

## Observations on T110 as the Syllable *ko*

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**T**HIS PAPER PRESENTS EVIDENCE for a new reading of a sign widely distributed in Classic Maya hieroglyphic writing. The affix in question (Fig. 1a) is numbered 110 in Thompson's glyph catalog (1962:51), and nicknamed "bone." Visually, however, sign T110 does not appear to be related to representations of bones in Maya art. Indeed, there are two other signs known to represent longbones—affix T111 (and its main sign form T570), read logographically as *BAK* ("bone" or "captive"); and T109, the well known sign for *CHAK* ("red") (Fig. 1b,c). In the Palenque Emblem Glyph, T570 is often replaced by a realistic depiction of an animal or bird skull, which reinforces the formal identification of T570 and T111 as bones (Stuart 1985). While T110 at first glance seems to be similar to T111 and T109, it is clearly distinguished graphically in the script and never occurs in the same context as those others. Therefore, the "bone" designation should not be applied to sign T110.

Several values have been suggested for T110 (Justeson 1984:324), but the sign has never been the subject of intensive testing to prove any of them. In this paper, we will propose a reading for T110 which is based, first, on substitution patterns and, second, on an assignment of value derived from an analysis of those patterns which makes sense in a number of hieroglyphic passages. Those glyphs containing sign T110 which elude interpretation are noted in the final part of the paper.

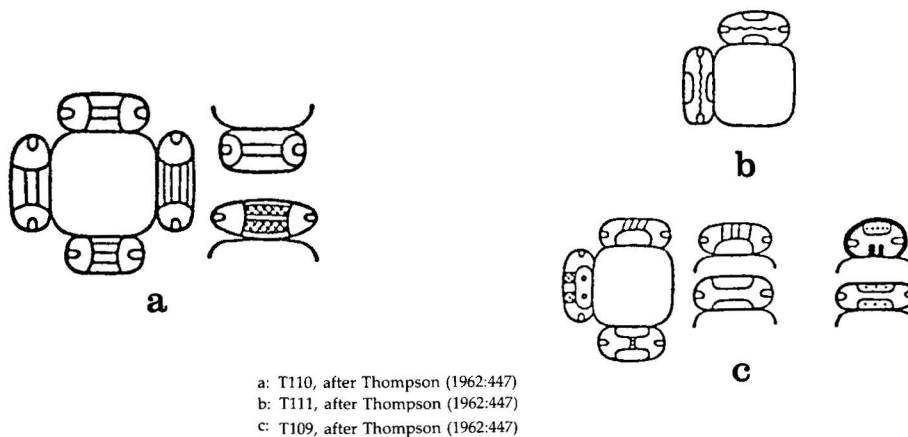


FIGURE 1. SIGN T110 AND VARIOUS "BONE" SIGNS

## SUBSTITUTION PATTERNS

Among the hieroglyphic texts of the Southern Maya Lowlands are two glyphs (Fig. 2) which refer to the act of scattering a substance, possibly blood or incense (Stuart 1984a, 1984b, Love 1987), during period ending and anniversary rites. The more common of the two forms is a glyph with a "scattering hand," T710, as its main sign and various affixes that may be grammatical morphemes or reading aids (Fig. 2a,b). This hand is sometimes positionally replaced in other examples by T590, identifiable as a mandible (Fig. 2c,d). Mathews (n.d.) has shown that the mandible sign on Dos Pilas Stela 8 is clearly equivalent to the "scattering" expressions on Dos Pilas Stela 1.

Both of these signs, the T710 "scattering hand" and the T590 mandible, can have T110 suffixed to them with no apparent change in meaning. An analysis of the distribution of both "scattering" glyphs reveals not only that T590:110 and T710:110 are functionally equivalent, but also that there is no difference in meaning between sign T710 alone and T710:110 (Fig. 3). Presumably, then, T110 is some complement, probably a phonetic syllable, to the "scattering" logograph, which pictographically represents the action. The T590 mandible sign of the other

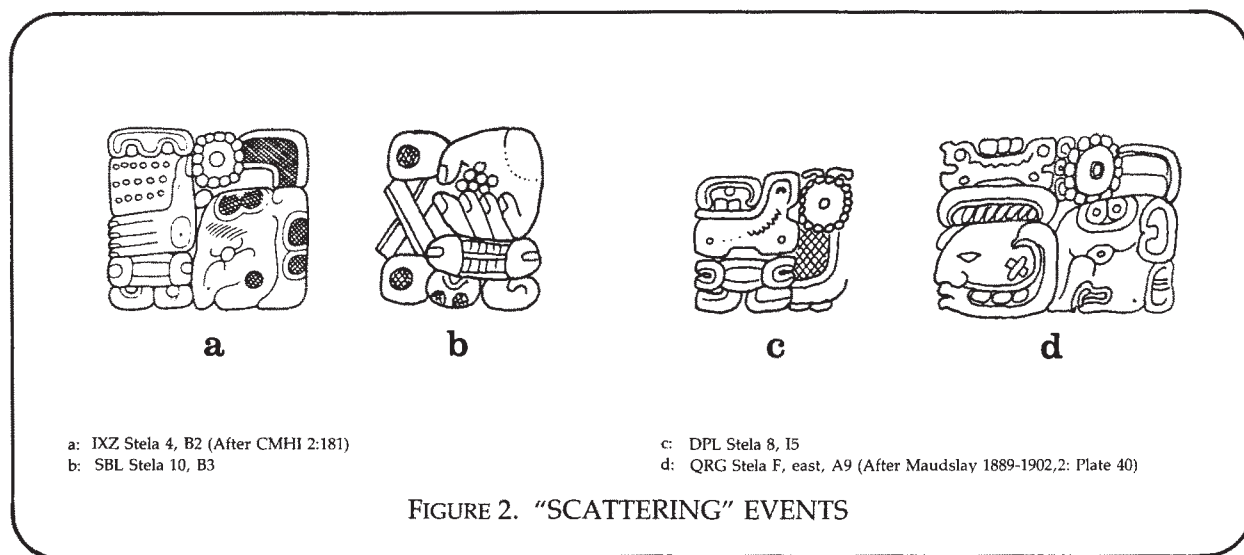















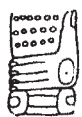







FIGURE 2. "SCATTERING" EVENTS

examples may have one of two functions: (1) it, too, may be a logograph with a cvc (consonant-vowel-consonant) value similar, if not identical to, T710; or (2) it is another phonetic syllable which when combined with T110 "spells" the word represented by the T710 "scattering hand."

On Quiriguá Stela F, T25, the well-known sign reported by Landa as having the syllabic value *ka*, is used as a complement to T590 instead of T110. If T110 and T25 are equivalent in function, as this suggests, they both should be used to confirm the final consonant of the cvc root expected as the reading of "scattering" glyphs. Logically, T110 should begin with the same consonant as T25, namely *k*, and should have a vowel that is dropped when suffixed to "scattering" glyphs. Moreover, both the scattering events mentioned should have readings based on a cv-*k* root for a verb meaning "to sprinkle" or something similar. The most widely distributed words for "mandible" in the Cholan and Yucatecan languages do not correspond phonetically to a verb with this meaning, but the Yucatec word *bak* could be a candidate for the reading of scattering glyphs: *bak* does not literally mean "mandible" but *bak* is the widely distributed word for "bone." In the Motul dictionary of Yucatec (Martínez Hernández 1929) *bak* (given as *baac*) is glossed as "*derramar agua de boca angosta*." The word *bak* has the final -*k* required by the phonetic complements on "scattering" glyphs, but we are hesitant to propose

	U	Verbal Root	Verbal Affix	Object
a				
b				
c				
d				
e				
f				

a: SBL Stela 10, B3

b: QRG Stela F, east, 9 (After Maudslay 1889-1902, 2: Plate 40)

c: DPL Stela 8, I5

d: DPL Stela 26, A7

e: IXZ Stela 4, B2 (After CMHI 2:181)

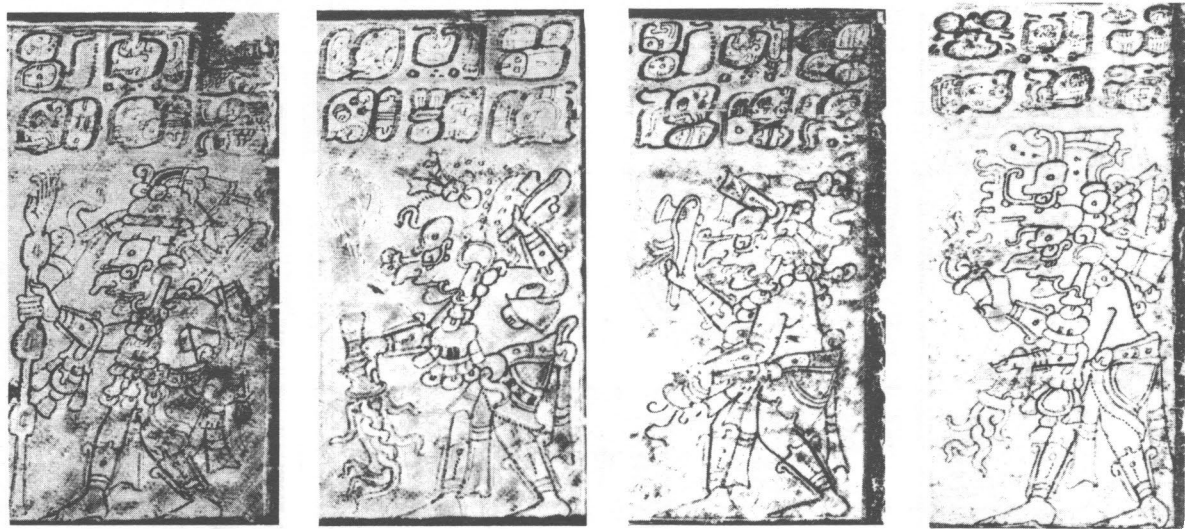
f: ARP Stela 2, C3 (After Houston & Mathews 1985)

FIGURE 3. THE MORPHOLOGY OF "SCATTERING" GLYPHS

this as the true reading of the verb. For one, we are not certain that the T590 mandible is a logograph—it could well be a syllabic sign that precedes *-k*. Also, as mentioned at the beginning of this paper, *bak* is well documented in the writing system as “bone” or “captive,” and the established forms (T570 or T1049, BAK ) are not known to substitute for the mandible sign.

Another case of clear substitution involving T110 occurs in Almanac 59 (pages 31b-35b) of the Dresden Codex (Fig. 4). In this almanac *Chacs* of the four colors and directions bear torches and axes. The texts accompanying the pictures follow the same syntactical structure in all four cases. Each text begins with a directional glyph (31b, east; 32b, north; 33b, west; 34b, south) and the compound T588b:140.181, which is otherwise known as the standard verb for 819-day-count phrases. The meaning of this glyph is not securely known, but we believe it to be a verb based on a positional root. The text then continues with the name glyph of the *Chac* and the color designation, and ends with a positive or negative augury. The third glyph in each of the sentences is that which interests us in regard to the substitution patterns involving T110.

In three instances, the third glyph has the main sign T765b and one or more affixes both before and after it (Fig. 4b-d). T765b represents a dog's head and has been deciphered as a logographic sign for morphemes based on *ok* (Schele 1984:287-305). In Yucatec *ok* has, among



a



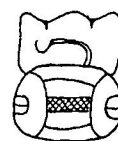
b



c



d



e

a: DRESDEN 31b-34b (After Förstemann 1892)  
 b-d: The *ok* glyphs of DRESDEN 31b-33b (After Förstemann 1892)  
 e: CPN Temple 11, East Door, South Jamb, A2 (Drawing by David Stuart)

FIGURE 4. SUBSTITUTION PATTERNS WITH T110



others, the meaning “to enter,” and this seems to fit the context of the scene. The affixes which go with the main sign differ from column to column. In spite of these differences in affixation, there is no evidence of semantic change in the T765b compounds. This observation can be taken as evidence that T765b in all its occurrences represents basically the same word in slightly different spellings.

The first of the *ok* glyphs is spelled T765b:110 on Dresden 31b (Fig. 4b). T110 most likely functions here as a phonetic complement (**ok-k(V)**). The next *ok* glyph (Fig. 4c) is spelled with a different suffix, T102 *ki* (Fox and Justeson 1984:29-47). *Ki* is used here in the same manner as T110 in the previous example, namely as a phonetic complement to the **ok** logograph. The third instance of *ok* in this almanac, on page 33b, is written T115.765b:102 (Fig. 4d). The T115 prefix has been deciphered by Stuart as *yo*, a reading to be argued in a forthcoming paper (Stuart, in press). Together the glyph would seem to read **yo-ok-k(i)**. The prefix here seems to represent the glide *y-* employed before vowel-initial stems when the third person singular (ergative) pronoun is prefixed. Here the pronoun itself is reduced to an initial *y-*. The glyph means “it enters” or “he enters,” depending on the subject. Again, the final T102 *ki* is employed as a phonetic complement. Finally, on Dresden 34b the *ok* glyph is spelled T115:765b **yo-ok**,

- a: PAL Tablet of the Temple of the Foliated Cross, B11  
 b: QRG Stela E, east, A8 (After Maudslay 1889-1902,2: Plate 32)  
 c: CPN Stela 2, A7 (After Maudslay 1889-1902,2: Plate 102)

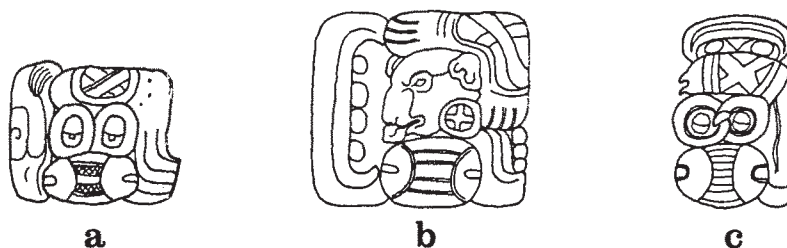
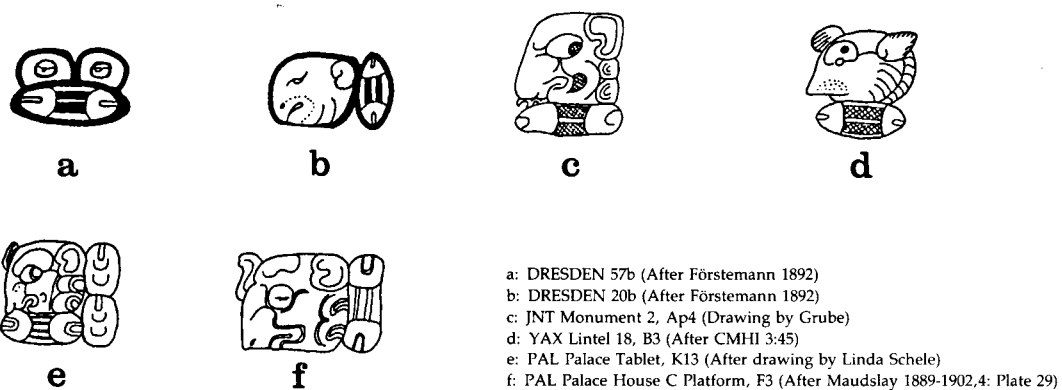


FIGURE 5. T110 IN GLYPH B OF THE LUNAR SERIES

without a postfix as complement (Fig. 4e). Thus the four glyphs in the third position clearly represent four different spellings of the same word. T110 in these glyphs is parallel to T102 in that it seems to have a *kV* value. If vowel synharmony really did exist as a convention in Mayan hieroglyphic writing—and groupings such as **ok-k(i)** seem to argue against it as an unalterable rule—then *o* should be the most likely candidate for the vowel of T110, resulting in a testable phonetic value *ko* for this sign.

Another reading employing *ko* involves a glyph that forms part of the 819-day-count passage in the doorway text of Temple 11 at Copan (Fig. 4e). Here the verb of the sentence is accompanied by the combination **yo-k(o)**. The *yo* syllable (Stuart, in press) was mentioned briefly above as a prefix to *ok* in the Dresden Codex. Here the combination would seem to spell *ok*, “to enter.” It is significant that the verb in this sentence (before *yo-ko*) and all other 819-day-count passages is the same verb that appeared in Dresden Almanac 59 before *ok* (see Fig. 4d). Presumably the event described in both instances is the same. In one case *ok* or *yok* is written as a logograph (with phonetic complements), while at Copan, much earlier, the purely syllabic *yo-k(o)* form is used. This should be seen not only as support for the *ko* reading, but for the *yo* value of T115 as well.

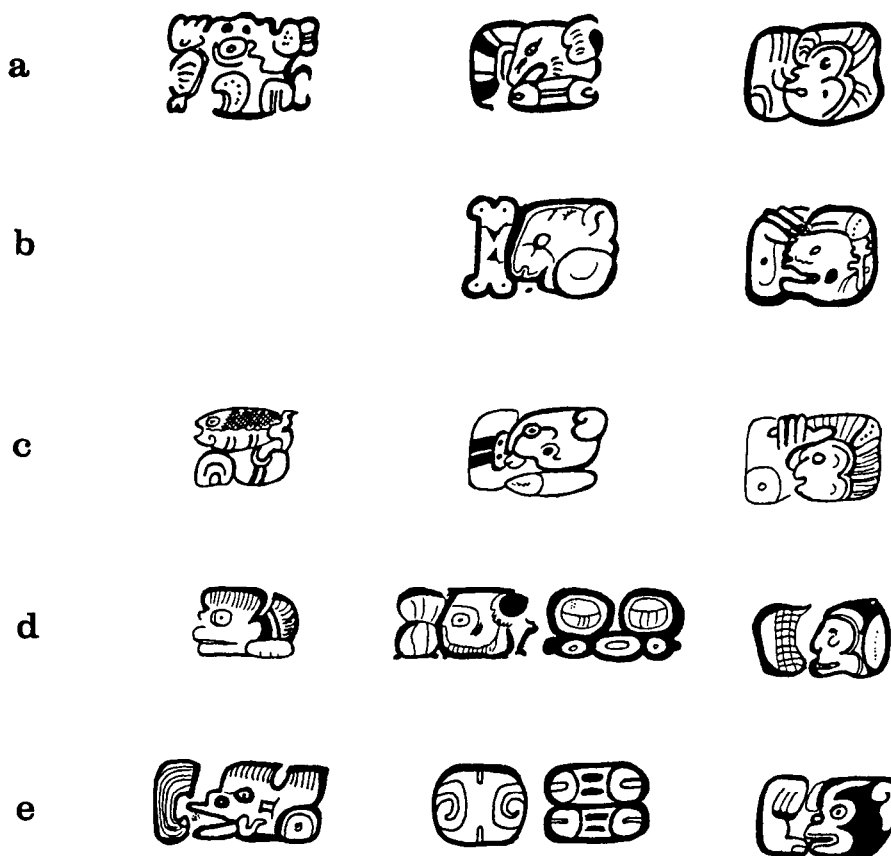
FIGURE 6. THE "RODENT-BONE" TITLE



"Fish"

"Rodent-Bone"

"Hand-Monkey"

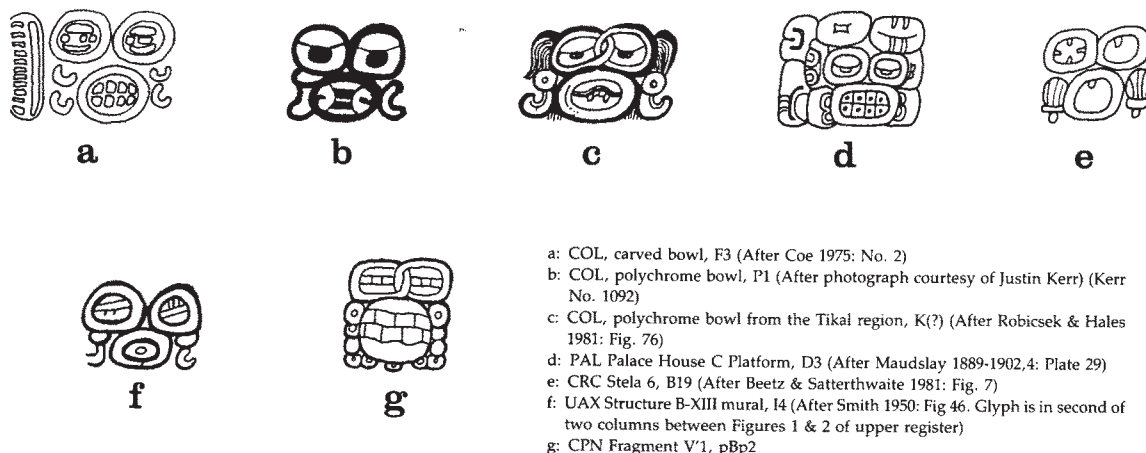


a: Holmul plate, H-J (After Reents 1985: Fig. 2)  
 b: COL, "codex-style" vessel, G-H (After Robicsek & Hales 1981:203,1)  
 c: COL, bowl from Naranjo region (After Coe 1978: No. 14)

d: ALH, vessel from unit A-8, Mac Phase, I-L (After Pendergast 1982: Fig. 34a)  
 e: COL, bowl, possibly from the Naranjo region, M-P (After Robicsek & Hales 1981: Fig. 32)

FIGURE 7. "RODENT-BONE" IN THE PRIMARY STANDARD SEQUENCE

FIGURE 8. T110 AND THE "TEETH" SIGN



In order to further examine the phonetic value of T110, let us turn to another pattern of glyphic substitutions. In Glyph B of the Lunar Series, T110 is nearly always present as a suffix or infix to the main signs T287 or T758 (Fig. 5). Lizardi Ramos (1941:243-269) was first to show that T287 and T758 are allographs. Outside of Glyph B, T287:110 and T758:110 are widely distributed as variants of a personal title. The definite reading of this title (Fig. 6), often referred to as the "Rodent-Bone," still remains unclear. As a title T287:110 and T758:110 occur not only in the monumental inscriptions but also in the Dresden Codex (Fig. 6a,b) and in pottery texts. Both glyphs occur in the Primary Standard Sequence in that part of the sequence which introduces the names and titles of historical persons. Coe (1973:21-22) was the first to dub this glyph the "Rodent-Bone" in the Primary Standard Sequence. In these pottery texts the glyph is bound to a position between the "Fish" glyph, interpreted by Stuart as a hieroglyph for cacao, and the glyph termed by Coe "Hand-Monkey" (Fig. 7). A close inspection of the Primary Standard Sequence with the "Rodent-Bone" glyph shows that there is usually another sign that comes between "cacao" and the "Hand-Monkey," usually confined to affix format but sometimes written as a separate main sign. This is a variant on T109 CHAK, and is sometimes replaced by a depiction of a skull or a naturalistically drawn bone (Fig. 7b). Apparently no other glyph besides "Rodent-Bone" can occupy the space between the "Fish" ("cacao") and "Hand-Monkey." However, on a vessel from the Middle Classic period excavated at Altun Ha (Pendergast 1982: Fig. 34a) a glyph is found in the position of the "Rodent-Bone" with a skull prefix, a T287 main sign, and a suffix which is clearly not T110 (Fig. 7d). The affix consists of three circular elements with infixed circles, the central circle being larger than the exterior ones. If this combination is equivalent to "Rodent-Bone," then presumably this affix somehow replaces T110 of the more usual spellings. The replacement is found in at least seven cases as a suffix to T287 (Fig. 8). There are considerable differences in the execution of the sign in these examples, but the general outline (two small circles attached to an oval central element) remains approximately the same. (With one exception, all examples of this form are from Middle Classic texts.) In at least three cases (Fig. 8a,c, & d) the sign under T287 can be identified as the depiction of an open mouth with clearly visible rows of teeth. Moreover, the suffix to T287 on the Palenque House C tablet (Fig. 8d) reveals that the teeth have inlays, a practice well documented from written sources and archaeological finds. In a few cases the "teeth" sign not only replaces T110, the suggested *ko* sign, but also may graphically overlap it to some extent. Some forms of T110 are flanked by the same circular ornaments typical of this "teeth" sign, as on Piedras Negras Lintel 2 in a title for the child who stands behind Ruler 2 of that site (Fig. 9a), and also in an example of Glyph B from

Naranjo Stela 29 (Fig. 9b). It may be assumed that the replacement of T110 *ko* by the “teeth” affix is based on some phonetic similarity of the sign values. In fact, the word for “teeth” in the Yucatecan languages corresponds perfectly to the *ko* value of T110 suggested above: Yucatec *co*, *coo*: “*diente; grano o pico de ave*” (Motul Dictionary); Mopan *koh*: “tooth, beak, bill” (Fisher 1973:item 254); Itza *koh*: “*diente*” (Schumann 1971); and Lacandon *koh*: “tooth” (Fisher 1973:254).

The “Rodent-Bone” title itself still eludes decipherment, and the problem of which persons carried it has yet to be completely solved. Stuart has noticed, however, that “Rodent-Bone” is common with names of rulers before they accede to power. The “rodent,” T758, has been interpreted in many ways, and its zoological identification has not been successfully determined. It is not even certain, for that matter, that the sign represents a specific animal or whether the head was used as an icon for various animals, depending on affixation and context, as suggested by Schele and J. Miller (1983:45). The “eyes” grapheme, T287, which is equivalent to this head sign, is also lacking a secure reading. Some of the glyphs illustrated here with the “eyes” and “teeth” strongly resemble some Maya versions of the complex of Teotihuacanoid gods known as Tlaloc. In a few cases the “eyes” are interwoven (Figs. 5c & 8c), a feature also at times characteristic of the eyes of Tlaloc.

In at least one example of the Primary Standard Sequence, “Rodent-Bone” is replaced by a reduplicated T110 (Fig. 7e). This may indicate that the phonetic value of T758 is similar to that of T110 *ko*. The proto-Maya term for “cougar” has been reconstructed by Kaufman and Norman (1984:118) as \**koj* (proto-Cholan \**choj*, proto-Yucatec \**koh*). However, the phonetic value *ko* cannot at present be successfully applied to T287. In any event, a satisfying reading of the “Rodent-Bone” title requires a thorough analysis of all its occurrences, and that is far beyond the scope of this paper.

#### READINGS WITH T110 KO

ONE WIDELY DISTRIBUTED GLYPH in which T110 is used in a phonetic spelling is T44:110. This glyph occurs both in the codices (Fig. 10) and in the monumental inscriptions (Fig. 11). In the Dresden Codex, T44:110 is found in two passages accompanying pictures of beings holding burning torches. On page 36a, a *Chac* is represented holding such a torch. On page 40b, a dog, “descending” from a sky band, also holds a torch, with flames, in his forelegs. T1.44:110 is the first glyph in each of the sentences that describes these scenes, followed by the names of the subjects and, finally, by positive or negative auguries. T1.44:110 must be the verb if the texts follow the basic word order of Yucatec languages. Since the readings of T1 and T44 are securely known as *u* and *to*, respectively, the phonetic value *ko* for T110 can now be tested. A reading of T1.44:110 as **u-to-k(o)** or *u tok* (in classic orthography) makes sense in the pictorial context since it is given as “*quemar herida o dar boton de fuego; Pegar fuego; quemar*” in the Motul Dictionary of Yucatec (Martínez Hernández 1930). it burns” or “its burning” is an appropriate reading for the verb. In the inscriptions, *to-k(o)* is common as a part of name glyphs, especially in combination with T281:23 **K’AN-n(a)** (Fig. 11a,b).

In the Chichén Itzá inscriptions there are two instances (Akab Dzib Lintel, E2, & Casa Colorada, Glyph 57) in which the sign combination T110:110:74/502 appears to represent the name of the famous ruling family Cocom (Fig. 12), read as **ko-ko-m(a)**, a purely phonetic spelling. The contexts in which these two glyphs occur are not adequately understood, but it is interesting that both examples are preceded by T33:586a, a “water group” variant that, as in Emblem Glyphs of the southern Lowlands, may somehow relate to the semantic complex of “blood” or “lineage.” From this we might conclude that T33:586a is used at Chichén Itzá as a grouping that introduces the names of lineages or families. If this **ko-ko-m(a)** reading is correct and truly refers to the Cocom family, this would be evidence for the presence of Cocom family members in Chichén Itzá as early as 10.2.0.0.0 (A. D. 869), the date of the Akab Dzib lintel. The



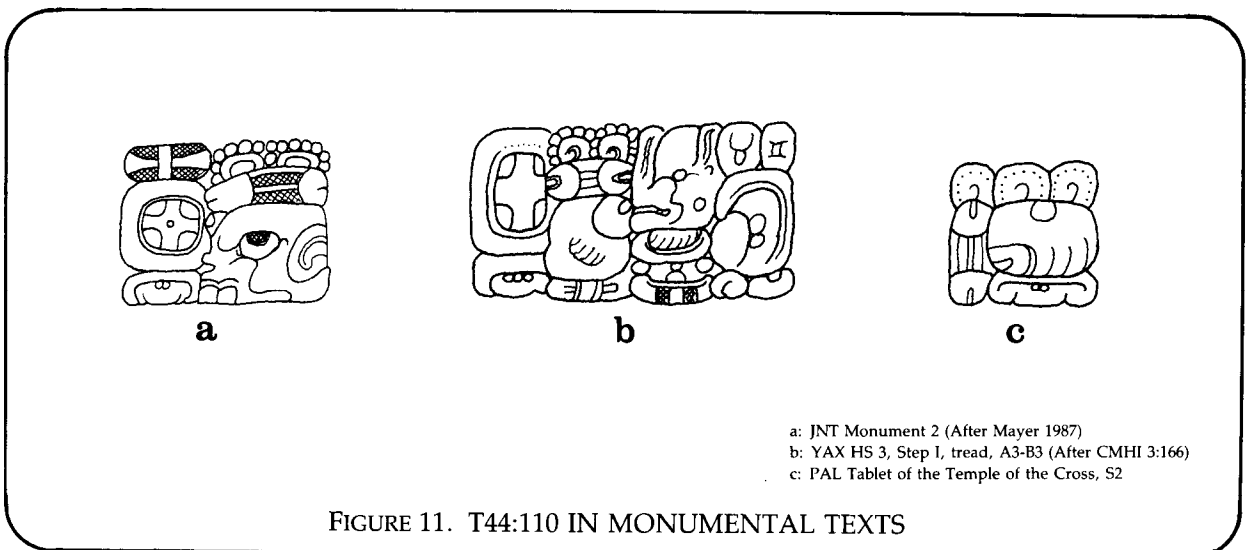
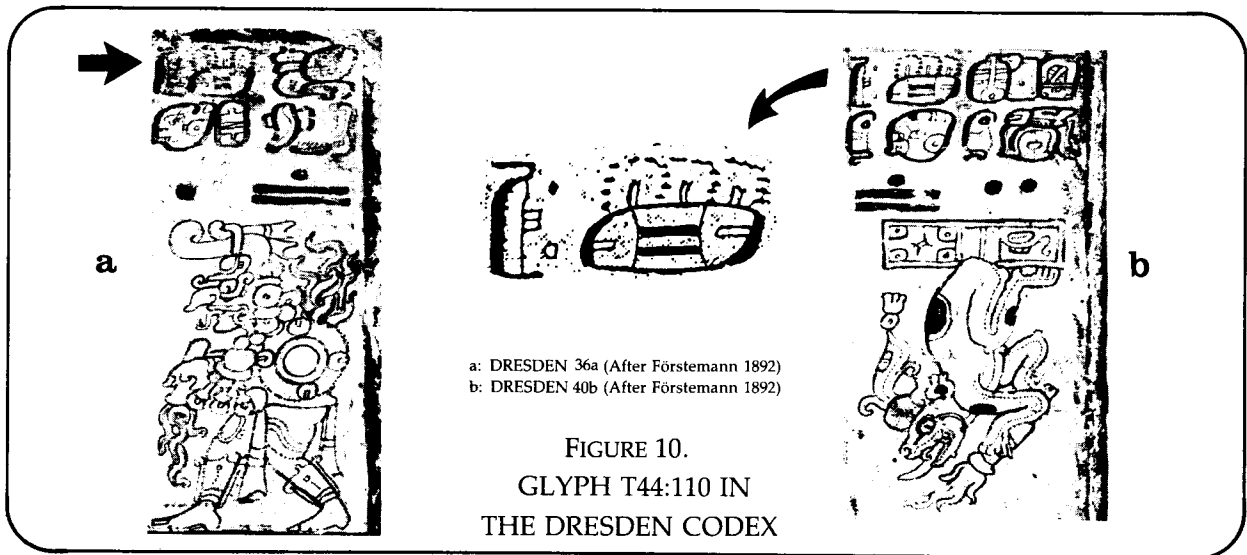
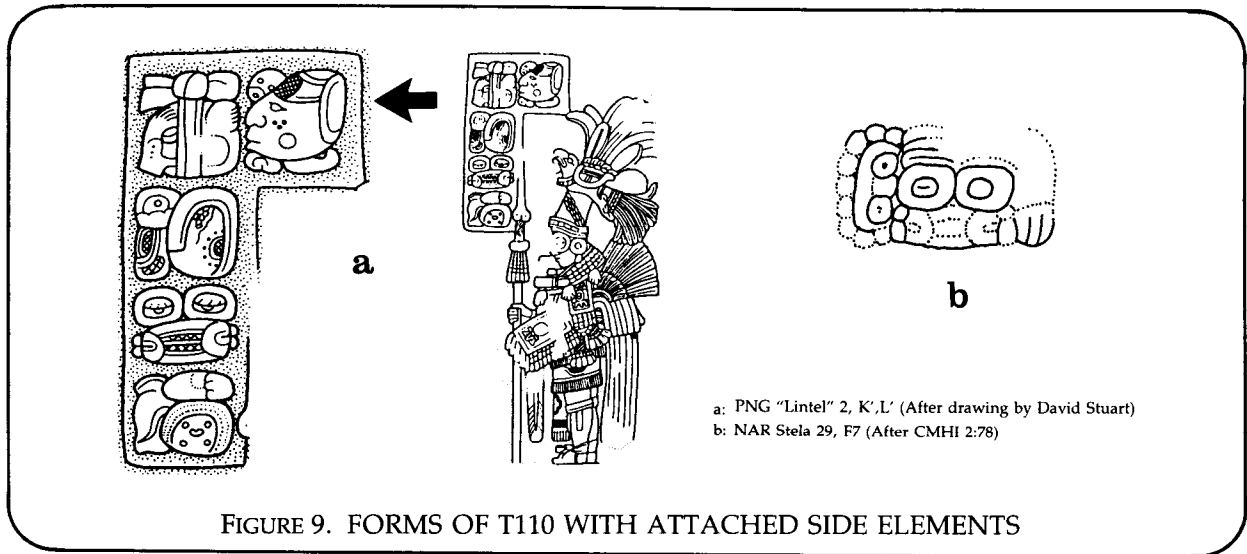
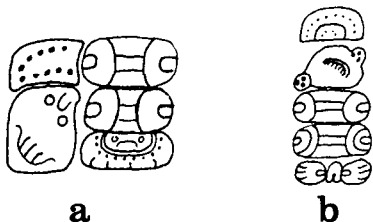
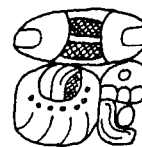


FIGURE 12. THE **ko-ko-m(a)** GLYPH

- a: CHN Akab Dzib Lintel, front, E2 (After Maudslay 1889-1902, 3: Plate 19)  
 b: CHN Casa Colorada freize, 57 (After Maudslay 1889-1902, 3: Plate 24)

FIGURE 13. THE **ko-ba-a** GLYPH

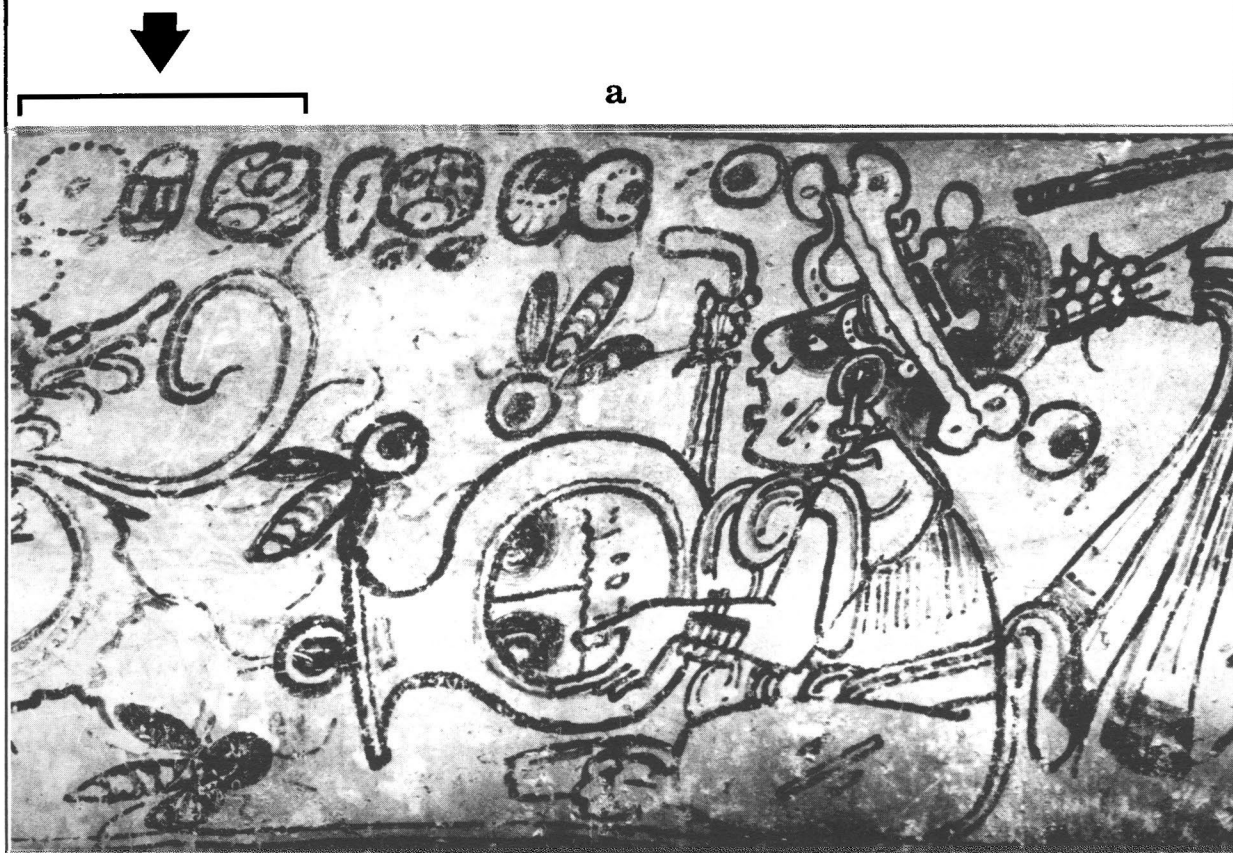
- COB Group D, text on edge of carved panel (After field drawing by Eric von Euw, courtesy of Ian Graham)

books of Chilam Balam usually associate the Cocom name with the rulership of Mayapan. Members of the Cocom family are never mentioned in the chronicles as living at Chichén Itzá, but it certainly seems possible that Cocombs were a part of the nobility of that place long before they gained historical importance through their hegemony at Mayapan.

At Cobá, Quintana Roo, there is one instance of a glyph that, interestingly enough, seems to be the syllabic grouping **ko-ba-a** (Fig. 13). Again the context is unclear, but it could well be associated with a name. While this compound does not have the usual affix of an Emblem Glyph, this would not argue against its use as a place reference given the various “unusual” Emblem Glyphs described by Houston (1986). Moreover, there has never been a conventional Emblem Glyph securely identified in the inscriptions of Yucatan. The name “Cobá” for the site seems to be ancient, for it occurs in the Chilam Balam of Tizimin (Edmonson 1982:lines 1141 & 5064) and Chumayel (Edmonson 1986:lines 631, 745), and in the Códice Pérez (Craine & Reindorp 1979:86-87, n. 87), and was surely applied to the place long before the arrival of the first archaeologists (see Thompson, Pollock, & Charlott 1932:6-7). The name seems to be composed of the words *cob*, “turbid,” and *ha*, “water.” The situation may be somewhat like that described by Stuart (1985) in the case of the ancient name *Yaxha* in the Peten. However, since only a single example of **ko-ba-a** occurs at Cobá, it would be premature to declare this to be the Classic name of the place, or even to say with certainty that the hieroglyph is a name.

Finally, we present a reading of a name glyph referring to a supernatural personage who appears on two Maya vessels (Fig. 14). This deity is associated with death, as revealed by the *cimi* marking on the cheek of one example, the blackened eyes, and the bone headdress. An important characteristic shared by these figures is a stacked arrangement of bow-tied knots in front of the nose and mouth. Long strands of cloth or hair hang down from the knots. The hieroglyphs with these figures are nearly identical, leading us to conclude that the two portraits are of the same entity. In the first instance (Fig. 14a) the glyphs are syllabic groupings readable as **mo-k(o)** and **chi**-(T61). This last sign, T61, is not well understood. In the second example of this name (Fig. 14b) a new glyph precedes the **mo-k(o)** combination, but since it also appears to introduce the name of the other supernatural on the same vase, we do not believe it is part of the name itself. T61 is also absent from the second vase, leaving the *chi* hand alone. The basic elements of this name are thus **mo-k(o)** and *chi*. One reading of this may be *mok chi'*, which in Yucatec means “knot-mouth.” Such a reading of these name glyphs would be apt in view of the apparently diagnostic stacked knots in front of the faces of both representations of this supernatural. *Mok Chi'*—if this is indeed the name—may also be seen in his Early Classic form

FIGURE 14. A POSSIBLE DEITY NAME INCORPORATING SIGN T110



No. 2284

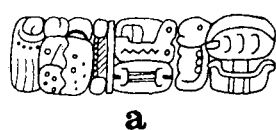


No. 2286

a: COL, detail of Late Classic vase (photograph courtesy of Justin Kerr)

b: COL, detail of Late Classic vase (photograph courtesy of Justin Kerr)

FIGURE 15. UNDECIPHERED GLYPHS WITH T110



a



b



c



d



e



f



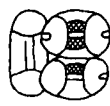
g



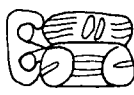
h



i



j



k



l



m



n

a: COL, panel, Kimbell Museum of Art, Ft. Worth, Texas, name phrase at N-P (After Schele & Miller 1986: Plate 86)

b: CHN Temple of the Initial Series, Lintel, name glyph at C6 (After Beyer 1937: Fig. 101)

c: YAX HS 5, 42, name glyph (After CMHI 3:179)

d: CRC Stela 14, A7, Uayeb glyph (After Beetz & Satterthwaite 1981: Fig. 14a)

e: CRC Stela 6, B7, possible Uayeb glyph (After Beetz & Satterthwaite 1981: Fig. 7)

f: PAL Tablet of the Temple of the Foliated Cross, G5

g: NAR Stela 35, D7 (After CMHI 2:92)

h: CPN HS

i: CHN Monjas Lintel 7A, D (After drawing by Ian Graham in Bolles 1977: (274))

j: TRT Monument 8, side, J (After Riese 1980: Abb. 4)

k: CPN Structure 18, east niche, D (After Baudez & Dowd 1983: Fig. M-19,a)

l: COL, Early Classic Period carved vase, B2 (After Coe 1973:110)

m: NAR Altar 1, H2 (After CMHI 2:104)

n: COL, carved bowl from the Xcalumkin region

on an unprovenanced carved cache vessel (Andre Emmerich & Perls Galleries 1984: No. 43) and as a stone statuette, also unprovenanced, published by Berjonneau, Deletaille, and Sonnery (1985:359).

### SUMMARY

The evidence presented here shows that the proposed phonetic value *ko* for T110 fits well in several contexts. Nevertheless, there are still many examples of glyphs with T110 that are not yet understood (Fig. 15). T110 seems to be used with the T590 mandible sign in several name glyphs in the inscriptions of the southern lowlands as well as at Chichén Itzá (Fig. 15a-c). Also, it is found with other signs (including AHAW) in a previously unrecognized variant of the month *Uayeb* (Fig. 15d,e). Further occurrences of T110 in glyphs where decipherment is still elusive are illustrated in Figure 15, f-n.

SUBMITTED APRIL 1987



## Acknowledgements

Thanks are extended to Justin Kerr of New York City, not only for permission to reproduce details of the painted vases shown in Figure 14, but also for pointing out the occurrence of the identical hieroglyphic names involved in their texts (letter to David Stuart, January 1986). The editor of this series wishes to acknowledge the useful comments of Bruce Love, and the help of Louise Millikan and Ron Callaghan in editing and proofreading the final version of this report.

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#### ERRATA

On page 5, in the line immediately below the figure frame, "(Fig. 4e)" should read "(Fig. 4a)." It refers to the middle glyph, bottom, in the detail of Dresden page 34 which appears at the far right in Figure 4.

On page 10, final paragraph, the text references "(Fig. 14a)" and "(Fig. 14b)" should be reversed.

The glyph *preceding* the *mo-k(o)* combination in the large detail of the painted vase shown in Figure 14a is shown here (see arrow) in relation to the *whole* hieroglyphic caption:



Finally, the following item--cited on page 10, line 16--was inadvertently omitted from the list of references:

STUART, DAVID

1985 The Yaxha Emblem Glyph as *Yax-ha*. *Research Reports on Ancient Maya Writing*, 1. Washington, D. C.: Center for Maya Research.