

# Textdatenbank und Wörterbuch des Klassischen Maya

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an der Rheinischen Friedrich-Wilhelms-Universität Bonn



ISSN 2366-5556

## RESEARCH NOTE 4

Published 7 Sep 2016

DOI: 10.20376/IDIOM-23665556.16.rn004.en



## Filling the Grid? More Evidence for the <t'a> Syllabogram

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This epigraphic note<sup>1</sup> reviews David Stuart's proposal for a **t'a** syllabogram (Stuart 1998: 417; Bíró 2003: 2, Lacadena & Wichmann 2005: fn. 1) and enriches the evidence for his reading by providing more examples in different productive contexts.

### The Initial Evidence from Ikil

In a written communication to fellow epigraphers in 1998, David Stuart identified a hitherto unrecognised and still unclassified grapheme on one of the two inscribed lintels from Structure 1 in Ikil, Yucatan. Each of these two lintels consists of 10 glyph blocks, and together they comprise a single, continuous text spanning two opposite doorways of the summit temple of Structure 1 (Figure 1a-b; Andrews & Stuart 1968: 73, figs. 1, 3, 7).

The glyph block in question (Figure 1c) is block B on Lintel 1. Based on context, Stuart proposed the reading  $_{nn}t'a?-_{T501}ba-_{T18}yi$ , for *t'ab?-ay-i* "(s)he/it ascended", representing a unique instance of syllabic substitution for the typical "step verb"  $_{T843}T'AB?$ . The logogram T843 was first proposed as a dedicatory verb for ceramic vessels by Barbara MacLeod (1990: 342) because of its abundant occurrence in the

<sup>1</sup> This research paper abstains from indicating or reconstructing vowel complexity on the basis of supraphematic vowel disharmony, as has been proposed in two studies (Houston, Stuart & Robertson 1998, Lacadena & Wichmann 2004). There are two main reasons for this approach: 1) although both proposals operate under similar premises, their conclusions are rather distinct; and 2) no consensus has yet been reached on the mechanisms of disharmonic spellings, resulting in alternative views on the reasons underlying the phenomenon of vowel disharmony (e.g. Kaufman 2003, Mora-Marín 2004, Gronemeyer 2014). We neither neglect previous research nor entirely dismiss the possibility of a quantitative Classic Mayan vowel system and its orthographic indication. Before the project has collected sufficient epigraphic data and can test previous proposals against the existing evidence or formulate new hypotheses, we prefer to pursue an unprejudiced approach in our epigraphic analysis and to be rather conservative, while also noting that the transcriptional spelling in one model may vary between authors. We therefore apply a broad transliteration and a narrow transcription, but only as far as sounds can be reconstructed using methods from historical linguistics. This last point particularly concerns the aspirated vowel nucleus, as in e.g., *k'a[h]k'*.

PSS. Stuart (1998: 409-417) later also linked it to building dedications. The reading and translation “to go up, to rise, to ascend” was first proposed by David Stuart, Nikolai Grube and Elisabeth Wagner (cf. Wagner 1995, Schele &Looper 1996: 51), based on the grapheme’s use in other contexts of historical nature<sup>2</sup> and correspondences in Ch’olan languages (Kaufman & Norman 1984: 133). However, clear phonemic support was lacking.

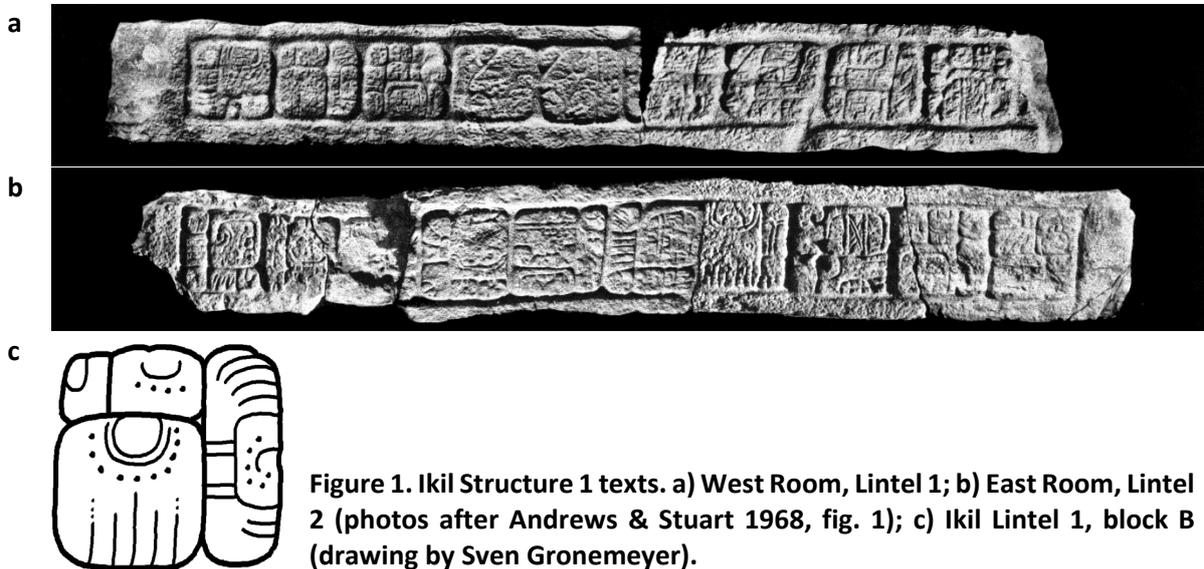


Figure 1. Ikil Structure 1 texts. a) West Room, Lintel 1; b) East Room, Lintel 2 (photos after Andrews & Stuart 1968, fig. 1); c) Ikil Lintel 1, block B (drawing by Sven Gronemeyer).

Stuart’s (1998: 417) idea of a full phonemic substitution is supported by the dedicatory nature of the Ikil text, which opens with **a-ALAY-ya t’a?-ba-yi u-wa?-ya-bi-li** (blocks A-C), *alay t’ab?-ay-i-Ø u-way?-ab-il* “here ascended the dormitory of ...”, followed by the elaborate name phrase of a noble woman. Equivalent formulae with either the T843 “step verb” or the T1014 “God N verb” are attested elsewhere and are well known in Yucatan (Figure 2). However, this evidence does not yet prove a full syllabic substitution for one of these two logograms, as it draws on functional parallels alone.

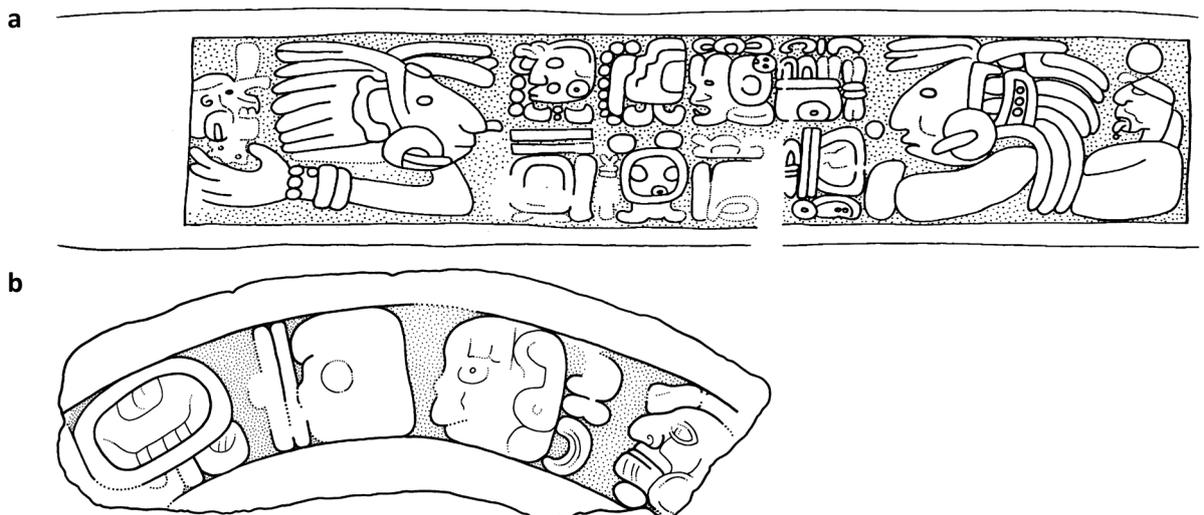


Figure 2. Examples of dedicatory verbs following *alay*. a) Cacabbeec Lintel 1 (drawing by Daniel Graña-Behrens [2002: pl. 4]); b) Edzna Ball-court Sculpture (drawing by Sven Gronemeyer [Benavides & Gronemeyer 2005: fig. 2]).

<sup>2</sup> For example, compare the accounts of *Bajlaj Chan K’awil* seeking refuge in different places as mentioned on Dos Pilas Hieroglyphic Stairways 2 and 4 (cf. Guenter 2003), or its use in association with other warfare events or tribute scenes (Stuart 1998: 409-416).

### Further Support by Phonemic Complementation

Stuart (1998: 416-417) furthermore cites the case of Uxmal Capstone 2 (Figure 3). In block C, he recognises the same shape with a dotted outline typical of the T843 “step verb”. This sign icon is the Late Classic representation of the footprint ascending a stairway that is more clearly visible in early forms (compare to Figure 2a). Although the main sign is again clearly T<sub>501</sub> **ba**, he considers the third sign to be a rendition of the very same supposed **t’a?** syllabogram visible on Ikil Lintel 1, an interpretation also followed here. Thus, we might be dealing in this instance with a full phonemic complementation.<sup>3</sup> We also have a dedicatory statement here and can thus analyse blocks C-D as **t’a?-T’AB?-ba u-tz’i-bV** for *t’ab?-a[y-i]-∅ u-tz’i[h]b*, “it ascends its writing”.

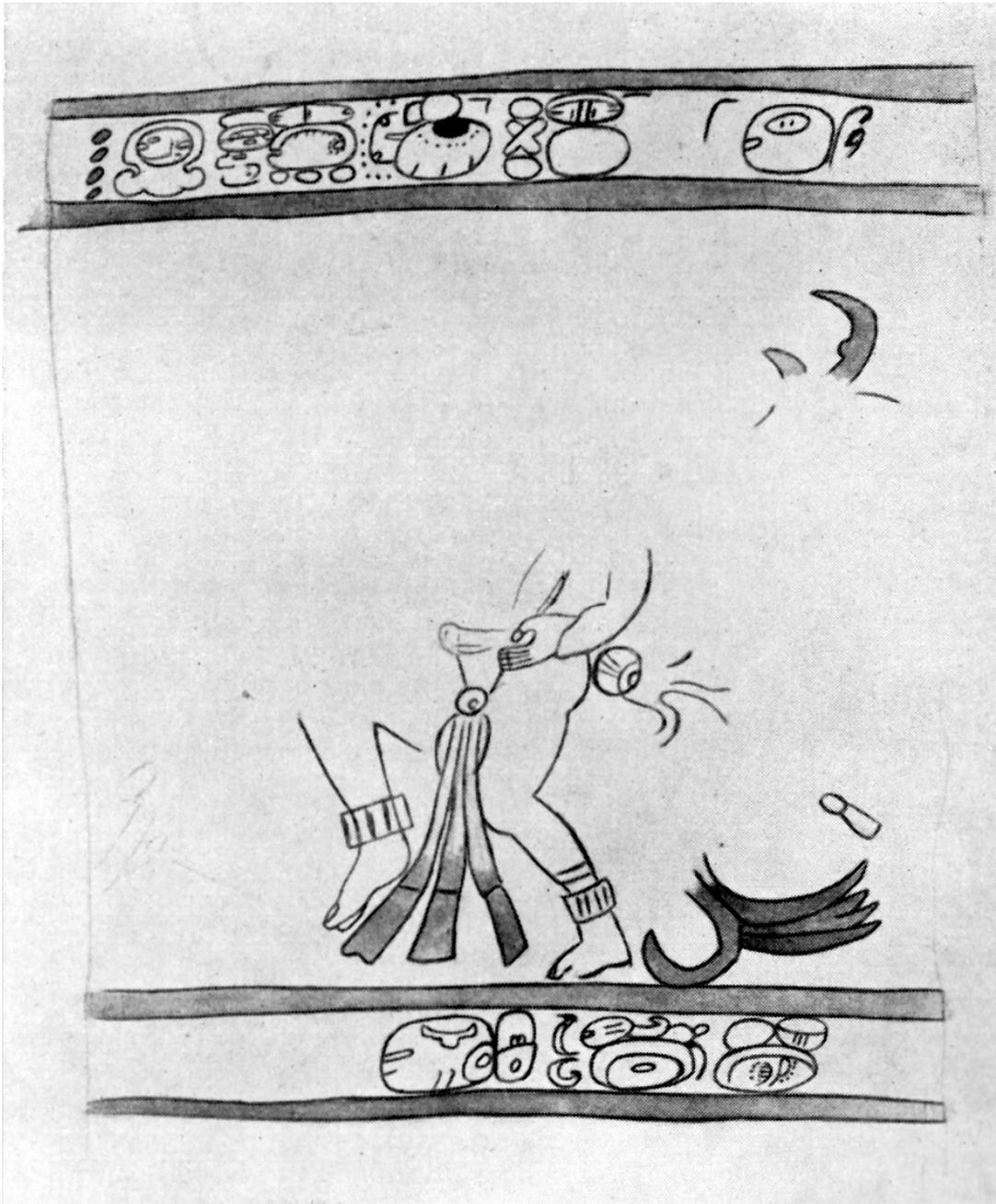
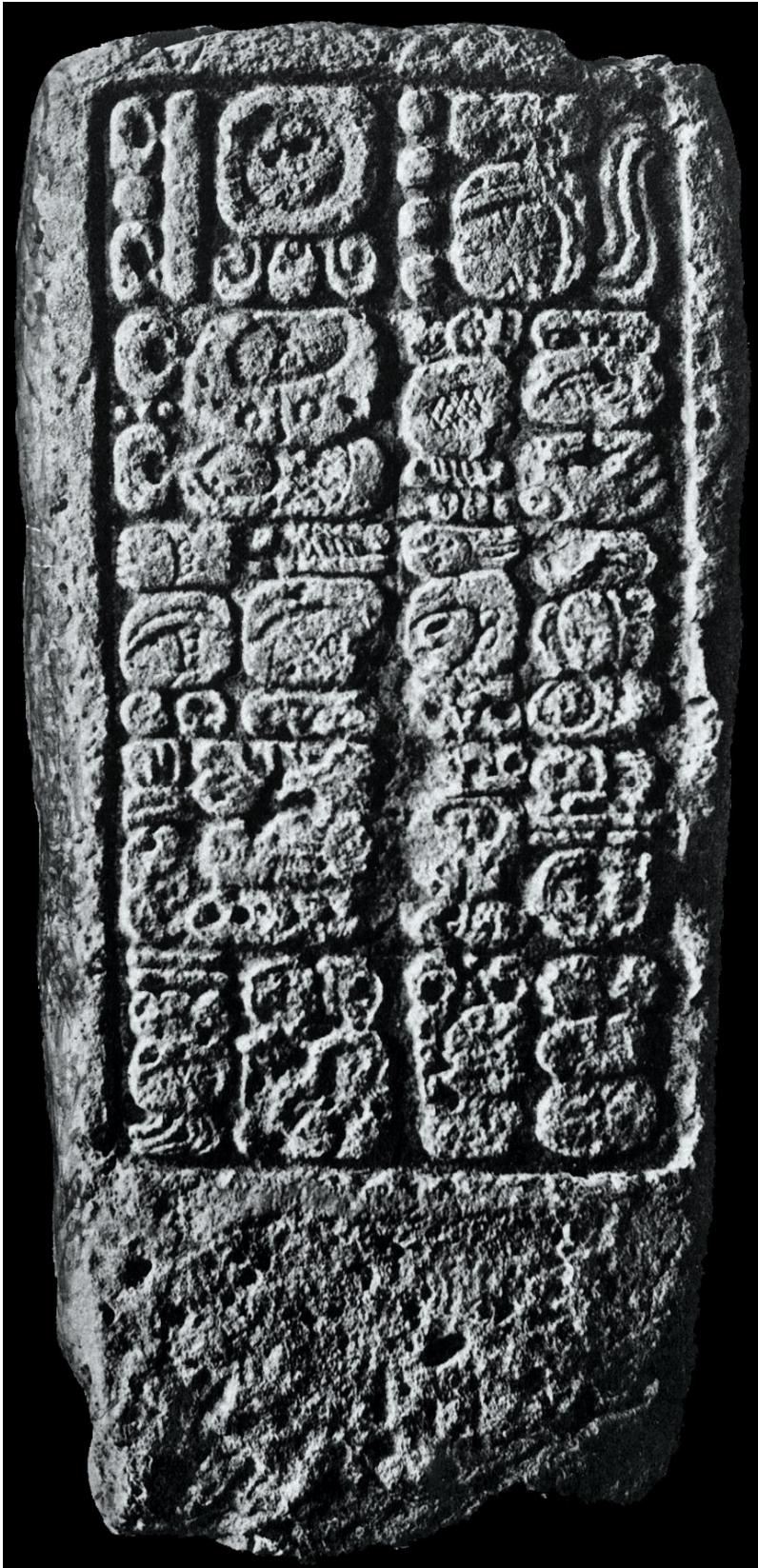


Figure 3. Uxmal Capstone 2 (drawing by Frans Blom [1934: fig. 4]).

<sup>3</sup> A similar instance may appear on Uxmal Ball-court Sculpture 1, block F (Graham 1992: 119), where we might have the bulbous part of the supposed **t’a?** sign on top of the “step verb”. However, this occurrence cannot be confirmed because of the block’s badly weathered state and the fracture in the middle.

A hitherto unrecognised instance of the “step verb” provides further support for the proposal that the enigmatic grapheme in question might indeed be a **t'a?** syllabogram. An altar support looted from Piedras Negras or its vicinity in the late 19<sup>th</sup> century and now stored in the magazine of the Peabody Museum (Teufel 2004: 565) was documented by Maler (1901: 64) in 1899 in Ciudad del Carmen. The inscription is badly weathered, especially in its lower half.



a



b

Figure 4. Piedras Negras Altar Support. a) Front Side (photo by Teobert Maler [1901: pl. 11]); b) Block A5b (drawing by Sven Gronemeyer).

In block A5b, we obviously encounter another instance of the T843 “step verb”, likely conflated with the **yi** sign indicating the mediopassive (cf. Houston 1997: 295-296, Houston, Robertson and Stuart 2000: 330). Above is a less clearly recognisable sign that bears resemblance to the examples from Ikil and Uxmal, although this should be verified by double-checking the original monuments. Based on these assumptions, we are likely dealing with **t’a?-T’AB?°yi**; however, the rest of the inscription does not further clarify the verb’s function, as only **ya-ha-? ?-?-k’i** is still recognisable from the subject.

The evidence brought forward thus far provides some supporting indications that the reading of the T843 “step verb” may thus indeed be **T’AB** and that the unclassified sign in question is likely the syllabogram **t’a**.

### Another Context to Test the <t’a> Reading

To verify the **t’a?** reading, more examples must be found of productive readings in other contexts. Luckily, there is at least one more environment where the sign is used. There are three examples, and once more, these originate from Yucatan, making the suspected case from Piedras Negras the only one from the Late Classic in the Maya heartlands.

Again, we are dealing with dedicatory statements of carved texts that all have a very similar structure (Figure 5). With the other syllabograms being well-known, we can tentatively operate with the spelling **bo-t’a?-ja**. As the expression appears in a predicative position, <sub>T181</sub>**ja** clearly marks a derived intransitive verb; thus, we can assume that *bot’* is the root and test it against the lexical and semantic evidence in the given hieroglyphic context.

Lexical evidence for *bot’* as a transitive verb is extremely limited and originates exclusively from Yukatekan (Table 1); thus, the spelling must indicate a passive. Here, we are dealing with a Yukatekan vernacular form with typical Classic Mayan morphology, providing another attestation of diglossia.

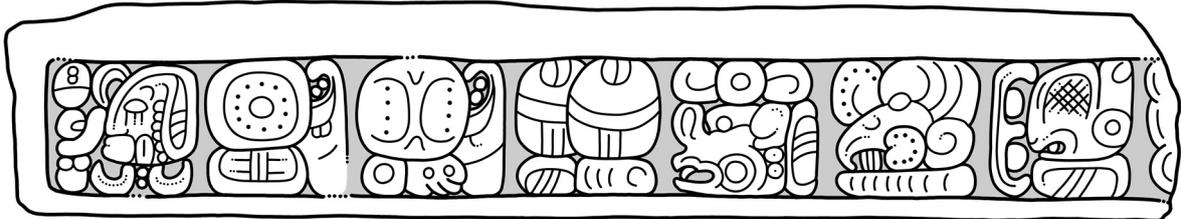
<b>YUK</b>	<i>bot’</i>	magullar, levantar chichón	(Barrera Vásquez 1980: 65)
<b>YUK</b>	<i>bot’a’an</i>	carne levantada a magullada de algun golpe	(Barrera Vásquez 1980: 65)

**Table 1. Linguistic evidence for *bot’*.**

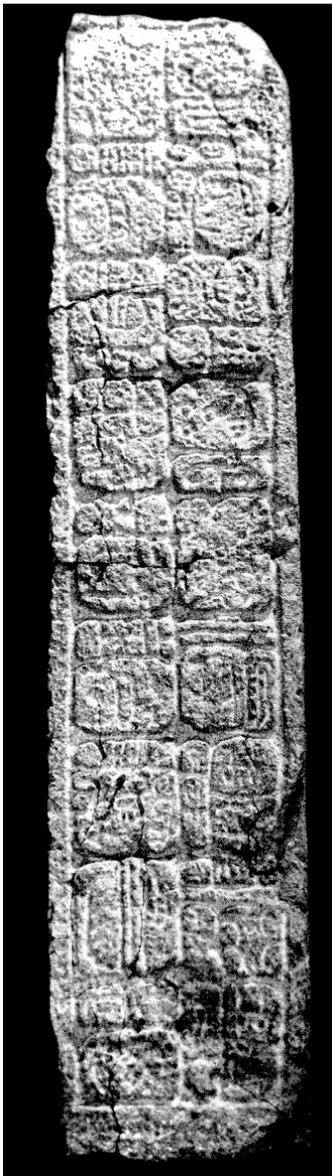
With its semantic range encompassing “to smash, to mash, to buckle, to dent, to make bumps”, the action of *bot’* could very well apply to the context of dedication statements (Table 2).

	<b>a-ALAY-ya PET-ta-ja bo-t’a?-ja tzi-tzi-li-le yu-xu-li-li-le u-k’a-li ...</b> <i>alay pet-aj-∅ boht’?-aj-∅ tzitz-il=e[’] y-uxul-il=e[’] u-k’al-∅ ...</i> here round-INCH-3s.ABS dent.PASS-MOD.V.INTR dedicate-ABSTR=TOP 3s.ERG-carve-ABSTR=TOP 3s.ERG-bind-NMLS
<b>a</b>	here became round, was dented the dedicated, its carving, its bound ...
	<b>... a-ALAY-ya bo-t’a?-ja yu-xu-li-li u-k’a-li ...</b> <i>... alay boht’?-aj-∅ y-uxul-il u-k’al-∅ ...</i> here dent.PASS-MOD.V.INTR 3s.ERG-carve-ABSTR 3s.ERG-bind-NMLS
<b>b</b>	here was dented its carving, its bound ...
	<b>bo-t’a?-ja yu-xu-li u-ja-yi ?-? ...</b> <i>boht’?-aj-∅ y-uxul-i[’] u-jay ? ...</i> dent.PASS.MOD.V.INTR-3s.ABS 3s.ERG-carve-ABSTR 3s.ERG-clay.bowl
<b>c</b>	it was dented its carving, its clay bowl ? ...

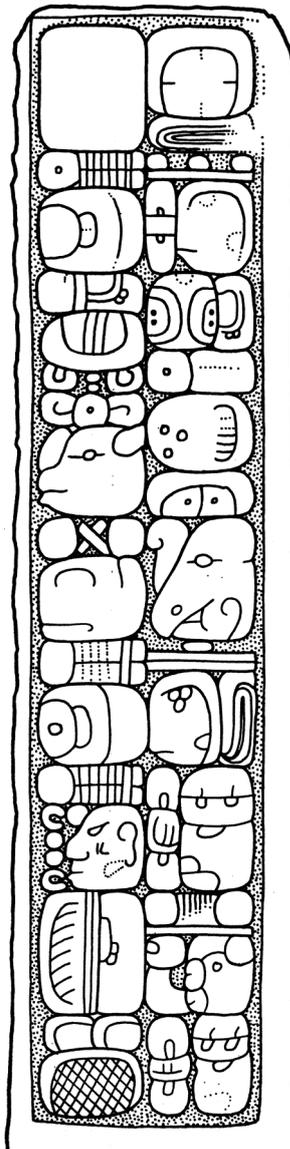
**Table 2. Linguistic analysis of the three examples of bo-t’a?-ja. a) Xcalumkin Lintel 1 Stone I, blocks A-G; b) Jamb of unknown provenance in the Museo Amparo, blocks A3-B5; c) Ceramic vessel of unknown provenance in Dumbarton Oaks, blocks A1-B2.**



a



b



c

Figure 5. Examples of the suspected bo-t'a-ja spelling. a) Xcalumkin Lintel 1 Stone I, block C (photo by Hanns J. Prem, drawing by Sven Gronemeyer); b) Jamb of unknown provenance in the Museo Amparo, block B3 (photo by Karl Herbert Mayer, drawing by Christian Prager [Mayer 1995: pls. 233, 237]); c) Carved ceramic vessel of unknown provenance in Dumbarton Oaks (DO 114), block A1 (drawing by Sven Gronemeyer).

Clearly, the term refers to the process of carving out glyph blocks from the background. In all of these examples, the elevated glyph blocks are elaborated in a bas-relief within the text field, as made explicit by *y-uxul(-il)*, “its carving” and further corroborated on Xcalumkin Lintel 1 Stone I by *pet-aj*, “it was made round”.<sup>4</sup>

A graphematic argument can also be made in favour of the supposed **t’a?** sign in the spelling *bot’?* in this context, in addition to the evidence for its lexical and semantic productivity. Most passive spellings tend to alter any potential root harmonic spelling from **CV<sub>1</sub>-CV<sub>1</sub>** to **CV<sub>1</sub>-Ca** in order to provide the vocalic onset for the *-aj* thematic suffix (Lacadena 2004: 166-167, Gronemeyer 2014: 251-253, 304-325).

### Distinguishing the Possible <t’a> Sign from <o> Allographs

This proposal of a second context in which to apply the **t’a?** reading to produce a meaningful reading *bot’* raises the question of graphic variability. In previous reading attempts (Lacadena 2012: 54, fn. 14), the grapheme was considered as a graphic variant of either  $T_{99}O$ ,  $T_{279}O$ ,  $T_{280}O$ , or  $T_{296}O$ ; or  $T_{87}TE'$  because of its close resemblance to these signs (Figure 6).

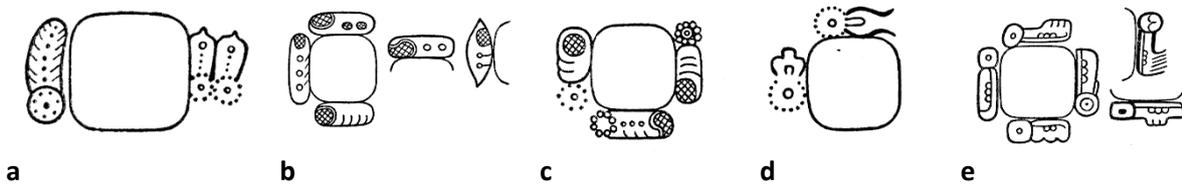


Figure 6. Comparison of graphemes similar to the proposed <t’a> sign. a) T99; b) T279; c) T280; d) T296; e) T87. All images from Thompson (1962).

Applying these correspondences to the aforementioned context would yield a root *bo'*, *bo[h]*, or *bo[j]*. Of these possibilities, only *boj* “to nail, drill” may be a semantically viable option (cf. pCh *\*b’oj*, “clavar, barrenar” [Kaufman & Norman 1984: 117]; CHT *boho*, “barrenar” [Morán 1695: 11]; *boh*, “golpe de madero hueco” [Barrera Vásquez 1983: 60]), showing some relationship to the affective verb *baj* “to hammer” (Kaufman & Norman 1984: 116, Zender 2010). Another related form is *bo[j]te'* in the semantic domain “fence, hedge” (cf. Lacadena [2012: fn. 14] for lexical evidence), but none of these options seems particularly probable for graphematic, morphophonemic, and semantic reasons. Why would a scribe have then written **bo-o-aj** instead of **bo-ja-ja** or **bo-jo-ja**?

A brief comparison of the different graphemes in Figure 6 can further clarify why the reading **bo-o-ja** cannot be favoured. T279 and T280 are attested in many contexts as the syllabogram **o** (Figure 7), a *pars pro toto* derivation of the front feather of  $T_{1066}O$ , the so-called O-Bird cited in the *Ritual de los Bacabes* (possibly also read **O'** [cf. Fitzsimmons 2012]). Although the bulbous end and the row of

<sup>4</sup> The spelling **yu-xu-li-li-le** on Xcalumkin Lintel 1, blocks E-F provides an interesting case. Although the two **li** signs clearly indicate an *-il* abstractive (or possessive) suffix, I interpret the **le** sign as the topic marker *=e'*, discussed by Alfonso Lacadena and Søren Wichmann (2002: 287-288) in other instances as evidence for Yucatekan vernacular influence. The Xcalumkin example is an overspelling that, instead of simply applying **-li-le**, produces a highly analytical form using a shallow orthography. The same enclitic appears in in block D as well, likely spelling **tzi-tzi-li-le** for *tzitz-il=e'*. Yucatec has a variety of entries for *tzitz*, including “bendecir, rociar” and “escurrir el agua”, as well as *tzitza'n* “cosa esquinada” (Barrera Vásquez 1980: 862); Itza has *tziitz* “splash, flick water with fingers” (Hofling & Tesucún 1997: 629). Another related form could be Ch'orti' *tzitz* “a sowing, a scattering” (Wisdom 1950: 730). Although we cannot securely tie the Xcalumkin example semantically to the “besprinkling” of a text, it nevertheless seems likely that it represents a dedicatory context.

circular elements are optional, the feather always features a crosshatched area at or near the tip. This feature is absent in all examples of the proposed **t'a?** sign.

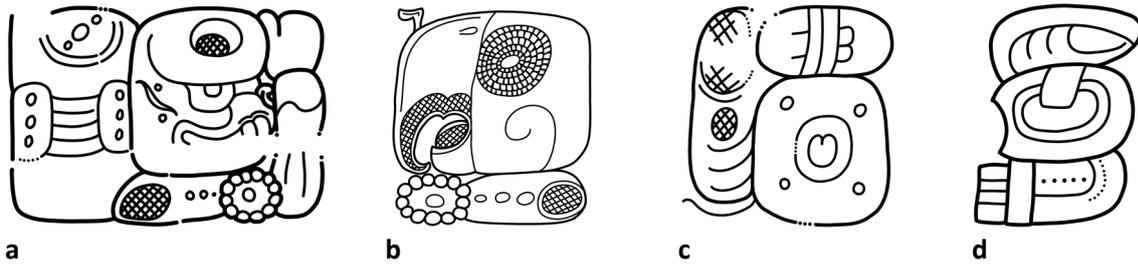


Figure 7. Examples of different T279 and T280 signs. a) ha-o-bo, Copan Temple 11, West Door South Panel, A4; b) MO'-o, Machaquila Structure 4, Fragment V, 3; c) o-ki-bi, Palenque Temple 19, Bench South Side, M7; d) o-OL-si, Yaxchilan Lintel 37, C7b. Drawings by Sven Gronemeyer.

In a late development, T99 appears as an **o** allograph in Yucatan, a pattern later preserved in the codices (Figure 8), where it diffuses in shape with T296. It consistently exhibits one bulbous end, a centre row of dots and a mirror-symmetrical array of lateral lines in its persistent part, thus still representing a feather. However, a cross-hatched area is absent.

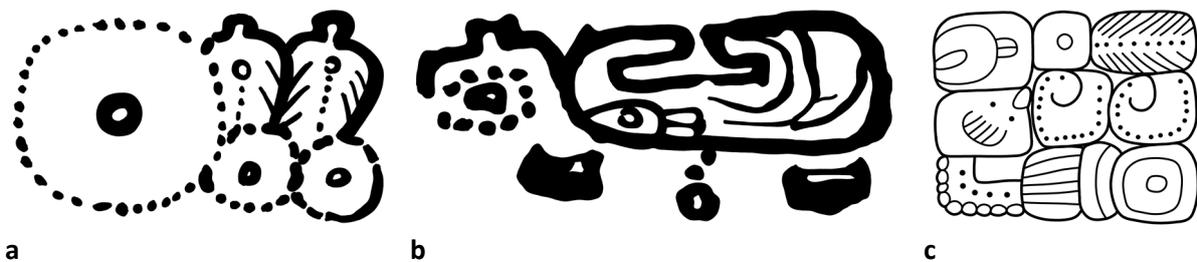


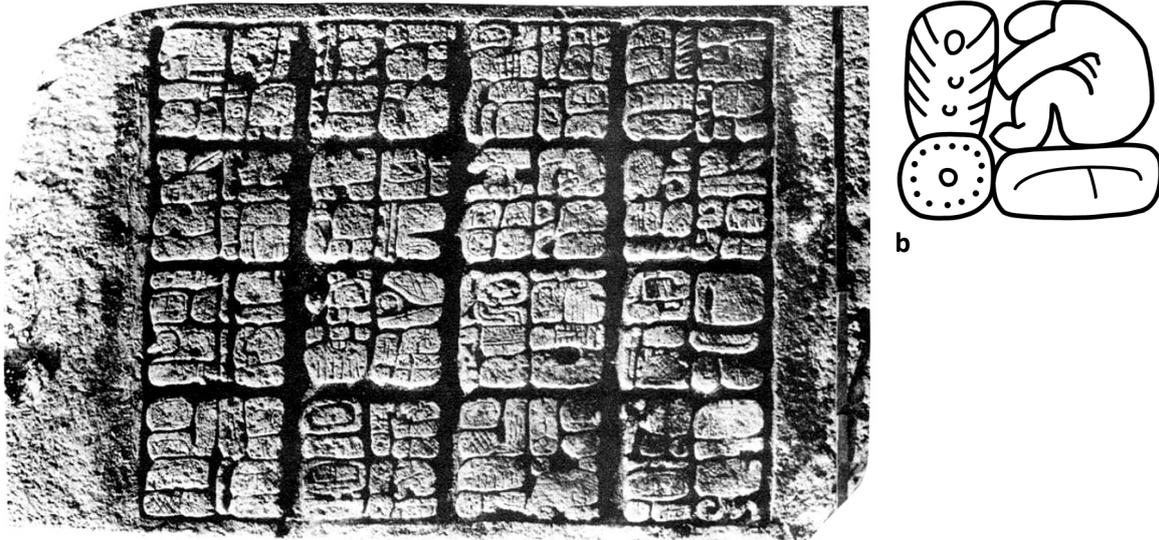
Figure 8. Examples of different T99 signs. a) MO'-o-o, Codex Dresden 16c3, A1; b) o-chi-ya, Codex Madrid 102d2; c) K'U'-u-lu-o-to-ti, Chichen Itza Akab Dzib, Lintel Front, C2. Drawings by Sven Gronemeyer.

Although the **t'a?** sign bears the most graphic resemblance to T99, there are in fact significant differences. Taking a closer look, the elongated element of the former has a rather lobed outline and is not symmetrical, and the line of circles appears not to be on the central axis. These features are especially visible in the Xcalumkin example, and less elaborated in Ikil and the Museo Amparo monuments (see the photo, rather than drawing). These characteristics, together with the given contexts, clearly prove that the proposed **t'a?** sign constitutes a distinct grapheme with a syllabic value different from the bird feather **o**.

### Yet Another Context for the <t'a> Sign?

There is one instance of T99 where the grapheme could be read as **t'a** instead of the usual value **o**. This interpretation would contradict the principle of multiple syllabic readings for one sign (Zender 1999: 56); however, diagnostic features of two signs are amalgamated in other contexts, in a blurring of distinctions between signs also observable in several graphemes recorded at Chichen Itza.<sup>5</sup>

<sup>5</sup> For example, compare the spelling of K'AK'-k'u-PAKAL-la on Chichen Itza Stela 1, C6. The spelling for PAKAL resembles more the T594 checkerboard sign from the name of GIII, rather than the standard T624a,b sign. An example of T624c, the tasselled shield outline with the checkerboard design, can for example be found on Lintel 4, F2 from the Temple of the Four Lintels.



a

**Figure 9. Chichen Itza, Temple of the Four Lintels (Str. 7B4), Lintel 2. a) Photo of the lintel (Bayer 1937: pl. 8c); b) drawing of block A8 by Sven Gronemeyer.**

Block A8 of Lintel 2 of the Temple of the Four Lintels is the last constituent of a nominal phrase. Its main sign is the undeciphered crouched body sign T226 (not to be confused with T703, which has a penis in place of the head). On Tonina Monument 161, block L (Graham and Henderson 2006: 102), this sign appears suffixed by *-ta-ja*, indicating an inchoative derivation of a noun; thus, the sign can be classified as a logogram.

Considering the high percentage of syllabic spellings and the shallow orthography used in Chichen Itza because of the diglossia situation (cf. Lacadena 2008: 1, 18, Gronemeyer 2014: 472), it is likely that the other two signs in block A8 of Lintel 2 function as phonemic complements. When applying the proposed *t'a* value in this case, and also considering the eroded, but still recognisable *li* sign, we may propose the reading **T'AL?** for T226.

This relates to some interesting lexical evidence for a positional root in the Yukatekan branch: YUK *t'al*, “agonizante, que no se muere” and “asentado sin firmeza, ligeramente puesto” (Barrera Vásquez 1983: 832); YUK *t'al*, “stretch out, be in agony, unconscious” (Bricker et al. 1998: 288); ITZ *t'äl*, “sit” (Hofling & Tesucún 1997: 617). The representation of the crouched body would also relate to this possible reading. But as the Tonina case indicates, the root represented by this sign clearly was not positional in this case.<sup>6</sup>

However, arguing with one undeciphered sign to support another decipherment may quickly become circular. This excursus is thus nothing more than a thought experiment. And it is still far from certain that the context here indeed represents the putative *t'a?* sign, and not the regular <sub>T99</sub> *o* sign.

<sup>6</sup> The context of the Tonina Monument 161, dedicated by *K'inich Ich'ak Chapat* on 9.14.18.14.12, 5 *Eb'* 10 *Yaxk'in* (AD June 18, 730), is about a “fire-entering” in the tomb of *K'inich Baknal Chahk* (Martin & Grube 2008: 186-187). Applying the proposed **T'AL?** reading, we can interpret block K-P as follows: *och[-i] k'a[h]k' t'al-t-aj u-muk?-nal K'inich bak-nal cha[h]k k'uh po[po'] ajaw*, “fire entered, he became seated in his tomb, *K'inich Baknal Chahk*, the Tonina-God-King.” This account could relate to a post-mortal treatment of the corpse, e.g. a bundling of the bones. Furthermore, in Classic Mayan, positional roots may blur with transitive verbs in their inflection (Wichmann 2002: 7-8).

## T66 as a Possible Allograph

Elisabeth Wagner (1995) also mentions the examples from Ikil and Uxmal in her discussion of T66 as another possible **t'a** syllabogram (Figure 10a). Part of her argument draws on the painted capstone from the so-called “Tomb of Unknown Location” (Figure 10b).

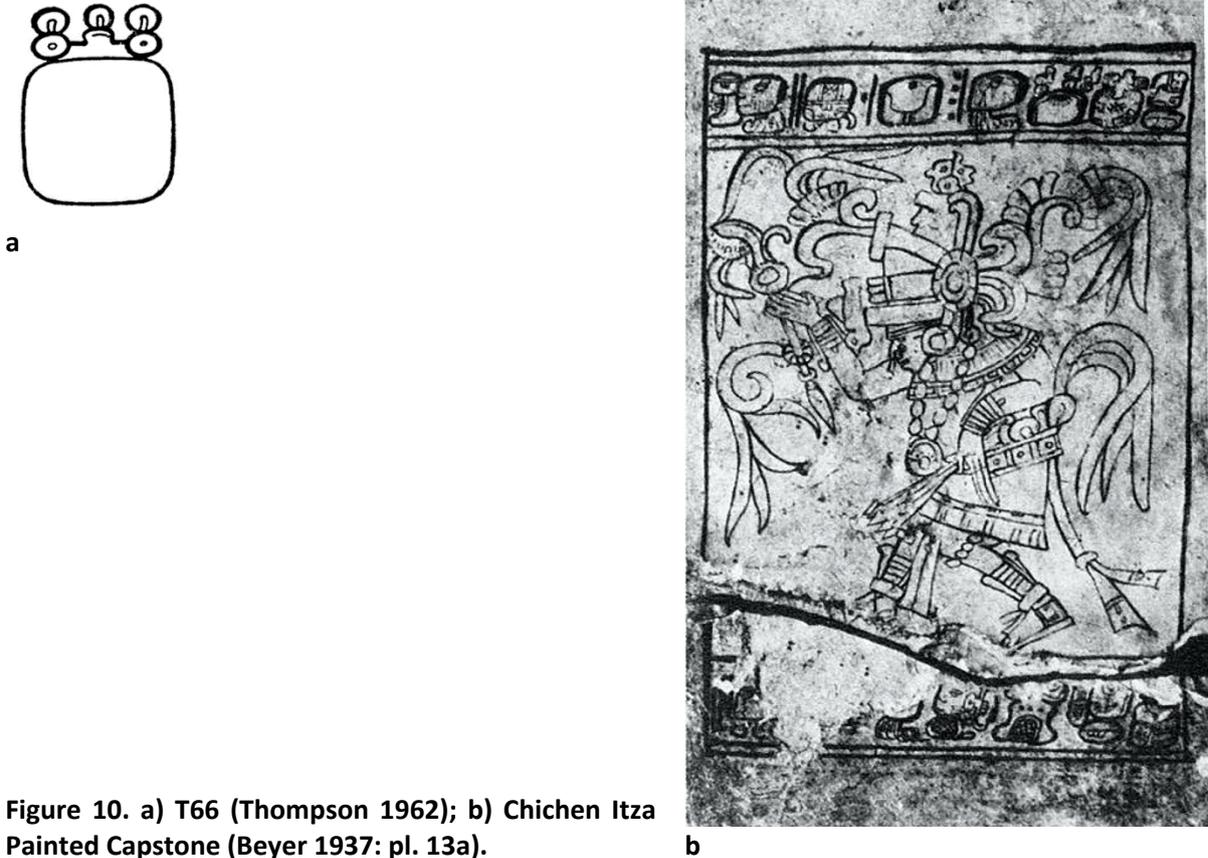


Figure 10. a) T66 (Thompson 1962); b) Chichen Itza Painted Capstone (Beyer 1937: pl. 13a).

In block E, we find  $T_{66}?$ - $T_{501}$  **ba** in a position and context that resembles that of Uxmal Capstone 2, which makes T66 a possible allograph of the **t'a** sign discussed here, spelling *t'ab?*. Again, no mediopassive form is indicated, and the following **ma-ka** in block F is also ambiguous. Although it could be interpreted as an underspelled passive *ma[h]k-a[j]*, interpreting these spellings as the nominalised forms *t'ab? mak*, “it is ascended, it is covered” would create a couplet structure. The codices provide other contexts for T66, but discussion of these would stray too far from the current case.

A short remark must also be made on sign shape. T66 is a tripartite grapheme, with each part made up of a circular and bulbous element that shows some compositional similarity to the **t'a** sign discussed here. Either way, T66 could be a multiplication of the single **t'a** sign, or the latter could be an abbreviated version of the former.<sup>7</sup>

## Conclusions

The context of *t'ab?* for the original proposal of the putative **t'a** syllable is potentially enhanced by another occurrence discussed in this note, in which it may function as a pre-posed phonemic

<sup>7</sup> Both strategies of sign manipulation are well attested with other syllabograms in the graphematic lexicon of Maya writing, e.g.  $T_{604}$  **k'u** and  $T_{149}$  **k'u**, or  $T_{93}$  **ch'a**,  $T_{603}$  **ch'a** and  $T_{634}$  **k'u**.

complement. Although the Ikil example could be considered a full phonemic substitution, the Uxmal case would account for a full phonemic complementation, if the signs are indeed the same (acknowledging the inaccuracy of many of Blom's glyph drawings). The latter example may also point to an allograph.

More support for the **t'a?** grapheme comes from the context of the proposed *bot'* reading in several dedicatory phrases. These instances also provide a series of subgraphemic details that help to delimitate these graphs from other **o** signs and support the status of the **t'a?** form as a completely different syllabogram. There are potentially two additional cases, but these appear in the context of two still undeciphered logograms.

Yet we still lack conclusive evidence to add a **t'a** syllabogram to the grid without question mark, if strict standards are applied. Ideally, at least a third context for the sign under discussion should be found to fulfil the following premises: the sign occurs in contexts in which it 1) functions as a syllabogram, 2) proves to be distinct from the different **o** variants, 3) exhibits vowel harmony with known syllabograms, either within the root or with a following suffix, and 4) complements a deciphered logogram. Ideally, more evidence should be found outside Late and Post-Classic Yucatan. Nonetheless, except for the dubious case from Piedras Negras, the sign seems to be a late invention.

## Acknowledgements

I would like to thank Nikolai Grube, Christian Prager, and Elisabeth Wagner for comments and suggestions on earlier drafts of this note. Mallory Matsumoto kindly corrected the English.

## References

### Andrews, E. Wyllys, and George E. Stuart

1968 The Ruins of Ikil, Yucatan, Mexico. *Tulane University of Louisiana. Middle American Research Series. Publications* 31(3): 69–80.

### Barrera Vásquez, Alfredo

1980 *Diccionario Maya. Maya-Español, Español-Maya*. Ediciones Cordemex, Mérida.

### Benavides C., Antonio, and Sven Gronemeyer

2005 A Ballgame Stone Ring Fragment from Edzna, Campeche. *Mexicon* 27(6): 107–108.

### Beyer, Hermann

1937 Studies on the Inscriptions of Chichen Itza. *Contributions to American Anthropology and History* 4(21): 29–175. Carnegie Institution of Washington Publication 483.

### Bíró, Péter

2003 The Inscriptions on Two Lintels of Ikil and the Realm of Ek' B'ahlam. Electronic Document. *Mesoweb*.

### Blom, Frans F.

1934 Short Summary of Recent Explorations in the Ruins of Uxmal, Yucatan. *Proceedings of the International Congress of Americanists* 24: 55–59.

### Bricker, Victoria R., Eleuterio Po'ot Yah, Ofelia Dzul de Po'ot, and Anne S. Bradburn

1998 *A Dictionary of the Maya Language as Spoken in Hocabá, Yucatán*. University of Utah Press, Salt Lake City, UT.

### Graham, Ian

1992 *Corpus of Maya Hieroglyphic Inscriptions, Volume 4, Part 2: Uxmal*. Peabody Museum of Archaeology and Ethnology, Harvard University, Cambridge, MA.

### Graham, Ian, and Lucia Henderson

2006 *Corpus of Maya Hieroglyphic Inscriptions, Volume 9, Part 2: Tonina*. Peabody Museum of Archaeology and Ethnology, Harvard University, Cambridge, MA.

**Graña-Behrens, Daniel**

2002 Die Maya-Inschriften aus Nordwestyukatan, Mexiko. Unpublished PhD dissertation, Rheinische Friedrich-Wilhelms-Universität, Bonn.

**Gronemeyer, Sven**

2014 The Orthographic Conventions of Maya Hieroglyphic Writing: Being a Contribution to the Phonemic Reconstruction of Classic Mayan. Unpublished PhD Dissertation, Department of Archaeology, La Trobe University, Melbourne.

**Guenter, Stanley P.**

2003 The Inscriptions of Dos Pilas Associated with B'ajlaj Chan K'awiil. Electronic Document. *Mesoweb*.

**Houston, Stephen D.**

1997 The Shifting Now: Aspect, Deixis and Narrative in Classic Maya Texts. *American Anthropologist* 99(2): 291–305.

**Hofling, Charles A., and Félix Fernando Tesucún**

1997 *Itzaj Maya - Spanish - English Dictionary*. University of Utah Press, Salt Lake City, UT.

**Houston, Stephen D., David S. Stuart, and John S. Robertson**

1998 Disharmony in Maya Hieroglyphic Writing: Linguistic Change and Continuity in Classic Society. In *Anatomía de una Civilización: aproximaciones interdisciplinarias a la cultura maya*, edited by Andrés Ciudad Ruiz, Yolanda Fernández, José Miguel García Campillo, Josefa Iglesia Ponce de Leon, Alfonso Lacadena García-Gallo, and Luis Sanz Castro, pp. 275–296. Publicaciones de la S.E.E.M. 4. Sociedad Española de Estudios Mayas, Madrid.

**Kaufman, Terence**

2003 A Preliminary Mayan Etymological Dictionary. *Foundation for the Advancement of Mesoamerican Studies (FAMSI)*. <http://www.famsi.org/reports/01051/pmed.pdf>

**Kaufman, Terence, and William Norman**

1984 An Outline of Proto-Cholan Phonology, Morphology and Vocabulary. In *Phoneticism in Mayan Hieroglyphic Writing*, edited by John S. Justeson and Lyle Campbell, pp. 77–166. Institute for Mesoamerican Studies, State University of New York Publication 9. Institute for Mesoamerican Studies, Albany, NY.

**Lacadena García-Gallo, Alfonso**

2004 Passive Voice in Classic Mayan Texts: CV-h-C-aj and -n-aj Constructions. In *The Linguistics of Maya Writing*, edited by Søren Wichmann. University of Utah Press, Salt Lake City, UT.

2008 Regional Scribal Traditions: Methodological Implications for the Decipherment of Nahuatl Writing. *The PARI Journal* 8(4): 1–22.

2012 Syntactic Inversion (Hyperbaton) as a Literary Device in Maya Hieroglyphic Texts. In *Parallel Worlds: Genre, Discourse, and Poetics in Contemporary, Colonial, and Classic Period Maya Literature*, edited by Kerry Hull and Michael D. Carrasco, pp. 45–72. University Press of Colorado, Boulder, CO.

**Lacadena García-Gallo, Alfonso, and Søren Wichmann**

2002 The Distribution of Lowland Maya Languages in the Classic Period. In *La organización social entre los mayas*, edited by Vera Tiesler Blos, Rafael Cobos, and Marla Green Robertson, 2:pp. 275–319. Memoria de la Tercera Mesa Redonda de Palenque. Instituto Nacional de Antropología e Historia, México, D.F.

2004 On the Representation of the Glottal Stop in Maya Writing. In *The Linguistics of Maya Writing*, edited by Søren Wichmann, pp. 100–164. University of Utah Press, Salt Lake City, UT.

2005 The Dynamics of Language in the Western Lowland Maya Region. In *Art for Archaeology's Sake: Material Culture and Style across the Disciplines*, edited by Andrea Waters-Rist, Christine Cluney, Calla McNamee, and Larry Steinbrenner, pp. 32–48. Chacmool/The Archaeological Association of the University of Calgary, Calgary.

**MacLeod, Barbara**

1990 Deciphering the Primary Standard Sequence. Unpublished PhD dissertation, Department of Anthropology, University of Texas, Austin, TX.

**Maler, Teobert**

1901 *Researches in the Central Portion of the Usumatsintla Valley: Report of Explorations for the Museum 1898-1900*. Vol. 1. Memoirs of the Peabody Museum of Archaeology and Ethnology, Harvard University 2. Peabody Museum, Cambridge, MA.

**Martin, Simon, and Nikolai Grube**

2008 *Chronicle of the Maya Kings and Queens: Deciphering the Dynasties of the Ancient Maya*. Thames & Hudson, London.

**Mayer, Karl Herbert**

1995 *Maya Monuments: Sculptures of Unknown Provenance, Supplement 4*. Academic Publishers, Graz.

**Mora-Marín, David F.**

2004 Affixation Conventionalization Hypothesis: Explanation of Conventionalized Spellings in Mayan Writing. Chapel Hill, NC.

**Morán, Francisco**

1695 *Arte en lengua Cholti que quiere decir lengua de milperos*. Unpublished manuscript. American Philosophical Society Library, Philadelphia.

**Schele, Linda, and Matthew G. Looper**

1996 *Notebook for the XXth Maya Hieroglyphic Workshop at Texas, March 9-10, 1996; Quiriguá and Copán*. Department of Art and Art History, the College of Fine Arts, and the Institute of Latin American Studies, University of Texas at Austin, Austin, TX.

**Stuart, David**

1998 "The Fire Enters his House": Architecture and Ritual in Classic Maya Texts. In *Function and Meaning in Classic Maya Architecture: A Symposium at Dumbarton Oaks, 7th and 8th October 1994*, edited by Stephen D. Houston, pp. 373–425. Dumbarton Oaks Research Library and Collection, Washington, D.C.

**Stuart, David, Stephen Houston, and John Robertson**

2000 The Language of Classic Maya Inscriptions. *Current Anthropology* 41(3): 321–356.

**Wagner, Elisabeth**

1995 *A Reading for T66*. Unpublished Manuscript. Bonn.

**Wichmann, Søren**

2002 *Hieroglyphic Evidence for the Historical Configuration of Eastern Ch'olan*. Research Reports on Ancient Maya Writing 51. Center for Maya Research, Washington, D.C.

**Wisdom, Charles**

1950 *Materials on the Chorti Language*. Microfilm Collection of Manuscripts on Middle American Cultural Anthropology 28. University of Chicago, Chicago, IL.

**Zender, Marc**

1999 Diacritical Marks and Underspelling in the Classic Maya Script: Implications for Decipherment. Unpublished M.A. thesis, Department of Archaeology, University of Calgary, Calgary.

2010 Baj "Hammer" and Related Affective Verbs in Classic Maya. *The PARI Journal* 11(2): 1–16.



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