The Codex Aubin: Nahuatl Glyphic Writing in Post-Conquest Mexico

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Abstract
In this paper, we study the Nahua glyphic script as used in the Codex Aubin, a post-Conquest codex produced in 1576 that narrates the traditional Aztec founding myth and chronicles indigenous life in the early colonial period. The text consists of a preconquest-style annal written in the form of a European book; traditional depictions of events and transcriptions in the traditional glyph script are paired with Nahuatl glosses in Roman script, allowing for analysis of glyphs alongside their intended readings. In particular, we look for evidence of phoneticity in glyphs; a number of Spanish language names are transcribed in glyphs in the Codex, providing yet-undescribed examples of phonetic glyph compounds. Further, we also explore the generation of new logograms and phonetic compounds to capture Spanish-language lexemes in the post-Conquest period. We demonstrate the fundamentally polyvalent usage of the script with novel data, interpreting the simultaneous usage of multiple modes of meaning-conveyance and proposing novel readings of some glyphs. Finally, we also investigate the assembly and visual organization of complex glyphs in the codex. In particular, we detail a new modality of glyph usage, which we dub ‘emphatic cross-reference’ — it involves the assignment of extra-graphemic meaning to individual glyphs by means of their visual organization in compounds. To our knowledge, this particular usage of the Aztec script is undescribed to date, and we preliminarily detail our analysis of a few examples found in the Codex Aubin.
The Codex Aubin: Nahuatl Glyphic Writing in Post-Conquest Mexico

Arjun Sai Krishnan

1 Introduction

The Codex Aubin, a post-conquest Nahuatl-language pictorial codex, is a valuable record of indigenous perspectives on historiography in the period immediately succeeding the Spanish conquest of the Valley of Mexico. A fascinating handwritten account of Mexica (Aztec) history and legend, it begins with a departure from Aztlan, the mythical homeland of the Mexica, and ends in the early seventeenth century with a depiction of indigenous life in early colonial Mexico. Clearly drawing from the Aztec cartographic and pictorial tradition, the codex contains primarily Nahuatl text transcribed in Roman script and printed on colonial octavo paper (Paxton and Cicero 2017). The text represents a complex intersection of cultures, languages, and representational systems: it is an indigenous annal swathed in European conventions, and unravelling the many competing traditions encompassed in the codex grants a unique window into the status of language and history in the nascent mestizo society of Mexico.

The hybrid nature of the text has led a number of scholars to comment on the historiography of the codex (Rajagopalan 2018, Navarrete 2000), focusing on a subset of the original text’s narratorial and pictorial choices. Rajagopalan (2018) argues that the Codex is, for the most part, the work of a single tlacuilo, or traditional Nahua scribe; she explores the tlacuilo’s authorial intent, arguing that the codex is an emulation of the European printed book (Lira 2020). She notes the influence of colonial morality and censorship on his exploration of indigenous themes, and explores contrasts with other codices to reveal continuity in the indigenous account of the Mexica founding myth. Navarrete (2000) similarly finds parallels between the Codex Aubin and other codices, noting that the written text may mirror the performance of originally narrated pre-Hispanic texts.

Beyond documenting intersecting cultural processes of text production and performance, however, the Codex Aubin also presents a valuable corpus of Nahua glyph-script usages alongside Nahuatl glosses, allowing us to examine the use of indigenous orthographies by, as Rajagopalan (2018) asserts, a traditional tlacuilo trained in their use. In particular, a focus on a single codex, paired with comparison to other texts, may help contextualize features of the script that represent innovations of an individual scribe, as well as those that are shared with other texts. In particular, the text of the codex may provide insight into pre-Hispanic phoneticity, a topic that remains unresolved (Lacadena 2008a, Whittaker 2009, 2012, 2018); Whittaker (2009) in fact, draws on examples from the Codex Aubin to advance his arguments. The usages he identifies, consisting of Spanish-language names and words transcribed in glyphs, remain among the most compelling examples of purely phonetic usages of the Aztec symbol inventory; in this work, we present a few more examples within the codex of this phenomenon, and also consider phonetic complements as used in Prehispanic place glyphs. In our analysis, we also consider the role of the visual organization of sub-glyphs within complex glyphs in conveying phonetic and semantic information, something that remains relatively understudied in the literature; we present here our preliminary findings, and identify new, polyvalent usages of individual glyphs to indicate grapheme-external information.

2 Nahuatl Glyphic Writing in the Codex

The question of phoneticity in largely logographic scripts has been historically contentious in the study of multiple cultures and languages (Bricker 1986, Robinson 2012), and Nahuatl is no exception to this phenomenon. Aubin (1885) produced a syllabary for Nahuatl in the late nineteenth century; this, according to Whittaker (2009), is now considered “an exaggerated attempt to derive” an “unusual degree of phoneticism” using Spanish-influenced texts from the later period; others also

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attribute the phoneticity observed in the post-Conquest period to Spanish influence (Dibble 2015). Most recently, however, Lacadena (2008a) laid out a Nahua syllabary in the vein of Aubin’s work, arguing instead that discrepancies in phoneticity between texts were not chronological, but rather pertained to distinctions in style between different schools. While hailed by some as a pioneering work, others, in particular the epigrapher Gordon Whittaker argued for nuance, suggesting that there insufficient evidence to definitively assert a widespread incidence of pre-Hispanic phoneticity.

However, despite the abundance of work exploring the phonetic and logographic elements of the Nahua script, there appears to be a lacuna in the literature surrounding the role of the visual organization in deriving meaning with regards to complex/compound glyphs. Lacadena notes that from the favoured reading direction tends to be “right to left and bottom to top,” and Whittaker (2012) explores in some depth the role of the orientation of the eyeball glyph “ix/ixyo” in determining the exact semantic value of the glyph. However, very little attention has been devoted to understanding compositional processes of meaning derivation, and in this section, we seek to interrogate this a little more deeply. Given Whittaker (2009)’s description of the Codex Aubin’s “extensive phoneticity,” we will examine claims of pre-Hispanic phoneticity in light of the evidence available in the Codex Aubin, and present some novel decipherment of data that emphasize the rich polyvalence of Nahua glyph system. We will also detail preliminary findings of the use of phonetic complements to denote grapheme-external meaning, something which appears to be hitherto undescribed.

First, clarifying terminology: in this work we will be referring to glyphs primarily as belonging to two classes (as described by Whittaker) — logograms, which refer to glyphic symbols that directly depict the semantic value held by the glyph or an associated concept or idea, and phonograms, which denote sound values. Using the conventions laid out in Whittaker (2009), we will gloss phonographs/phonetic complements in lower case, phonetic indicators in superscript, and logograms in uppercase. As many have commented, the use of rebus is prominent in the Nahua glyph script, and as Whittaker clarifies, it is the “functional” use of signs that matters most. That is, logograms can function primarily as phonograms when used in rebus; indeed, most of the phonetic signs and syllabograms in Lacadena’s syllabary derive from logographic depictions of Nahuatl words that contain the syllable in question.

2.1 Nahua Glyphic Writing: The Basic System

The use of phonetic complements is a well-documented phenomenon (Whittaker 2009), involving “add[ing] precision to the reading of a logogram,” in some cases to indicate grammatical features, and in others to disambiguate possible readings of a phonogram. Before entering that debate, however, it might be necessary to establish a few features of the Aztec writing system as a whole. Gordon Whittaker describes the system as “onomastic” and “almost entirely restricted to the recording of names,” in particular “personal and place names, titles and professions” (Whittaker 2018). As earlier described, we see a complex, layered usage of logograms and phonograms, and a system that is “fundamentally multivalent, with two or more values per sign.”

Figure 1 shows a few examples (from the Codex Aubin) of glyph usages in toponyms and ruler names, showing both purely logographic and phonetically augmented glyphs. First from the left, we see the name for the Mexica tlatoani Chimalpopoca, glossed as “Smoky Shield” (Diel 2015); the name glyph here consists of two logograms (chimal(li), shield, and popoca(tl) in bottom-to-top reading order), producing a complex glyph that also overlaps with the phonetic rendering of the name. Second, we see a usage in (b) that combines a logogram with a phonogram: for the place-name Cohuatitlan (beside the snakes, cohuatl(l) (snake) + -titlan,¹ a common place-name suffix that can be translated to beside/next to), we see a logogram for a snake combined with the rebus glyph tlan(tli), tooth, to produce an overall reading of COA-(ti)-tlan. In the third example, the toponymic glyph for Colhuacan “Bent mountain” (Whittaker 2018), a standard logographic glyph for mountain/hill is given a curved top (col) to produce a reading of COL-HUACAN. In particular, we note in (b) the usage of the phonetic complement tlan(tli) bearing a phonetic value of tla or tlan, and a number of other similar glyphs possess a standardized use as phonetic complements.

¹The tlan rebus glyph occurs with both the place suffixes tlan and -titlan, and perhaps denotes both values.
including the *atl* water glyph which is amongst the most common. Lacadena (2008a) provides a thorough overview of the basic system of phonetic complements; in this paper, we will simply identify them to the reader as and when they appear. We furnish the above illustrative examples to provide a sense of the polyvalent nature of the script, as well as to demonstrate the rich potential for creative expression; in the next subsection, we will interrogate more deeply the processes of meaning generation visible in the Codex Aubin’s glyphs.

### 2.2 Pre-Hispanic Phoneticity: What is the Evidence?

In searching for evidence of Pre-Hispanic phoneticity in the Codex Aubin, there are a number of factors to keep in mind. Firstly, as Rajagopalan (2018) reminds us, the work is likely the product of a single *tlacuilo* seeking in some ways to emulate a European-style text; as such, there is significant (though not always obvious) European influence in even the base iconography of the text. On the other hand, the author of the text appears to have been working from another indigenous account as a template/paradigm for the pre-Conquest section of the annals (likely the *Codex Boturini*, which Rajagopalan asserts). As such, one might consider the possibility that toponyms and regnal name glyphs would represent a standardized indigenous orthography that would see little need for change, and as such, they may provide a natural avenue to begin exploration of the question.

One such interesting case that is encountered in the Codex Aubin is that of the name glyph of an individual named Bartolomé Atempanecatl, who appears on folio 47r. The Atempanecatl is a noble title which Muñon (1997) parses as “field marshal”; the title is also enumerated in the Codex Mendoza, where a similar compound glyph appears, but lacks the *pan(tli)* sub-grapheme. According to Déhouve 2013, the Atempanecatl served a ritual role in the temple at Atempán, the name simply meaning “the one from Atempán” by means of a derivational suffix.

We can read this glyph as found in the Aubin as **a-pan-(e)hecatl**, where the composition of the glyph consists of the *atl* water glyph, the *pan(tli)* banner glyph, and an abstracted version of the *ehecatl* glyph, which usually depicts the head of the wind god. Alternatively, we could parse the third glyph as a logogram for the ritual/noble rank which we cannot clearly ascertain with present information, which would leave us with **a-pan-ATEMPANECATL**. The former would be interesting for the possible retention of the “-tl” nominal suffix, a phenomenon Whittaker (2009) points out (with nominal suffixes usually excluded from phonetic readings). Galarza (1962) suggests that the Codex Aubin retains an original iteration of the Atempanecatl glyph; in this case, we would potentially have a standard glyph for a pre-Hispanic lexeme that was entirely composed of phonograms.²

²The lack of the *tetl* glyph providing phonetic value *te* is also unusual, given the presence of two other standard phonograms, which makes one wonder if the nasal at the end of *a-tem* prevents usage of the glyph —
given that the meaning appears to be unrelated to the subglyphs composing the title. If so, this would be a compelling example of pre-Hispanic phoneticity, but the evidence in the Codex Mendoza also suggests to us that the addition of the pan glyph may be an innovation to enhance phoneticity on the part of the Codex Aubin’s tlacuilo, and may betray a Spanish influence in producing an increased degree of phoneticity in glyphs.

2.2.1 Spanish Influence on the Nahua Script

Considering the assertion that increased phoneticity in the Nahua glyph script reflects the influence of Spanish, a survey of the Codex’s glyph usages for clear post-Conquest influence would be worthwhile. In this subsection, we will highlight some data not discussed in the literature, and also discuss the innovative production of Spanish-influenced complex glyphs. Whittaker (2009) highlights the deep interconnections between Nahua writing and iconography; this fact is made apparent in the adoption of Spanish iconography to produce novel logograms, as well as the generation of new logograms to encode post-Conquest concepts. A prominent example of new Spanish-inspired glyphs involves those created to denote coinage, particularly for tribute; these appear to have been standardized and those that appear in the Codex Aubin are also attested from the Códice Tributos de Coyoacán (Wood 2018). Figure 3 shows the glyphs for Spanish tomín coinage; according to Wood (2018), the same glyphs, appearing in the Coyoacán Codex, are glossed as representing a half-peso (four tomín) and two tomín value. The glyphs represent incidences of complex glyphs (Whittaker 2009), with one logogram enclosing another, and appear alongside text detailing the amounts of tribute paid.

Figure 3: Logograms for a value of (a) 4 tomínes (47r) (b) 2 tomínes (46v) (Note the color of the glyph indicating copper/silver coinage) © The Trustees of the British Museum.

However, one of the most interesting examples of a novel logogram occurs on folio 65 of the Codex, where an account of a tribute of 13 tomínes exacted in 1587 (Dibble 1963) is accompanied by a glyph consisting of a large circle enclosing the number thirteen depicted in the traditional pre-Conquest fashion (as seen in Fig 4, which contrasts the glyph for the year 13-Tecpatl with the tribute glyph on Folio 66). It thus appears that the circular glyph enclosing a value did not simply represent a physical depiction of a coin, but also an abstract glyph encoding currency values. This compound for a discussion of phonogram-final nasals, see Whittaker (2009).
glyph demonstrates the versatility of the traditional script at least sixty-six years after the Conquest, but also shows how novel conceptions of currency were adopted to produce complex logograms utilizing the traditional script.

Figure 4: (a) A complex glyph showing an tribute paid of 13 tomines (65v) (b) The traditional year glyph for the year 13-Flint. © The Trustees of the British Museum.

Another somewhat similar phenomenon can be observed on Folio 19, where we see the traditional Nahua speech glyph is replaced by European speech scrolls, where the Nahuatl text of the dialogue is placed within the speech scrolls (See Fig 5 below).

Figure 5: (a) The traditional Nahua speech scroll (77r), (b) A European-influenced speech scroll glyphic compound (19v). © The Trustees of the British Museum.

More interestingly, however, we also see the generation of novel toponymic glyphs (See Figure 6) to accommodate the new post-Conquest names assigned by the Spanish to various locations in the Codex Aubin. (Rajagopalan 2018) locates the tlacuilo author of the Codex Aubin in San Juan Moyotlan, one of the four main subdivisions of Tenochtitlan, and we see a toponymic glyph consisting of a chalice with serpents emerging from it appear multiple times alongside events located in San Juan, the same way the traditional toponymic glyphs do. This is almost certainly identifiable with a story in which St. John the Evangelist neutralizes a poisoned chalice of wine (De Vergnette 2020). It appears the the tlacuilo chose to produce a logographic toponym for the eponymous San Juan Moyotlan in reference to the legend, something which would not be out of place in a traditional place glyph for a toponym involving an individual (as in the later discussion of the toponymic glyph for Mexicatzinco). Interestingly, we similarly see the glyph of a pierced heart accompany the term San Agustín whenever it appears (Dibble 1963), which appears to have been adopted from the Augustinian emblem (Kehoe 1979). Interestingly, the glyph consists of the traditional yolotl “heart” glyph pierced by an arrow, showing a degree of iconographic continuity with the pre-Hispanic tradition.

However, the post-Conquest phenomenon most relevant to the question of phoneticity is the transcription of Spanish-language names that appear in the Codex. This phenomenon has been discussed by others in reasonable depth (Whittaker 2009, 2012); here, we will provide some analysis of glyphs that have not yet seen discussion in the literature, and also consider the function of logograms and phonetic complements in transcribing non-Nahuatl words.

Entirely phonographic compounds are rare in the transcription of traditional/pre-Hispanic lexemes, with logograms typically forming the template for the glyph — as such, many have posited that the production of exclusively phonetic glyphs in this context was driven by necessity in the
absence of any logographic glyphs that would correspond semantically to Spanish-language nomenclature. However, these compounds may document the use of phonetic complements not attested elsewhere, and provide an understanding of how the Nahua system adapted to incorporate novel lexical items. In (a), we see a name produced compositionally: the vertical corn glyph olo(tl) providing the phonetic value lo, the eyeball glyph ix(tli) providing us with ix, and the a(tl) water glyph reading a to produce lo-ix a as an approximate abbreviation of Luis de Velasco — Whittaker (2018) demonstrates abbreviation to a key part of the pre-Hispanic system, and so rather than being incomplete glyph transcriptions of a Spanish word, the compounds produced may actually reflect indigenous convention. Similarly we have in (b) caxtli “pot/vessel” for cax, and pa(n) as seen earlier, producing cax-pa/cax-pan for Gaspar. Now, with regards to (c), the grasping hand glyph has been discussed in some depth in the literature (Lacadena 2008c), where Lacadena convincingly argues it to be a logogram for WA in some contexts. However, the sign appears frequently alongside the name Juan/Juana, and Lacadena suggests that it would indicate the phonetic value wa here, and dismisses the idea that it could be ana, from the verbal root an(a) “to grasp” (Wood 2020, Alonso de Molina 1977). However, the co-occurrence of the glyph here with the Spanish-language name Ana suggests that this is indeed one of the valid readings of the glyph, with the atl glyph servings as a phonetic indicator to emphasize that value. This example cautions us to not generalize from a single context, and furthermore, the grasping-hand glyph, when holding a stick as in (d), becomes a logogram for the Spanish token juez. The example here points out the inherent context-dependency and polyvalency of Nahua glyphs, but also highlights the role of phonetic complements in highlighting particular readings of polyvalent glyphs; their function may even extend beyond simple disambiguation, as we will discuss in the next section.

2.3 Phonetic Complements: Agents of Visual Cross-Reference?

As noted earlier, however, little attention has been paid to phonetic complements beyond determining the values that they hold, and how they visually organize around logograms and other glyphs.
Beyond the fact that “the favoured reading direction tends to be right to left and bottom to top,” (Lacadena 2008b), we know that the visual, iconic aspect was key to deriving meaning from glyphs. Whittaker 2018 cites the toponymic glyph for “Tepetlhuieyacan ‘Where There Is a Tall Mountain’” as being a “mountain (tepelt) glyph that has been stretched vertically”; he describes also the “playful use” of “hieroglyphic orientation” to convey various meanings, for instance the overturning of a royal name glyph in the depiction of a king being overthrown. However, beyond this, one finds scant reference in the literature to the visual organization and orientation of the sub-glyphs of a compound, and one intuits that in a highly iconographic script, there might be reason to explore this further. In this subsection, we are not attempting a thorough examination of this phenomenon in the entire body of codices available; rather, we will point to a rather interesting phenomenon visible in the Codex Aubin that ties together phoneticity and visual organization, and hopefully paves the way for further examination of this topic. We have already discussed the phenomenon of phonograms and phonetic complements in some depth; one such phonetic complement which appears in Lacadena’s syllabary is the metl or maguey glyph, which indicates the phonetic value me. Now, the appearance of the metl phonetic complement in both of the above signifies the phonetic syllabogram me with no logographic value; however, it is easy to note the difference in orientation. Noting the presence of this glyph in other locations in the Codex Aubin, as well as other codices (Lacadena 2008b,a, de Las Casas 1909) makes it apparent that the vertical orientation is the default; that is, with the leaf tips of the maguey plant pointing upwards. As such, one begins to question why the glyph would be inverted in Figure 8(a). For some context on what the logogram above represents, we turn to Rajagopalan (2018)’s analysis of the Codex Azcatitlan; there we see a similar place-glyph with a largely nude individual with bent knees. While Rajagopalan asserts the icon in the Codex Azcatitlan is of an individual in the Aztec founding myth named “Mexicatl Cozooliltic,” in the Codex Aubin, each section of the narrative appears along with a place-glyph indicating where the event occurs. Thus, the name of the site mentioned might be derivative from the individual in the legend, rather than the converse, as Rajagopalan suggests. Rajagopalan glosses the bent knees in the image as representing the -tzin honorific suffix, which one can also see in Fig 1(a). The honorific -tzin is homonymous with Nahuatl tzin(tli) meaning “buttock,” explaining the association with this seated posture; thus, royal figures are typically depicted in this way to append a morphographic rebus reading to a logogram and indicate the presence of the honorific morpheme.

Now, as we discuss the orientation of the metl glyph further, it is apparent that the tlacuilo’s decision to invert it is not related to a phonemic reading order, as the me syllable appears in a word-initial position in both lexemes, and that this is not necessarily about ease of visual organization, as (a) could have very well had the phonetic complement placed in the same location on the logogram’s head as (b). It appears that the tlacuilo has placed the phonogram there intentionally for another function; that is, to point the reader of the glyph to the homonymous tzin/tzin(tli) reading when un-
derstanding the place glyph. As such, the *metl* glyph here holds a grapheme-internal phonological meaning, which is the *me* phoneme, and secondly, a grapheme-external morphographic meaning, that is to emphasize the *tzin* reading of the logogram and indicate the presence of the honorific morpheme. This second meaning is entirely predicated on the visual organization of the phonetic complement relative to the primary logogram, and points to an entirely different modality of conveying meaning that emerges from the composition of the complex glyph. This usage, to our knowledge, is thus far unattested in the literature; it appears a few more times in Codex Aubin, and we will provide and discuss those examples below.

Figure 9: Tzompanco, “Place of the Skull Racks” (10v) © The Trustees of the British Museum.

Now, we see another complex glyph above, which is the place glyph for the location Tzompanco; we can gloss this as *tzompantl(i)* combined with the locative suffix ‘-*co,*’ glossed by Whitaker as ‘at’. The *tzompantli* was a ritual structure in some Mexica temples that consisted of horizontal wooden columns upon which the skulls of sacrificial victims were affixed (Wood 2020, Muñón and Cuauhtlehuaniitzin 1997); in this case, the logogram is sufficiently iconicographic to identify that meaning *a priori*. Locative suffixes are often left unwritten (Whittaker 2018), but in this case, we have the phonogram *tzon(tli)*, meaning head, hair, or bristle (Whittaker 2009, Wood 2020, Karttunen 1992), which provides the phonetic value *tzom*, and the banner sign *pantl(i)* which provides the phonetic value *pan*. As such, we get an overall reading of *tzom-pan-TZOMPAN*. However, in the previous vein, if we consider the visual organization of the phonetic complements relative to the main logogram, rather than affix at the apex of the *tzompantli* depicted, or onto one of the beams, the banner glyph attaches to the top of the skull visible on the *tzompantli*. The location where the phonetic complement appends corresponds to the location of the scalp/apex of the head, which corresponds to a secondary phonographic value of *tzom*, deriving from *tzontl(i)* as earlier mentioned. Indeed, one sees redundant phonetic complements in multiple places, and one wonders if complex, layered, rebus readings of glyphs were the intended effect; this is something we see even more exaggeratedly in our next example, the toponymic glyph for *Acolnahuac* as it appears in the Codex Aubin, which displays polyvalent glyph readings on multiple levels and complex rebus readings.

Figure 10: The toponymic glyph for *Acolnahuac* (16v) © The Trustees of the British Museum.
The name *Acolnahuac* can be translated a number of ways, with one possible reading being “Near the curving/bent waters” (*atl* = water, *col* = bent (as in Col-huacan), and *nahuac* being a common toponymic suffix indicating proximity (Wood 2020, Alonso de Molina 1977)). To begin, we can see that the complex glyph is made up of the *atl* water glyph, the *acolli* shoulder glyph (Zender 2008), and a pair of speech glyphs (as in Fig 5(a)); this is similar to other attested forms of this toponymic glyph (Zender 2008). The glyph resembling an arm could denote any variant of the Nahuatl words for hand/arm, for instance *maitl*, which often encodes a phonetic value of *ma* (Lacadena 2008a). However, in this case, the *atl* glyph disambiguates the reading by providing the phonetic value *a*, which suggests to us that the correct reading is *acolli/acol*. However, even more interestingly, if we consider the location where the three distinct units of the compound glyph join, it corresponds to the shoulder of the arm glyph. As such, we once again have the phonetic complements denote extra-graphemic meaning by emphasizing a particular semantic value/reading of another glyph. We will dub this form of glyph usage as *emphatic cross-reference*; it adds yet another level of polyvalence to the glyph system as presently known. We note that this finding does not necessitate an extensive pre-Hispanic phoneticity to be significant, or for this usage to be productive; as such, this preliminary finding remains somewhat distinct, and certainly necessitates more exploration.

To follow, the *Acolnahuac* glyph as seen in the Codex Aubin is even more fundamentally multivalent: Zender has discussed the variants of this glyph in some depth, but we can find here an even more complex set of readings. Another meaning of the suffix *nahuac* is pair (Wood 2020, Alonso de Molina 1977); if this is the primary gloss, the entirety of the toponym is captured logographically in the “pair of curved waters” emerging from the *atl* water glyph in the top left. Notably, the nature of the curve depicted in highly similar to that in the Fig 1(c), which also contains the same morpheme *col*. However, speech glyphs are positioned similarly, though detached from the water, in other iterations of the glyph, suggesting that the *tlacuilo* intended both meanings of the glyph: that is, by means of color and vertically attached orientation, meant to signify *a-col*, “curved waters,” but also the phonological value *nahu*. Furthermore, the phonetic value *nahu* is derived twice: first from the curved water/speech glyphs, and secondly logographically derived from their doubled nature. As such, we attain an overall reading of the glyph as *a-acol-acol*-A-COL-NAHUAC-nahuac-nahuac, or in the event that the correct gloss of the glyph is unclear, *a-acol-acol*-a-col-nahuac-nahuac-nahuac (acol* indicates the extra-graphemic indication of *acolli* by the placement of other glyphs). This is not mere redundancy; Whittaker (2018) describes the “playful virtuosity” of the Nahuatl writing system, and indeed, it appears the polyvalency of glyphs may have been intentionally enhanced in some contexts. As such, it remains open whether, as Whittaker puts it, our scribe was “in a playful mood,” or if this form of glyphic wordplay was assigned a cultural value; a broader analysis of intra-and extra-graphemic polyvalency across texts is certainly an important direction for future work.

3 Conclusions and Future Work

In sum, the Nahuatl glyph script as used in the Codex Aubin represents a fundamentally polyvalent system, with individual graphemes holding multiple meanings not just in different contexts, but sometimes within the same glyph compound. We see interesting examples of orthography in translation, and phonetic as well as logographic adaptation to novel concepts and lexical items. Complex glyphs capture multiple, often redundant readings — understanding the disambiguative, as well as cultural function of redundancy may prove an important direction for future work. We have also described a novel modality in glyph usage, which we dub ‘emphatic cross-reference,’ in which individual glyphs are made to denote grapheme-external values by virtue of their visual placement. Generalizing this finding will necessitate further examination of phonetic glyphs in other codices, and also would greatly benefit from exploring parallels in other glyphic writing systems such as Sumerian proto-cuneiform. We would also welcome statistical approaches to quantify the frequency and appearance of individual glyphs across texts, and finally, a more thorough study of the assembly and substructure of complex glyphs would be key to understanding the processes of meaning generation underlying the Nahuatl glyph script.
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