A Newly Discovered Column in the Hieroglyphic Text on La Mojarra Stela 1: A Test of the Epi-Olmec Decipherment

John S. Justeson and Terrence Kaufman

A badly weathered column of hieroglyphs was discovered in November 1995 on the side of Stela 1 from La Mojarra in southern Veracruz, Mexico. Most of the signs in this column have now been identified by nighttime examination under artificial lighting, making possible a nearly complete transcription and translation of this column. This data expands the modest corpus of epi-Olmec hieroglyphic texts and confirms various aspects of the decipherment of the epi-Olmec script.

The remains of a distinctive script tradition are found on monuments from southern Mexico, ranging from Cerro de las Mesas in the north to Chiapa de Corzo in the south. Because the associated art style and artifacts descend from the Olmec tradition, we refer to this script as epi-Olmec.

Only four legible texts currently attest the epi-Olmec writing system (*1*): three are virtually complete, whereas one fragmentary text preserves portions of just a few words. Until the discovery and publication of the fourth legible text, that on La Mojarra Stela 1 (*2*)—one of the longest known from ancient Mesoamerica—there was too little text data on which to base a decipherment of this script.

It was this fourth text that enabled us to decipher a substantial portion of this writing system (*3*, *4*). Topic continuity in lengthy texts leads to repetition of lexical items and larger grammatical units; with a model for the grammar of the text's pre–proto-Sokean language, this repetition was exploited to determine the boundaries of many of the words in the text and thereby some aspects of their grammatical structure. The text on the Tuxtla Statuette provided important additional clues to the decipherment, and the other two short texts provided modest additions to our knowledge. The state of the decipherment as of December 1992 is summarized in (*3*) and its state as of January 1994 is partially described in (*4*).

Additional progress in decipherment has been achieved through constant reanalysis and by applying insights from several years of descriptive and comparative work we have undertaken on the extant languages of the Mije-Sokean family. There has been a fair amount of revision in our knowledge of reconstructed proto-Sokean and proto–Mije-Sokean, based on Wichmann's work (*5*) and on Kaufman's comparative analysis of data from our own Mije-Sokean Language Documentation Project. Further evidence concerning the epi-Olmec script now depends chiefly on the recovery of more textual data written in it, but no new texts have since come to light.

La Mojarra Stela 1 was brought to scientific attention after it arrived in the Museo de Antropología in Xalapa, Veracruz, Mexico, in 1986. For reasons that epigraphers have never found compelling (*6*), doubt was cast on its authenticity, and recent directors of the museum left it in the basement, but it was put on public display in November 1995 by order of the museum's new director. While the stela was being readied for display, geologist F. Muñiz and archaeologist S. Vásquez discovered what appeared to be the remains of a column of glyphs on the left side (viewer's right) of the monument. The day before the stela was first exhibited, Vásquez satisfied himself that it was a series of eroded glyphs, a little more than 20 by his estimate. The verbal reports we had from the scene were that it was in such poor condition that little of the original text could be recovered. In June and October 1996 and January 1997, we spent approximately 40 man-hours over 10 nights examining and tracing this column of glyphs using artificial lighting.

The result was an almost complete recovery of the final column of text on the monument (Fig. 1, A and B). The column is at the far left of the surface of the side, ranging 1 to 2 cm from the face of the monument. In this position, it is likely to be the final (22nd) column of text, which we label column V. There appear to be 30 sign groups, which we number 1 through 30; four of the legible sign groups contain two signs each.

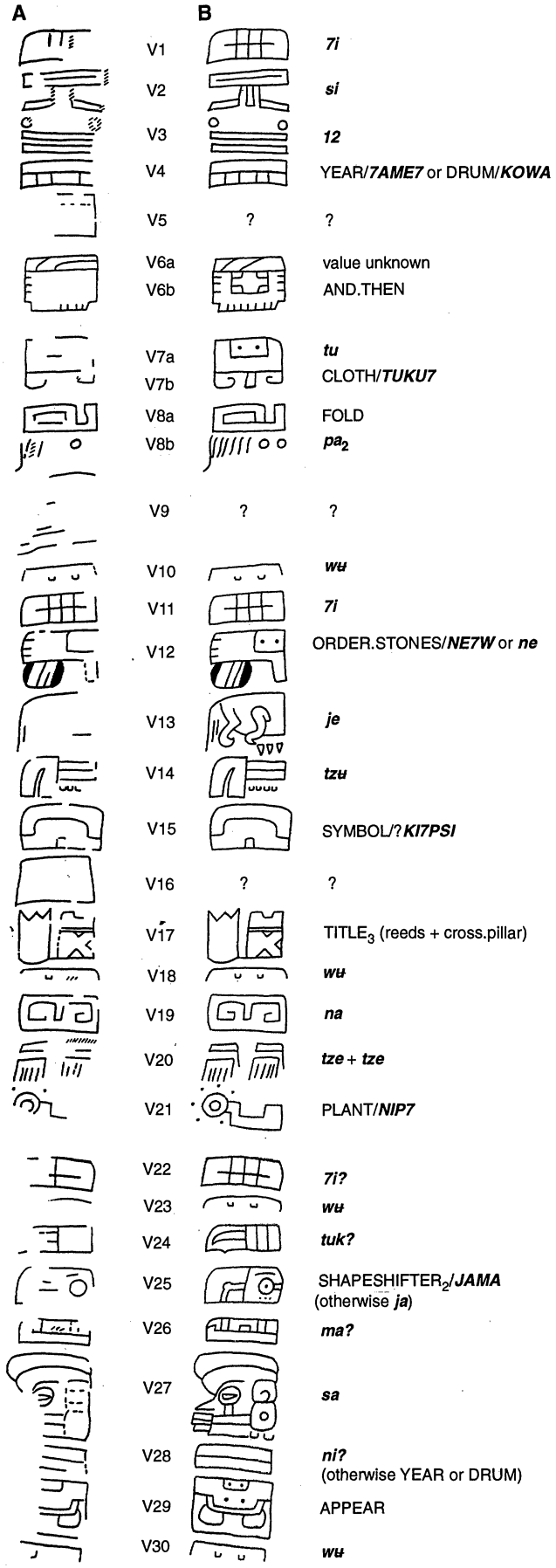
No surviving details diagnostic of the identities of any signs have been detected at sign groups V5, V9, or V16 (although the content of the surrounding contexts of each of these signs provides enough constraint that we can parse, and determine the general sense of, the phrases in which they occur). However, 22 signs are securely identifiable with previously known signs, three others (at V6b, V13, and V23) are fairly securely identified, one (at V25) is fairly securely either SHAPESHIFTER$_2$/**JAMA** or ***ja*** (*7*), and a previously unattested sign occurs at V6a. Identifications for four signs are open to doubt: The surviving details at V22, V24, V26, and V28 are consistent with just one or (at V28) two signs each, but are simple enough that they might plausibly be the remains of previously unattested signs. Most doubtful is the identification of the sign at V26. Its surviving diagnostic features are a pattern of vertical lines, but some might be due to erosion; many vertical lines in this column have been subjected to heavy erosion, one proof of the authenticity and antiquity of the text.

In our previous decipherment work (*8*), we had already read all of the recognizable signs in column V. This text therefore provides not only more evidence concerning the epi-Olmec script, but also a serious test of the decipherment. We began working on an analysis and translation of the text, after the drawings of the individual glyphs had been completed, in October 1996. It is indeed possible to provide a complete, coherent, and grammatical analysis and translation for the entire column (*9*) in terms of previously reconstructed Sokean vocabulary and grammatical structures and of previously established representational principles of the script. Nevertheless, the translation provided here is not definitive. Given the present state of our knowledge of the epi-Olmec language, there are alternatives for a few clauses, and the few signs that are missing or not securely identified bring some uncertainty.

At a general level, the grammatical model for the decipherment is supported by these results; it is this model that makes it possible to set the parameters for the syntactic parsing. Certain specific features of the decipherment are also supported, along with the grammatical framework and much of the specific phonetic and lexical decipherment on which these features were based.

In the case of sign sequences that were not repeated, the determination of word boundaries in the original decipherment work had to be based on a systematic grammatical analysis of the entire text, along with a uniformly applicable set of sign readings and vocabulary identifications. Three of the sign sequences that had occurred only once in the previously known columns of text—but that were analyzed as belonging to single linguistic units on the basis of the way they fit into the overall structure of the decipherment—are now known to occur also in column V. Their recurrence in

J. S. Justeson, Department of Anthropology, State University of New York, Albany, NY 12222, USA.
T. Kaufman, Departments of Anthropology and Linguistics, University of Pittsburgh, Pittsburgh, PA 15260, USA. Authorship is equal; correspondence may be addressed to either author.



C

T	***7i-si***	***12***	YEAR	?
R	*7is*	*mak=metz-a*	*7ame7*	[TITLE]
MG	see	ten-two-NUM	year	[title]
LT	Behold	twelve	year	[title]

FT Behold, there/he was for 12 years a [title].

T	?+*AND.THEN*	***tu***+CLOTH	FOLD+***pa***$_2$
R	(?) AND.THEN	*tuku7*	0-*?paks-pa*
MG	(?) and.then	cloth	3A-fold-INC
LT	(?) and.then	clothing	3A-fold-INC

FT And then a garment got folded.

T	?-***wu***
R	0-["UTTER"]-*wu*
MG	3A-["utter"]-CMP
LT	he-["uttered"]:

FT He [uttered]:

T	*7i*-ORDER.STONES	***je-tzu***	SYMBOL	?	TITLE$_2$-***wu***
R	*7i+ne7w=e*	*je7-tzu*	0-*?ki7ps-i*	?	TITLE$_2$*wu7*
MG	3pE-order.stones	yon-MAN	3A-?remember-RES	?	?king-REL
LT	his-ordered.stones	that.way	symbol	?	?king-type

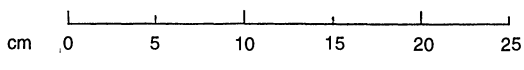
FT -- the stones that he set in order were thus symbols, ?kingly ones

T	***na-tze+tze***	PLANT-***7i***	***wu-tuk***
R	*na+tzetz-e*	0-*nip7-i*	0-*wu=tuk-i*
MG	XE-chop-RES	3A-plant-RES	3A-good-harvest-RES
LT	my-chopped-thing	planted-thing	well-harvested-thing

FT "What I chopped has been planted and harvested well."
or "What I chopped is a planting and a good harvest."

T	SHAPESHIFTER$_2$	***ma-sa-ni***-APPEAR-***wu***
R	*jama*	0-*masa=ni7*-APPEAR-*wu*
MG	shape-shifter	(is) 3A-god-BODY-appear-CMP
LT	shape-shifter	it-appeared-divinely-in.his.body

FT (A) shape-shifter(s) appeared divinely in his body.



this column supports the view that the decipherment had built a correct parsing of all of these units and, in part at least, of their immediate surrounding contexts. (i) The combination ***je-tzu***, which occurs at M2-3 and is interpreted as /je7-tzu/ "thus", occurs also at V13-14. This recurrence confirms the analysis of this sequence as a word, and the meaning of the word fits both contexts. (ii) At V26-27, ***ma-sa*** spells an incorporated preposed variant of proto–Mije-Sokean *masan (*10*) "god," which is found also at D2-3; /maas=/, from *masa=, is attested as a variant of *masan used as a preposed incorporee in present-day Soteapan and Ayapa. (iii) At V20, ***tze-tze*** spells the word /tzetz-e/, consisting of the verb root {tzetz} "to chop" followed by the resultative nominalizing suffix {-e}. The same sign sequence is found at L5, where it spells the root {tzetz} only, given that L4-L7 spells /na+tzetz-ji/ "when I chopped it." The repetition shows that ***tze-tze*** at L5 was correctly isolated from its context as spelling a full verb root. (iv) At V21-22, PLANT-***7i*** spells the word /nip7-i/, with ***7i*** representing the final /7/ of the root and the resultative nominalizing suffix {-i}. This occurrence confirms the interpretation of the sign PLANT as representing the verb root {nip7} in its other two instances, on the Tuxtla Statuette and the O'Boyle Mask. It was correctly isolated as a logogram, not a syllabogram spelling an affix, nor partially spelling a root in combination with other signs in its context.

Several signs are used to spell the same morphemes as in previously known instances, and these examples (such as the sign ***wu*** for the verb suffix {-wu}) support the grammatical model for the uses of these signs. The values of three signs are supported by their use in new contexts: (i) All previously known instances of the syllabogram ***wu*** are used to spell either the completive suffix {-wu} or the relativizer enclitic {+wu7}. At V23, ***wu*** seems to spell the root {wu} "good," which confirms the reading of this sign as the syllable /wu/. (ii) The probable ***ni*** sign seems to spell the prefix /ni7/ "on/in the body" at V25-30, the first instance of the prefix {ni7-} recognized in epi-Olmec texts. It confirms the phonetic reading of the sign that represents it, which only occurs in one other instance, as the syllable /ni/. (iii) The string ***7i-si 12*** YEAR/ **7AME7** $TITLE_x$ at V1-5 is mirrored at H3-I4 (***7i-si***$_2$ ***13*** YEAR/**7AME7** BUNDLE/ ***PIT-ti***) and at T7-10 (***7i-si***$_2$ ONE YEAR/ ***7AME7-me*** $TITLE_4$); in all three cases, the reading is "behold he/there was a ROLE for *n* years." The occurrence of ***7i-si*** at V1-2 alongside ***7i-si***$_2$ at H3 and T7 also demonstrates the previously postulated equivalence in value of ***si*** and ***si***$_2$.

Column V provides evidence concerning certain grammatical constructions. The five instances of verbs of speaking that occur on the face (columns A through U) of La Mojarra Stela 1 all have the incompletive suffix {-pa}. Sign groups V9-10 apparently spell a verb of speaking (because it is followed by a first-person ergative pronominal agreement marker, which should occur only in a direct quote) that occurs with the independent completive suffix {-wu}. In our documentation of present-day Mije-Sokean languages, incompletive {-pa} is typical on verbs of speaking, even with past time reference, although the completive {-wu} is not proscribed.

Sign groups V6-8 and V9-10 spell two clauses in sequence linked through what we have labeled the *pa*-conversive; in this construction (i) the two clauses are adjacent, (ii) the events referred to are in close temporal succession, and (iii) one verb is marked with incompletive {-pa}, whereas the other verb is marked with completive {-wu}, and both verbs are understood as being in the completive. Usually, as here, it

Fig. 1. The text on the side of La Mojarra Stela 1. (**A**) Recoverable details of eroded text. Slanted hatching indicates lines that have been deepened and widened by erosion; dashed lines are plausible but open to doubt. Sign groups are designated sequentially as V1 through V30; in sign groups consisting of two vertically juxtaposed signs, the individual signs are labeled with the position number of the group, followed by a or b. (**B**) Reconstruction of original form of text. Each sign is identified by its previously determined values. A freestanding ? means that the sign is illegible; a ? after a sign's value, as in ***ni ?***, reflects some uncertainty over the identification of the incised form, with the reconstructed form transcribed by that value. We reconstruct $SHAPESHIFTER_2$ rather than ***ja*** at V25 and ***ni*** rather than DRUM/YEAR at V28 because our provisional reading of the text uses these identifications, but the alternative reconstructions are not precluded. (**C**) Analysis of text. T = transcription of sign values; R = reading in the epi-Olmec language; MG = morpheme-by-morpheme gloss of R; LT = literal translation; FT = free translation. In transcriptions, a hyphen joins transcriptions of signs that are part of the spelling of a single word but are visually in separate groups, in that they are vertically in sequence separated by space; a + joins transcriptions of signs that are part of the spelling of a single word but that visually occupy a single sign group. In readings, +X means X is enclitic; X+, proclitic; -X, suffix; X-, prefix; =X, postpound; and X=, prepound. In morpheme glosses, a hyphen marks any morpheme boundary, and grammatical morpheme functions are described by the following abbreviations: A, absolutive person marker; E, ergative person marker; X, exclusive (first) person; RES, resultative nominalizer; NUM, numeral-forming suffix; INC, incompletive aspect suffix; CMP, completive aspect suffix; REL, relativizer enclitic; and MAN, manner-adverbial–forming suffix. Dots join English words or abbreviations that together translate a single epi-Olmec linguistic unit. A freestanding ? transcribes a morpheme or word whose identity is unknown; parenthesized, it means that such a unit may or may not have been present. A ? preceding a form reflects uncertainty over the meaning or phonological value of the sign whose use is reflected by that form.

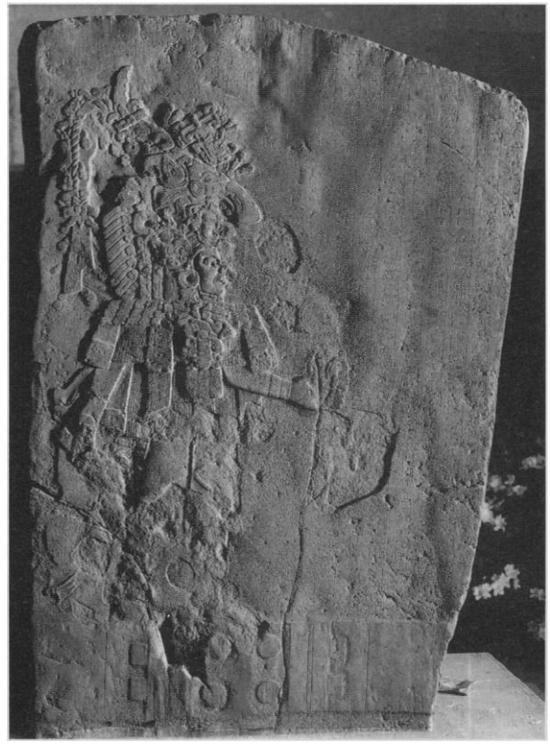


Fig. 2. The long hieroglyphic text on the front face of the pre-Columbian monument Stela 1 of La Mojarra, Veracruz, Mexico. The discovery of this text made possible the decipherment of the epi-Olmec writing system in 1993 (*3*). The hieroglyphic text described in this report was recovered from the remains of a badly weathered column on the right side of the monument. The added text helped to confirm the correctness of the original decipherment. [Photo courtesy of I. Graham]

is the first verb that takes {-pa} and the second that takes {-wʉ}. It is plausible that V6-10 is an instance of the *pa*-conversive.

Column V provides more evidence for a pre–proto-Sokean phonological pattern. The spelling PLANT-***7i*** "planting/planted" at V21-22 shows that the epi-Olmec descendant of proto–Mije-Sokean *ni:p7 "to plant," with the nominalizer {-i} suffixed, was pronounced /nip7i/, with a postconsonantal /7/, in pre–proto-Sokean. This conclusion is consistent with epi-Olmec postconsonantal /7/ in /RULER ko7=mon7a/ "ruler's head-wrap," spelled KNOT+GOVERNOR-***7a*** at Q41-42, and /poy7a/ "moon, month," spelled ***po-7a*** at J3-4. In proto-Sokean, as it would be reconstructed from surviving languages, postconsonantal /7/ had been lost from these words. Data from Mijean languages show that postconsonantal /7/ appeared in all such items in proto–Mije-Sokean (*5*).

A distinctive spelling convention is also supported. In quite a few cases, a syllabogram's iconic origin is apparent, and in these cases, the syllabic value is based on the consonant and vowel that begin the word whose depiction the sign reflects; some such signs can be used both as a logogram for that word and as a syllabogram. For example, the icon for "earth," which was **na:s* in proto–Mije-Sokean, is almost always used for the syllable /na/, but it occurs at O26 as a logogram for "earth" in spelling /nʉ-tzat7-e=nas/ "ground jointly measured by handspans." Similarly, the sign for the numeral 2 is used at R43 to spell the syllable /wʉ/ (*11*), a syllabographic use of what is otherwise known only as a logogram; "two" in Mije-Sokean has two suppletive allomorphs, *metz and *wʉstʉk.

A confirming example is now provided by the sign ***ne***, which shows a hand setting down a stone; its logographic origin is pre–proto-Sokean {ne7w}, "to set stones in order." At V12, this glyph is used to spell the logogram ORDER.STONES, not the syllable /ne/. As a logogram for the verb {ne7w}, it may also spell the corresponding participle or verbal noun /ne7w-e/ "having been set in order, of stones," and that is what it does at V12. The example also confirms the convention by which logograms for verbs could be used to spell their nominalizations.

This study shows that a previously unknown segment of text can be read and understood in terms of the same model for language structure, sign values, and spelling conventions that were developed in the previously achieved decipherment of the epi-Olmec script, and shows that the segment's content is well integrated with the previously read portion of the same text. Conversely, there are no phenomena in this stretch of text that challenge the model in any way. It is difficult to imagine that this model would yield a complete, coherent, and grammatical text if these portions of the decipherment—language structure, sign values, and spelling conventions—were not essentially correct. In our view, the data confirm the results obtained in the first two of our by now six years of our work on the decipherment of epi-Olmec writing.

REFERENCES AND NOTES

1. These texts are, in order of their discovery, the Tuxtla Statuette, the Chiapa de Corzo Sherd, the O'Boyle Mask, and La Mojarra Stela 1. When not otherwise mentioned, the text is from La Mojarra.
2. F. Winfield Capitaine, *La Estela 1 de La Mojarra, Veracruz* (Publ. 16, Research Reports on Ancient Maya Writing, Washington, DC, 1988).
3. J. S. Justeson and T. Kaufman, *Science* **259**, 1703 (1993).
4. ———, *Arqueología* **8**, 1992 (1996).
5. S. Wichmann, *The Relationship Among the Mixe-Zoquean Languages of Mexico* (Univ. of Utah Press, Salt Lake City, 1995). Wichmann made versions of this work available to us in 1991.
6. A. M. H. Schuster, *Archaeology* **47** (no. 5), 51 (1994).
7. We write Mije-Sokean forms in a practical, Spanish-based orthography. Most letters have their usual Spanish pronunciations, but *j* represents [h], *ʉ* represents a high, central-back unrounded vowel, and *7* represents a glottal stop. Phonologically explicit representations of Mije-Sokean words are between slashes; phonetic transliterations of epi-Olmec signs are in bold italics. In phonologically explicit representations of Mije-Sokean words, grammatical affixes are joined to roots or to one another by a hyphen; elements of compound words are joined by =; and clitics are joined to adjacent words by +.
8. Readings for almost all of these signs were reported in the original announcement of the decipherment (*2*). Only three readings have been subsequently revised. One, appearing at V14, was revised from ***tzi*** to ***tzʉ*** in the spring of 1996, when it was realized that the final vowels of words we believed to be spelled with these signs would conform exactly to existing and reconstructible words if the sign values were exchanged. This change does not impinge on any semantic interpretation. Another sign, appearing at V29, was identified as a logogram for an intransitive verb, initially identified as referring to the performance of some kind of ritual, but later revised semantically to "to appear" (*4*). The reason for this change is that the verb refers to something done by or happening to both a throne (inanimate) and to human beings, to heavenly or spirit jaguars, probably to a god, and to a constellation, all in a ritual context. The constellation helps to narrow the semantics fairly tightly; becoming manifested (appearing, being revealed) in some way seems to be the only feasible category. The last change was made on 1 May 1997. Although the reading of the sign at V25 as /jama/ is unchanged, we have found that the meaning of this term in Mije-Sokean languages is "shape-shifter" rather than "animal spirit counterpart."
9. Comments on the translation: Sign groups V1-5, "Behold there/he was for 12 years a [title]," most plausibly refers to a status held by the protagonist for 12 but not for 13 full years, after the last date referred to in the previous part of the text (that on which the protagonist's brother-in-law was executed). This brings us to, or somewhat past, 8.6.9.15.2, 58 days before the end of an epi-Olmec decade at 8.6.10.0.0, perhaps the dedication date for the stela. The effaced title may refer to a rank the protagonist achieved after the defeat of his brother-in-law, maybe something like "regional overlord." At V6-8, ". . . a garment got folded" (or "he garment-folded") may refer implicitly to a new bloodletting event, because folding garments has this association at O*32-33 and Q6-8. At V11-12, "the stones that he set in order . . . " are most likely the same stones referred to at R28-30 ("when he placed stones in order . . . ") and T24-30 ("the symbol[-stone]s got replaced upright"). At V13-18 " . . . were thus a symbol, a ?kingly-type one," "thus" translates /je7.tzʉ/, literally "in yon way," and refers to a relatively distant past event rather than a relatively recent one—presumably, then, to the event of setting stones in order that is referred to on the face of the monument. The sign at V17 appears as a title of Harvester Mountain Lord at R24, and that also appears at P31 and, although presumably for a different person, on the Tuxtla Statuette at G4. Visually, at least, this title is of Olmec vintage; whether it refers back to Olmec times or institutions has not yet been determined. In the context at V17, where it is combined with the relativizer {+wʉ7}, it serves as a qualifier, TITLE$_3$-***wʉ*** meaning something like "kingly" or "royal." We read V11-18 as an aside or parenthetical remark about the situation of the protagonist when he made the remark at V19-24. Sign groups V25-30 might be a continuation of the quote at V19-24 or, more likely, is information provided by the narrative voice of the text. The text at V19-24 reads "What I chopped is a planting and a good harvest." /tzetz-e/, /nip7-i/, and /tuk-i/ are resultative verbal nouns or nonactive participles translatable as both "having been VERBen," and "VERBen thing," thus "chopped thing," "planted thing/planting," and "harvested thing/harvest." These three nouns presumably stand for three actions that are linked in some logical order. The chopping may refer to the beheading of a prisoner at L4-7 ("when I chopped [off his head] . . . ") or to the execution of the protagonist's brother-in-law, or both. The heads of his enemies or their blood, or both, may be the buried things referred to ("to plant" and "to bury" are the same word, {nip7}). This passage may have the prosaic interpretation that the "harvest" is the fruitfulness of the land with respect to some crop or crops at the point of or as a result of the burial of the head(s) or the blood. Human sacrifice was believed to promote good harvests. Among Mayans, at least, the ruler was expected to carry out rituals that would ensure good harvests at year-endings. "Harvester Mountain Lord" may be an epithet of the protagonist, rather than a name, and may refer to his success over time in ensuring good harvests. In this column of text, the protagonist who speaks at V19-24 is not named, although a title is given him at V5. He is presumably the same person as Harvester Mountain Lord, who is named and depicted on the face of the monument and given various titles. The text at V25-30 is translated as "(An) animal spirit companion(s) appeared divinely in his body." The text spanning Q48-T23 refers to ritual acts that resulted in the protagonist (or him and his supporters) taking 23 jaguars over a 23-day period [confirming the chronology of (*4*)]; thus, V25-30 may refer to this set of events; or to the garment-folding event at V6-8, when a public bloodletting and attendant vision probably took place, perhaps on the 10-year period ending; or to a public event after one of the harvests that may be referred to at V24.
10. Reconstructed words, labeled by an asterisk, are pre–proto-Sokean unless otherwise stated.
11. The identification of this sign as that for the number 2 is another result of direct examination made possible by the erection of the stela. The drawing in (*2*) suggested that the numerical dots were ovals, presumably because the photographs on which it was based had to be done at an angle, and they showed a spurious internal line, presumably an effect of lighting.

12. We thank S. Ladrón de Guevara, director of Museo de Antropología, who made the discovery of this text possible and provided us with the access needed for drawing it, and I. Graham, for photographing the monument. Our work has been supported by funding from the State University of New York at Albany Faculty Research Awards Program grant 320-9753P, the Texas Workshops on Mesoamerican Writing and Iconography, National Geographic Society grants 4910-92 and 5319-94, and NSF grants BNS-9411247 and SBR-9511713.

26 December 1996; accepted 17 April 1997