



# The PARI Journal

A quarterly publication of the Ancient Cultures Institute  
Volume XXI, No. 4, 2021

## In This Issue:

### Naj Tunich Drawing 29 and the Origins of the Baax Tuun Dynasty

by  
Nicholas Carter and  
Barbara MacLeod

PAGES 1-16

Marc Zender  
Editor  
[marc@ancientcultures.org](mailto:marc@ancientcultures.org)

Joel Skidmore  
Associate Editor  
[joel@ancientcultures.org](mailto:joel@ancientcultures.org)

The PARI Journal  
202 Edgewood Avenue  
San Francisco, CA 94117  
415-664-8889  
[journal@ancientcultures.org](mailto:journal@ancientcultures.org)

Electronic version  
available at:  
[www.precolumbia.org/  
pari/journal/2104](http://www.precolumbia.org/pari/journal/2104)

ISSN 1531-5398

## Naj Tunich Drawing 29 and the Origins of the Baax Tuun Dynasty

NICHOLAS CARTER  
BARBARA MACLEOD

Since their discovery in 1979, the painted images and hieroglyphic texts in the cave of Naj Tunich, in the vicinity of Dolores and Poptun in southeastern Peten, Guatemala, have stimulated interest and interpretation. Written by elite pilgrims and ritual specialists, some of whom traveled from hundreds of miles away, the Naj Tunich texts are the largest corpus of cave inscriptions in the Maya world, and they offer a fascinating but at times confusing picture of religious activity and political interaction in the eighth century AD. In this paper we explore the contents and implications of the second oldest text at Naj Tunich with a written date, Drawing 29. We present the case that one local dynasty with a special role at Naj Tunich, anciently Baax Tuun ("Quartz Stone"; Garrison and Stuart 2004:830; Zender 2010:8, n.10), flourished and may have been founded under the tutelage of the hegemonic Kaanul kingdom far to the north. We propose that Kaanul's involvement in the Dolores-Poptun region, while older than the Naj Tunich cave cult, intensified around the turn of the eighth century in response to climatic change and geopolitical setbacks in its rivalry with the Mutul dynasty of Tikal.

### Naj Tunich

Naj Tunich is a limestone cavern in the southeastern Department of Peten, Guatemala, in the Maya Mountains east of Poptun, near the border with Belize (Figure 1). Access is through a sinkhole in the bedrock opening onto a 30 m high entrance which was intensively modified in antiquity (Stone 1995:101). A great

heap of fallen rock in the entryway, its slopes terraced and its top leveled, was a focus for ancient activity that left a dense concentration of artifacts and ceramics—mainly belonging to a Protoclassic complex potentially corresponding to the Peripheral Chicanel phase defined for the Terminal Preclassic/Early Classic period in the adjoining Dolores region by Juan Pedro Laporte (1995)—as well as pits and stone enclosures that may have been tombs (Brady 1989:101-159). Beyond this lie about three kilometers of winding tunnels containing a number of dramatic natural features (Figure 2; Stone 1995:101-105). Naj Tunich was a ritually important site from the Late Preclassic until the end of the Late Classic period, but it was specifically between about 692 and 772 that Maya pilgrims penetrated into the farthest reaches of the cave to conduct agricultural and calendrical rituals and to paint the images and texts on the cavern walls which are the subject of this paper (MacLeod n.d.).

After centuries of abandonment, Naj Tunich was rediscovered in 1979 by Bernabé Pop and came to the attention of the Guatemalan authorities and the wider world in the following year. Early explorers included: a group of speleologists who mapped the cave (Witte and Garza 1981); George Stuart and William Garrett of the National Geographic Society (Stuart 1981); Jacques van Kirk, who photographed many of the cave paintings (Rodas 1980); and the linguist Pierre Ventur, who gave Naj Tunich its present name (Stone 1995:100). Excavations by James Brady and Sandra Villagrán de Brady yielded



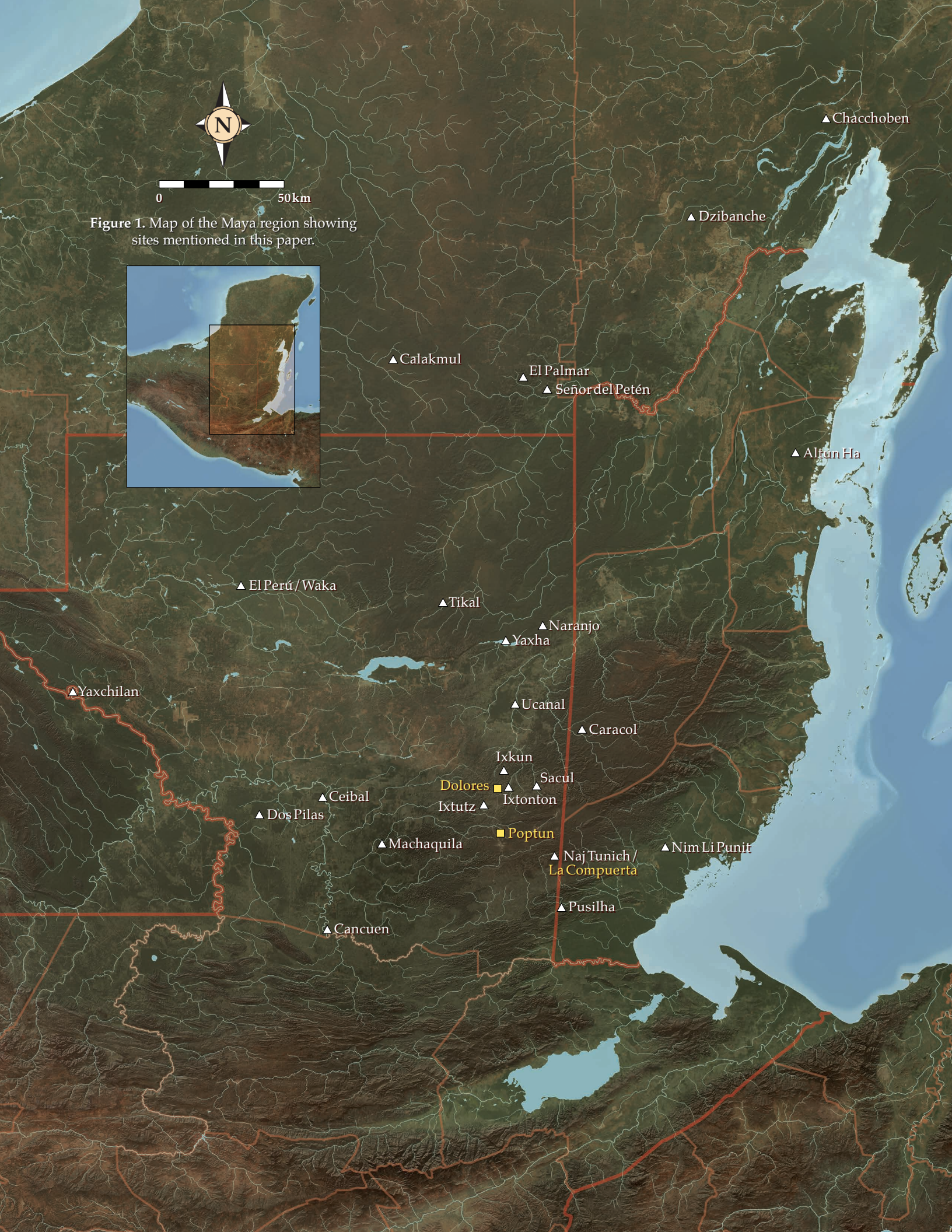
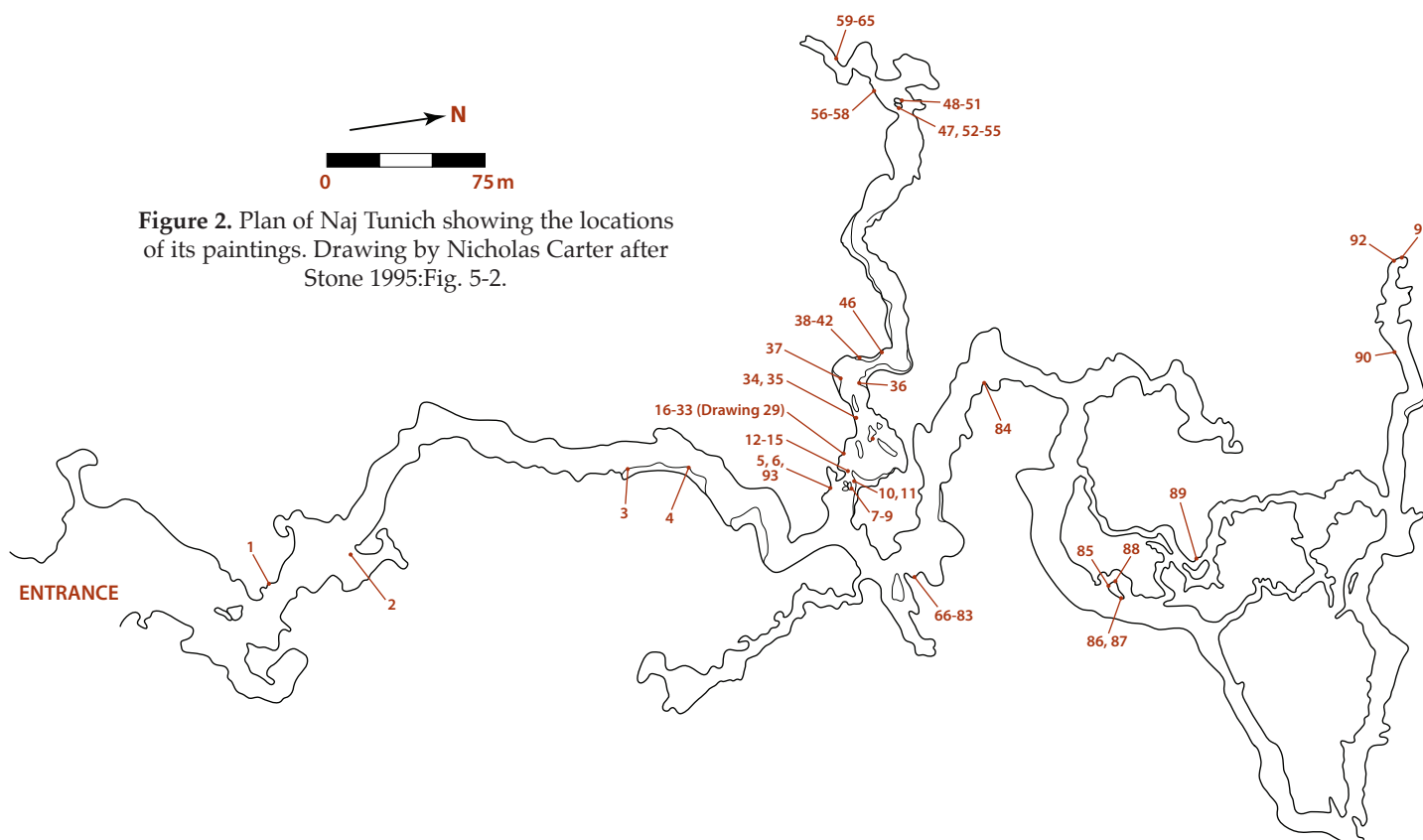


Figure 1. Map of the Maya region showing sites mentioned in this paper.





**Figure 2.** Plan of Naj Tunich showing the locations of its paintings. Drawing by Nicholas Carter after Stone 1995:Fig. 5-2.

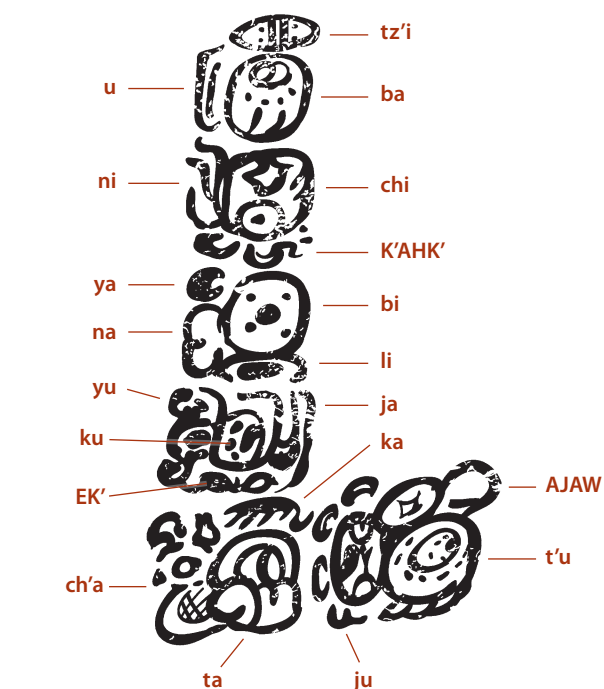
abundant data about the stratigraphy, architecture, and ceramics of the cave (Brady 1989), and infrared photography by Brady revealed a number of important details in the paintings (Brady 1999). Andrea Stone's 1995 book, *Images from the Underworld: Naj Tunich and the Tradition of Maya Cave Painting*, summarized the history of its use, situating it in the context of ancient Maya cave painting practices. The work includes a catalog of the Naj Tunich paintings photographed by Chip Clark and Jennifer Clark and a chapter, co-authored with Barbara MacLeod, on the epigraphy and historical content of the painted texts (MacLeod and Stone 1995).

These inscriptions deal primarily with ritual events carried out by young men from various different polities, members of the elite or of ruling families but usually not themselves kings (*k'uhul ajaw*, "holy lords"), who often visited the cave in one another's company. The texts thus furnish valuable information about the social and political relationships among those kingdoms during the period when the texts were written (MacLeod and Stone 1995:152-153). The paleography is Late Classic, and some of the personal names belong to people known from monumental or ceramic inscriptions elsewhere, but pinning down the exact dates of the inscriptions has been complicated by the unusual way that dates are recorded in them (MacLeod and Stone 1995:158-165).

Sixteen of the 93 paintings at Naj Tunich bear Calendar Round dates and sometimes other calendrical

information. The problem for epigraphers has been that nine of those dates use nonstandard correlations between the tzolk'in and haab calendars, making it hard to connect them to dates in the Long Count. Recently, Barbara MacLeod (n.d.) reconciled the anomalous dates with the standard Classic Maya calendar by proposing that the nonstandard dates reflect the effective suspension of the tzolk'in, from the perspective of pilgrims spending multiple days in the darkness of the cave, while the haab calendar was allowed to advance. Her reconstruction is persuasive because it yields several precise haab-year anniversaries among dates at Naj Tunich, which are unlikely to occur by chance. Thus analyzed, the dated Naj Tunich inscriptions cover a period of 80 years, from AD 692 to 772. The Long Count dates used below come from MacLeod's work; for their correlation with the Gregorian calendar, see Martin and Skidmore (2012).

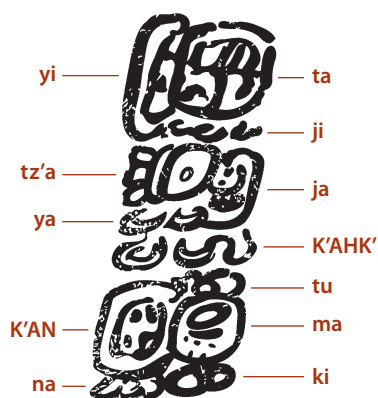
One likely motivation behind the newly intensified and internationalized rituals at Naj Tunich was a long but locally variable period of progressive climatic drying throughout the Maya lowlands, including areas near Naj Tunich. Well attested from multiple climate proxies, this period of increasing aridity lasted from about AD 680 until well into the tenth century, perhaps peaking ca. 820-870, and was at this peak the most devastating of a number of factors contributing to the end of kingship and widespread depopulation across the southern lowlands in the ninth century (e.g., Douglas et al. 2015; Hodell et



*u tz'ihb nich k'ahk' yanabil yuklaj ek' ch'akat jut' ajaw*

It is the writing of Nich K'ahk', the anab of  
Yuklaj Ek' Chakat, the Jut' lord

a



*yitaaj tz'ahyaj k'ahk' k'antu maak*  
in company with Tz'ahyak K'ahk',  
the K'antu person

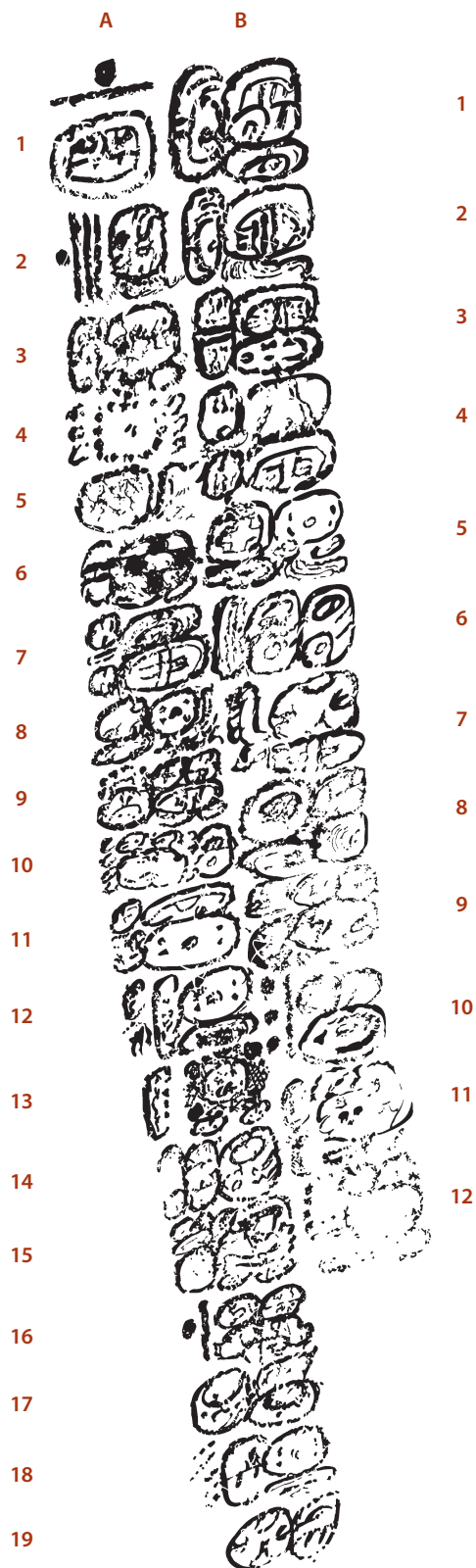
b

**Figure 3.** Details of Drawing 88 naming (a) Nich K'ahk', a courtier in the service of a lord of Jut', and (b) Tz'ahyaj K'ahk', a member of Caracol's royal family. Drawing by Nicholas Carter after photographs by Chip Clark and Jennifer Clark (Stone 1995:Figures 8-88c,d).

al. 2005; Hoggarth et al. 2017; Kennett et al. 2010, 2012; Lentz et al. 2014; Medina-Elizalde et al. 2010; Webster et al. 2007). Well before the Terminal Classic collapse, and apart from its effects on agriculture, drought would have diminished the navigable sections of rivers that were important to Late Classic travel and trade, disrupting economic networks and lending new importance to coastal and pedestrian routes (Canter 2012; see Caso Barrera and Aliphath Fernández 2006 and Carter et al. 2019 for the Dolores-Poptun corridor as one of the latter). One response pursued by Late and Terminal Classic Maya farmers, rulers, and religious leaders in the eastern lowlands was to intensify ritual activity in caves, believed throughout Mesoamerica to be the residences of rain deities (Moyes et al. 2009). Various pieces of evidence—the timing of many dated visits, the presence of twenty victims of child sacrifice, and a recurring ritual mentioned in the texts (discussed below)—lead us to think that pilgrimages to Naj Tunich were part of that generalized response (MacLeod n.d.).

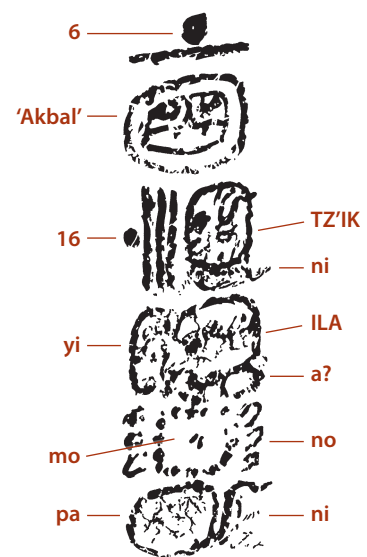
Yet Classic Maya ritual specialists, like their counterparts in other times and places, were involved in formal and informal political systems, and their ritual acts had a political dimension (Prufer 2005). For the Maya especially, cave rituals created and reasserted ties to the land and deities of nature which political leaders were keen to claim for themselves (Moyes and Prufer 2013:225-228). This appears all the more true at Naj Tunich, where many named pilgrims belonged to royal families and sometimes traveled hundreds of kilometers to participate in such rituals. That being so, we understand the painted texts naming visitors to offer (admittedly incomplete) snapshots of a shifting network of friendly political relations among the kingdoms from which they hailed. We also suppose that those pilgrimages would have been politically important, providing visitors from different kingdoms a revered and relatively neutral meeting space and building solidarity among them through shared participation in the drama of ritual, bloodletting, and sacrifice in the otherworldly setting of the cave. We propose that in the same ways that local cave shrines served individual polities as authoritative and protective channels for communion with the sacred Earth, Naj Tunich granted authority and legitimacy to participants in long-distance alliances.

The earliest dated text at Naj Tunich, Drawing 88 (January 3, 692), describes a visit to the cave by several named individuals (Figure 3). Among them are a member of Caracol's royal family and a courtier in the service of a lord of Jut', a polity not yet identified with an archaeological site but probably located between Tikal and the Dolores region (Houston 2018). Jut' does not appear again in the Naj Tunich corpus, and Caracol recedes from prominence after this early inscription. The next painting with a date, Drawing 29 (Figure 4), was inscribed 27 years later—by which time the political landscape of the Dolores region, including Naj Tunich, had taken on a shape that was to persist until the end of the elite cave cult, after 772.



**Figure 4.** Naj Tunich Drawing 29. Drawing by Nicholas Carter after infrared photographs by James Brady (1999).

**Figure 5.** Naj Tunich Drawing 29, glyph blocks A1–A5. Drawing by Nicholas Carter after infrared photographs by James Brady (1999).



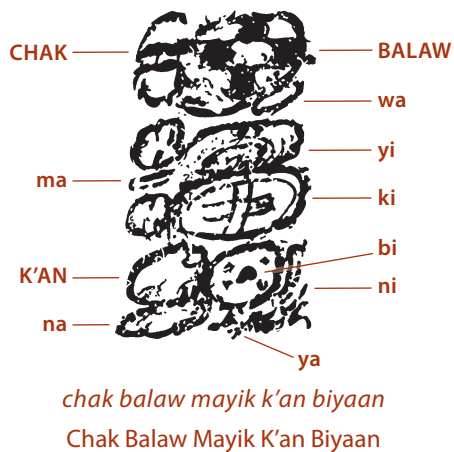
wak \*ak'ab waklajuun \*te' tz'ikin yila mon pan

On 6 Akbal 16 Xul, he witnessed the  
nurturing of the sprouts

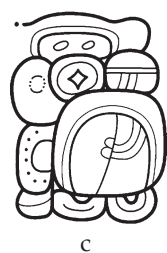
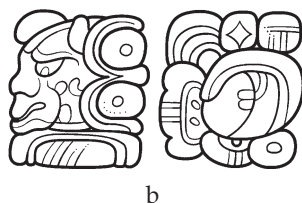
### An analysis of Naj Tunich Drawing 29

Drawing 29 is located near the beginning of the Western Passage, a tunnel that branches off from the Main Passage about 300 m from the entrance to the cave, in a section where major collapses have widened the passage and heaped the floor with fallen limestone. This area is the primary focus of painting at Naj Tunich, containing a total of 32 drawings, although paintings are found throughout the entire cave (Stone 1995:101-103). Drawing 29 deals with a single event (Figure 5), a visit to Naj Tunich by two brothers on the Calendar Round date 6 Akbal 16 Xul, corresponding to 9.14.7.11.3 or June 7, 719. The brothers “witnessed” or “attended” (*yila*) something spelled **mo-no pa-ni** (elsewhere **mo-no pa-na**). This term was initially and independently identified as the toponym *Mopan* or *Mo'pan*, connected to the Mopan River and the Mopan Maya people of the region, by Houston and Stuart (1994:Fig. 66) and MacLeod and Stone (1995:169). But following David Stuart's (2002:2) decipherment of the syllabic sign **no**, MacLeod and Alejandro Sheseña (2013:205-207) reinterpreted the sequence as *mon pan*, “the nurturing of the [maize] sprouts,” an agricultural ritual that usually coincided with the summer rains and corn planting time (MacLeod n.d.). *Mon pan* is a consistent and central theme of half of the Naj Tunich texts, the primary and in many cases the only event they discuss, and Drawing 29 is the earliest dated inscription that mentions it.

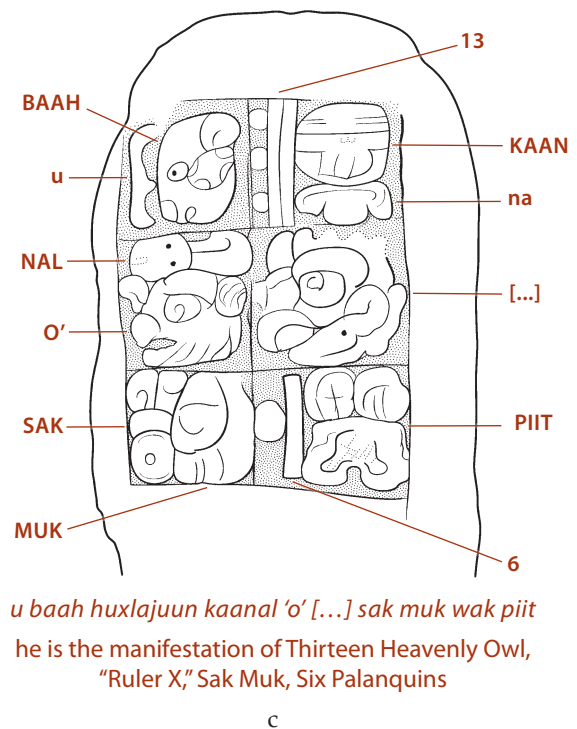
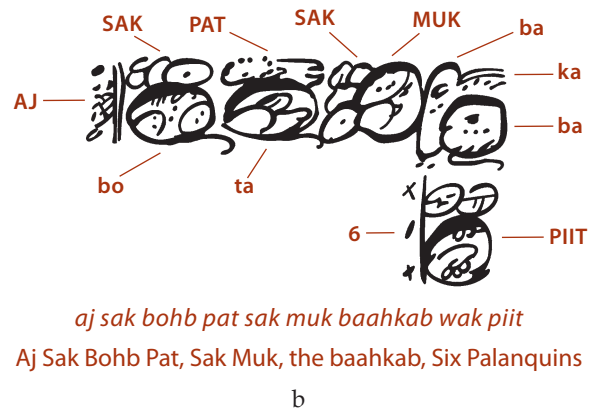
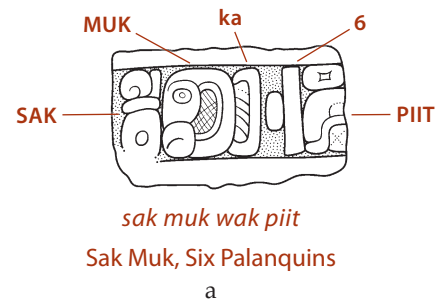
The elder brother, mentioned beginning at glyph block A6 (Figure 6), is named Chak Balaw Mayik K'an Biyaan (see Prager 2015 for the reading of T594 as **BAL**, **BALAW**). Suggestively, the construction CVC-*ik*-Ø for *Mayik* appears to be Yukatekan (MacLeod n.d.), although the language of the text as a whole is Ch'olan. Here, Chak Balaw is called a holy lord of a polity named *Yax*, “Blue/Green” (Figure 7a). The same kingdom once provided an important marriage partner to the Caracol dynasty: a



**Figure 6.** Naj Tunich Drawing 29, glyph blocks A6–A8. Drawing by Nicholas Carter after infrared photographs by James Brady (1999).



**Figure 7.** (a) Naj Tunich Drawing 29, glyph block A9 (drawing by Nicholas Carter after infrared photographs by James Brady [1999]); (b) name and Emblem Glyph of Lady “Batz’ Ek’” of Yax (Caracol Stela 3, back, glyph blocks A15 and B16; drawing by Nicholas Carter); (c) Emblem Glyph of the mother of Lady “Batz’ Ek’” (Caracol Stela 3, glyph block B10; drawing by Nicholas Carter after Beetz and Satterthwaite 1981:Fig. 30a).



**Figure 8.** Inscriptions naming Sak Muk, Six Palanquins people: (a) El Palmar (Campeche) Hieroglyphic Stairway, Step V, glyph blocks W and X (drawing by Carter after a photograph by Kenichiro Tsukamoto; Tsukamoto and Esparza Olguín 2014:Fig. 12); (b) polychrome painted vessel from Señor del Petén (drawing by Carter after Cortés de Brasfeder 1996:Figs. 5 and 6); (c) unnumbered stela from Chacchoben (drawing by Carter after a photograph by Jim Rauh).



royal woman known to epigraphers as “Lady Batz’ Ek’” (perhaps Ix Tiwol Kan Ek’; Boot 2014:23, n. 17; Christophe Helmke, personal communication to Boguchwała Tuszyńska, cited in Tuszyńska 2016:37, n. 7; Figure 7b), who arrived at Caracol in AD 584 and played an important political role there until her death in 634 (Martin and Grube 2008:91). Although Lady “Batz’ Ek’”’s mother’s dynastic title is spelled **YAX-a-AJAW-wa** on Caracol Stela 3 (glyph block B10), the more usual spelling—including on the same monument—is **YAX-AJAW-wa**, omitting the **a**, and even in that instance the proportions of the glyphs make it evident that the **a** syllable is there as a phonetic complement for **AJAW** (Figure 7c). By contrast, the Emblem Glyph and toponym of Yaxha’ (*Yaxa’*, “Blue/Green Water”) are consistently spelled with an **-a**, usually the parrot’s head (T743) variant, with **YAX-a** occupying the position of the main sign in the Emblem Glyph (Stuart 1985). We therefore identify Yax as a different polity than Yaxha’, not identified with an archaeological site but probably near and subordinate to Caracol. The presence of a Yax lord at Naj Tunich suggests that Caracol remained involved in some way in the *mon pan* cultus.

If so, however, Caracol took a back seat to two other polities. One was Baax Tuun, discussed below. The name of the other is spelled **SAK-T694-ka**, variously read by epigraphers as *Sakho’ok* (“White Valley”; Tsukamoto and Esparza Olguín 2014:39), *Sak Ook* (perhaps “White Axe Head”; Houston 2016:404), or *Sak Muk* (“White Muk Plant,” where *muk* is *Dalbergia glabra*, a flowering shrub abundant in Campeche; Bíró et al. 2020). We will use the last interpretation here, setting aside the question of possible vowel complexity to focus on the history of this dynasty. Sak Muk people are named in texts from several sites east of Calakmul: El Palmar (Tsukamoto and Esparza Olguín 2014:39), Señor del Petén (Cortés de Brasdefer 1996), and Chacchoben, the last located near Chetumal Bay (Bíró et al. 2020:141; Figure 8). Both Baax Tuun and Sak Muk feature prominently in Drawing 29.

Unusually, perhaps uniquely, for someone with the status of “holy lord” (*k’uhul ajaw*), Chak Balaw also bears a courtly title: *anab*, potentially “sculptor” (Houston 2016:407) or “helper” (in MacLeod’s interpretation, based on the Yukatekan root *an* ‘help’ plus an instrumental noun suffix). In the Maya corpus, the status of *anab* always indicates service to some patron; here, Chak Balaw is called a “southern *anab*” (*nohol anab*; Figure 9) and “the *anab* of” (*yanabil*) a ruler of Sak Muk named U Pakal K’ihnich (Figure 10).

U Pakal K’ihnich carries the usual lordly titles of his dynasty: *Sak Muk* and *wak piit*, “six palanquins.” *Sak Muk* is one of several titles used throughout the Maya lowlands which function as emblem glyphs, denoting rulership or membership in a royal family, but which lack the typical *k’uhul* (“holy”) and/or *ajaw* (“lord”) elements (see Houston 1986). Similarly, *wak piit* is among multiple “numbered palanquin” titles attested for elites from various polities: for instance, *chan piit* (“four palanquins”) and *waxak piit* (“eight palanquins”) for lords of Ceibal around the bak’tun ending of AD 830 (Carter 2014:196–197), and *wak piit* for eighth-century lords of Sacul (Figure 11). Here, U Pakal K’ihnich is also called a *baahkab*, a kingly title, and a *k’uhul Ibil winik*, “holy Lima Bean Field person.” This last may be a version of the titles *Ib ajaw* (“Lima Bean lord”) and *k’uhul Ibil ajaw* (“holy Lima Bean Field lord”) attested on Stela 1 at Yaxchilan and a Late Classic incised vessel (Tokovinine 2014:14).

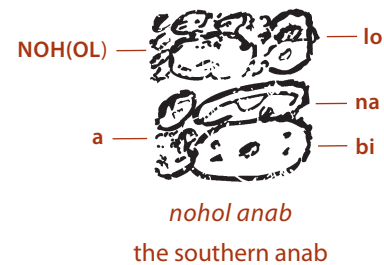
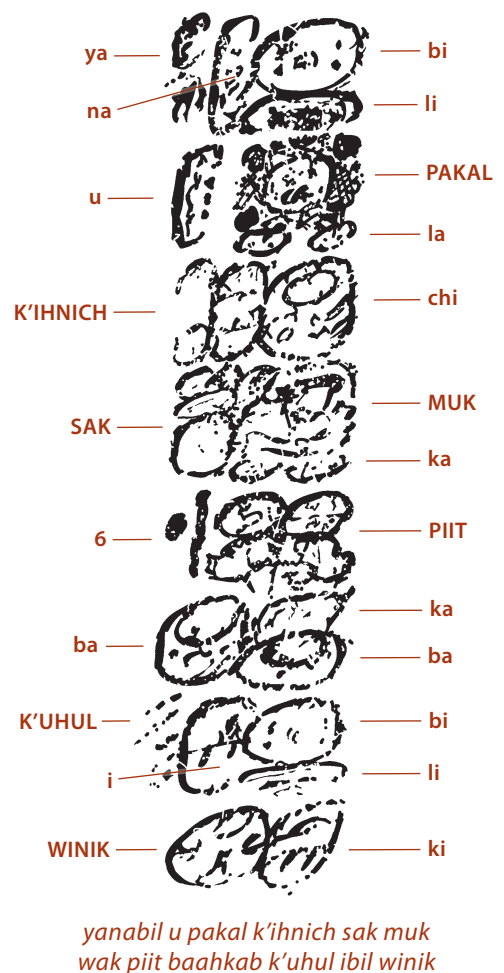
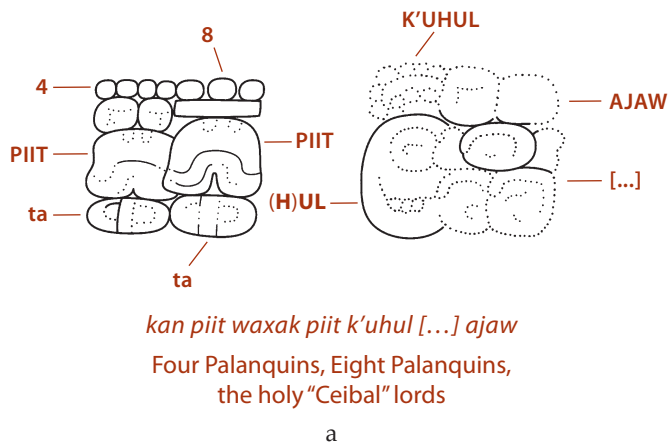


Figure 9. Naj Tunich Drawing 29, glyph blocks A10–A11. Drawing by Carter after infrared photographs by James Brady (1999).

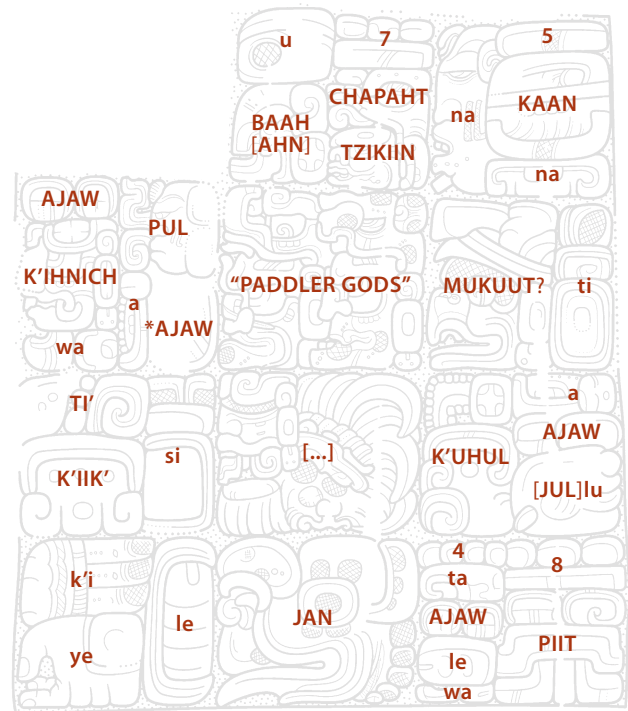
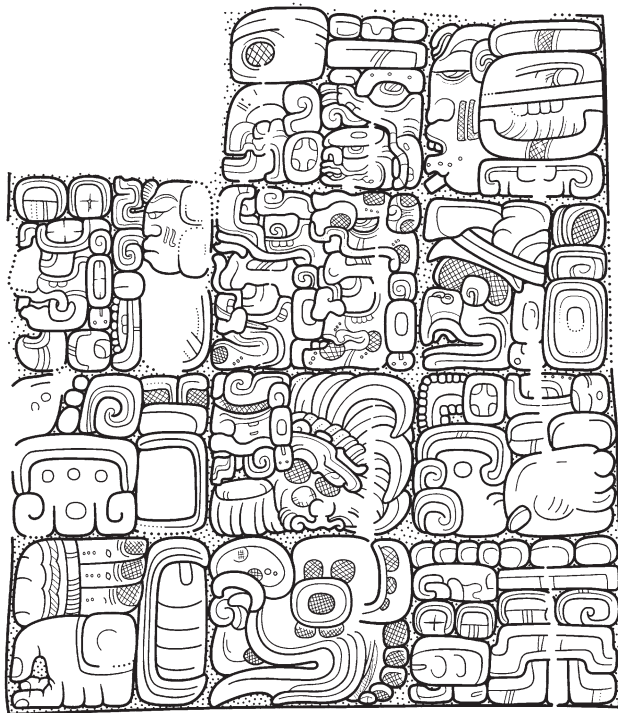
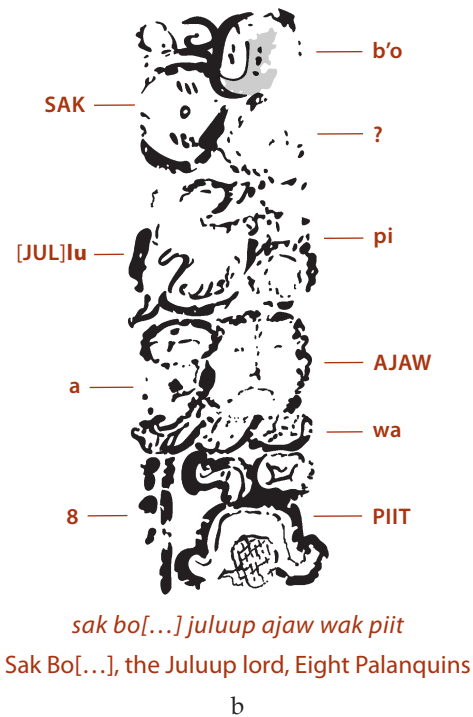


the *anab* of U Pakal K’ihnich, Sak Muk, Six Palanquins, the *baahkab*, the holy Ibil lord

Figure 10. Naj Tunich Drawing 29, glyph blocks A12–A19. Drawing by Carter after infrared photographs by James Brady (1999).



**Figure 11.** (a) Detail of Ceibal Stela 11 naming lords of Ceibal as "Four Palanquins" and "Eight Palanquins" (drawing by Carter after a photograph by Ian Graham [Graham 1996:33]); (b) detail of Naj Tunich Drawing 25 naming Sak Bo[...], a lord of Sacul, as "Eight Palanquins" (drawing by Carter after a photograph by Chip Clark and Jennifer Clark (Stone 1995:Fig. 8-25); (c) detail of Sacul Stela 1 naming K'iyel Janab, a king of Sacul, as "Eight Palanquins" (drawing by Carter after photographs by himself and Ian Graham).

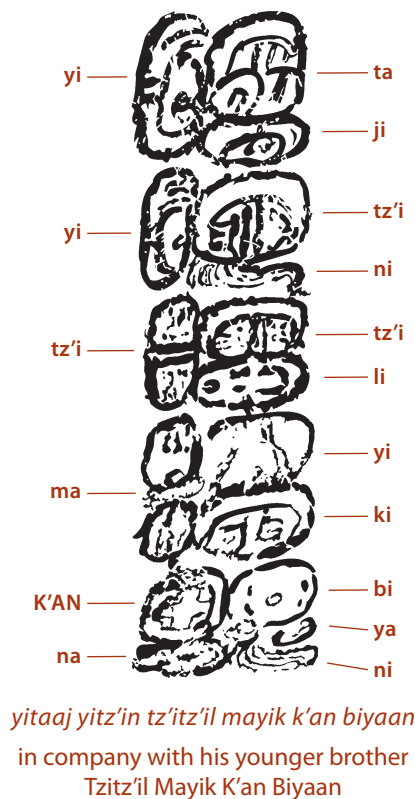


ubaah huk chapaht tzikiin k'ihnich ajaw pul ajaw [...] k'iik' ti'is [...] k'iyel  
janab naah ho' kaan mukuut k'uhul juluup ajaw kan ta ajawlel waxak piit

he is the manifestation of Seven Centipede Eagle Sun Lord, Burning Lord, "Stingray Paddler" and  
"Jaguar Paddler," Blood Mouth [...] K'iyel Janab, the Naah Ho' Kaan attendant,  
the hold Juluup lord, fourth in the lordship, Eight Palanquins

c





**Figure 12.** Naj Tunich Drawing 29, glyph blocks B1–B5. Drawing by Carter after infrared photographs by James Brady (1999).

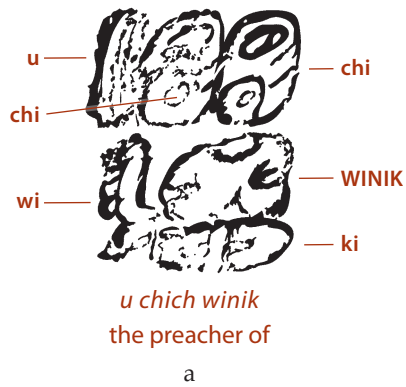
Several inscriptions at Naj Tunich mention Sak Muk lords. Based on those and other hieroglyphic sources, the Sak Muk polity appears as an important ally of the Kaanul (“Snake Place”) dynasty, whose original capital was at Dzibanche’, but which had been based at Calakmul since 635 (Martin and Velázquez García 2016:26; Tsukamoto and Esparza Olguín 2014; Velázquez García 2004). Following Kaanul’s “golden age” under Yuknoom Ch’een the Great (600–ca. 686) as a hegemonic power in the southern lowlands, a military defeat at the hands of Tikal in 695 diminished Kaanul’s diplomatic influence. A subsequent ruler, Yuknoom Took’ K’awiil, was in office by 702 and set about consolidating the dynasty’s power. The effort was ultimately unsuccessful—the Kaanul kings suffered further major defeats in the 730s and 740s, and apparently no longer ruled at Calakmul by midcentury—but during the early decades of the eighth century, Kaanul did manage to solidify its influence over some other parts of the Maya world (Martin and Grube 2008:108–113).

Sak Muk evidently played a significant role in Kaanul diplomacy during that time owing to its strategic position between Calakmul and the sea. With Chacchoben well placed to control access to Chetumal Bay, their support guaranteed Kaanul access to the Caribbean coast, even as Tikal pressed its advantage inland. One Sak Muk lord based at El Palmar, Aj Pach’ Waal, traveled to Copan in 726, probably acting on behalf of Kaanul (Tsukamoto and Esparza Olguín 2014:35). As U Pakal K’ihnich’s “southern *anab*,” Chak Balaw may have represented Sak Muk’s interests in the southern section of that coast.

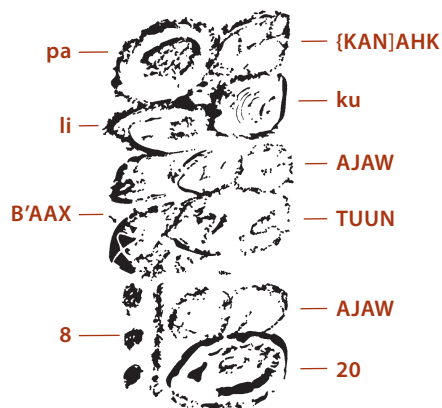
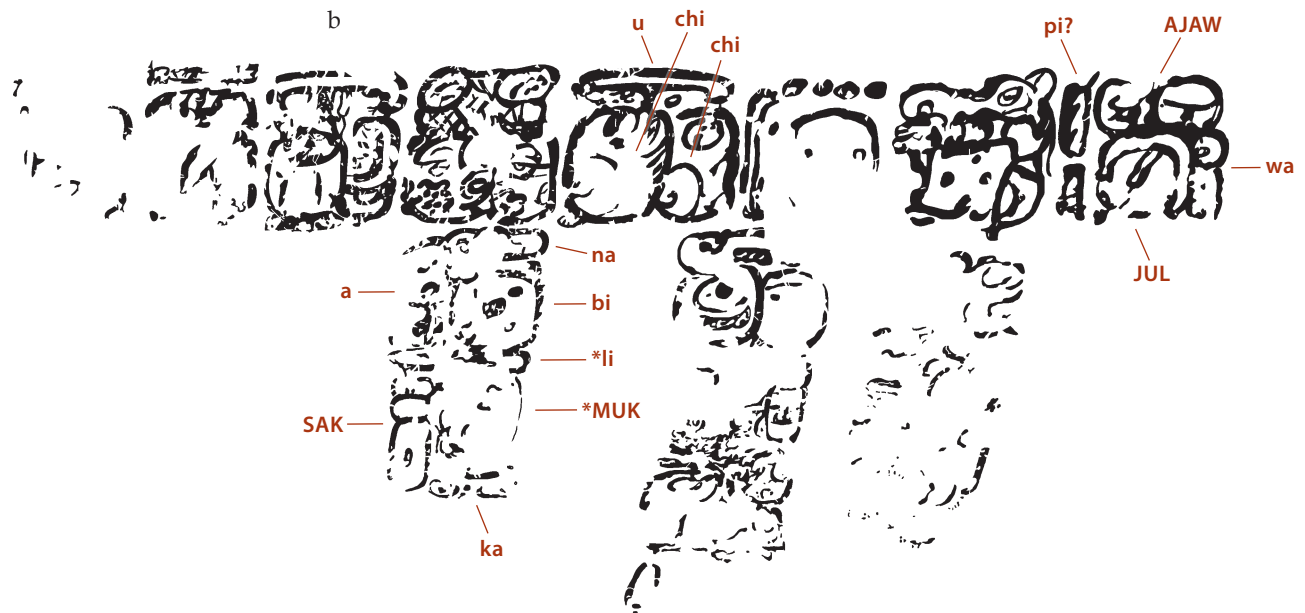
Following U Pakal K’ihnich’s name and titles, Drawing 29 tells us that Chak Balaw’s younger brother, Tz’itz’il Mayik K’an Biyaan, joined him at the *mon pan* event (Figure 12). Tz’itz’il, too, served a king—but a different one—in the capacity of *chich winik* (Figure 13a). *Chich* is a term for “prayer” in the Dresden Codex (Grube 2012:78) and has a cluster of meanings related to words, preaching, and oratory in Colonial Yucatec (Barrera Vásquez et al. 1980:93). As a *chich winik*, Tz’itz’il may have served as a preacher or a guide, both in a spiritual sense and in the physical sense of leading pilgrims into the cave (Tokovinine 2013b). The term *chich* appears again at Naj Tunich in Drawing 13, which has no surviving date. There, it seems to describe “the prayer of” or “the word of” some person. The same drawing names a Sak Muk *anab* and contains the Juluup Emblem Glyph (Figure 13b).

The name and titles of Tz’itz’il’s royal patron continue the Drawing 29 text (Figure 14). His personal name, at position B8, appears to read **pa-li-[KAN]AHK-ku**, perhaps cueing *Paal Kan Ahk* (see Barrera Vásquez et al. 1980:627 for Yucatec *paal* “young man”). His royal title, at B9, is Baax Tuun Ajaw (see Garrison and Stuart 2004:830 for the identification of Baax Tuun as distinct from Xultun, Baax Witz). Baax Tuun is mentioned in numerous texts at Naj Tunich—in particular, those of the agrarian season—both as a place and as a dynasty. Although it has not yet been conclusively identified with an archaeological site, the kingdom was probably based quite close to Naj Tunich itself, perhaps at a site within the present-day Q’eqchi’ community of La Compuerta (MacLeod n.d.; Mara Antonieta Reyes, personal communication 2018; Tokovinine 2013b). People from Baax Tuun seem to have had a special role at Naj Tunich, acting as hosts and guides for travelers from other kingdoms.

We read at B10 that Paal Kan Ahk was a “lord of the Twenty-Eight” (*waxakwinik ajaw*). This and similar titles referring to a set of 28 dynasties, lineages, or territories are attested throughout the southeastern lowlands, attributed outside of Naj Tunich to lords of Machaquila, Naranjo, and Nim Li Punit, as well as to people from unspecified polities mentioned at Ceibal and Ixtutz (Tokovinine 2013a:113–115). Intriguingly, two late monuments, Stela 1 at Ixtonton (AD 889) and Ballcourt Marker 3 at Caracol (798), reduce the count to 27. The “Twenty-Eight” titles may refer to a model of social or political organization dating to the Early Classic period, since a passage on Tikal Stela 31 (AD 445) mentions “28 provinces” (Stuart 2011; Tokovinine 2013:115). Because there is presently no textual evidence that the Baax Tuun dynasty existed in the Early Classic, there may have been some flexibility in who could plausibly claim those titles—perhaps a newly founded dynasty could do so without increasing the number.



**Figure 13.** (a) Naj Tunich Drawing 29, glyph blocks B6–B7 (drawing by Carter after infrared photographs by James Brady [1999]); (b) Naj Tunich Drawing 13 (drawing by Carter after a photograph by Chip Clark and Jennifer Clark [Stone 1995:Fig. 8-13]).



*paal kan ahk baax tuun ajaw waxakwinik ajaw*

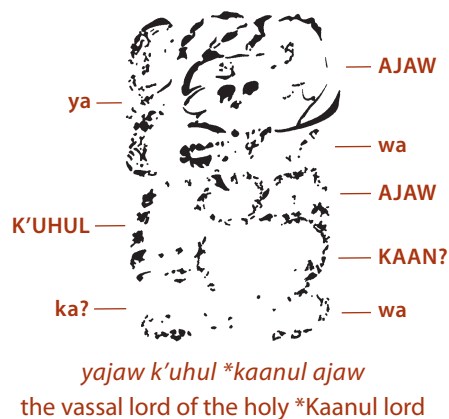
*Paal Kan Ahk, the Baax Tuun lord,  
the lord of the Twenty-Eight*

**Figure 14.** Naj Tunich Drawing 29, glyph blocks B8–B10. Drawing by Carter after a photograph by Chip Clark and Jennifer Clark (Stone 1995:Fig. 8-68).

The final two glyph blocks in Drawing 29 are significantly eroded, yet they hold an important clue about the political ties of the Baax Tuun dynasty in the moment when it first enters the historical stage. Glyph block B11 reads **ya-AJAW-wa** for *yajaw*, “his [vassal] lord” (see Bricker 1986:70; Houston and Mathews 1985:Fig. 12a, 12c, n. 2). Vassalage may explain why this, the earliest dated mention of a Baax Tuun ruler anywhere in the known corpus, omits the more reverential *k’uhul* from his emblem glyph. First attested in the Early Classic period, *yajaw* vassalage relationships between kings feature prominently in hieroglyphic texts dealing with Kaanul and its various subject polities under Yuknoom Ch’een, but such statements fall off sharply in the corpus dating to the reigns of his successors (Martin 2020:254-259; Martin and Grube 2008:111).

Drawing 29 does not give us the personal name of Paal Kan Ahk’s overlord, but the emblem glyph of this person concludes the text, in block B12 (Figure 15). Although it is badly eroded, there are enough clues to permit a suggestion as to its identity. To begin with, kings who “owned” other kings in *yajaw* relationships had more power and resources than their subordinates, so the emblem glyph should belong to an appropriately mighty dynasty. Given the involvement of Sak Muk, we can safely rule





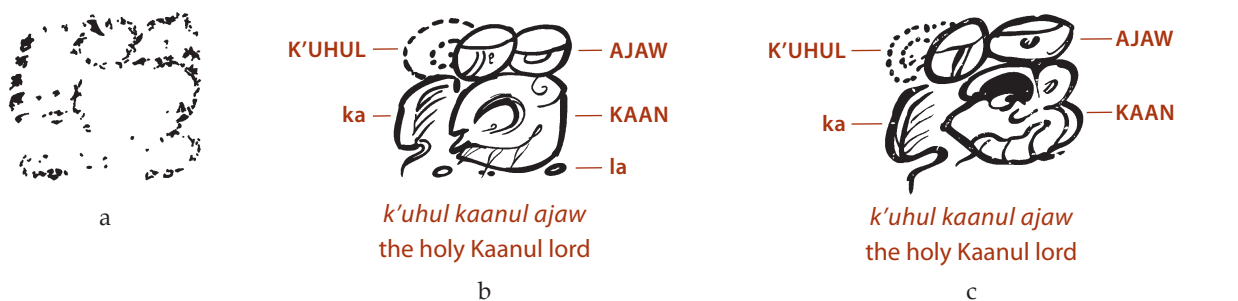
**Figure 15.** Naj Tunich Drawing 29, glyph blocks B11–B12. Drawing by Carter after infrared photographs by James Brady (1999).

out Kaanul’s rivals at Tikal, leaving only a few good candidates (Figure 16). These are Kaanul (*k’uhul Kaanul ajaw*), Naranjo (*k’uhul Sa’il/Sa’aal ajaw* or *sak chuween*), Caracol (*k’uhul K’antu maak*), or conceivably the Mutul dynasty at Dos Pilas (*k’uhul Mutul ajaw*). We know of two other important dynasties in the Dolores region in the eighth century, based at Sacul (*k’uhul Juluup ajaw*) and Ixtonton and Ixtutz (*k’uhul Ho’kab ajaw*). Neither of those kingdoms could approach Naranjo or Caracol for potency, but as local powers, they should also be considered.

Out of those six polities, we can rule out Caracol because block B12 contains a standard

Emblem Glyph, made up of **K’UHUL**, **AJAW**, and one or more other signs—one of them here is probably the phonetic complement **wa**, a common feature of such titles. That structure is inconsistent with Caracol’s Emblem Glyph, usually written **K’UHUL-K’AN-tu-ma-ki**. It is also inconsistent with the title *sak chuween* used at Naranjo, and the shape of the main sign does not match the **SA’** sign in Naranjo’s emblem glyph nor either variant of the **MUT** logogram attested at Dos Pilas. Neither do we see any trace of the bone awl in the **JUL** logogram in Sacul’s dynastic title or the numeral five that begins the Ho’kab Emblem Glyph. Could this be the Kaanul emblem?

Looking closely, we observe that the top right corner of the main sign is formed by a rounded brush stroke whose two end points intrude into the main body of the sign—a common trait of glyphs depicting the heads of mammals and some other animals. In fact, one variant of the logogram **KAAN**, “snake,” has an ear-like element in the same position; painted versions of the “eared” snake sign feature, for example, in some of the “Painted King List” vessels that name successive rulers of Kaanul (Martin 1997, 2017). Further clues pointing to Kaanul can be seen in the left portion of the emblem glyph: the **K’UHUL** logogram does not take up the whole height of the glyph block, but curves back towards the main sign about two thirds of the way down from the top. That left the scribe room to put another sign beneath **K’UHUL**. This bottom left sign includes a roughly horizontal line at the base and traces of another, internal line parallel to it. This construction is consistent with the common **K’UHUL-ka-KAN-AJAW-wa** spelling of the Kaanul royal title, but not with the usual ways of writing any of the other potential candidates’ emblem glyphs. We propose, then, that Kaanul is the strongest candidate, and that Paal Kan Ahk was responsible directly to the far-off king of that dynasty, Yuknoom Took’ K’awiil, rather than to any of the Kaanul kingdom’s allies closer to Naj Tunich.



**Figure 16.** Comparison of (a) the Emblem Glyph at Naj Tunich Drawing 29, glyph block B12, to Emblem Glyphs and royal titles from other Late Classic painted texts: (b) Kaanul (K1005); (c) Kaanul (K1344); (d) Naranjo (K0635); (e) Caracol (Naj Tunich Drawing 82); (f) Dos Pilas (K1599); (g) Sacul (Naj Tunich Drawing 82); and (h) Ho’kab (Naj Tunich Drawing 69). Drawings by Carter after photographs by James Brady (a), Justin Kerr (b, c, d, and f), and Chip Clark and Jennifer Clark (a, e, g, and h; Stone 1995: Figs 8-29, 8-82, and 8-69).



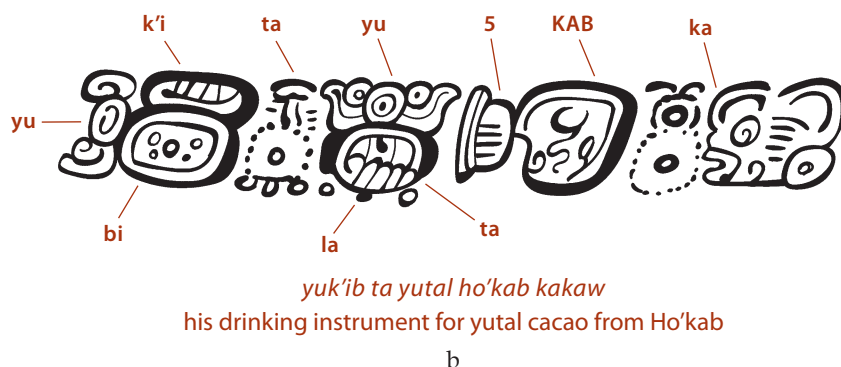
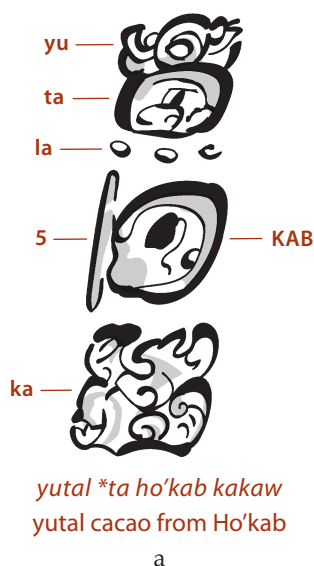


Figure 17. Details of Naranjo-area polychrome vessels (a) K4681 and (b) K8245 referring to Ho'kab cacao. Drawings by Carter after photographs by Justin Kerr.

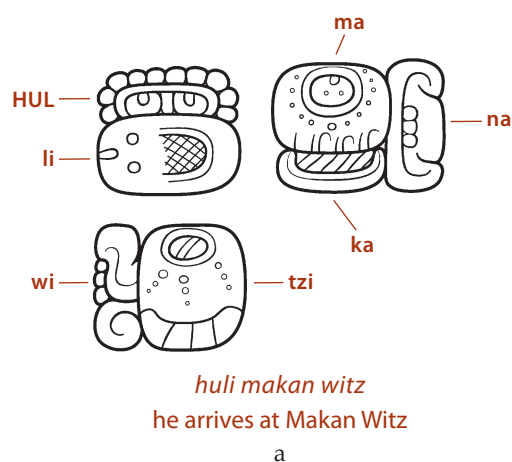


Figure 18. Details of (a) the Cancuen looted panel (drawing by Carter after Finamore and Houston 2010:cat. 70) and (b) Naj Tunich Drawing 24 (drawing by Carter after a photograph by Chip and Jennifer Clark [Stone 1995:Figure 8-24]).

## Discussion

The hieroglyphic record for the Dolores-Poptun region prior to AD 692, the date of Drawing 88, is sparse indeed. Nevertheless, there is some evidence to suggest that polities in this region were at least friendly to Kaanul in the sixth and seventh centuries, whether or not any of them had been formally incorporated into its alliance network. One such clue comes from two polychrome painted vessels produced for the court of Aj Numsaaj Chan K'ihnich, a key ally of Kaanul who ruled at Naranjo from 546 to 615 or a little later (Martin and Grube 2008:72). The dedicatory inscriptions on the vessels specify that they are “for Ho'kab cacao” (*ta ho'kab kakaw*), that is, for cacao from the area of Ixtonton and Ixtutz (Figure 17). The implication is that Naranjo under Aj Numsaaj enjoyed good relations with Ho'kab, obtaining cacao from that region via trade or tribute.

A later text on a panel looted from Cancuen mentions a location called Makan Witz which formed part of the itinerary of the Cancuen ruler K'iib Ajaw as he traveled to that site in 657 after being crowned at Calakmul. As proposed by Stanley Guenter (2002:7-8), Makan Witz may be identical with a place called Mak Witz mentioned in Naj Tunich Drawing 24 and presumed to be in the vicinity of Caracol (Figure 18). If the identification is correct, then K'iib Ajaw could have traveled east from Calakmul to the Caribbean coast, then south by canoe, before turning inland and journeying west through the southeastern lowlands to his capital. For this to have been a safe route, K'iib Ajaw should have had some confidence in the rulers of the polities along the way, including Ho'kab; otherwise, a western route, connecting Calakmul with Cancuen via sites including El Peu/Waka' and Ceibal might have been preferable (see Canuto and Barrientos Quezada 2013:Fig. 1).

In any case, the turn of the eighth century saw some major changes to the political landscape of the Dolores region and adjoining areas (see Table 1). Under the warrior queen Ix Wak Chan Leem Ajaw and her son K'ahk' Tiliw Chan Chahk, Naranjo—one of Kaanul's most powerful allies—conquered Ucanal in 698 and installed a new ruler there in 712. The Juluup dynasty at Sacul was probably founded around the same time as that conquest, based on the average reign length of Tikal's rulers and a claim by a Juluup king in 761 to be “fourth



Long Count	Calendar Round	Gregorian	Event	Source
9.11.4.9.2	9 Ik 5 Uo	3-22-657	K'iib Ajaw of Cancuen arrives at Makan Witz en route to Cancuen	CNC Looted Panel
9.12.7.14.1	3 Imix 9 Pop	2-29-680	"Star war" against Caracol by Naranjo; probably major defeat for Naranjo by Caracol and Kaanul within 2 years	CRC Str. B16 stucco
9.12.8.4.9	2 Muluc 17 Ch'en	8-15-680	Caracol Ruler VI returns to Caracol	CRC Str. B16 stucco
9.12.10.5.12	4 Eb 10 Yax	8-28-682	Ix Wak Chan Leem Ajaw of Dos Pilas arrives at Naranjo to restart its dynasty under Kaanul hegemony	NAR ST 3, ST 8
9.12.19.14.7	13 Manik 0 Kayab	1-3-692	Nich K'ahk', <i>anab</i> of Yuklaj Ch'akat of Jut', and Tz'ahyaj K'ahk' of Caracol visit Naj Tunich with two other people; <b>earliest NTN dated text</b>	NTN DR 88
9.13.0.0.0	8 Ahau 8 Uo	3-16-692	People mentioned in NTN DR 88 "descend ... <b>ju</b> -T501[544]"	NTN DR 88
9.13.3.7.18	11 Edznab 11 Ch'en	8-6-695	Army of Yuknoom Yich'aak K'ahk of Kaanul defeated by Jasaw Chan K'awiil of Tikal	TIK TI L3
9.13.3.9.18	12 Edznab 11 Zac	9-15-695	Jasaw Chan K'awiil of Tikal celebrates his victory over Kaanul	TIK TI L3
9.13.6.10.4	6 Kan 2 Zac	9-5-698	Naranjo army burns Ucanal and captures Itzamnaaj Bahlam I	NAR ST 22
9.13.10.0.0	7 Ahau 3 Cumku	1-24-702	Itzamnaaj Bahlam I of Ucanal is presented before K'ahk' Tiliw Chan Chahk of Naranjo	NAR ST 22
9.13.10.0.0	7 Ahau 3 Cumku	1-24-702	Period ending possibly celebrated by Tz'ahyaj K'ahk' of Caracol	CRC ST 21
9.14.0.10.0	11 Ahau 8 Yaxkin	6-20-712	K'ahk' Tiliw Chan Chahk of Naranjo oversees accession of Itzamnaaj Bahlam II of Ucanal	NAR ST 2
9.14.7.11.3	6 Akbal 16 Xul	6-7-719	Chak Balaw Mayik K'an Biyaan and Tz'itz'il Mayik K'an Biyaan visit Naj Tunich; <b>first mention of Baax Tuun</b>	NTN DR 29
9.15.0.0.0	4 Ahau 13 Yax	8-23-731	Lord of Sacul receives polychrome bowl from Naranjo	Museo Popol Vuh obj. 424 (K3394)
9.15.8.8.5	7 Chicchan 18 Pax	12-21-739	People including an Altun Ha ruler visit Naj Tunich	NTN DR 65
9.15.8.9.4	13 Kan 17 Kayab	1-9-740	People including elites from Ucanal and Sak Muk visit Naj Tunich	NTN DR 65
9.15.12.11.13	7 Ben 1 Pop	2-6-744	"Star war" against Naranjo by Tikal	TIK TIV L3
9.15.13.3.16	2 Cib 4 Zac	8-27-744	"Fire-carrying" by Tutum Yohl K'ihnich of Caracol, overseen by Chak Bolay Took' of Sacul	NTN DR 82
9.16.10.0.0	1 Ahau 3 Zip	3-15-761	K'iyel Janab of Sacul receives palanquin from Itzamnaaj Bahlam II of Ucanal	SCU ST 1
9.17.1.10.16	4 Cib 4 Zac	8-20-772	28-haab anniversary event at Baax Tuun with Kaanul and Huacutal lords; <b>last mention of Baax Tuun and latest NTN dated text</b>	NTN DR 82

**Table 1.** Chronology of selected events relevant to the history of Baax Tuun and the Dolores-Poptun region.



**Figure 19.** Naj Tunich Drawing 65, glyph blocks I1–I2, naming a person from Ucanal (K'anwitznal). Drawing by Carter after an infrared photograph by James Brady (1999).

in the lordship" (Carter 2016:242; see Jones 1991:109). The Naranjo court made presents of high-status ceramics both to the new king of Ucanal (Helmke et al. 2017:11; Reents-Budet et al. 1994:300) and, in 731, to a "Juluup lord" (*juluup ajaw*, on a polychrome bowl, object 424 in the collection of the Museo Popol Vuh). Various texts at Naj Tunich describe visits by Juluup and Ho'kab lords in the company of guides from Baax Tuun. Drawing 65 records the presence of someone from Ucanal in 740 (Figure 19), embedded in a text documenting several end-of-haab celebrations attended by lords of Altun Ha and Sak Muk, and Drawing 82 recounts a "fire-carrying" event in 744 carried out by a Caracol royal under the supervision of a Juluup lord (MacLeod n.d.). We can thus infer that Altun Ha, Baax Tuun, Caracol, Ho'kab, Juluup, and Ucanal were all within Kaanul's sphere of influence, mediated in part through participation in the *mon pan* and year-end ceremonies at Naj Tunich. Yet as Caracol's on-again, off-again conflicts with Naranjo make clear, fealty to Kaanul did not necessarily imply peaceful relations among those polities, and lords of Naranjo are conspicuous at Naj Tunich by their absence, even though they were probably friendly with at least Juluup (see Carter and Santini 2019). Meanwhile, to the southeast, Pusilha, whose rulers may have claimed some ancestral link to the Late Preclassic Ho'kab dynasty, has a major gap in its monumental record from 9.12.0.0.0 or 9.12.7.5.0 to 9.14.0.0.0 (AD 672 or 679 to 711), potentially connected to political unrest (Prager et al. 2013:286; Reents-Budet 1982:6).

In this historical context, the sudden appearance of Baax Tuun in the hieroglyphic corpus, its connections to Kaanul, and its prominence at Naj Tunich begin to make

sense. After the defeat by Tikal in 695, Kaanul was set back on its heels, but by no means friendless or incapacitated. The Kaanul kings had long pursued a grand strategy of encircling Tikal, acquiring allies to the south, east, and west of their rivals through conquest, diplomacy, royal marriages, and dynastic foundation (Martin and Grube 1995:45–46; Schele and Freidel 1990:211). Now, under Yuknoom Took' K'awiil, the Dolores-Poptun region took on a new importance to that strategy. The Dolores-Poptun corridor through the Maya Mountains presented a natural trade and travel route connecting the Peten heartland with the fertile cacao-growing country of the Sarstoon river valley (Carter 2016; Carter et al. 2019; Caso Barrera and Aliphath Fernández 2006). Like their Juluup neighbors at Sacul, the Baax Tuun dynasty may have been raised to kingship in order to help secure that passage for Kaanul and its sometimes restive supporters.

Yet where Sacul's epigraphy and monumental art show close connections to Naranjo (Carter and Santini 2019), Baax Tuun was from the beginning tied to more distant kingdoms, Sak Muk and Kaanul. This may go some way to explain why Baax Tuun vanishes from the hieroglyphic record by the late eighth century. The political order in the southern Maya Mountains began to break down after 744, when a Tikal army sacked Naranjo, cutting Ucanal and Sacul adrift and depriving Kaanul of a vital ally. The Naj Tunich cave cult persisted for decades after that defeat—both Baax Tuun and a lord of Kaanul appear in Drawing 82, in 772 (MacLeod n.d.)—but by 751, the Kaanul dynasty was in steep decline and may no longer have been based at Calakmul (Martin 2005; Martin and Grube 2008:115). In 779, Sacul broke with Ucanal and Ho'kab to make an aggressive bid for control of the mountain corridor, including by founding its own vassal kingdom at Ixkun (Carter 2016). The new ruler at Ixkun, Yukuul Kan Ahk, might have been related to the Baax Tuun lords, some of whom have names including *Kan Ahk* (Maman Kan Ahk, in Naj Tunich Drawings 25, 66, and 28, and K'ilismal Kan Ahk, in Drawings 28, 66, and 30). Yet if so, dynastic discontinuity is still indicated because Yukuul Kan Ahk took a new emblem glyph which does not resemble that of Baax Tuun (Carter 2016:246). Much of the monumental record at Ixkun, Ixtutz, and Sacul deals with the fallout of those events—regional conflict or outreach to other dynasties (e.g., Carter 2016; Carter and Santini 2019; Zender 2002)—but of Baax Tuun we read nothing at all. Dependent on its northern patrons, the kingdom may have been unsustainable without their support.

## References

- Barrera Vázquez, Alfredo, Juan Ramón Bastarrachea Manzano, William Brito Sansores, Refugio Vermont Salas, David Dzúl Góngora, and Domingo Dzúl Poot  
1980 *Diccionario maya Cordemex: maya-español, español-maya*. Ediciones Cordemex, Mérida.
- Beetz, Carl P., and Linton Satterthwaite  
1981 *The Monuments and Inscriptions of Caracol, Belize*. Monograph 45. University Museum, University of Pennsylvania, Philadelphia.
- Biró, Péter, Barbara MacLeod, and Michael Grofe  
2020 Hidden in Plain Sight: The Codical Sign T648 and Its Forerunner T694 in Three Classic Period Contexts. *Estudios de Cultura Maya* 55:121–150.



- Boot, Erik  
2014 "Out of Order!" Or Are They? A Textual and Visual Analysis of Two Dedicatory Texts on Classic Maya Ceramics. *The PARI Journal* 15(2):15-37.
- Brady, James E.  
1989 An Investigation of Maya Ritual Cave Use with Special Reference to Naj Tunich, Peten, Guatemala. Ph.D. dissertation, University of California, Los Angeles.
- Brady, James E., and Gene Ware  
1999 Ultraviolet and Infrared Filming of the Naj Tunich Inscriptions. Electronic document, accessed March 12, 2021. <http://www.famsi.org/reports/96061>
- Bricker, Victoria  
1986 *A Grammar of Mayan Hieroglyphs*. Publication 56. Middle American Research Institute, Tulane University, New Orleans.
- Canter, Ronald A.  
2012 Re: Shifts in Trade and the Maya Collapse. *Aztlan Digest* 495(1), May 24, 2012. Electronic document, accessed March 30, 2021. <http://pre-columbian-cultures-language.2324888.n4.nabble.com/Response-to-Message-1-Shifts-in-trade-and-the-Maya-collapse-Aztlan-Digest-Vol-495-Issue-1-td7497.html>
- Canuto, Marcelo, and Tomás Barrientos Quezada  
2013 The Importance of La Corona. *La Corona Notes* 1(1). Published online at Mesoweb: [www.mesoweb.com/LaCorona/LaCoronaNotes01.pdf](http://www.mesoweb.com/LaCorona/LaCoronaNotes01.pdf)
- Carter, Nicholas P.  
2014 Kingship and Collapse: Inequality and Identity in the Terminal Classic Southern Maya Lowlands. Ph.D. dissertation, Brown University.
- Carter, Nicholas P., and Lauren M. Santini  
2019 The Lord of Yellow Tree: A New Reference to a Minor Polity on Sacul Stela 9. *The PARI Journal* 29(4):1-9.
- Carter, Nicholas P., Lauren Santini, Adam Barnes, Rachel Opitz, Devin White, Kristin Safi, Bryce Davenport, Clifford Brown, and Walter Witschey  
2019 Country Roads: Trade, Visibility, and Late Classic Settlement in the Southern Maya Mountains. *Journal of Field Archaeology* 44(2):84-108.
- Caso Barrera, Laura, and Mario M. Aliphat Fernández  
2006 Cacao, Vanilla, and Annatto: Three Production and Exchange Systems in the Southern Maya Lowlands, XVI-XVII Centuries. *Journal of Latin American Geography* 5(2):29-52.
- Cortés de Brasfeder, Fernando  
1996 A Maya Vase from "El Señor del Petén." *Mexicon* 18(1):6.
- Douglas, Peter M. J., Mark Pagani, Marcello A. Canuto, Mark Brenner, David A. Hodell, Timothy I. Eglinton, and Jason H. Curtis  
2015 Drought, Agricultural Adaptation, and Sociopolitical Collapse in the Maya Lowlands. *Proceedings of the National Academy of Sciences of the United States of America* 112(18):5607-5612.
- Garrison, Thomas, and David Stuart  
2004 Un análisis preliminar de las inscripciones que se relacionan con Xultun, Petén, Guatemala. In *XVII Simposio de Investigaciones Arqueológicas en Guatemala, 2003*, edited by Juan Pedro Laporte, Bárbara Arroyo, Héctor Escobedo, and Héctor Mejía, pp. 829-842. Ministerio de Cultura y Deportes; Instituto de Antropología e Historia; Asociación Tikal, Guatemala.
- Graham, Ian  
1996 *Corpus of Maya Hieroglyphic Inscriptions, Volume 7: Seibal*. Peabody Museum of Archaeology and Ethnology, Harvard University, Cambridge.
- Guenther, Stanley  
2002 A Reading of the Cancuen Looted Panel. *Mesoweb*: [www.mesoweb.com/features/cancuen/Panel.pdf](http://www.mesoweb.com/features/cancuen/Panel.pdf)
- Helmke, Christophe, Yuriy Polyukhovych, Dorie J. Reents-Budet, and Ronald L. Bishop  
2017 A Bowl Fit for a King: A Ceramic Vessel of the Naranjo Court Bearing the Komkom Emblem Glyph. *The PARI Journal* 18(1):9-24.
- Hodell, David A., Mark Brenner, and Jason H. Curtis  
2005 Terminal Classic Drought in the Northern Maya Lowlands Inferred from Multiple Sediment Cores in Lake Chichancanab (Mexico). *Quaternary Science Reviews* 24(12):1413-1427.
- Hoggarth, Julie A., Matthew Restall, James W. Wood, and Douglas J. Kennett  
2017 Drought and Its Demographic Effects in the Maya Lowlands. *Current Anthropology* 58(1):82-113.
- Houston, Stephen D.  
1986 Problematic Emblem Glyphs: Examples from Altar de Sacrificios, El Chorro, Río Azul, and Xultun. *Research Reports on Ancient Maya Writing* 3:1-11.  
2009 A Splendid Predicament: Young Men in Classic Maya Society. *Cambridge Archaeological Journal* 19(2):149-178.  
2016 Crafting Credit: Authorship among Classic Maya Painters and Sculptors. In *Making Value, Making Meaning: Techné in the Pre-Columbian World*, edited by Cathy Lynne Costin, pp. 391-431. Dumbarton Oaks Research Library and Collection, Washington, D.C.  
2018 A "Lost City" in the Heartland. *Maya Decipherment: Ideas on Ancient Maya Writing and Iconography*, August 27, 2018. Electronic document, accessed March 10, 2021. <http://maya-decipherment.com/2018/08/27/a-lost-city-in-the-heartland>
- Houston, Stephen D., and Peter Mathews  
1985 *The Dynastic Sequence of Dos Pilas, Guatemala*. Pre-Columbian Art Research Institute, San Francisco.
- Jones, Christopher  
1991 Cycles of Growth at Tikal. In *Classic Maya Political History: Hieroglyphic and Archaeological Evidence*, edited by T. Patrick Culbert, pp. 102-127. Cambridge University Press, Cambridge.
- Laporte, Juan Pedro  
1995 ¿Despoblamiento o problema analítica?: El clásico temprano en el sureste de Petén. In *VIII Simposio de Investigaciones Arqueológicas en Guatemala, 1994*, edited by Juan Pedro Laporte and Héctor Escobedo, pp. 609-639. Museo Nacional de Arqueología e Historia, Guatemala.
- Lentz, David L., Nicholas P. Dunning, Vernon L. Scarborough, Kevin S. Magee, Kim M. Thompson, Eric Weaver, Christopher Carr, Richard E. Terry, Gerald Islebe, Kenneth B. Tankersley, Liwy Grazioso Sierra, John G. Jones, Palma Buttles, Fred Valdez, and Carmen E. Ramos Hernandez  
2014 Forests, Fields, and the Edge of Sustainability at the Ancient Maya City of Tikal. *Proceedings of the National Academy of Sciences of the United States* 111(52):18513-18518.
- MacLeod, Barbara  
n.d. Celebrations in the Heart of the Mountain: Hieroglyphic Records of Agricultural, Dedicatory, and Year-End Rituals at Naj Tunich Cave, Petén, Guatemala. In press with the Association for Mexican Cave Studies, Huntsville.

- MacLeod, Barbara, and Alejandro Sheseña  
2013 Ritos agrícolas mayas clásicos desarrollados en cuevas. In *Religión maya. Rasgos y desarrollo histórico*, edited by Alejandro Sheseña, pp. 201-224. Universidad de Ciencias y Artes de Chiapas, Tuxtla Gutiérrez.
- MacLeod, Barbara, and Andrea J. Stone  
1995 The Hieroglyphic Inscriptions of Naj Tunich. In *Images from the Underworld: Naj Tunich and the Tradition of Maya Cave Painting*, by Andrea J. Stone, pp. 155-184. University of Texas Press, Austin.
- Martin, Simon  
1997 The Painted King List: A Commentary on Codex-Style Dynastic Vases. In *The Maya Vase Book, Volume 5: A Corpus of Roll-Out Photographs*, edited by Barbara Kerr and Justin Kerr, pp. 846-867. Kerr Associates, New York.  
2005 Of Snakes and Bats: Shifting Identities at Calakmul. *The PARI Journal* 6(2):5-15.  
2017 Secrets of the Painted King List: Recovering the Early History of the Snake Dynasty. *Maya Decipherment: Ideas on Ancient Maya Writing and Iconography*, May 5, 2017. Electronic document, accessed March 12, 2021. <https://mayadecipherment.com/2017/05/05/secrets-of-the-painted-king-list-recovering-the-early-history-of-the-snake-dynasty/>  
2020 *Ancient Maya Politics: A Political Anthropology of the Classic Period (150-900 CE)*. Cambridge University Press, Cambridge.
- Martin, Simon, and Nikolai Grube  
1995 Maya Superstates. *Archaeology* 48(6):41-46.  
2008 *Chronicle of the Maya Kings and Queens: Deciphering the Dynasties of the Ancient Maya*. 2nd edition. Thames and Hudson, New York.
- Martin, Simon, and Joel Skidmore  
2012 Exploring the 584286 Correlation between the Maya and European Calendars. *The PARI Journal* 13(2):3-16.
- Martin, Simon, and Erik Velázquez García  
2016 Politics and Places: Tracing the Toponyms of the Snake Dynasty. *The PARI Journal* 17(2):23-33.
- Medina-Elizalde, Martín, Stephen J. Burns, David W. Lea, Yemane Asmerom, Lucien von Gunten, Victor Polyak, Mathias Vuille, and Ambarish Karmalkar  
2010 High Resolution Stalagmite Climate Record from the Yucatán Peninsula Spanning the Maya Terminal Classic Period. *Earth and Planetary Science Letters* 298(1):255-262.
- Moyes, Holley, Jaime J. Awe, George A. Brook, and James W. Webster  
2009 The Ancient Maya Drought Cult: Late Classic Cave Use in Belize. *Latin American Antiquity* 20(1):175-206.
- Moyes, Holley, and Keith M. Prufer  
2013 The Geopolitics of Emerging Maya Rulers: A Case Study of Kayuko Naj Tunich, a Foundational Shrine at Uxbenká, Southern Belize. *Journal of Anthropological Research* 69:225-248.
- Prager, Christian  
2015 Is T594 the Logograph for **BAL(AW)** "Cloth, Cover, Textile"? Electronic document, accessed March 10, 2021. [http://academia.edu/25792741/Notes\\_on\\_Ancient\\_Maya\\_Writing\\_Is\\_T594\\_the\\_Logograph\\_for\\_BAL\\_AW\\_cloth\\_cover\\_textile](http://academia.edu/25792741/Notes_on_Ancient_Maya_Writing_Is_T594_the_Logograph_for_BAL_AW_cloth_cover_textile)
- Prager, Christian, Beniamino Volta, and Geoffrey E. Braswell  
2013 The Dynastic History and Archaeology of Pusilha, Belize. In *The Maya and Their Central American Neighbors: Settlement Patterns, Architecture, Hieroglyphic Texts, and Ceramics*, edited by Geoffrey E. Braswell, pp. 245-307. Routledge, New York.
- Prufer, Keith M.  
2005 Shamans, Caves, and the Roles of Ritual Specialists in Maya Society. In *In the Maw of the Earth Monster: Mesoamerican Ritual Cave Use*, edited by James E. Brady and Keith M. Prufer, pp. 186-222. University of Texas Press, Austin.
- Reents-Budet, Dorie  
1982 The Hieroglyphic Inscriptions of Pusilha: Preliminary Comments. Manuscript.
- Rodas, Haroldo  
1980 Gruta de las inscripciones, con murales mayas descubierta en Peten, cerca de Belice. *Prensa Libre*, August 31.
- Schele, Linda, and David Freidel  
1990 *A Forest of Kings: The Untold Story of the Ancient Maya*. William Morrow, New York.
- Stone, Andrea J.  
1995 *Images from the Underworld: Naj Tunich and the Tradition of Maya Cave Painting*. University of Texas Press, Austin.
- Stuart, David  
1985 *The Yaxha Emblem Glyph as Yax-ha*. Research Reports on Ancient Maya Writing 1. Center for Maya Research, Washington, D.C.  
2002 Glyphs for "Right" and "Left"? *Mesoweb*: [www.mesoweb.com/stuart/notes/RightLeft.pdf](http://www.mesoweb.com/stuart/notes/RightLeft.pdf)  
2011 Some Working Notes on the Text of Tikal Stela 31. *Mesoweb*: [www.mesoweb.com/stuart/notes/Tikal.pdf](http://www.mesoweb.com/stuart/notes/Tikal.pdf)
- Stuart, George  
1981 Maya Art Treasures Discovered in Cave. *National Geographic* 160(2):220-235.
- Tokovinine, Alexandre  
2013a *Place and Identity in Classic Maya Narratives*. Studies in Pre-Columbian Art and Archaeology 37. Dumbarton Oaks, Washington, D.C.  
2013b Travelling to See: Naj Tunich Inscriptions and the Pilgrimage Genre in Classic Maya Texts. Paper presented at the 112th Annual Meeting of the American Anthropological Association, Chicago.  
2014 Beans and Glyphs: A Possible **IB** Logogram in the Classic Maya Script. *The PARI Journal* 14(4):10-16.
- Tsukamoto, Kenichiro, and Octavio Q. Esparza Olguín  
2014 Ajpach' Waal: The Hieroglyphic Stairway of the Guzmán Group of El Palmar, Campeche, Mexico. In *Maya Archaeology 3*, edited by Charles Golden, Stephen D. Houston, and Joel Skidmore, pp. 30-55. Precolumbia Mesoweb Press, San Francisco.
- Tuszyńska, Boguchwała  
2016 *Pozycja kobiety w świecie Majów w okresie klasycznym (250-900 n.e.)*. Ph.D. dissertation, Adam Mickiewicz University, Poznań.
- Velázquez García, Erik  
2004 Los escalones jeroglíficos de Dzibanché. In *Los Cautivos de Dzibanché*, edited by Enrique Nalda, pp. 78-103. Instituto Nacional de Antropología e Historia, Mexico.
- Webster, James W., George A. Brook, L. Bruce Railsback, Hai Cheng, R. Lawrence Edwards, Clark Alexander, and Philip P. Reeder  
2007 Stalagmite Evidence from Belize Indicating Significant Droughts at the Time of Preclassic Abandonment, the Maya Hiatus, and the Classic Maya Collapse. *Palaeogeography, Palaeoclimatology, Palaeoecology* 250(1):1-17.
- Witte, Karen, and E. Garza  
1981 Naj Tunich: The Writing on the Wall. *National Speleological Society News*, July, 149-151.
- Zender, Marc U.  
2002 A Note on the Inscription of Ixtutz Stela 4. *The PARI Journal* 2(4)/3(1):17-27.  
2010 Baj 'Hammer' and Related Affective Verbs in Classic Mayan. *The PARI Journal* 11(2):1-16.