Mayan historical linguistics and epigraphy: a new synthesis

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Abstract:
Recent years have seen rapid advancement in our understanding of the phonology and grammar of Classic Ch’olan and the distribution of Lowland Mayan languages in the Classic period. The control over the data has advanced to such an extent that Classic Ch’olan should no longer be considered chiefly a product of reconstruction, but rather a language in its own right, providing fresh input to historical reconstruction. The interpretation of principles of the writing system has moved into the forefront of research, and recent discussions of these and other major issues are summarized. It is suggested that the exceptional phonological transparency of the Maya script, which is a precondition for the current advances in linguistic epigraphy, is rooted in the need of scribes to ‘spell out’ regional linguistic variants, and a sociolinguistically oriented theory of the evolution of writing in general is formulated and tested on the Mayan hieroglyphic materials.
Introduction

Three decades ago, two Mayan historical linguists asked themselves “where are we now?” (Campbell & Kaufman 1985). Their paper represented the culmination of a productive period of research where many Mayan languages had become documented, new members of the language family had been discovered, major phonological developments had been worked out, grammar and lexicon of the proto-language had to some extent been reconstructed, and a classification had been arrived at most aspects of which still enjoy a large degree of consensus. The authors, however, could not foreshadow that an entirely new approach to Mayan historical linguistics was beginning to take shape, namely the synthesis of historical linguistics and the epigraphy of Maya writing. Advances in epigraphy have allowed us to move beyond pure diachronic reconstruction into the realms of observation and explanation. Since many monuments are dated and securely placed in space, their texts expose language change before our very eyes, and it has become possible to see how such changes are sensitive to geographical and social factors. The purpose of the present paper is to discuss the major, current issues in the study of the developments of the languages of the hieroglyphic inscriptions and to illustrate how the study of the script is affecting the practice of Mayan historical linguistics

Language identification

While early epigraphic studies mostly relied on geographical arguments as regards the identification of languages involved in the Classic Maya inscriptions, it became clear from the 1980’s onwards that such identifications should preferably be made by matching morphological elements in the inscriptions to data from extant Mayan languages. Given the high degree of lexical diffusion among Mayan languages in
general and Lowland Mayan languages in particular (Kaufman 1980, Justeson et al. 1985, Wichmann & Brown 2003), the recurrence in a particular language of some lexeme found in an inscription does not provide sufficient evidence to argue that the inscription is written in the language in question. The foundation for the linguistic identification of the script as chiefly Ch’olan was mainly provided by Schele (1982), MacLeod (1984, 1987), and Bricker (1986), who identified certain Ch’olan verbal grammatical morphemes in the inscriptions, as well as by Campbell (1984), who pointed out phonological parallels. Subsequent studies, in particular Wald (1994), Lacadena (1997a, 1997b, 2000b, 2003, 2004), MacLeod (1987, 2004), and Houston, Robertson & Stuart (2000, 2001), have identified an ever-increasing range of Ch’olan grammatical affixes in the inscriptions.

Along with a steadily more detailed picture of Classic Ch’olan grammar acknowledged as being present throughout the lowlands it has also been recognized that features of other languages, including early forms of Yucatecan and Tzeltalan, have left traces in or among texts that are otherwise written in Classic Ch’olan (Lacadena & Wichmann 2000, 2002; Lacadena 2000a), and variation within Classic Ch’olan itself has also been observed (Lacadena & Wichmann 2002; Wichmann 2002b). Table 1 gives an overview of these features and Figure 1 shows their distribution. Examples of how this model has led to other distributional studies are provided by the onomastic studies of Colas (2004a,b), where it is pointed out that differences in naming patterns also have an eastern vs. western distribution. In the west rulers are usually named after animals, objects and social roles and the names function syntactically as noun phrases, whereas in the east rulers mostly carry names based on those of gods and the names function as sentences.
## TABLE 1  Variable and vernacular linguistic features

### Ch’olan variable features

| Strong Eastern vs. Western Ch’olan features | WINAL-la vs. WINAK-ki for ‘month’ |
| Strong Eastern vs. Western Ch’olan features | AJAW-li vs. AJAW-le(-le) for ‘rulership’ |
| Strong unilateral Eastern Ch’olan features | Loss of vowel length |
| Strong unilateral Eastern Ch’olan features | Passive in -w-aj |
| Weak unilateral Eastern Ch’olan features | -b’i-complement to HAB’ or WINAKHAB’ |
| Weak unilateral Eastern Ch’olan features | -he-na rather than -he-wa in distance numbers |
| Weak unilateral Eastern Ch’olan features | -na, not -ta complement to “Wo” and “Sip” |
| Strong unilateral Western Ch’olan features | -wa-ni rather than -la-ja on positional verbs |
| Weak unilateral Western Ch’olan features | CV1-CV1-ja spellings of passive verbs |
| Weak unilateral Western Ch’olan features | -b’u, not -wa on K’AN-HAL spelling “Pop” |
| Weak unilateral Western Ch’olan features | Positionals in –(V)i-l-iiy |

### Yucatecan vernacular features

| Strong features | Passive in –(a)b’ |
| Strong features | Titles preceding, not following personal names |
| Strong features | Inchoative in –(a)j-al |
| Strong features | Causative in -kun |
| Strong features | Various lexical traits |
| Weak features | -ik and -(i)k-i suffixes |
| Weak features | Suffixation of –ya, not -yi to verb T’AB’ |
| Weak features | Final -Ce spellings |

### Possible Tzeltalan vernacular features

| Stronger features | Positional in –h-…-(a)j |
| Stronger features | WINIK-ii, winikil for ‘month’ |
| Weaker features | -na complement to month name “Wo” |
| Weaker features | Synharmonic spelling i-la-ja ‘was seen’ |
Fig. 1. The language distribution as revealed through Classic Maya inscriptions
It has been debated where to place the otherwise essentially unitary language of the Classic-period inscriptions within the part of the family tree of Mayan languages that comprises the Greater Tzeltalan (Ch’olan and Tzeltalan) group. As an alternative to what I have denominated by the neutral term ‘Classic Ch’olan’ (‘Hieroglyphic Ch’olan’ would serve equally well), Houston et al. (2000) have introduced the term ‘Classic Ch’olti’an’, since they believe that they have found grammatical evidence for a specifically Eastern Ch’olan affiliation of Classic Ch’olan and furthermore, following Robertson (1992, 1998), see Ch’olti’ as an ancestral form of Ch’orti’.

Mora-Marín (2005), however, argues against Houston et al. that their ‘Ch’olti’an’ grammatical markers are in fact proto-Ch’olan retentions and therefore cannot count as evidence for a specifically Eastern Ch’olan affiliation of the inscriptions, and Wichmann (2002b) has argued against the view that Ch’orti’ is a descendant of Ch’olti’ (a view that Robertson 2004 has subsequently formulated somewhat differently). Various important issues are raised but not necessarily resolved in these recent contributions:
How is the internal Ch’olan linguistic variation in the inscriptions of the Lowlands to be interpreted? Did scribes more or less write the kind of Ch’olan that they currently spoke or did they suppress their linguistic identities in favor of some prestige norm and only occasionally, and perhaps unconsciously, let features of their local dialect or vernacular percolate into written texts? How great is the differentiation among the different variants of Ch’olan? Should we be speaking of different languages or just different dialects? If there was some kind of prestige norm, to which historical stratum of Ch’olan did it belong?

It should be stressed that the evidence for the existence of a specifically Eastern Ch’olan norm, as correctly seen by Mora-Marín (2005), crucially hinges upon whether or not certain features used throughout the inscriptions of the Maya lowlands can be proven to be Eastern Ch’olan innovations. The existence of a norm representing a conservative form of Ch’olan, on the other hand, would hinge upon the identification of features which are known to have changed in vernacular languages or dialects but retained in written inscriptions. Lacadena & Wichmann (2002, p. 282) were positive towards the Eastern Ch’olan prestige language hypothesis although cautioning that “it is still too early to make final judgments about the totality of the picture”. Today I would be less positive, given that the following six problems with the hypothesis still remain and no new evidence in its favor have emerged. (i) It is not clear at all that the three ‘Ch’olti’an’ features of Houston et al. (2000), which are comprised by a passive, a mediopassive, and a transitive verbal derivation, were indeed innovated by Eastern Ch’olan. For the first two the authors themselves show that the suffixes involved have pre-Ch’olan ancestry and for the last there is Tzeltalan evidence for also reconstructing the derivational process in question for proto-Ch’olan. (ii) Several of the features observed by Lacadena & Wichmann to originate
in the Western Lowlands ‘spill over’ into the east (see figure 1), whereas eastern linguistic features are not adopted by westeners. This is at variance with a picture according to which Eastern Ch’olan is somehow more prestigious than the western variant. (iii) Both eastern and western features spread in a more-or-less systematic fashion in time and space from different centers of innovation and do not pop up in a haphazard manner, as would be expected if the represented unconscious ‘slips of the chisel’; thus, they seem to attest to linguistic changes indicative of an emerging Eastern vs. Western Ch’olan differentiation rather than old isoglosses. (iv) The domination of one part of the Maya lowlands over all of the rest is not expected from the political picture, which rather suggests constant competition among different regions, great and small (Martin & Grube 2000). (v) Positional and passive morphology documented in Early Classic inscriptions such as Tikal Stela 31, show the language of this period to be so archaic (Hruby & Robertson 2001, Lacadena 2002) that it hardly makes sense to imagine a full-blown Eastern vs. Western Ch’olan differentiation to simultaneously be in place by then. (vi) When we do find linguistic features that are identifiably Eastern Ch’olan and can not be traced to proto-Ch’olan or beyond, such as the passive suffix –w occurring at Copan (Lacadena 1997b) or the deverbalizing instrumental derivation in –ib’ also from Copan (Wichmann 2002b), then these exclusively occur in inscriptions of the eastern region. Particularly interesting is the mediopassive –k’–aj found at Tikal (Beliaev & Davlethsin 2003). A salient characteristic of Eastern Ch’olan is the occurrence of a suffix –a on derived intransitives, including passives and mediopassives. The origin of this clearly must the –aj which, together with infixed –h–, forms the passive and which has a proto-Mayan origin. Thus, the ancestry of the suffix can be traced, but its spread to derived intransitives in general in Eastern Ch’olan is an innovation. The –k’–aj mediopassive,
then, could be yet another possible Eastern Ch’olan marker, but again we find it just where we would expect it, namely in the eastern part of the lowlands. Thus, even though some possible Eastern Ch’olan innovations exist, they cannot be brought to bear on an Eastern Ch’olan prestige language hypothesis.

Even if there are many reasons to doubt a specifically Eastern Ch’olan affiliation of a prestige language it is still possible that the written language preserved features of some early kind of Ch’olan which no longer existed in the currently spoken language or happened to have been preserved only in a part of the Ch’olan speech community. Such features would also support a prestige language hypothesis, although the affiliation of this prestige language would be somewhat different, representing an earlier form of Ch’olan, before any significant differentiation. We do find scattered evidence of returns to previous norms. For instance, Hruby & Child (2004, p. 22) observe a return to the use of –laj suffixation to positional verbs in the inscriptions of Palenque after the reign of K’ihnich Janaahb’ Pakal, which saw the introduction of the innovative Western Ch’olan –waan suffix (it has been assumed that –waan is a specifically Chontal affix, but Vázquez Alvarez 2002, pp. 27, 157-9 provides attestations for a cognate Ch’ol affix –wañ, now used only in negative imperatives of positionals). Clearly, there are tendencies in the written language to preserve an archaic norm. Moreover, it is obviously correct to talk about prestige norms when scribes write in Ch’olan even if they are identifiable as mother-tongue speakers of Tzeltalan or Yucatecan by the sporadic vernacular influences they leave in their texts. Clearly there were norms for writing which were often distinct from local vernaculars, but we also see that scribes were flexible enough to accommodate linguistic changes.
A final issue is the degree of differentiation within Ch’olan in the Classic period. Given that we are excluded from using tests like mutual intelligibility or counts of differences in standard word lists, it is really a moot question whether we are dealing with different languages or different dialects at a given stage of the Classic period. Since Eastern vs. Western Ch’olan differentiation had set in by 400 A.D. we could perhaps speak of different dialects at this point. Around 600 A.D., in the Late Classic, there is evidence for a further differentiation within Eastern Ch’olan foreboding the Ch’orti’ vs. Ch’olti’ split (Wichmann 2002b). At this point, then, we might talk about Eastern vs. Western Ch’olan languages, and about dialects within these languages. Eventually, at least four Ch’olan languages would emerge. Possibly this happened around the transition to the Post-Classic. Although I suggest using the terms ‘dialect’ and ‘language’ in the manner specified in the context of the Ch’olan group, I would never insist on such terminology and would rather suggest speaking of ‘variants’ and leave the terms ‘dialect’ and ‘language’ altogether out of use whenever such a use would stimulate purposeless controversy.

Terminology becomes even more contentious when stages of written, hieroglyphic Ch’olan are assigned labels such as ‘pre-proto-Ch’olan’, ‘proto-Ch’olan’ or other such labels that refer to reconstructed stages. Identifying an attested language with a reconstructed one is fallacious since the two are qualitatively different objects. Reconstructions can be made ‘bottom-up’ if descendant forms are well attested within the subgroup and ‘top-down’ if they are attested in at least one language of the subgroup plus languages of other subgroups of the family. If none of these conditions hold, it is not possible to make a reconstruction. Thus, there will inevitably be features that would have been present in the given, early language stratum but simply cannot be reconstructed because the formal criteria for establishing the reconstruction are not
met; thus, any proto-language will necessarily will be an impoverished version of the language which it is supposed to approximate (Wichmann 2003b). The hieroglyphic inscriptions sometimes present features which are not reconstructible to proto-Ch’olan on the basis of the alphabetically recorded Ch’olan languages even if they can be reconstructed to proto-Mayan. Thus, we find at any one stage of Classic Ch’olan a mixture of features, some of which would have to be called pre-proto-Ch’olan, others proto-Ch’olan, and yet others Eastern or Western Ch’olan if the guideline for their classification were the framework of reconstructions. This can lead to confusion and discussions which are meaningless because the premise is wrong. While debates revolve around whether Classic-period Hieroglyphic Ch’olan is pre-proto-Ch’olan, proto-Ch’olan or something else, the correct answer is that it is neither of these but rather a language in its own right. It would be a terminological fallacy to call the language proto-Ch’olan or pre-proto-Ch’olan. Instead, one should label it ‘Classic Ch’olan’—or ‘Pre-Classic’, ‘Early Classic’, ‘Late Classic’ etc. Ch’olan if one needs to be more specific.

**Phonology**

Once scholars had agreed that a component of the Maya writing system consisted of syllabic signs, a syllabary (or inventory of syllabic signs) could be drawn up as a way of summarizing existing hypotheses about readings and indicating, by means of empty cells, the scope and aims of future decipherment. A comparison of an early syllabary, such as that of Mathews (1984), with the most recent one, by Stuart (2005, p. 28-32), reveals tremendous progress in decipherment and in the understanding of the phonology of the script. As late as a few years ago, Grube (2004) was able to add a column to the syllabary, having assembled evidence for a systematic distinction
among velar and glottal fricatives. Reversely, the column left open in the grid as of 1984 for signs representing ejective $p'$ plus vowel has never been filled. Partly with the aim of explaining why that might be, Wichmann (2003a) looks at the comparative linguistic evidence for the innovation of the phoneme $p'$ and concludes that it hardly dates to a period earlier than the transition to the Post-Classic. Another feature of the syllabic grid which has been discussed is the traditional column for vowel-only signs. In Wichmann (2002a) I propose that the column could be split in two given that at least within each of the cells for a and u there are signs which are in complementary or near-complementary distribution; I suggest as a very tentative explanation that there could be a vowel length distinction in play. Whether or not such an explanation is tenable—this is still a very open question—the distributional facts remain and pose a challenge to interpretation.

Much recent attention has been given to orthographical conventions. Words in Mayan languages usually end in closed syllables; the syllabic signs of the writing system, however, invariably represent open (CV) syllables. Thus, whenever a syllabic sign is involved in the spelling of a word-final consonant (as in TUN-ni ‘stone’), the final written vowel is ‘silent’. While Knorozov (1965, p. 174-5) had stipulated that this final vowel would normally be identical to the preceding one—a principle he called ‘synharmony’—this is by no means always true. Searches for any governing principle for the different patterns observed were unsuccessful until David Stuart in 1997 suggested to close colleagues that disharmony might be a way to indicate vowel length (cf. Stuart 2005, p. 26). This developed into the hypothesis of Houston et al. (1998) that disharmony could be a way to indicate that the syllable preceding the complement was complex, i.e. consisted of a long vowel, a vowel plus h or a vowel plus glottal stop. The only vowels that occur in disharmonic complements are i, a, and
u. Synharmony, the authors contended, is a sort of default or unmarked spelling mode also occurring both with short and complex vowels. Lacadena & Wichmann (2004a) suggested a refinement of this proposal. They noted first that no consistent pattern, neither synharmonic nor disharmonic, is associated with a preconsonantal $h$ (e.g., $k'a$-$k'a$ ‘fire’, known to have been pronounced $k'ahk'$). On the other hand, specific and distinct patterns of disharmony are associated with glottal stops as opposed to vowel length. Synharmony indicates the presence of a short vowel (Rule 1). Disharmony involving a complement vowel $i$ indicates vowel length (Rule 2) and disharmony involving a complement vowel $a$ indicates the presence of a glottal stop (Rule 3).

Since these rules are sometimes in conflict, some supplementary rules are needed. Thus, when the spoken vowel is $i$ and the scribe needs to indicate a long vowel, Rule 1 and 2 are in conflict: normally the complement vowel $i$ would indicate a long vowel, but in this case synharmony would arise; for this reason a supplementary rule specifies that the complement vowel $a$ indicates a long vowel when the spoken vowel is $i$. When Rules 1 and 3 are in conflict the complement vowel used is $u$. Thus, to express a glottal stop when the spoken vowel is $a$, the complement vowel is $u$ rather than synharmonic $a$. Finally, a complement vowel $u$ will also be used when the spoken vowel is $i$ since the pattern $i$-$a$ is already occupied by the supplementary rule for expressing vowel length. Lacadena & Wichmann (2004a) find good overall agreement with their orthographic interpretations and phonological reconstructions, but do note that almost a third of the synharmonic spellings are potentially problematic since they apply to forms that have been reconstructed with vowel length or glottal stops. They also note exceptions to their rules 2-3, but only in the order of 12%-16%. Several types of explanations for the possible exceptions are offered. Some orthographical forms may record late Ch’olan phonological developments. Others
may really be underspelled (abbreviated), as is possibly the case with yu-ha ‘his necklace’. Harmony rule 3 requires the interpretation y-u ’h, which is conflict with the reconstruction of Brown & Wichmann (2004) (though not with that of Kaufman & Norman 1984). Nevertheless, the form ceases to be problematical if we consider that it could be an underspelling of yu-ha-la for y-uh-al. Maya scribes commonly left out a final sign spelling the last consonant of a suffix. Finally, it is argued that some synharmonic spellings may have been retained by mere force of cultural habit from earlier periods of the script. Lacadena & Wichmann (2004a) hypothesize that the harmony rules were not established until the Early Classic, when they replaced earlier conventions of always either using synharmonic complementation or complementation involving Ca signs. Some of the earlier spellings, however, would have become so ingrained that they were maintained even after the spelling reform. It would, additionally, be possible to argue that Classic inscriptions sometimes contribute phonological information about proto-Mayan lexemes not to be retrieved from any other source. It is a commonplace experience in reconstruction using the comparative method that new data will require existing reconstructions to change.

A different approach would be to simply broaden the spelling rules such as to accommodate exceptions. For instance, if we stipulate that synharmonic spellings do not necessarily imply a short vowel, the majority of exceptions would disappear. But it would be hard to see the motivation for a system where one and the same word form could be spelled using different patterns of complementation. Moreover, apart from changes in spellings that were motivated by phonological changes known to have occurred (loss of vowel length and glottal stops), we actually do not see fluctuations in spelling patterns that would suggest vague rules. Finally, a theory encompassing all spellings observed throughout the history of the writing system in a
single framework of orthographic rules would come at the cost of losing hypotheses about orthographic and phonological changes. The hypothesis of an Early Classic spelling reform would no longer have any basis and Late Classic changes in spellings from earlier disharmonic patterns to synharmonic ones (e.g., b’a-ki > b’a-ka ‘captive’) would not necessitate a hypothesis about the loss of vowel length, since both types of spellings would be licensed by the rules. More generally, spelling rules that seek to accommodate all historical developments in a single system falls victim to what Houston (2000, p. 144) has called the ‘synoptic fallacy’, defined as “the belief that a script in use over centuries or millennia can be understood as a synchronic phenomenon” (Houston 2004, p. 239). Nevertheless, in a recent manuscript reacting to Lacadena & Wichmann (2004a), J.S. Robertson, S.D. Houston, M.U. Zender, and D. Stuart advocate such an approach. In their new proposal the orthographic rules of Houston et al. (1998) are revised such as to accommodate some of the insights of Lacadena & Wichmann, but at the same time they are kept vague in order to avoid conflicts with phonological reconstructions. The new proposals represent a small step towards a consensus. But the two camps are far from reconciled. Given the differences in degree to which different scholars are willing to see Maya spellings directly reflecting phonological distinctions, the approach of Lacadena & Wichmann might be said to operate with ‘radical phonological transparency’ and that of Robertson et al. with ‘moderate phonological transparency.’

**Morphology**

As regards interpretation of the way that Maya scribes rendered suffixes, the differences between proponents of moderate vs. radical phonological transparency widens. In spite of Stuart’s (1987, p. 45) warnings against “dangerously” assuming
that certain signs could represent grammatical affixes, Houston et al. (2001, pp. 14-23) introduced a category of signs labeled ‘morphosyllables’. They are graphically identical to various syllabic signs, but when they are involved in spelling affixes they are to be interpreted as having morphemic values. Thus, a sign such as li can occur at the end of a word with the value –IL, as in AK’AB’-IL ‘darkness’, which is derived from AK’AB’ ‘night’. There are several problems with the concept of morphosyllables, the major ones being the following, which have been identified in collaboration with A. Lacadena. First, such a category of signs is typologically rare. Sporadically one does find signs representing grammatical morphemes, as in the Egyptian script where two or three vertical strokes represent the plural, but there is no script in which there are several such signs, forming a whole category. Secondly, if signs were to be read backwards (as when li is read –il) it would require the Maya reader to be able to operate with phonemes, which is hardly possible for someone trained to use a logosyllabic system (Read et al 1986, Morais et al. 1986). Thirdly, one and the same sign, e.g. ja/-AJ, would correspond to several distinct suffixes (e.g., -aj ‘inchoative’, -aj ‘thematic of derived intransitives’, -aj ‘nominalizer’). Thus, one would have to allow for polyvalency of logograms in the script in spite of the fact that it is extremely rare for are known to have more than one logogrammatic value. Fourthly, one and the same morpheme would correspond to several different signs, showing, again, that there is not always a one-to-one correspondence between a ‘morphosyllable’ used and the morpheme it represents. Thus, ja is only used to spell the thematic suffix on derived intransitives in the absence of a following suffix having a vowel different from a. When the future participial –o’m follows, jo is used (e.g., TZUTZ-jo-ma ‘it would be ended’) and when the temporal deictic enclitic –iiy follows, ji is used (e.g., TZUTZ-ji-ya ‘it had been ended’). If ja represented the
suffix in the same way that a logogram represent a lexeme it would be inexplicable that other signs could replace it.

Houston et al. (2001, p. 15) claim that morphosyllables “underspecify the phonological content of the morphemes they reference. They underspecify since their spoken counterparts are suffixes, taking the form VC (not CV), the vowel being unwritten and variable” and they “underspecify by suspending disharmony. . .” If the putative morphosyllables indeed both underspecify the vowel of the suffix and block harmony rules from operating it would mean that no phonological information but the consonant of the suffix is given orthographically. Thus, there would be very little input in the inscriptions for the study of diachronic phonological developments of Mayan suffixes. Lacadena & Wichmann (2004b), however, are more optimistic about the amount of phonological information to be gleaned from the hieroglyphic inscriptions. They see the spelling rules as working in the normal ways, supplying information about vowel length and glottal stops. In the three following examples each of the three harmony rules are operative in the domain of suffixes:

\[
\begin{align*}
\text{K'UH-lu / k'u-hu-lu, k'uh-ul ‘holy’} \\
\text{u-K'UH-li, u-k'uh-uul ‘his god’} \\
\text{ma-su-la, Mas-u'l ‘place where the cricket abounds’ (toponym)}
\end{align*}
\]

The inscriptions are rich in such contrastive forms where affixes that share the same vowel and consonant are spelled according to different patterns of syn- or disharmony, something which can only indicate that the scribes were carefully distinguishing different types of syllable nuclei, exactly as they did when writing lexemes. In many cases the quality of the vowel of the suffix may be inferred from alternative spellings elsewhere in the corpus. Thus, ‘holy’ may be spelled \text{K'UH-lu}. Since the vowel of the complement \text{lu} is silent and we do not consider it possible to
read lu ‘backwards’ as ul there is no way of knowing which of the five Ch’olan vowels are present. This information, however, is provided by the alternative spelling k’u-hu-lu. Here the vowel u of the suffix is spelled syllabically as part of the hu syllabic sign. For u-K’UH-li we have evidence from the Ch’olti’ expression <vchuul ahitzao> ‘the idols of the Itzas’, recorded by Morán (1695, p. 37), that it is the high back rounded vowel which is intended (M. Zender, personal communication). The –VVaramel possessive suffix is found in other hieroglyphically recorded forms, e.g., in the expression yo-lo-li (on a Tikal bone tube published by Laporte 1999), which likely refers to ‘its center’ and contains the same vowel-harmonic suffix which is seen in a fossilized form in modern Tzotzil ‘o’lol ‘middle, center’ (Laughlin 1975, p. 64). Thus, the writing system may, indeed, underspecify the quality of the vowel, but only in the special case where a syllabic sign spelling part of a suffix is directly preceded by a logogram. Once the quality of the vowel is provided by the reader, the harmony rules operate as usual. For instance, if the underspecified suffix vowel of K’UH-li is the high back one, the ‘silent’ i-vowel of li tells us that the high back vowel is long and we can transliterate the spelling as k’uhuul. For K’UH-lu, however, once we know that the vowel intended is the high back one, we also know that that vowel is short because of the synharmony pattern.

The following case study may illustrate the importance of a correct understanding of spelling rules for the decipherment of grammatical elements. The inscriptions of the Naj Tunich cave contain a recurrent verb alternately spelled pa-ka-xi and pa-ka-xa. Barbara MacLeod related this to the Ch’olti’ forms <pacxi> and <pacxiel> ‘to return’ in MacLeod & Stone (1995), and epigraphers have been on the lookout for morphemes of the shape –xi or –xa that might explain the Naj Tunich forms. Knowing how spelling rules operate, however, the obvious strategy is to look
for a verb of the shape pakaax, corresponding to pa-ka-xi, later developed into pakax due to loss of vowel length. Standard lexicographical sources for Tojolab’al and Ch’orti’ offer the verb pakax ‘to return’. It is likely, then, that it is a suffix –aax ~ –ax which is directly reflected in the Naj Tunich drawings and that the cognate Ch’olti’ form <pacxi(el)> contains a syncopated version of the suffix with further suffixation of an –i, which in this language is found on other intransitive motion verbs as well.

The suffix –aax ~ –ax can now directly be related to the ones seen on three different verbs on Copan Stela J, the most semantically transparent being ma-ka-xa ‘got (or will get) covered’, from the transitive mak ‘to cover’. These verbs appear to represent intransitives derived from transitive roots and have a mediopassive function. Going back to paka(a)x we also discern a mediopassive origin for this, given the existence of a verb root pak ‘to fold’, attested in Ch’orti’, Tzeltal, and Q’anjob’al. The suffix must surely be related to one which has been reconstructed to proto-Mayan by TS Kaufman (unpublished comparative work), and whose reflexes include Huastec –x ‘reciprocal’, Tojolab’al –x ‘mediopassive’, Chuj –ax ‘non-agentive passive’, Mocho –Vx ‘reflexive’, as well as several Eastern Mayan cognates. Notice that none of the attestations include Ch’olan or even Tzeltalan languages. Thus, like the nominal absolutive –is identified by Zender (2004), the suffix –aax (or –VVx) represents an instance of a Classic Ch’olan suffix with clear cognates beyond Ch’olan but none (or at most a fossilized instance) in alphabetically recorded Ch’olan languages. As such, it is an excellent example of the new synthesis of epigraphy and historical linguistics, showing how a good understanding of the mechanisms of the writing system combined with the use of comparative evidence may aid decipherment, which in turn produces new data that contributes to further historical reconstruction.
To date, an excess of 70 different Classic Ch’olan and Classic Yucatecan affixes have been deciphered, a great many within the past few years. It is likely that the near future will see the publication of grammatical overviews, just as the first Classic Ch’olan vocabularies have recently seen the light of day (Boot 2002, Montgomery 2002, Stuart 2005, pp. 79-90). Currently the most direct way of acquiring an overview of grammatical morphemes is probably by reference to Stuart (2005, pp. 42-78), with supplementary use of the index of Wichmann (2004b).

Morphosyntax
An issue often pondered by epigraphers is whether Classic Ch’olan had a split ergative system. Kaufman & Norman (1984, p. 90) asserted that proto-Ch’olan had “a verbal agreement system of the so-called split ergative type in which subject agreement with intransitive verbs is marked by ergative morphemes in the incompletive aspect but by absolutive morphemes in the completive aspect” and furthermore ascribed the split to Yucatecan influence. Others, such as Hofling (2000) and Mora-Marín (2005) have concurred with Kaufman & Norman. Their view, however, is challenged by Law et al. (2007), who argue that split ergativity is restricted to Western Ch’olan, whereas Ch’olti’ is only incipiently split ergative. They propose to distinguish between the progressive in Ch’olti’, which does show the use of ergative pronominals with intransitive verbs, and the incompletive, which does not. While these arguments are reasonable, several details of the Eastern Ch’olan developments still need to be worked out and the argument begs the question of what the Classic Ch’olan incompletive construction would have looked like. It cannot be excluded that intransitives in the incompletive in fact did carry ergative inflection. Since the texts nearly always describe completed actions no clear instances of
incompletive intransitive predicates have been discerned. It is likely, however, that 
texts such as the direct speech utterances embedded in the cartoon-like illustrations on 
painted vessels will some day yield just the right kind of data to conclusively settle 
the issue.

**Syntax and discourse**

Research on syntactic structures of the hieroglyphic inscriptions and the larger 
discourse structures which they comprise has, somewhat surprisingly, been largely 
neglected in recent years. Thus, I will limit myself to very briefly signaling some 
areas where new insights are likely to be harvested. Mora-Marin’s (2004) work on 
preferred argument structure, which focuses on texts from Palenque, could be 
followed up by studies of a larger corpus. Another area which still deserves more 
scrutiny is the syntactic structure of personal names. Finally, the calendrical 
sequences, which form a large part of the inscriptions, should be studied more closely 
with a view to their syntactic organization. As revealed by the presence of the deictic 
enclitics –*ij* and –*iiy* studied by Wald (2004), long count dates and time intervals (so-
called ‘distance numbers’) are to be regarded as linguistic expressions just like 
sentences describing historical events, and their internal syntactic structure as well as 
their syntactic relationship to other text segments are in need of more study.

**Writing with an accent: phonology as a marker of ethnic identity**

The phonological transparency of the Maya writing system is what makes possible a 
close integration of Mayan historical linguistics and epigraphy. But why is the system 
so transparent in the first place?
The Maya script is a unitary one. Its orthographic rules are the same throughout the area where writing was practiced, and its basic sign inventory, although it developed over time (Grube 1990), was shared among all sites. Nevertheless, there is some variation in the degree of phoneticism. Since it operates with both syllabic signs and logograms, the Maya writing system in many cases offers different possibilities of writing one and the same word, i.e. by the use of logogram, a combination of a logogram and one or more syllabic signs, or by means of syllabic signs only. Although all these possible ways of spelling the word would be equally adequate, they represent different degrees of phonological specification. How can we account for different preferences among scribes for one over the other type of spelling?

A very general hypothesis about the evolution of writing systems would be that developments toward greater phonological transparency are often triggered by the wish of scribes to clearly set off their pronunciations of words from other possible pronunciations by speakers of other dialects or languages. Such a need to clearly indicate phonological differences only arises in situations of language contact, most pressingly in diglossic situations where different languages are used by speakers for different purposes. ‘Writing with an accent’ is, however, not equally opportune under all sociolinguistic circumstances. In the city-states of Ancient Greece or the petty kingdoms of the Classic Maya it was natural to express differences in the pronunciations of cognate morphemes, and the writing systems that developed under these circumstances were therefore relatively phonologically transparent. However, in a large, centralized state subsuming many ethnic groups, such as China, Ancient Egypt or the Aztec Triple Alliance, it would be a disadvantage to have a writing system designed to indicate subtle differences of pronunciation. Under these
circumstances contact among different languages produces the opposite effect, namely writing systems that are relatively opaque phonologically. Since the Maya writing system allows for variation with respect to the degree of phonological transparency of individual spellings, it offers an opportunity to investigate whether degrees of language contact correlate with phonological transparency.

As a simple way of quantifying the degree of phonological transparency in different inscriptions Wichmann & Davletshin (2004) counted the number of syllabic signs vs. the total number of signs, logograms included, in a sample of 245 provenanced and dated texts. For the purpose of studying regional differences in phoneticism the overall division of Sharer (1994) of the Classic Maya realm into three major zones was followed: the Northern Lowlands (here labeled ‘Yucatan’), including such sites as Dzibilchaltun, Chichen Itza, Tulum, and others, the Central Lowlands (Calakmul, Tikal, Naranjo, etc.), and the Southern Lowlands. The last was divided into the Lower Usumacinta (Palanque, Tonina, Yaxchilan, etc.), Pasión (Dos Pilas, Cancuen, Machaquila, etc.), and Motagua (Copan, Quirigua) regions. The cells in the datasheet represent the number of syllabic signs per all signs in all texts during a given k’atun period (20 * 360 days) at a given site.
Figure 2. Average regional development of phoneticism during the Classic period

The overall, average development of phoneticism is shown in figure 2, the stipled line representing the average increase throughout the history of the inscriptions studied (8.17 = 376 A.D to 10.3 = 889 A.D.). Disregarding the earliest point at 8.17, which is based on too limited materials to be statistically reliable, the increase may be described as neatly step-like with an average of around 40% during the Early Classic period of 8.19-9.2 (416-476 A.D), around 50% by the transition to the Late Classic (9.4-9.10 or 514-633 A.D.), around 60% during most of the Late Classic (9.11-10.1 or 652-849 A.D.), and around 70% during the Terminal Classic period of 10.2-10.3 (869-889 A.D.).

Not included in the graph are the earliest and latest attestations of Maya writing. A count of the glyphs on a small sample of proto-Classic objects shows a 30.8% proportion of CV signs, which is roughly what we would expect. Some representative sections of Codex Dresden showed a 59.9% proportion of CV signs. If the stipled line in figure 2 is extended, the prediction is a 90% proportion for the time the Dresden Codex was produced (assigning the date to around 1500 A.D.). Instead,
we find an amount corresponding to the average of the greater part of the Late Classic. This suggests that the glyphic texts of the codices relate in different ways to the actual language spoken by the scribes than the Late Classic texts do and/or that the writing system has somehow stagnated.

Figure 3. The regional development of phoneticism during the Classic period

Figure 3 gives an overview of differences among the different regions. The clearest result is that Yucatan has a much higher overall degree of phoneticism than other areas. The Central and Southern Lowland regions do not show any marked mutual differences. All undergo a gradual increase in phoneticism with only slight differences in how steep the average rise is. The fact that the Northern Lowlands stand out as markedly more phonologically transparent is explained by our theory that language contact will lead to a higher degree of phoneticism, provided that the sociopolitical
circumstances allow it. The studies referenced above show that there was a diglossic situation in northeastern and north-central Yucatan. This would have spurred the greater degree of phoneticism. For example, scribes here would prefer syllabic spellings if the Ch’olan pronunciation of a logogram did not correspond to the Yucatecan pronunciation of the corresponding word. Thus, the equivalent of the Ch’olan hieroglyphic expression \textit{yo-OTOT-ti} ‘his house’ is \textit{yo-to-che} in Yucatan. We would similarly attribute the overall increase of phoneticism in the Central and Southern Lowlands to an increasing need to ‘spell out’ regional variants in the wake of the gradual differentiation of Ch’olan.

\textbf{Conclusion}

Whereas the mid-eighties saw the great boom in the phonetic decipherment of the Maya script, the late nineties and the turn of the century have witnessed the culmination of its linguistic interpretation (Wichmann 2004a, p. 1). By now, a very detailed picture of the development of the language distribution in the Classic Maya lowlands has been worked out, the morphology of Classic Ch’olan is reasonably well understood, and highly refined interpretations of orthographical rules of the script as well as improved phonological reconstructions based on the extant spoken Mayan languages have become available. Classic Ch’olan has crystallized to such a degree that it forms a dataset in its own right, providing a unique new input to the diachronic study of Mayan languages.

While it is the dedication of many scholars that has brought us this far, it is interesting to realize that the ultimate condition for the success is due to the Mayas themselves. The decipherment of monumental inscriptions could not have happened without the existence of alternative spellings of identical words, producing so-called
substitution patterns. These patterns have allowed epigraphers to identify the phonetic values of particular signs by their equivalence to other, already deciphered signs. It is almost as if ancient Maya scribes try to give us hints at how to read their texts when they suddenly deviate from common practice and begin to complement a logogram with syllabic signs or substitute it entirely for such signs. These hints, however, are of course not directed at us, but rather at contemporary readers. They represent an awareness of language which is ultimately rooted in an awareness of regional identity. By exposing features of who they considered themselves to be, the Classic Maya have indirectly helped modern scholars improve their understanding of Maya history and society through the linguistically controlled scrutiny of the ancient hieroglyphic texts.

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