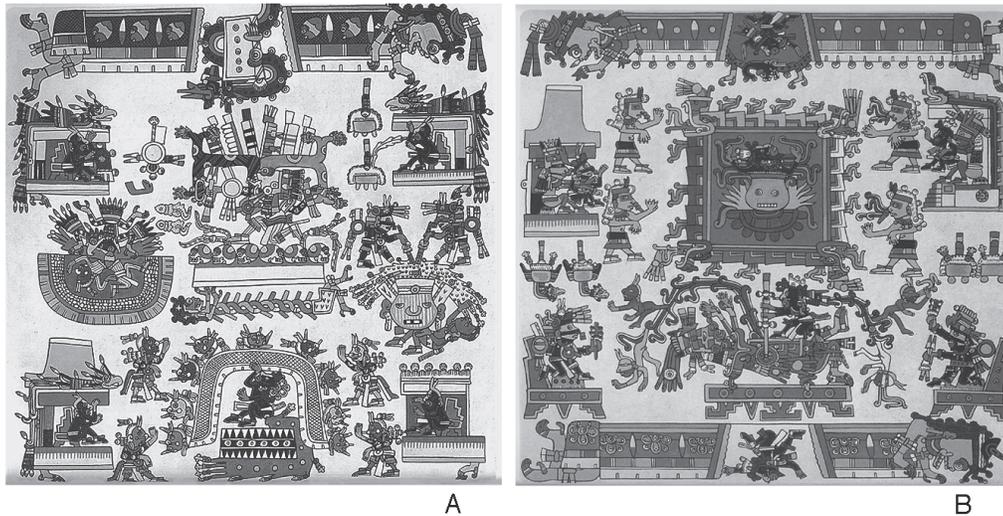


FIGURE 6.10. (a) Left, Borgia 45 depicts Quecholli in November at the onset of the dry season, honoring Camaxtli, the god of the hunt, here fused with a skeletal aspect of Venus symbolizing the Morning Star invisible in the underworld. War banners represent the dry season as the time of warfare. Wearing a Venus symbol, Venus-Quetzalcoatl is hidden from view in a funerary bundle that is framed by decapitated heads representing the deceased Morning Star. (b) Right, Borgia 46, shows the transformation of Venus by fire as Quetzalcoatl boils in a flaming jar in a temple precinct surrounded by fire serpents. He then reemerges as the newly visible Evening Star and drills a fire on the fire serpent during the December solstice festival in Panquetzaliztli (after Milbrath 2013, fig. 4.12).

Subsequently, we see that Black Quetzalcoatl on page 35 begins his descent down a path at a time that the Morning Star was slowly moving closer to the eastern horizon during the dry season in a period running from April 20 to May 9 in 1496 (table 6.2; figure 6.5a). Page 35 shows Quetzalcoatl accompanied by Tezcatlipoca (“smoking mirror”), who has a smoking mirror on his brow but also wears the wind god mask of Ehecatl-Quetzalcoatl. Tezcatlipoca is a lunar god in this context, probably representing the waning moon slowly descending to the eastern horizon during this *veintena*, when it joined the Morning Star (Milbrath 2013, 84–85). Apparently, this one-of-a-kind image (seen also on Borgia 36) shows that Tezcatlipoca takes on some of the Venus god’s attributes in the astronomical narrative to show their proximity in the sky.

The ball game scene at the bottom of page 35 introduces a new Venus avatar, showing Quetzalcoatl with a vertical stripe of face paint that runs through his eye (Milbrath 2013, 85). Stripe-Eyed Quetzalcoatl seems to represent a rainy-season aspect of Venus. Because the pages are read top to bottom, the

ball court scene on the bottom of the page refers to the latter part of the 20-day period on page 35, probably referencing the seasonal transition and possibly also the solar zenith at the end of the *veintena* on May 9 (table 6.2; Milbrath 2013, 85–86, plate 7). As the first rains began in May 1496, Stripe-Eyed Quetzalcoatl makes his first appearance as the rainy season aspect of Venus when the planet was seen descending in the morning sky.

With the onset of the heavy rains in May, Stripe-Eyed Quetzalcoatl appears repeatedly on the border of page 36 (figure 6.5b; Milbrath 2013, plate 8). He floats down a dark path at a time when the Morning Star was descending each night closer to the eastern horizon. On page 38, a nude figure of Stripe-eyed Quetzalcoatl is seen with rain clouds rising up from his body at the time of heavy rainfall during June (figure 6.6b; Milbrath 2013, plate 10). On page 39 his path of descent takes him into the jaws of the Earth Monster, as Venus descends closer to the eastern horizon (figure 6.7a; Milbrath 2013, plate 11). On the next page he moves into the nocturnal realm of the underworld in an image that represents only a temporary sojourn in darkness, when Venus was seen alongside the Sun during the total solar eclipse in August 1496 and day turned to night (figure 6.7b; Milbrath 2013, plate 12). Appearing among nine manifestations of Venus in the eclipse scene, Stripe-Eyed Quetzalcoatl takes the most prominent position in the center as he cuts open the largest solar disk on the darkened Sun during the eclipse. He wears a hummingbird costume because he takes the role of the hummingbird god honored during *Miccailhuitontli* (Milbrath 2007, 2013, 29). On Borgia 40, as on Borgia 33 and 35, multiple representations of Quetzalcoatl allude to different aspects of Venus.

On the next page (41), Stripe-Eyed Quetzalcoatl continues along a path of descent while Black Quetzalcoatl and a red-spotted Quetzalcoatl offer their blood in a giant disk representing Venus, which was now especially brilliant just above the horizon at dawn because it was close to the sun in the east (figure 6.8a; Milbrath 2013, plate 13). On page 42, Stripe-Eyed Quetzalcoatl sacrifices a red-spotted avatar of Quetzalcoatl, a scene representing the disappearance of the Morning Star during September (figure 6.8b; Milbrath 2013, plate 14). All the images on Borgia 35–42 representing Stripe-Eyed Quetzalcoatl correspond to a time when Venus was visible as the descending Morning Star during the rainy season (see note 5 and table 6.2; Milbrath 2013, table 4.2, plates 7–14).

One final image of Stripe-Eyed Quetzalcoatl appears in the border of page 43, where he is completely covered by a skeletal god who is positioned in the abdominal opening of the goddess of the Milky Way, an image representing Venus located in the underworld side of the Milky Way (Milbrath 2013, plate 15). This scene, taking place in October near the end of the rainy season, shows

Stripe-Eyed Quetzalcoatl as a rainy-season aspect of the planet, but one that is hidden from view as Venus in superior conjunction descended to the depths of the underworld (Milbrath 2013, 93).

SEASONAL PATTERNING

The narrative is loosely integrated with the seasonal cycle of festivals, beginning on page 29 with Atemoztli, just following the winter solstice, and closing on page 46 with Panquetzaliztli, the festival corresponding to the winter solstice. At least six *veintena* festivals are clearly referenced in the central images of the Borgia narrative (Byland 1993, 33, 37, 40, 44, 45, 46), and on other pages (Borgia 31, 32, and 38) there are also allusions to the corresponding *veintena* festival (Milbrath 2013, plates 3, 4, 10).

An avatar of the Sun God references a rainy-season aspect of the Sun housed in a flowered temple on the summer solstice and fall equinox on pages 37 and 42 (Milbrath 2013, plates 9, 14). These solar dates bracket the period of heaviest rainfall. In addition to the *veintena* festivals, there are also seasonal transformations of Venus represented in the Borgia narrative, as well as numerous references to the seasonal patterns of flora and fauna. Images of flowers and creatures active in the rainy season are seen only on pages 36–44, corresponding to May through October, and their absence can be noted on the remaining pages, all linked with the dry season. On pages referencing the dry season we see a different kind of imagery, featuring war banners, fire ceremonies, and skeletal vegetation goddesses, representing plants that have died or are dormant from November through April. On pages representing the dry season, the imagery also features fire-serpent temples on the spring equinox and winter solstice, as seen on Borgia 33 and 46 (figures 6.4a, 6.10b; Milbrath 2013, plates 5, 18). These subtle details are part of a seasonal narrative that can be deciphered through detailed iconographic analysis.

The narrative on Borgia 29–46 records seasonal rituals and astronomical events portrayed by Venus gods who take on different avatars in relation to the corresponding seasons and changes in the phase and positioning of Venus in the sky. A similar interest in the seasonal cycles involving specific Venus phases is apparent on Borgia 27, a discovery first made by Aveni, whose seminal research on the Codex Borgia inspired me to study “real-time” astronomical events on Borgia 29–46 and the preface to this narrative on Borgia 27–28.

The recognition of dates associated with natural history events in the Post-classic codices is a recent development, providing a new path for understanding the content of codices in Mesoamerica. Mythology may play a part in the

veintena festivals portrayed in the Borgia, but myths do not appear to be the central subject of the events on Borgia 29–46. This narrative is in fact a record of an exceptional year, the year of the only total eclipse of the sun recorded for Central Mexico in Aztec sources (Aveni and Calnek 1999). Although not explored here in any detail, the narrative also includes images depicting observations of the moon throughout 1496, including representations symbolizing the new moon on Borgia 43 and 44 (Milbrath 2013, plates 15, 16). In this year, Venus disappeared as the Evening Star just following the winter solstice and cycled through inferior conjunction, Morning Star, and superior conjunction, and then reappeared as the Evening Star just prior to the winter solstice (Borgia 46). This reflects a great interest in coordinating the solar cycle with Venus events, an important element in the Central Mexican Venus almanac also evident in the Maya area (Milbrath 1999, 172).

The narrative on pages 29–46 tracks the seasons of the year and the solstices in relation to Venus phases and the lunar cycle, events that are clearly of interest in longer cycles of time, such as those seen in the preface to the narrative on Borgia 27–28 (figure 6.1; Milbrath 2013, fig. 1.5). Long-term weather patterns are apparently recorded in relation to the phases of Venus and the Moon in the Codex Borgia. The agricultural almanacs on Borgia 27–28 record dates that coordinate the seasonal cycles with observations of events involving Venus, the Sun and the Moon, the same pattern seen in the narrative on Borgia 29–46 (Milbrath 2013, plates 1–18). Page 27 focuses on variations in seasonal rainfall in relation to the fortunes of maize over the fifty-two-year cycle known as *Xiuhmolpilli*. Drought, flooding, and pest infestations are all represented in relation to a long cycle of time that can be considered a climate record coordinated with astronomical observations.

Prior to the conquest, Central Mexican codices lacked any inscriptions except for dates, so the artists used detailed visual imagery to provide records of the natural cycles and variation in climate and crops. Even though the events in this narrative focus on only one year, the images tell us that the rains came late in the year 1496. This year was apparently especially ominous for other reasons, for this was the year of the only total eclipse recorded in Aztec sources. The narrative and its preface seem to be natural history records compiled over 500 years ago by the people of Central Mexico, making them exceptionally important to our understanding of the ancient Mexican environment and world view.

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had the opportunity to collaborate with Anne, who has efficiently shepherded our book through its many phases, making the volume available only three years after the 2012 SAA conference honoring Tony.

NOTES

1. Tlaxcala had a festival calendar sequence very similar to that of the Aztecs, indicating a widespread Central Mexican tradition that may be quite ancient (Milbrath 2013, table 2.2).

2. Šprajc (1996, 42) argues that maize deities are connected with the Evening Star, but Johannes Neurath (2005, 91–92, 95n6.9) points out that among the Cora today in western Mexico cloud serpents that bring the first rains when the planting is about to begin represent the Morning Star, and he concludes that among some Mesoamerican traditions the Young Corn God should be identified as the Morning Star.

3. Many of the pages record sets of four day signs spaced at five-day intervals, all drawn from the 20 day signs used in the 260-day count (Tonalpohualli). The lack of numerical coefficients allows the same set of day signs to function in a variety of ways. Using the same set of day signs with different numeral coefficients allows placement of the festival calendar dates over the four-year sequence of yearbearers and the eight-year cycle of the Venus Almanac, as well as the 52-year Xiuhmolpilli (Caso 1971, 347; Milbrath 2013, 103–4).

4. A precipitation graph for Central Mexico shows that rainfall steadily increases in May and peaks in June (Hernández and Bricker 2004, fig. 10.3; Hernández 2006, fig. 3). The rainy season runs from May to the end of October, incorporating the summer solstice and fall equinox, representing the half-year when maize was growing. The dry season runs from November through April, a period that includes the winter solstice in December and the spring equinox in March, when the only maize available was the mountain maize or maize from irrigated crops (Milbrath 2013, 19–20, 116n12, 116–17n18).

5. A report published by Carlos Lara (2006) notes that the availability and quality of floral resources explains the temporal and spatial composition of the hummingbird community in Tlaxcala, which is composed of two resident hummingbirds, three altitudinal migrants, and three winter visitors. The plant species visited by hummingbirds in Tlaxcala differ throughout the year in terms of flowering intensity, nectar, and sugar characteristics, but the highest floral abundance occurs in May to October (the rainy season), with blooming peaks for the three preferred flowering plants: *Salvia elegans*, *Bouvardia ternifolia*, and *Penstemon roseus*.

6. A sixteenth-century legend recounts how Tezcatlipoca stole a mirror that produced rain, housed in Quetzalcoatl's temple (*Historia de México*; Garibay 1973, 114–15).

Tezcatlipoca's acquisition of a mirror that controls rain is in keeping with his lunar identity, for the moon seems to play a prominent role in controlling rainfall, according to ethnographic accounts in Mesoamerica (Milbrath 1999, 29).

7. Xolotl is often said to be a twin aspect of Venus, but in fact the dog god represents Mercury, which is the planetary twin of Venus, because both planets follow a similar trajectory as an inferior planet. Xolotl is the Venus twin because he represents Mercury, the only other planet that has a four-phase synodical cycle. Xolotl's descent in the Codex Borgia reflects the observed positions of Mercury in the morning sky during 1496, and the narrative actually shows two descending paths, twin trajectories of descent that pair the movements of Venus and Mercury (Milbrath 2013, fig. 4.7, sky map 5). His changing aspect in the Borgia narrative mirrors the changing phases of Mercury. Xolotl begins a short path of descent on page 37 and reaches the end when he tumbles from a platform on page 38. His brief descent encompassing a period of no more than 40 days, which is typical for Mercury in the early morning sky. The descent of Venus on pages 34–42 covers nine pages that represent an interval of 180 days. The disappearance of Venus on September 18, 1496, is depicted by the sacrifice of the Venus god on page 42 (Milbrath 2013, plate 14). Mercury's disappearance on June 18, 1496, is represented on the top of page 38 by the image of Xolotl tumbling off a platform and transforming into a skeletal god floating in the waters of the underworld during Mercury's superior conjunction phase (last visibility of Morning Star on June 18) (Milbrath 2013, table 4.2, plate 9).

8. The Atamalqualiztli ceremony took place every eight years to coordinate cycles of Venus with the Sun and Moon during Hueypachtli or Quecholli (Milbrath 2000, 2013, 30). In the Borgia narrative, Atamalqualiztli was clearly performed during Hueypachtli in the year 1496 (Milbrath 2013, 95).

9. All dates on table 6.2 are from the Julian calendar in use prior to 1582, so the winter solstice fell on December 11, 1496, during Panquetzaliztli, coinciding with Borgia 46. Even though page 46 ends the narrative, it does not bring the year to a close because the calendar year ended in February among the Tlaxcalans, as it did among the Aztecs (Milbrath 2013, table 2.3). Almost immediately following the narrative, an almanac on Codex Borgia pages 49–52 carries the year to an end in February. This four-page directional almanac records yearbearer dates spaced at 13-year intervals. The four yearbearer dates (4 House, 4 Rabbit, 4 Reed, and 4 Flint) are paired with *Tonalpohualli* dates that all bear the number five (5 Earthquake, 5 Wind, 5 Deer, 5 Grass) to form *Xiuhmolpilli* dates that fall in Izcalli, the eighteenth festival of the year, when there was a fire-drilling ceremony like that shown on each of the yearbearer pages (Milbrath 2013, 35).

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