A Classic Maya Plate in the Collection of the De Young Museum, San Francisco: An Analysis of Text, Image, and "Kill Hole"

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The collections of the De Young Museum of the Fine Arts Museums of San Francisco contain a large number of important Classic Maya objects, from the Early Classic (ca. AD 300–600) to the Late Classic period (ca. AD 600–900). Many of these objects were either gifted or bequested to the museum by well-known private collectors. This short note features a plate formerly in the collection of Gail and J. Alec Merriam (Figure 1).[1]

The vessel, a medial ridge tripod plate with rattle supports, measures 10.5 (h) x 40.6 (w) x 40 (d) cm. It is currently on exhibit in the Gail and J. Alec Merriam Gallery at the De Young Museum. It is painted in the style typical of ceramics (cylindrical vessels, bowls, and plates) of the greater El Zotz area in Guatemala, an area located directly west of Tikal (Houston 2008a:Fig. 1), a consideration also supported by the color scheme with dominant reds and oranges. It is clearly Late Classic in style.

The inside rim features a stylistically well-executed and distinctively individual example of a Late Classic dedicatory formula on ceramics (also known as the Primary Standard Sequence; see Coe 1973; Boot 2005d). A provisional epigraphic analysis is as follows:

A: **'ALAY**?-**ya**
alay(?) "here(?); this one(?)"
Note: In this example the "Initial Sign" is not prefixed with **'a**, as is normally the case. The main sign is a variant of the common "mirror" sign that is employed as main sign of this compound. The reading of the sign as **'ALAY** is tentative (see Boot 2003a, 2003b, 2005b).

B: **K'AL**-**ja**
k'a[h]laj "presented is"
Note: This is an allograph of the common "Flat Hand" composite sign group, the actual hand sign of which can be reduced to the lower of the two elements of **K'AL**, as in this example. The "hand" points to the left (one may even recognize the abstracted fingers and the segmentation).

C–D: **yi chi**
y-ich "the surface of"
Note: The scribe employed "head variants" for the signs **yi** and **chi**, changing the outer shape into a human head. At present I follow the original proposal by MacLeod (1989) that Classic Maya *–ich* is a cognate to early Colonial Yucatec *jech* "surface."

E–H: **'u tz'i ba li**
utz'i[h]bal "the writing of"
Note: Each of the four signs to spell *utz'i[h]bal* is is written with head variants taking up a full glyph block each. It opens with a common sign for **'u**, followed by the "bat" variant for **tz'i** (see Boot 2009), common to dedicatory texts from the greater El Zotz area. Scribes from this area (that is, working for courts belonging to the lower, higher, and highest elite within this area) also employed a specific set of variants for writing **ba**. In this case the scribe employed a "skull" sign (compare K7147, a very clear example for the use of the "skull" sign) for **ba**, most probably acrophonically derived (the last consonant of a CVC root is dropped to arrive at a CV syllable) from **BAK**, "bone." As such the "skull" would refer to the "bony" state of a skull instead of specifically targeting a word for "skull." Note as such

[1] As far as I could go back in available auction catalogs, this plate was offered for sale at a Sotheby's auction in New York in May, 1983 (Sotheby's 1983:Lot no. 207).

The PARI Journal 16(3):12–18

Figure 1. Plate from the El Zotz area, FAMSF-De Young Museum inv. nr. 2010-70-12, gift of Gail and J. Alec Merriam. Photo © Fine Arts Museums of San Francisco.

the following selection of entries on "skull (*calavera*)" in various Mayan languages: *ubaker* "calavera" (Ch'orti'), *bakel awich* "calavera" (Mopan; "bone of your face"), *bakel upol* "calavera" (Itzaj; "bone of the head"), *sb'aqil jolomej* (Q'anjobal; "bone of the head"), and *xbaquel jolom* (Q'eqchi'; "bone of the head") (Kaufman 2003:360-361).

The root of *utz'i[h]bal* is *tz'ihb-*, a noun meaning "writing," to which an *–al* derivational suffix is added. Final **–li** in this spelling could potentially target a possessive suffix *–il*, which often is abbreviated. In Mayan languages multi-syllabic constructions are reduced to either tri- or disyllabic constructions; thus **utz'i[h]bal**il* is reduced to *utz'i[h]bal*. (This reduction may be due to a shift in stress, which is not on the last syllable.[2]) Also

note the reduction of the intermediate *-a-* when *chu[h]kaj* obtains an *-i[i]y* suffix, as in *chu[']kji[i]y* (**chuhk**a**ji[i]y*).

I–K: **'u la ka**
u-lak "his plate"
Note: Three glyph blocks provide the three signs used to spell *ulak* (Figure 2), the first of which is the defining compound of the El Zotz polity Emblem Glyph, "Broken or Split Sky," which can be read Pa'chan (see Boot 2004 on T209 **PA'**; Houston 2008a, 2008b; Martin 2004). Many texts on ceramics produced in this regional style contain the SPLIT.SKY-**na** ([**PA'**]**CHAN**-**na**) collocation prefixed to spellings such as **ja-yi** and, on plates, **la-ka** (Boot 2003c).[3] This is thus a signature of sorts for this style; it identifies the plate and its dedicatory text as inherently associated with the El Zotz polity. However, this SPLIT.SKY-**na** compound most probably is not read *pa'chan* in this context (although I have suggested this in the past; Boot 2003c, 2005a); it operates as syllabic **'u** (see Houston 2008b). In a number of examples the SPLIT.SKY-**na ja**-**yi** (e.g., K5465, K5509, K6618, K7979) spellings are substituted by **'u**-**ja**-**yi** (e.g., K2023, K4551) employing the "closed eye" **'u** variant, lending support to this identification (e.g., Boot 2014:226, Fig. 6). Now also note that the thick outer line with which the *pa' chan* sign for **'u** is written is continuous. The small area in the upper center provides the "break"; it is scratched out by the artist (observation based on photographs provided by Michel Quenon, December 2015).

L-N: **14 CHAN**? [**K'IN**]**NAL**?
chanlaju[u]n [...]
Note: Instead of providing the referent to the food contents of the plate, I presume that the sequence **14 CHAN**? [**K'IN**]**NAL**? directs to a personal name, more specifically the name of the owner. This suggestion may find support in the final collocation at O.

O: **K'UH**
k'uh[ul] [pa'chan ajaw]
Note: The sign **K'UH** is commonly employed in these dedicatory texts to open the paramount title sequence that refers to the highest elite of the El Zotz polity (as the plate is executed within the style of this tradition, this would not be a surprise). As such I suggest that this is the case here as well and thus **K'UH** is employed to spell *k'uh[ul]* "god-like; godly," a qualitative adjective which would introduce Pa'chan Ajaw "Pa'chan king" (e.g., K6080, K8393). Note that the text on K6618 simply records Pa'chan Ajaw (spelled [[**PA'**] **CHAN-na**]**'AJAW**).

In full, the dedicatory formula can be given as *alay(?) k'a[h]laj y-ich utz'i[h]bal ulak chanlaju[u]n […] k'uhul [pa'chan ajaw]* or, in a provisional translation, "here presented is the surface (and) the writing of the plate of Chanlaju[u]n [...], the God-like [Pa'chan king]."

Other plates produced in this regional tradition identify the plate not just simply as *ulak* (in which *lak* means "plate" and probably at the same time refers to "clay," the material of which it is made) but also as *uwe'ib* "the eat-instrument" (*we'-* "to eat"; *–ib* "instrumental suffix") (e.g., K6080, a plate in the collection of the Gardiner Museum in Toronto). Plates identified as

[2] In Classic Mayan, word stress (with stress defined as relative syllable prominence in a word; Van der Hulst 2002:246) may be a clue to many patterns of "underspelling" or "incomplete spelling" (e.g., final possessive suffixes like *–il* or absolutive suffixes like *–ij*). The following idea is currently under investigation, through researching word stress patterns in Colonial and present-day Mayan languages. Note for instance the short remark by Wisdom (1940:x) for Ch'orti' that "[s]tress is always on the last syllable," while Hofling (2011:5) for Mopan provides a description of word stress (lexical stress) but not phrasal stress. My hypothesis regarding Classic Mayan stress is as follows. In word stress one needs to make a distinction between isolated word stress (a word spoken in isolation; in those cases stress would be on the final syllable) and phrasal word stress (words spoken within a phrase; in those cases stress would be on the first syllable unless the word is phrase-final, in which case the stress would be on the last syllable). As the corpus of Maya texts provides phrases, short and long, and combinations thereof, it is phrasal word stress reconstruction that is under investigation. There are cases in Mayan languages in which word stress is fixed (e.g., in Colonial Yucatec the word /maya/ can be found, which specifically is given as *máya*, even in isolation); Wisdom's remark for Ch'orti' may thus be an oversimplification when considering Classic Mayan. In other cases of "underspellings" or "incomplete spellings" one may invoke shorthand, especially when a word and its context is clear. Note as such spellings such as **chu**, **chu-ka**, and **chu-ja** for *chu[h]kaj* (which through phrasal word stress probably would have been **chú[h~']kaj* > stress boundaries: chú[h~'].kaj > spelling: **chu.ka-ja**). The reduction of polysyllabic words to either disyllabic or trisyllabic constructs may be derived from shifting stress as well, in which vowel reduction (deletion) could be a result of the shift in stress (and the fact that the now-center-positioned ***-a-*** in **chu[h]k**a**ji[i]y* was without stress); it could be the explanation for **chu[h]k**a**ji[i]y* to be reduced to *chu[']kji[i]y* > **chu[']kjí[i]y* (this particular conjugation is also subject to the reduction of a potential triconsonantal group *-hk-j-* to *-'k-j-*), as the reconstructed long vowel may attract the stress (note that possibly the *-i[i]y* suffix is a contraction of **-iji[i]y*). Tentatively: stress boundaries: chu[']k.jí[i]y > spelling: **chu-ku.ji-ya**. That any research on stress (be it word stress or phrasal stress) in Mayan languages to ultimately arrive at some idea for Classic Maya will be a difficult one (but very intriguing) can be seen in the overview of stress systems in a selection of Mayan languages in Van der Hulst et al. (2010:283-298). Other issues involving stress will be under consideration as well, such as pitch accent, tone, and prosody (e.g., Hyman 1977; Haraguchi 1991; Van der Hulst 2014). As vowel quality is of importance in studying stress systems, tracking the evolution of the five syllable nuclei (V, VV, Vh, Vj, V'; V=a, e, i, o, u) has potential, as well as tracking the change of (complex) vowel quality in syllable nuclei due to morphosyntactic and phonological principles and considerations through the hieroglyphic spellings that provide them.

[3] Within the dedicatory phrase on ceramics *ulak* refers to the plate on which it is written. Two clay bricks at Comalcalco are also referred to as *ulak*, which may mean that *lak* refers to various (large) flat objects of which the material used to make them is clay (compare Kaufman 2003:986, pM **laq*).

Figure 2. Glyphs I–K: **ʻu la ka** *u-lak* "his plate."

we'ib can contain reference to their potential food contents like *sak[il] chijil wa[a]j* "white venison bread" (see Zender 2000). The plates identified as *ulak uwe'ib* thus contain a paired term, in which I identify a typological component (*lak* "plate," i.e., "object of clay") and a functional component (*uwe'ib* "eat-instrument") (see Boot 2005c).

The plate at the De Young Museum only contains *ulak* and, as I suggest here, no referent to food. This could be a case in which that specific part of the dedicatory formula is fully abbreviated as the scribe wanted to include the name of the owner of the plate and his paramount title but ran out of space. However, the stylistic tradition in which it was produced and the employment of the trigraphic SPLIT.SKY**-na** compound for **ʻu** makes it quite easy to identify the final title sequence as *k'uhul pa'chan ajaw*.

The center of the plate is elaborately decorated with a fish. The long (perhaps exaggerated) maxillary barbel, the flattened snout, the feather elements on the upper and lower body (standing for "feathery" dorsal and pelvic fins), as well as the long elements that define the forked tail identify the fish as some kind of catfish. Various species of catfish are native to the Maya region (in coastal areas, rivers, streams, and lagoons). The speckled surface of the fish skin may provide an additional clue to the species (most probably it is a bullhead catfish), or perhaps the age of the catfish (at various stages of their life, certain species of catfish have different skin patterns; note that while catfish do not have scales, they may have plates, e.g., catfish of various suckermouth species; Evers and Seidel 2005:22).[4] These are not jaguar spots as has also been suggested (Sotheby's 1983:Lot no. 207). Jaguar spots are shaped very differently, commonly (but not always) one or more small spots in the middle encircled by an outline of larger spots or hook-like elements (Figure 3).

Before final deposit (most probably in a tomb or grave located in the greater El Zotz area, but alternatively from a secondary deposit, as the original context in which the plate was found is unknown), the plate was apparently ritually enhanced through the small hole that was drilled slightly off-center. Besides being drilled, holes can also be found to be pecked, punched, or gouged out. These holes are generally referred to as "kill holes," and before these "kill holes" were identified in Maya ceramic objects, they had been identified in ceramics from South America, the American Southwest (e.g., Fewkes 1914:6, 11, 37, 43, on Mimbres pottery), and Florida. It is from a short study on pottery from Florida that the current concept of "kill holes" is derived, and it was introduced by William H. Holmes (1894:108-109). He described the drilled holes in ceramics as well as the custom of depositing broken ceramic vessels in graves for which he presented two explanations. The first

[4] In May-July of 2015 various news items were released in the Guatemalan and Mexican press in which the large-scale death of fish in the Pasión and Usumacinta rivers was reported. According to testimonies, the death of the fish is related to the dumping of chemical waste by the REPSA company that exploits African palms in Guatemala, some 120 km upriver from Sayaxche' (e.g., Escobar et al. 2015; Paredes 2015). Judging from photographs posted on the web, among the variety of species of affected fish are catfish.

Figure 3. Comparison of the catfish skin pattern and an example of jaguar spots (jaguar spot image: detail of photo 436896 at www.alphacoders.com).

explanation Holmes presented reads:

> ...since the vessel was usually regarded as being endowed with the spirit of some creature of mythological importance, it was appropriate that it should be "killed" before burial that the spirit might be free to accompany that of the dead person. (Holmes 1894:108)

An interesting phenomenon developed, for instance, among the inhabitants of Kolomoki, Georgia, who participated in the Southeastern Ceremonial Complex. Here ceramics were drilled before firing and thus seem to have only been manufactured for mortuary purposes (Power 2004:54). The custom of "kill holes" survived into the twentieth century, for instance among the Isleta Pueblo (Ellis 1979:359, Fig. 11), and up to the present day in Pecos ceramics (Dods 2015:24, "[p]ottery was (and is) considered to have life, there not being a division of animate from inanimate as we know it"). In a recent study Scherer (2015) doubts that these drilled holes in Maya ceramics are "kill holes" and that the plates are ritually terminated. He offers an alternative explanation in which the plates represent the surface of the earth and the holes are drilled to establish the axis mundi within the burial place (Scherer 2015:117; compare Scherer et al. 2014:212-213). His explanation is derived from, for instance, the conceptualization of the seven layers of the heavens and the holes in them through which a giant ceiba tree grows to finally reach "El Gran Dios," as voiced among early twentieth century Yucatec Maya commoners (Tozzer cited in Scherer 2015:108-109).[5] This is an interesting alternative that merits more research. Intriguing as well, as I found in my research on the phenomenon of "terminating" (transitioning) ceramics, is the custom among the Panare, who live in the middle of the Orinoco valley in southern Venezuela, in which ceramic pots are ritually broken at mourning rituals "which reestablishes the future agricultural abundance once threatened by death" (Dumont 1976:141). The ritual termination of the ceramics is thus part of the perpetuation of the cycle of life and death.

What I would like to add to this discussion on the "kill holes" is that a hole in a ceramic in a mortuary setting within one cultural context (such as Mimbres, Pueblo, Pecos in American Southwest, Florida, or the ritual breaking of ceramics among the Panare in southern Venezuela) cannot necessarily be extended to have the same meaning in a mortuary setting within another cultural context (such as Maya), unless additional affirmative information can be presented from that particular context. The intentional drilling (pecking, punching, gouging) or complete destruction by breaking of ceramic containers of many sorts (e.g., plates, tripod plates, bowls, tripod cylinders)[6] within a mortuary context stands in a much wider ideological (and thus cosmological) context than the strict functionality of final deposit with the deceased (either in the burial or mounted and/or deposited somewhere else). Note additionally that among the Maya one can find drilled (pecked, punched, gouged) holes in the base of various types of ceramics (at the center, or slightly off-center, near the outer margin of the base, e.g., Tikal, Burial 92, slightly outcurving-side bowl, see Culbert 1993:61, Fig. 62b), or even in the wall of a cylindrical vessel (e.g., Caracol, S.D. C193B-3, fluted incised vase;

[5] For the original text, see Tozzer 1907:154, and note the small adjustment in text citation by Scherer and the removal of *yaštše*, Tozzer's spelling of *yaxche'*, as the indigenous name for the ceiba tree.

[6] Note also that non-ceramic objects can be transitioned in this way, e.g., metates.

Chase and Chase 2013:9, Fig. 23b ["kill holes" are rare at Caracol]). Plates in particular are intentionally damaged (though not always), not only by means of a hole, but by the legs being broken off before deposit (e.g., Tikal, tripod plates in Burials 83 and 96; see Culbert 1993:44, Fig. 43). At various Maya sites ceramics were deposited in burials either whole, broken, with parts removed (i.e., rimless), or drilled and placed either under or over the head of the interred individual or next to the body (e.g., for Blue Creek, see Guderjan 2007:77; for Caracol, see Chase and Chase 1987:Figs. 21, 73; for the Piedras Negras-Yaxchilan area, see Golden et al. 2008:264-265; for Saturday Creek, Belize, see Lucero 2010:145-147). It would be interesting to see an in-depth study of these kinds of intentional and purposeful modes of destruction (termination, transition) within the Maya area (or the whole American continent, if time would permit) and the range of ceramic containers in which they can be found (as well as other classes of objects, again time permitting; compare Adams 2008 for the American Southwest) and the location they are assigned to in a mortuary context.

This short note introduced a plate painted in the style of the greater El Zotz area tradition, and it presented an analysis of its hieroglyphic text, an example of the dedicatory formula on ceramics. This hieroglyphic text contained some uncommon signs and sign compounds and represents a good example of a highly individually designed and executed dedicatory text painted by an accomplished scribe but still within the parameters (calligraphy, sign inventory, syntax) of a well-known regional variant. The floor of the plate features the image of a stylized catfish, and the plate was enhanced with a drilled hole, possibly to transition it from one realm (of existence) to another.

Acknowledgments

The author wishes to thank the De Young Museum of the Fine Arts Museums of San Francisco and curator Mathew Robb for providing the photographs of the plate that are published here with their kind permission. I thank Michel Quenon for sharing with me his photographs of the plate during the European Maya Conference in Bonn, December 12-13, 2015, which led to improvements in some of the observations made prior to this. As always, unless otherwise noted, the opinions expressed in this essay are mine.

References

Adams, Jenny L.
2008 Beyond the Broken. In *New Approaches to Old Stones: Recent Studies of Ground Stone Artifacts*, edited by Yorke M. Rowan and Jennie R. Ebeling, pp. 213-228. Equinox Publishing, London.

Boot, Erik
2003a A Comment on the Initial Sign Collocation on Kerr No. 8123. *Mayavase*: www.mayavase.com/8123/Kerr8123.pdf.
2003b A Comment of the Initial Sign of Kerr No. 4961. *Mayavase*. URL: www.mayavase.com/com4961.pdf.
2003c A New Classic Maya Vessel Type Collocation on a Uaxactun-style Plate. *Mayavase*: www.mayavase.com/bootplate.pdf.
2004 T299 Split as the Logographic Sign for **PA**. *Wayeb Notes* 13. Electronic document, www.wayeb.org/notes/wayeb_notes0013.pdf.
2005a A Preliminary Overview of Common and Uncommon Classic Maya Vessel Type Collocations in the Primary Standard Sequence. *Mayavase*: www.mayavase.com/BootVesselTypes.pdf.
2005b Further Notes on the Initial Sign as /alay/. *Wayeb Notes* 18. Electronic document, www.wayeb.org/wayeb_notes/wayeb_notes0018.pdf.
2005c A Short Epigraphic Analysis of the Hieroglyphic Text on a Tripod Plate in a Private Collection (Guatemala). *Mayavase*: www.mayavase.com/guatplate.pdf.
2005d Regional Variation of the Standard Dedicatory Formula on Classic Maya Ceramics. In *Source Book for the Workshop Classic Maya Ceramics at the 10th European Maya Conference, December 5-11, 2005, Leiden, the Netherlands*, compiled and authored by Erik Boot, pp. 6-10. Wayeb; Leiden University, Leiden.
2009 The Bat Sign in Maya Hieroglyphic Writing: Some Notes and Suggestions, Based on Examples on Late Classic Ceramics. *Mayavase*: www.mayavase.com/boot_bat.pdf.
2014 On (Some of) the Principles and Structures of Graphic Sign Substitution in Classic Maya Writing. In *Visualizing Knowledge and Creating Meaning in Ancient Writing Systems*, edited by Shai Gordin, pp. 215-259. PeWe-Verlag, Gladbeck, Germany. Available: independent.academia.edu/BootErik.

Chase, Arlen F, and Diane Z. Chase
1987 *Investigations at the Classic Maya City of Caracol, Belize, 1985-1987*. Monograph 3. Pre-Columbian Art Research Institute, San Francisco.
2013 Interpreting Ancient Maya Society Through Neighborhoods. Investigation of Adjacent Residential Complexes near Caracol's Epicenter: Caracol Archaeological Project Investigations for 2013. Report prepared for the Belize Institute of Archaeology. Available: www.caracol.org/reports/2013.pdf.

Coe, Michael D.
1973 *The Maya Scribe and His World*. The Grolier Club, New York.

Culbert, T. Patrick
1993 *The Ceramics of Tikal: Vessels from the Burials, Caches and Problematical Deposits*. Tikal Report 25, Part A. Monograph 81. University Museum, University of Pennsylvania, Philadelphia.

Dods, Roberta Robin
2015 Seeking the Mind of the Maker. In *How Do We Imagine the Past? On Metaphorical Thought, Experientiality and Imagination in Archaeology*, edited by Dragoş Gheorghiu and Paul Bouissac, pp. 9-26. Cambridge Scholars Publishing, Cambridge.

Dumont, Jean-Paul
1976 *Under the Rainbow: Nature and Supernature among the Panare Indians*. University of Texas Press, Austin.

Elli, Florence Hawley
1979 Isleta Pueblo. In *Handbook of North American Indians, Volume 9: Southwest*, edited by Alfonso Ortiz, pp. 351-365. Smithsonian Institution, Washington, D.C.

Escobar, R., H. Alvarado, and C. Álvarez
2015 Mortandad de peces abarca 105 kilómetros. *Prensa Libre*, June 11, 2015. Available: www.prensalibre.com/guatemala/mortandad-de-peces-abarca-105-kilometros-1.

Evers, Hans-Georg, and Ingo Seidel
2005 *Baensch Catfish Atlas, Volume 1: South American Catfishes of the Families Loricariidae, Cetosidae, Nematogenyidae and Trichomycteridae*. Mergus Verlag GmbH, Melle.

Fewkes, Jesse Walter
1914 Archaeology of the Lower Mimbres Valley, New Mexico. *Miscellaneous Collections* 63(10):1-53. Smithsonian Institution, Washington, D.C.

Golden, Charles A., Andrew K. Scherer, A René Muñoz, and Rosaura Vasquez
2008 Piedras Negras and Yaxchilan: Divergent Political Trajectories in Adjacent Maya Polities. *Latin American Antiquity* 19(3):249-274.

Guderjan, Thomas H.
2007 *The Nature of an Ancient Maya City: Resources, Interaction, and Power at Blue Creek*. University of Alabama Press, Tuscaloosa.

Haraguchi, Shosuke
1991 *A Theory of Stress and Accent*. Foris Publishing, Dordrecht.

Hofling, Charles A.
2011 *Mopan Maya–Spanish–English Dictionary*. University of Utah Press, Salt Lake City.

Holmes, William H.
1894 Earthenware of Florida: Collections of Clarence B. Moore. *Journal of the Academy of Natural Sciences of Philadelphia*, 2d Series, Vol. 10:105-128.

Houston, Stephen D.
2008a In the Shadow of a Giant. *Mesoweb*: www.mesoweb.com/zotz/articles/Shadow-of-a-Giant.pdf.
2008b The Epigraphy of El Zotz. *Mesoweb*: www.mesoweb.com/zotz/articles/ZotzEpigraphy.pdf.

Hyman, Larry M.
1977 *Studies in Stress and Accent*. Department of Linguistics, University of Southern California, Los Angeles.

Kaufman, Terrence
2003 A Preliminary Mayan Etymological Dictionary. *FAMSI*: www.famsi.org/reports/01051/pmed.pdf.

Lucero, Lisa J.
2010 Materialized Cosmology among Ancient Maya Commoners. *Journal of Social Archaeology* 10(1):138-167.

MacLeod, Barbara
1989 Writing on the Curved Page: A Reading for the Manik Collocation in the Primary Standard Sequence. *Mexicon* 11(2):27-31.

Martin, Simon
2004 A Broken Sky: The Ancient Name of Yaxchilan as Pa' Chan. *The PARI Journal* 5(1):1-7.

Paredes, Fredy
2015 Empresa guatemalteca contamina al río Usumacinta en México. *Diario de la Tarde*, May 6, 2015. Available: diariodelatarde.com.mx/2015/05/06/empresa-guatemalteca-contamina-al-rio-usumacinta-en-mexico-2/.

Power, Susan C.
2004 *Early Art of the Southeastern Indians: Feathered Serpents and Winged Beings*. University of Georgia Press, Athens.

Scherer, Andrew K.
2015 *Mortuary Landscapes of the Classic Maya: Rituals of Body and Soul*. University of Texas Press, Austin.

Scherer, Andrew K, Charles Golden, Ana Lucia Arroyave, and Griselda Pérez Robles
2014 Danse Macabre: Death, Community, and Kingdom at El Kinel, Guatemala. In *The Bioarchaeology of Space and Place: Ideology, Power, and Meaning in Maya Mortuary Contexts*, edited by Gabriel D. Wrobel, pp. 193-224. Springer, New York.

Sotheby's
1983 *Important Pre-Columbian Art, New York Galleries, May 12 and 13, 1983*. Sale 5034. Sotheby Parke Bernet, New York.

Tozzer, Alfred M.
1907 *A Comparative Study of the Mayas and the Lacandones*. Macmillan, New York.

Van der Hulst, Harry
2003 Stress. In *The Encyclopedia of Cognitive Science*, edited by Lynn Nadel, v. 4, pp. 246-254. Nature Publishing Group, London.
2014 *Word Stress: Theoretical and Typological Issues*. Oxford University Press, Oxford.

Van der Hulst, Harry, Rob Goedemans, and Ellen van Zanten
2010 *A Survey of Word Accentual Patterns in the Languages of the World*. De Gruyter Mouton, Berlin.

Wisdom, Charles
1940 *The Chorti Indians of Guatemala*. University of Chicago Press, Chicago.

Zender, Marc
2000 A Study of Two Uaxactún-Style Tamale Serving Vessels. In *The Maya Vase Book: A Corpus of Rollout Photographs of Maya Vases, Volume 6*, edited by Barbara Kerr and Justin Kerr, pp. 1038-1055. Kerr Associates, New York.