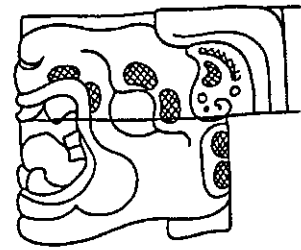


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Some Venus Dates on the Hieroglyphic Stair at Copán

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During June 1991, discussions between Linda Schele and Barbara Fash on the iconography and use of Structure 10L-22A led Schele to investigate the timing of the dates associated with this structure and its builder, Smoke-Monkey, with possible Venus phenomena. This initial investigation expanded outward to include the entire dynastic history of Copán as it is now known, and resulted in the identification of a pattern of Venus associations that permeates the historical record of that city. Copán's kings from the beginning of the dynasty seem to have had a particularly intense fascination with Venus.

Bits and pieces of this Copanec preoccupation with Venus have emerged in previous research.

Anthony Aveni (1979, 1991) associated the western window in Temple 22¹ with Eveningstar phenomena, and the epigraphers of the Copán project have regularly noted Venus associations for many dates. Until summer 1991, however, we simply did not realize how connected and intentional these associations were. This note will discuss the phenomena we have detected on the Hieroglyphic Stair concerning earlier versions of that building and the nearby Ballcourt.

The pivotal Venus events and perhaps the entire pattern at Copán seem to hinge on Yax-K'uk'-Mo's two founding events as recorded on Altar Q. As Schele (1989) noted, these events occurred on dates, 8.19.10.10.17 (September 6, 426)², when

1. Aveni (1991:317) cites Closs et al. (1984) for the identification of a Venus alignment of Temple 22. During the months of April and May, at the planting season, Venus appears on the western horizon in positions toward which the western window of the building was aligned.

*The Copán Notes are a running series of commentaries and small reports deriving from the multidisciplinary research project designed to conserve, document, and analyze the architectural and sculpture monuments of the Classic Maya ruins of Copán. Originally undertaken by William L. Fash and known as the Copán Mosaics Project, this endeavor has since June 1988 formed part of the larger Copán Acropolis Project, funded and carried out by the Instituto Hondureño de Antropología e Historia through financing from the U.S. Agency for International Development. Funding for the Copán Mosaics Project, the Copán Hieroglyphic Stairway Project, and supplementary funding for the Copán Acropolis Project has been provided by the National Science Foundation (1986-1988), the National Geographic Society (1986-1989), the National Endowment for the Humanities (1986-1987), the Center for Field Research (EARTHWATCH; 1985-1988), the Wenner-Gren Foundation for Anthropological Research (1987; 1989), the H.J. Heinz Charitable Fund (1986), Council for International Exchange of Scholars (1987), and Northern Illinois University (1985-1989). The Copán Acropolis Project, as a dependency of the Instituto Hondureño de Antropología e Historia, is subject to the rules of that body. Regarding any re-use or subsequent distribution of these materials presented in the Copán Notes or in project publications, those rules stipulate that any publication using materials (either written or in the form of line drawings or photographs) derived from the Copán Acropolis Project must receive prior written consent from the Project Director (William Fash) and the Director of the Instituto (José María Casco). These notes are published by the Copán Acropolis Archaeological Project and the Instituto Hondureño de Antropología e Historia.

the Morningstar was only 0.1 below its maximum altitude, and three days later on 8.19.10.11.0 (September 9, 426), when Venus was exactly at maximum elongation (Schele 1989). Altar Q is, of course, a retrospective monument recording events in the distant past, so that Yax-Pak could have invented the Venus association by moving the dates to fit his purpose. However, we suggest this is unlikely, since he would have to have had to use averages to cast Venus back 340 years to the early dates. He would not have achieved such exact calculations for the maximum altitude and elongation points by using tables to retroactively create a Venus association. Furthermore, the king's preoccupation with Venus continued throughout Copán history, from Smoke-Imix-God K to Yax-Pak.

Venus apparently also played an important role in determining the dedication dates for several phases of Structure 10L-26. Much of the Hieroglyphic Stair is eroded and out of order, but the bottom fourteen steps were found in their original order and the last seven are particularly important to this discussion. Step 7 (Fig. 1) begins the passage with the accession of Smoke-Imix-God K and continues on Step 6 with his parentage. These steps are at eye level exactly above the top of the altar which intrudes into the stair. The next step down, which is split by the image of a reclining figure, records his death on 9.13.3.5.7 12 Manik seating of Yaxk'in³ on the left side of the figure. Unfortunately, the area where the verbal phrase would have been is totally illegible, but the clause ends with his name

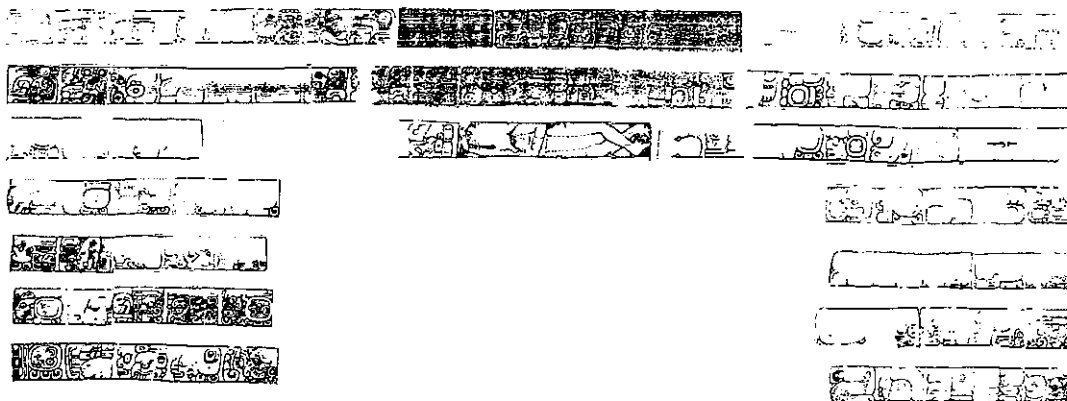


Fig. 1 The bottom seven steps of the Hieroglyphic Stair (drawing by B. Fash)

2. All dates in this note are given in the Julian calendar unless otherwise noted.

3. The badly damaged Calendar Round looks like it has the head variant of the number one with the day sign, making it 9.13.3.5.9 1 Muluk 2 Yaxk'in. The 12 Manik date is taken from a fragment reused in the Structure 9N-82 stairway (Schele 1987). Either date is possible, but since they are only two days apart, the relationship to other events in Copán history is not affected if the later position is the correct one.

phrase and continues on other side of the figure with a pair of unreadable glyphs. The verb of the next clause is, as Stuart (personal communication, 1987) first observed, *mukah*, "he was buried." Until now no one had reconstructed a date for the event. Now we can. The month is clearly Yaxk'in and its coefficient is either four or seven, but most likely four. Since burials usually occurred within several days of death, this date should be either four or seven dates after the date above. We think [3 Chuwen] 4 Yaxk'in (9.13.3.5.11), a position just four days after the probable death date, is the best reconstruction. The rest of the phrase must have recorded either the location of the burial and the name of the deceased, or perhaps just his name. This burial occurred on June 22, 695 (Gregorian), the summer solstice.

The reclining figure between the death and burial passages must represent Smoke-Imix-God K himself reclining in death as he prepares to enter the road to the other world. He holds a scepter with an unidentifiable face and a handle decorated with the feather fans which mark the War Serpent, called Waxaklahun-Ubah-Chan by the Maya; so that in death he carries the dominant iconography of Temple 26—the Tlaloc war complex.

The text continues on Step 4, which begins with a Distance Number Introductory Glyph and a badly eroded distance number reconstructed as 15.11.18. The next two glyphs are badly damaged, but Schele believes that they follow the pattern of Step 2 just below by repeating the base of the count in the phrase *utiy Ox Chuwen*, "after it had happened on 3 Chuwen." On the other side of the altar, the text continues with *iwal ut* "and then it happened" and a Calendar Round that can be reconstructed as 12 [Muluk 7 Muwan], which is recorded on the last step with the long count date 9.13.18.17.9. Thus, the distance number specifically links the death and burial of Smoke-Imix-God K to this later date. Unfortunately, the record of the 9.13.18.17.9 event on Step 4 is mostly destroyed, but it included a verb ending with the signs *-bah(a)* and a glyph including a *mo* sign and a large voluted shell which is perhaps a *ho* sign.

Step 3 still eludes decipherment, but it should refer to the action done on 9.13.18.17.9, or perhaps on an earlier date recorded in the first

several glyphs of Step 2. There the text begins with *iwal ut*, "and then it happened," an eroded Calendar Round that Stuart and Schele (1986) reconstructed as 9 Kawak 17 Muwan (9.3.8.1.19), a Distance Number Introductory Glyph, and distance number of 10.10.15.10 preceding *utiy Bolon Kawak*, "after it had happened 9 Kawak." The distance number then leads to the other side of the altar where the date discussed above, 9.13.18.17.9, is recorded in long count form including a full lunar series. This long count was first deciphered by Morley (1920:248-249) in his original study of the Hieroglyphic Stair.

The long count date ends on Step 2 with 9 k'ins, then drops down to Step 1 where the scribe recorded the tzolk'in day 12 Muluk, the lord of the night, the haab 7 Muwan, the age of the moon, and crossing to the other side of the bench, the rest of the lunar series and a now-lost event that probably had a *-wan* suffix. *Wan* is a suffix occurring exclusively on positional roots, so that the verb was probably some action having to do with space or the shape of something. "To sit down" is, for example, a positional verb.

The final glyphs of the text are critical to understanding the full intention of Smoke-Shell and his scribes in putting this information at best visual range of those approaching the stairway. David Stuart (personal communication, 1991) and Linda Schele upon examining the original step, both agree that the next sign is *yebal* (or *yebul* as an alternative spelling), the word for "his stair." The next glyph is difficult to read, but it appears to have the same voluted *ho* as the first statement of the 12 Muluk event on Step 4. The last glyph is that for Copán ahaw. The text declares that some positional action, probably a dedication, because this type of verb usually takes a *-wan* suffix, was done to a stairway on 9.13.18.17.9 12 Muluk 7 Muwan.

To reiterate, the text of the last seven steps of the Hieroglyphic Stair record a sequence of events specifically linked together by distance numbers so that they are understood as a single interrelated flow of history. This history occupies all the steps at eye level so that they must have been considered the particular segment of history that Smoke-Shell most wanted read by those standing in the court in front of the stairway. These events

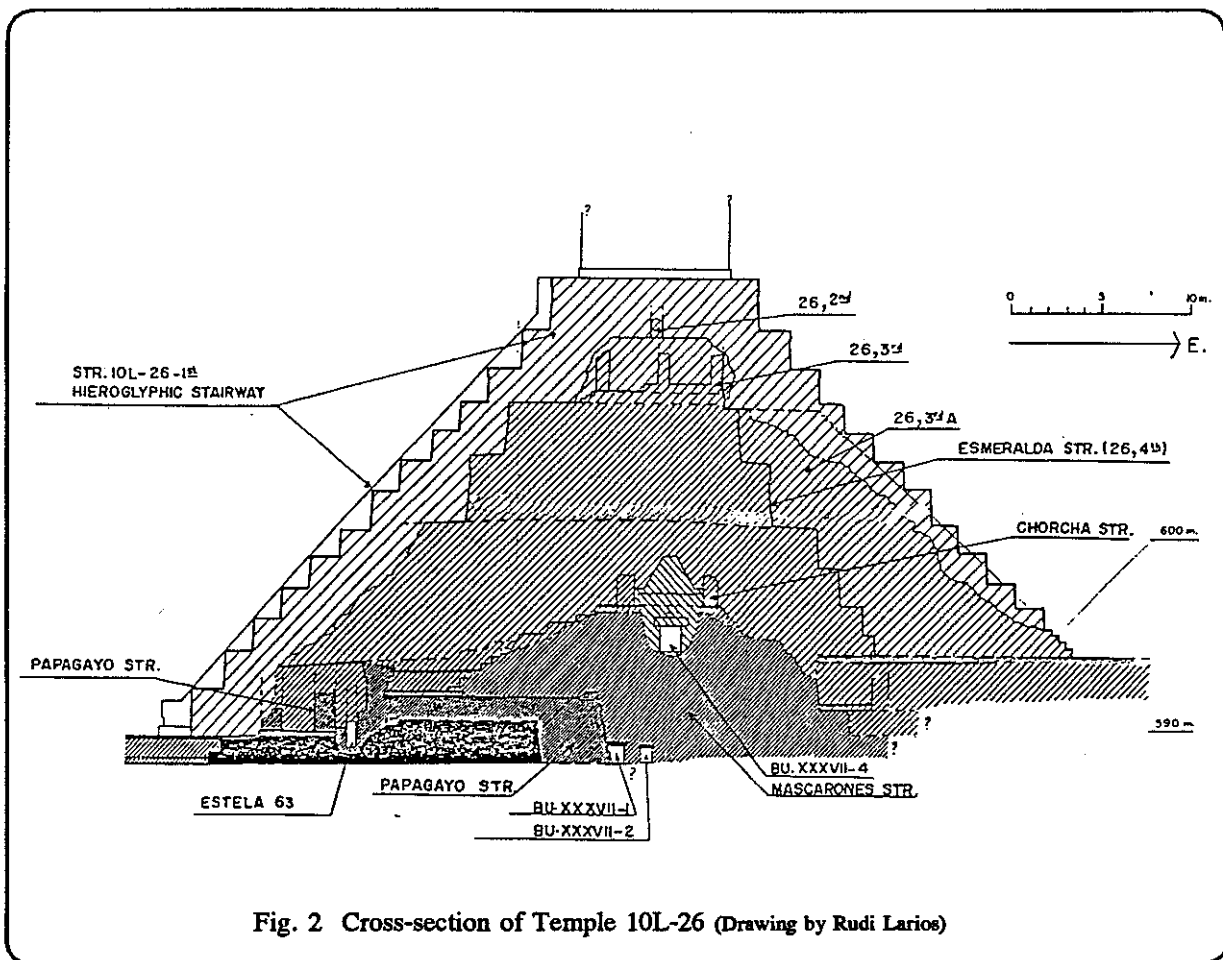


Fig. 2 Cross-section of Temple 10L-26 (Drawing by Rudi Larios)

are: the accession of Smoke-Imix-God K on 9.9.14.17.5, his death on 9.13.3.5.7 (or within two days of that date), his burial on 9.13.3.5.11, which was the summer solstice, and the dedication of a stairway some fifteen years later on 9.13.18.17.9.

We think that event was the dedication of a stairway on Structure 10L-26. According to Rudy Larios, the most likely candidate was an addition to an earlier phase of 10L-26, which has been nicknamed Esmeralda (Fig. 2). Sometime during the Late Classic period, before the final phase of Structure 10L-26 was dedicated (on 9.16.4.1.0—May 4, 755), two high terraces without moldings were added to the top of Esmeralda, a huge stairway was constructed across its entire east face, and a temple facing west was built on top. Fragments of incensarios found in the fill between this revision and the next stage include 18-Rabbit's

name and the date 7 Lamat 16 Sotz', the thirteenth-tun anniversary of his accession. One of the incensarios may have the date (9.13.18.6.8) 12 Lamat 6 Sotz', which falls only 221 days before the dedication of the stairway. Furthermore, the markers from Ballcourt IIA-b clearly have 18-Rabbit's name and can also be dated to his reign. Because of these fragments, William Fash and other project archaeologists had taken this phase of Structure 10L-26 as the work of 18-Rabbit. We propose, in addition, that the 9.13.18.17.9 12 Muluk 7 Muwan "stair" event was the dedication of the east stairway on 10L-26 and the newly-refurbished version of Ballcourt IIA.

When Stuart originally identified the burial of Smoke-Imix-God K on the Hieroglyphic Stair, Fash and others anticipated that his tomb would be found inside Structure 10L-26. We agree with their ideas, but add new information by noting

that both his probable death date and burial are connected by a distance number to the dedication registered on the lowest step. 18-Rabbit, however, is not the king who commissioned the enormous text of the Hieroglyphic Stair. It was Smoke-Shell, who, by the placement of this dedication phrase in the only region that can be read by the naked eye, focused great attention on this action by his predecessor. William Fash and his colleagues already plan to investigate this level of the pyramid in the coming season in order to test similar hypotheses derived from the archaeological evidence. We would like to add to that evidence by noting that Smoke-Shell himself seems to be saying that the burial of Smoke-Imix-God K was directly associated with the building of the upper two terraces and the eastern stairway.

Schele also has thoughts on the choice of 9.13.18.17.9 (November 25, 710) as the dedication date of this phase of Structure 10L-26. In checking this date for Venus associations, she found that the Eveningstar was elongated 46.7456 from the sun. Exact elongation occurred twelve days earlier at 47.3052, a difference of .56, but Venus was just as close to its maximum altitude on that day. At sunset it hovered at 39.4244, just

.49 short of the maximum altitude it would achieve on December 10.

This 9.13.18.17.9 Venus-associated date was important not only in our way of calculating the position of the planet and its appearance to human observers, but it was also linked to the earlier event by the Venus intervals used in the Dresden Codex. 9.3.8.1.19 9 Kawak 17 Muwan (January 26, 503) also fell on an elongation of the Eveningstar. It was at 46.1778, twelve days and .59 past the exact elongation; however, it was only one day and .006 past maximum altitude. Venus's position when it was highest in the sky may well have determined the choice of this day for the ritual performed. Of the two dates, this earlier one is the most accurate in its correlation to Venus. It also appears to have determined the position of the second date, because 9.13.18.17.9 is two Grand Venus Cycles less ten days after 9.3.8.1.19.

To understand what a Grand Venus Cycle is, we must discuss the Venus table in the Dresden Codex (Fig. 3). The table is divided into five pages, each recording a repetition of the 584-day Venus cycle with each of its stations—heliacal rising of Morningstar, disappearance at superior conjunction, heliacal rising of the Eveningstar,

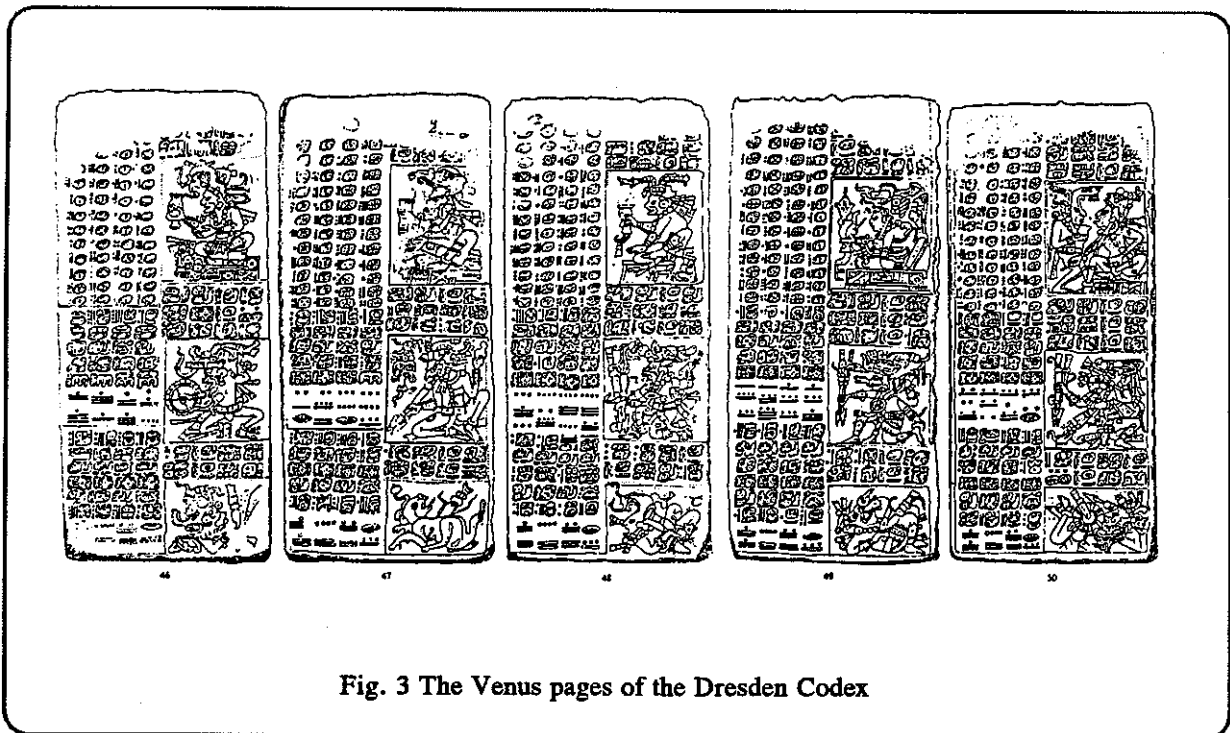


Fig. 3 The Venus pages of the Dresden Codex

and disappearance at inferior conjunction.⁴ The pictures on each page, however, show only what happens on the heliacal rising of the Morningstar in each of the five repetitions. The upper picture is a god of the Morningstar; the middle picture depicts a Morningstar god aiming a spear at the lowest picture, which represents the victim. Thus there are five gods of the Morningstar, five spearing gods, and five victims.

The Maya divided the table into five repetitions because five Venus cycles equal eight years of 365 days. Thus, every completion of this unit of five cycles (which takes 2,920 days) brings the rising of the Morningstar, or any other point in the cycle, back to the same point in the year. Notice also that going through five repetitions brings the same gods of the Morningstar back into power again. Since the Grolier Codex demonstrates that there were five gods of the Morningstar, the Eveningstar, Superior Conjunction, and Inferior Conjunction, those gods would also come into power once every five repetitions. Thus, when a historical event was enacted eight haabs, or five Venus cycles after an earlier one, the same Venus gods would be in power for both events.

To complete the entire cycle and bring the heliacal rising of the Morningstar back to its beginning date of 1 Ahaw takes 37,960 days and one complete run through the table recorded in the Dresden. The Dresden Venus tables are not, however, a perfect representation of the true Venus cycle. The Maya introduced a correction mechanism to ensure that the Grand Venus Cycle always began on 1 Ahaw and that a particular 1 Ahaw really fell on a heliacal rising of the Morningstar. The time elapsed between the two dates at Copán, 9.3.8.1.19 (January 26, 503) and 9.13.18.17.9 (November 25, 710), was equivalent to two repetitions of this Grand Venus Cycle less ten days, which we believe to be the correction they applied to adjust for the slight drift built into the tables⁵. At the 1991 International Congress of Americanists, Floyd Lounsbury and John Carlson informed Schele that the exact correction for two runs of the full table is 10.2 days. The Grand

Venus Cycle is a special number that derives specifically from the shape and arithmetic of the Dresden Codex. When it appears as a factor of a distance number between two historical events, like those above, it is unlikely to be accidental happenstance.

If we are correct in our reconstruction of the dates involved in the bottom seven steps of the Hieroglyphic Stair and in our assessment of the astronomy, 18-Rabbit carefully chose a day to dedicate his revision of Structure 10L-26 that fell two grand Venus cycles after that earlier 9.3.8.1.19 date. In keeping with his other Venus dates, 9.13.18.17.19 was an elongation of the Eveningstar, but more importantly it replicated exactly—in the Maya way of thinking about these things—an earlier event that likely was of the same general kind. Certainly both dates were important Venus stations.

Many people who commented on this note while it was being written were surprised that Smoke-Shell did not also choose a Venus date for his dedication of the final Hieroglyphic Stair. We cannot know for sure, but 9.16.4.1.0 (May 4, 755) fell about one hundred days after the heliacal rising of Eveningstar, eighty days after an heliacal rising of the Morningstar, and 100 days before an elongation. Possibly, other concerns eliminated waiting as an option. Although he did not choose a Venus date for the dedication, Smoke-Shell did incorporate Venus in the iconography of the final phase of 10L-26. The structure is covered with Tlaloc war imagery, which has been associated repeatedly (Closs 1979; Lounsbury n.d., 1982; Miller 1986; Schele 1986; Schele and Freidel 1990; Werner Nahm, personal communication through John Justeson, 1989; Anthony Aveni, personal communication, 1990; Peter Mathews, personal communication, 1980) with war events and other types of ritual timed to Venus phenomena. This same complex of iconography was at Teotihuacan, where it apparently became the basis of the cult of Tlahuizcalpantecutli, and the basis of paradigmatic war fought under the aegis of Venus in the lineage founding of the Mixtec lineages recorded in the Codex Nuttall (Pohl

4. Nikolai Grube (personal communication, 1991) suggested to us that the upper set of events in the left half of each page represents the day Venus came into each station, while the lower events involve the duration of Venus through that particular station. Thus, the table may picture both entry into each station and duration.

5. See J. Eric S. Thompson's (1950:224-226) explanation of these corrective mechanisms in his discussion of the Dresden tables.

1984; Koontz 1991). Grube, Werner Nahm, and Gordon Whittaker (personal communication from Grube, 1991) identified the spearer on Dresden 48 as *Tawiskal*, the Maya spelling of Tlahuizcalpan-tecutli. Since the Dresden is Postclassic in date, we cannot be sure that Tawiskal was a Classic-period Maya god, but the Tlaloc-war associations with Venus are very widespread in Mesoamerica.

We have also suggested that the connection between 18-Rabbit's dedication of the stairway on 9.13.18.17.19 (whether or not it corresponds to the archaeological phase we have suggested) and the earlier 9.3.8.1.19 event were meant to associate two actions of the same king. Here we call on precedents from Copán and elsewhere of texts connecting ancestral events to current history by astronomy and numerology. For example, Schele (1990) has shown a numerological relationship of the type Lounsbury (1976) called "contrived numbers" between the 8 Eb dedication of the step on the stairs of Ante and the 8 Eb dedication of the Reviewing Stand of Temple 11. Lintel 21 of Yaxchilan connects Bird-Jaguar IV's dedication of Structure 22 to the dedication of a building of exactly the same name by the seventh successor in his lineage some 297 years earlier. Schele and others have supposed this ancestral building to be an earlier phase of the same building Bird-Jaguar IV dedicated. We think the two dates on the Hieroglyphic Stair at Copán may likewise connect the dedication of different phases of the building.

The date 9.3.8.1.19 9 Kawak 17 Muwan falls sometime between the end of the third successor's reign and the early years of the fourth's. If Schele's (1990) suggestions about the early monuments at Quiriguá referring to Copán kings are correct, then we have a reference to a fourth successor at 9.2.18.13.10 7 Ok 13 Sak (November 5, 493), only nine years before the dedication date on the Hieroglyphic Stair. Furthermore, inside the early temple referred to as Papagayo by Copán Project archaeologists, two inscribed texts were found—Stela 63, which records the end of bak'tun 9 by Yax-K'uk'-Mo', and the erection of the stela by his son, whom we believe to be the third successor. In front of this stela, a step inscribed by the fourth successor was placed, we suggest, as the dedication marker for the construction of the temple called Mascarones. This large structure

was built after Papagayo, but designed to incorporate the earlier temple and its platform into the new construction. The earlier Venus date on the Hieroglyphic Stair of 9.3.8.1.19 (January 26, 503) to which 18-Rabbit's stair dedication is linked by the two Grand Venus Cycles, nicely matches the archaeology as it is presently known.

Conclusions

The last seven steps of the Hieroglyphic Stair yield a number of dates and associations with the architectural sequence of Structure 10L-26 that lend support to current hypotheses about its history. These are:

1. That the stairs and terraces now known as 10L-26-3rd were built by 18-Rabbit and dedicated along with Ballcourt IIA-b on 9.13.18.17.9 (November 25, 710) near the maximum elongation and altitude of the Eveningstar.

2. That this dedication occurred some fifteen years (15.11.18) after he buried Smoke-Imix-God K on 9.13.3.5.11 (June 22, 695, Gregorian) and that the tomb, according to the text, was sealed just before he began the construction on his own phase of the structure.

3. That he timed the dedication of his building project to occur two Grand Venus Rounds after the dedication of Mascarones by his predecessor, the fourth successor, Ku-Ix. Although this suggestion may not be testable, the separation of the 9.3.8.1.19 and the 9.13.3.5.11 by two Grand-Venus Cycles and their coincidence with elongation periods of the Eveningstar remain a potent and unusual connection between the dedication of an earlier stair and its associated phase of Structure 10L-26, and some earlier dynastic event.

4. That these attributions also suggest that the fragmentary temple atop 26-3rd, if it was in fact a separate stage, was constructed by Smoke-Monkey, the king who succeeded 18-Rabbit.

Finally, Nikolai Grube and Schele suspect that a significant portion of the inscription on the Hieroglyphic Stair relates not only the history of the dynasty of Yax-K'uk'-Mo', but also the construction of Temple 26 and perhaps other parts of the Acropolis.

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