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WHY IS IT SO DIFFICULT TO UNDERSTAND THE LANGUAGE OF A CULTURE THAT IS GONE? THE CHALLENGES OF MAYA DECIPHERMENT IN COGNITIVE LINGUISTIC PERSPECTIVE

Agnieszka Hamann

Faculty of "Artes Liberales", University of Warsaw, Poland

Abstract

When trying to read ancient inscriptions, we are often faced with unexpected difficulties, when we – for example – fail to understand what it means that a king performs a 'bird staff' dance. Cognitive linguistics offers here some insights into the nature of these challenges. First of all, language underspecifies conceptualizations it codes, i.e. words do not carry all the rich thought behind them but are only prompts for re-creating the conceptualization with the help of our knowledge of the world around us. Secondly, language is motivated by two conceptual mechanisms: metaphor and metonymy, which make it more colourful but also more difficult to understand for an outsider (e.g. a foreigner or translator). This article attempts to explain the nature of difficulties we encounter in inter-cultural communication on examples from Indo-European, Mayan and Aboriginal languages.

Resumen

Al tratar de leer las inscripciones antiguas, frecuentemente nos encontramos con dificultades imprevistas y no somos capaces de entender, por ejemplo, el significado de un rey que baila con un cetro de ave. En los casos de este tipo la lingüística cognitiva permite penetrar en la naturaleza de estos problemas. En primer lugar, el idioma no precisa de manera suficiente los conceptos codificados, es decir las palabras no abarcan toda la riqueza del concepto subyacente, siendo tan solo una indicación para recrear dicho concepto con ayuda del conocimiento del mundo que nos rodea. Además, el idioma está motivado por dos mecanismos conceptuales: la metáfora y la metonimia que lo hacen más pintoresco, pero al mismo tiempo más difícil de entender para un extranjero o un traductor. El presente artículo, partiendo de algunos ejemplos procedentes de lenguas indoeuropeas, mayas y aborígenas, intenta explicar la naturaleza de las dificultades existentes en comunicación intercultural.

INTRODUCTION

Why is it so difficult to decipher an ancient text? Even if we consider a well-deciphered inscription, for example Lintel 2, from the Maya site of Yaxchilan, it is surprisingly difficult. We know all the glyphs, so we can do the transliteration, we know the rules of Classic Mayan grammar and phonology, so we can do the transcription, and we know meanings of the words, so we can do a rough translation. Nevertheless, we still do not really understand what the inscription is about. In other words, we know who – Yaxchilan king Yaxuun Bahlam and his son Chelte', when – the 7th of April AD 757, 5th anniversary of the king's accession to the throne, what – they perform a "bird staff" dance (see Martin and Grube 2008: 133), but we do not know why they are doing this and what an ancient Maya

would read from this inscription (see Grube 1992). As Tedlock puts it: "Much decipherment has taken place but very little in the way of translation" (2010: 1) – it is often the case that we can read the texts but we cannot translate them properly because, in fact, we do not understand them.

Cognitive linguistics offers here several insights into the nature of the difficulties that contemporary epigraphers face. This article discusses certain inherent features of language that carry serious implications for modern readers of ancient texts. Firstly, words are only partly responsible for carrying the message, a large part of it being supplied by our knowledge of the world and relationships between its elements. Secondly, human languages are inherently metaphoric and metonymic, so in consequence also polysemous, which adds to the complexity. While pondering the nature of decipherment challenges, this study attempts to identify certain metaphoric and metonymic extensions functioning in Mayan languages and imagery of Classic Maya inscriptions.

THE UNDERSPECIFICATION OF THE LINGUISTIC CODE

Structural and generative linguists believe that words carry meaning (for a discussion of formal approaches to meaning see, e.g., Evans and Green 2006: 208), but cognitive linguists look a step further than words. Let us consider a straightforward and unambiguous sentence: *A cat jumped over the wall* (see Evans and Green 2006: 8). There are no hidden meanings in it, yet it is possible to suggest several possible trajectories of the cat's movement that potentially illustrate the expression *jumped over* (Figure 1).
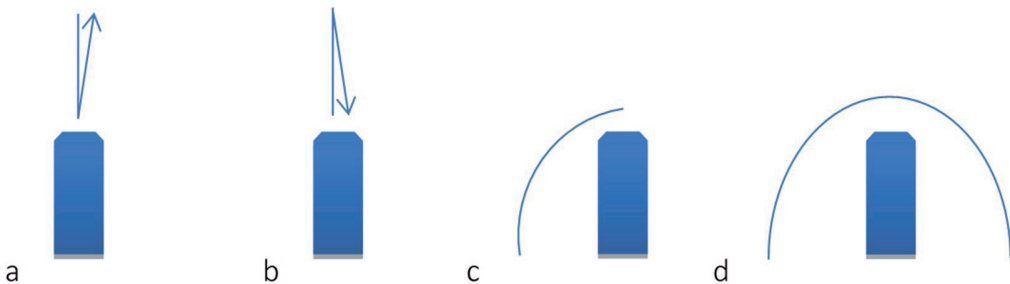

Figure 1. Possible trajectories for: *A cat jumped over the wall* (based on: Evans and Green 2006: 8).

Technically, if we look at the dictionary definitions of *jump* and *over*, any of the trajectories is possible, as they all illustrate instances of jumping and they all illustrate a spatial relationship between the cat and the wall. Yet, it is highly unlikely that any speaker of English chooses trajectory (a), (b) or (c), since our knowledge of the world informs us that cats are unlikely to do bungee-jumping (a), jump up and down for joy (b), and that jumping over the wall should not finish on the wall (c). Thus, only trajectory (d) ideally illustrates the sentence, although the meaning is not derived from the linguistic code alone, but supplemented by our encyclopaedic knowledge of the world around us.

The compositionality of meaning

The reliance on certain body of knowledge is even more pronounced in composite expressions, such as *fast food* or *slow food*. Nowadays every participant of Euro-American culture knows the

difference but if in a millennium future epigraphers would try to analyse these linguistic expressions and rely on words alone, they might conclude that *fast/slow food* is: (a) food that moves fast or slowly, or (b) food that is produced fast or slowly, or maybe (c) food that is consumed rapidly or slowly. Obviously, interpretation (a) is mistaken, since in our culture food is generally consumed when it is no longer able to move, so it must be interpretation (b) and/or (c). However, a hamburger – a prototypical fast food – even if prepared and eaten slowly remains fast food, while a vegetable salad prepared quickly and swallowed in a hurry is still slow food. Thus, the distinction turns out to be related rather to the quality of food and its highly processed or organic ingredients than to the manner of consuming it, as it was initially assumed on the basis of the analysis of lexical items. Obviously, the meaning of these expressions cannot be derived from its component words, but it comes from our knowledge of the environment and culture.

Visual perception

Since language is an aspect of cognition (see, e.g., Evans and Green 2006: 5), the same mechanism of substantial reliance on encyclopaedic knowledge is noticeable in non-linguistic contexts. When (swiftly and unconsciously) analysing a picture, human mind supplies the missing information with the help of cognitive mechanisms such as conceptual metaphor or conceptual metonymy and a whole body of knowledge of the world around us. For example, Figure 2 depicts a human hand in a characteristic gesture. Via the PART FOR WHOLE metonymy (conceptual metonymy will be discussed in detail below), we understand that the hand is part of a human body. Via the SALIENT STAGE OF AN ACTION FOR THE WHOLE ACTION metonymy, we understand that the person is about to knock or is knocking on a door. Therefore, deciphering the meaning of the image requires a certain body of knowledge.
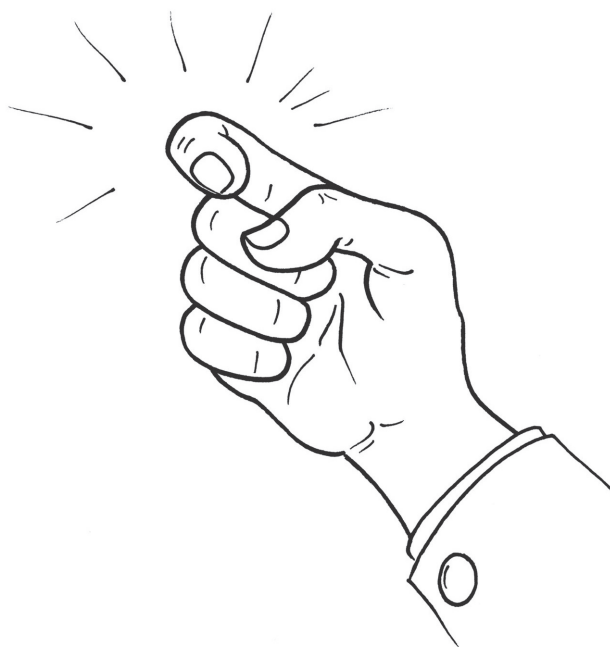

Figure 2. Illustration for 'knock' (drawing: Christophe Helmke).

Scenarios

This enormous body of knowledge is organized into certain scenarios (e.g., Wierzbicka 1996), or cognitive frames (Fillmore 1985), which help us to read the linguistic or visual puzzle. For example, Figure 2 triggers all sorts of information which comprises the "knocking-on-the-door" scenario: men usually have short nails while women wear them longer and enamelled, a person in a suit probably works in an office. What is more, we can make certain inferences about things which are not shown in the picture: doors lead to buildings or rooms, you should knock before entering somebody's house (unless it belongs to you or a very close person), you do not knock when entering a shop or bank). Thanks to this, we conclude that it is a white-collar man knocking on the door of a private house or apartment that is not his own. The scenario helps us to analyse the visual input and any meaning hidden behind it.

Difficulty no. 1

Thus, the first difficulty that we encounter when deciphering an ancient inscription is the lack of encyclopaedic knowledge, or cultural background, which words activate and provide access to. The linguistic code offers only a "skeleton" of information that needs to be filled in with the "flesh" of non-linguistic data about the potential array of relationships between the given objects, complex meanings derived from cultural factors, or certain scenarios of social behaviours (see, e.g., Tyler and Evans 2003: 3). In other words, in the case of Yaxchilan Lintel 2, we do not know what the "relationship" between the king and his bird staff is, what is the reason and purpose for the bird-staff dance, or what stage of a longer activity the inscription depicts and describes.

THE METAPHORIC NATURE OF LANGUAGE

Our life consists of two layers of reality: the first includes tangible objects and physical activities, which are easy to verbalize and to comprehend (e.g. *this is a big table, he is running, he is tired*). On the other hand, a large part of human world consists of intangible relationships such as social status or friendship, and emotions such as love or hatred. How do we talk and think about them?

Conceptual metaphor

Let us consider the following set of sentences referring to people's social status (Lakoff and Johnson 1988: 17):

(1)   a.   He has a *lofty* position.
         b.   She'll *rise* to the top.
         c.   He's at the *peak* of his career.
         d.   He's *climbing* the ladder.
         e.   He's at the *bottom* of the social hierarchy.

In these sentences there are no metaphors in the literary sense of a rhetorical figure of speech that compares two things, but there is an obvious tendency to talk about the social status of a person in terms of spatial relationships. Evidently, speakers of English perceive certain similarities between social relationships and spatial relationships. What is more, they consistently regard high social status as good and low social status as bad. This is the **conceptual metaphor**, i.e. "the phenomenon where one conceptual domain is systematically structured in terms of another" (Evans and Green 2006:

38). The sentences above illustrate the conceptual metaphor SOCIAL STATUS IS PHYSICAL ELEVATION and, in fact, it would be impossible to talk about someone's social status in other words than referring to their physical location in space. Thus, cognitivists see the conceptual metaphor as a central feature of human language and an important means of semantic extension which allows to make a mapping from the source domain to the target domain and use the vocabulary of the source domain to talk about the target domain (see Table 1).

Table 1. Metaphorical mapping from the source domain to the target domain.

Linguistic manifestations of source domain PHYSICAL ELEVATION	Metaphorical mapping via SOCIAL STATUS IS PHYSICAL ELEVATION	Linguistic manifestations of target domain SOCIAL STATUS
a_1. She *rose* to leave.	→	a_2. She *rose* to the top.
b_1. a mountain *peak*	→	b_2. the *peak* of his career
c_1. He *climbed* the tree.	→	c_2. He's *climbing* the ladder.
d_1. The coin sank to the *bottom* of the pool.	→	d_2. He's at the *bottom* of the social hierarchy.

Metaphoric semantic extension

Conceptual metaphors have ample manifestations in our everyday language. Table 1 presents how the source domain of physical elevation is used to understand the target domain of social status, which otherwise would be impossible to describe. Thus, the physical act of vertical bodily motion in example (a_1) is extended to vertical motion on the imaginary social ladder in (a_2), the highest part of a mountain in (b_1) is extended to the highest social position someone achieves in (b_2), climbing a physical object in (c_1) is extended to climbing an abstract social ladder in (c_2), and the lowest physical position (d_1) is extended to the imaginary lowest social position in (d_2). All four semantic extensions are possible thanks to metaphorical mappings via the SOCIAL STATUS IS PHYSICAL ELEVATION conceptual metaphor, and in particular via its elaborations: HIGH STATUS IS UP and LOW STATUS IS DOWN (resulting from the general-level GOOD IS UP metaphor). Furthermore, all the metaphorical extensions result in **polysemy**, as the words $rise_1$, $peak_1$, $climb_1$ and $bottom_1$ gain new but related meanings $rise_2$, $peak_2$, $climb_2$ and $bottom_2$.

Extensions of metaphorical meaning can be also noticed in the way we use the preposition *over*, as in the following examples (from Evans and Green 2006: 36):

(2)	a.	The picture is *over* the sofa.	ABOVE
	b.	The picture is *over* the hole.	COVERING
	c.	The ball is *over* the wall.	ON-THE-OTHER-SIDE-OF
	d.	The helicopter flew *over* the city.	PATH (Taylor 1989: 127)
	e.	She has a strange power *over* me.	CONTROL

The word *over* in the sentences above exhibits a number of distinct meanings, listed on the right. They are all related to each other and originate from the basic meaning 'above'. However, while the first four examples are relatively simple extensions of different spatial configurations of two physical

objects, the last example is a more complicated case. The polysemy exhibited by the preposition *over* in (2e) may be explained by the conceptual metaphor CONTROL IS UP, which is illustrated in the sentences below (from Evans and Green 2006: 38):

(3)   a.   I'm on top of the situation.
        b.   She's at the height of her powers.
        c.   His power rose.

The examples show that 'power' or 'control' is being understood in terms of greater elevation (Evans and Green 2006: 38), which enables extension from the spatial 'up' meaning in (2a) to the metaphorical 'control' meaning in (2e). In other words, 'control' is verbalized in terms of 'elevation' via the POWER IS UP conceptual metaphor.

Thus, it turns out that conceptual metaphor is ubiquitous and often accounts for polysemy. What is more, polysemy is not a relatively rare phenomenon, but it is a fundamental feature of our everyday language, also governing the use of such basic and frequent words as prepositions.

Universality of conceptual metaphor

Metaphors that are based on embodied human experience are generally expected to be universal because it is plausible that "universal primary experiences produce universal primary metaphors" (Kövecses 2005: 3). One of such primary metaphors is UNDERSTANDING IS SEEING as in (4), which has been identified in many Indo-European languages (e.g., Kövecses 2005: 103-104), including these presented below:

(4)   a.   English: UNDERSTANDING IS SEEING
           I *see* what you're saying. It *looks* different from my point of view. What is your *outlook* on that? I *view* it differently. Now I've got the whole *pictur*e (Lakoff and Johnson 1988: 48).
        b.   Polish: ROZUMIENIE TO WIDZENIE
           Widzę, co masz na myśli. To *wygląda* inaczej z mojego punktu *widzenia*. Jaki jest twój *pogląd* na to. Ja to *widzę* inaczej. Teraz mam kompletny *obraz* (Lakoff and Johnson 1988: 73).
        c.   Spanish: ENTENDER ES VER
           Ya *veo* lo que dices. *Parece* diferente desde mi punto de *vista*. ¿Cual es tu punto de *vista* en esto? Lo *veo* de manera diferente. Ahora tengo una *imagen* total (Lakoff and Johnson 1995: 87-88).
        d.   Russian: Понимание – это видение
           Я *вижу*, что вы говорите. С моей точки *зрения*, это *выглядит* иначе. Как ты на это *смотришь*. Я это *вижу* по-другому. Теперь у меня есть полная *картина* (Lakoff and Johnson 2004: 80).

Because UNDERSTANDING IS SEEING is found in many diverse languages and is based on human physiology (vision being our dominant sense), it is a good candidate for a universal conceptual metaphor. However, when Evans and Wilkins (2000) decided to investigate aboriginal languages of Australia, they found that the transfield extension from perception verbs to cognition readings does not have to be necessarily from vision, since "Australian languages recruit verbs of cognition like 'think' and 'know' from 'hear', but not from 'see'" (Evans and Wilkins 2000: 546). Thus, in Australian languages they found many cases of polysemy where 'hear, listen' is extended to 'understand', 'think',

'know' or 'remember' (Evans and Wilkins 2000: 565, 567-568, 572), which means in these languages Understanding is hearing, e.g.:

(5)   a.   *Wanjing yibvn yang kah**wonan** wanjingh*. 'One boy can **understand / hear** (Dalabon) language' (lg. Dalabon)

        b.   *Ngada **marri-ja**rri dathinki kang-ki.* 'I don't **understand / hear** that language' (lg. Kayardild)

        c.   *Kenbo bulah-**woniyan** bulu ngah-marne-yenjdjung-iyan.* 'I gotta talk to everybody in language and they'll **understand / listen to** me' (lg. Dalabon)

        d.   *Nga-wok-**bekka**-n.* 'I **understand / hear** his speech' (lg. Kininjku)

        e.   *Arrantherre anteme **awe**-rrirre-me-le **awe**-0-aye!* 'Now you each must understandingly [**hear**-PL-NP-ss] listen [**hear**-IMP-EMPH]!' (lg. Arrernte)

Further evidence for the non-universality of the Understanding is seeing conceptual metaphor comes from Mayan languages. As Houston and his colleagues state "[i]n many Mayan languages, 'to hear' means 'to understand, to comprehend', as it does today in Ch'orti'" (Houston *et al.* 2006: 153). Indeed, example (6) from modern Ch'orti' confirms this claim (Kerry Hull pers. comm. 2013):

(6)   *E sitz' uputputir u't ma'chi o'b'yan twa' apatna.* 'The capricious boy doesn't **understand / hear** how to work.'

On the other hand, Houston *et al.* (2006: 173) also state that "in most Mayan languages, to see something is also to discern and understand". However, the *Mayan Etymological Dictionary*, compiled by Terrence Kaufman with the assistance of John Justeson, does not seem to confirm this (see Table 2 for some examples): extensions from 'hear' to 'feel', 'understand', 'know' and 'think' are attested in a number of languages, while 'see' shows only one extension to 'know' in a minor language (Kaufman 2003). For the majority of major languages of the family the dictionary mentions no extensions of *il* 'to see' at all, in some it offers – rather interestingly – readings extended to certain social contexts: 'visit' or 'make an invitation', which would be consistent with patterns found in some Australian languages on one hand (Evans and Wilkins 2000: 573-574), and on the other, with Maya epigraphic data which show numerous uses of the verb *il* 'to see / to visit / to witness' in the context of Maya rulers visiting other cities and overseeing certain ceremonies (see examples in (7) below).

Table 2. Selected examples of extensions of verbs 'to hear' and 'to see' in Mayan languages.

to hear (Kaufman 2003: 210-212)	*to see* (ibid 204-209)
proto-Mayan *'ab'.i	**proto-Mayan *'il**
Chuj *ix yab'i'* 'lo oyó' [hear]	Yukateko *il* vt 'ver, mirar' [see, look]
Chuj *ix yab' kan-i* 'lo entendió' [understand]	Lakantun *ir* vt 'ver, mirar' [see, look]
Chuj *ix yab'i* 'lo supo' [know]	Mopan *il* vt 'ver, mirar' [see, look]
Mocho *'ab'i'* vt 'oir, escuchar, entender, sentir' [hear, listen, understand, feel]	Mopan *uyilaj* 'lo vio, lo observó' [see, watch]
	Ch'orti' *ir* vt 'ver, mirar' [see, look]
Tuzanteco *'ab'in.a-:n* vi 'entender' [understand]	Ch'ol *il* vt 'ver, mirar' [see, look]
Q'anjob'al *ab'i ~ ab'e* vt 'oír, sentir' [hear, feel]	Tzotzil *il* vt 'ver, mirar' [see, look]
Q'anjob'al *maxyab'ekoq* 'lo escuchó' [listen]	Tzeltal *il* vt 'ver, mirar' [see, look]
Q'anjob'al *maxyab'e'* 'lo oyó' [hear]	Tojolab'al *il* vt 'ver, mirar' [see, look]

Q'anjob'al *maxyab'e'* 'lo entendió' [understand]	Chuj *il* vt 'ver, mirar' [see, look]
Q'anjob'al *maxyab'ekoq* 'lo supo' [know]	Tuzanteco *'il.b'e'* vt:idiomatic 'pulsearlo' [wrestle]
Q'anjob'al *maxyab'e'* 'lo sintió' [feel]	Tuzanteco *'il ta:* vt + dir 'hacerle invitación' [make invitation]
Akateko *xyab'e* 'lo escuchó' [listen]	
Akateko *xyab'e* 'lo oyó' [hear]	**Eastern Mayan *ka'ay.i**
Akateko *xya'b'eh* 'lo entendió' [understand]	Mam (Tacana) *ok tke'n* 'lo vio (fijamente)' [stare]
Akateko *xyab'eh* 'lo supo' [know]	Mam (Tacana) *ok tke'n* 'lo vio, lo observó' [see, watch]
Greater K'ichean *'ak'axa*	Mam (Tacana) *ok tke'n* 'conoció' [know]
Tz'utujiil *xk'axa-aj* 'lo escuchó' [listen]	**Mamean (proper) *q'ol.b'e***
Tz'utujiil *xuk'axa-aj* 'lo entendió' [understand]	Teko *xhwa'q q'olb'el tetz* 'lo visitó' [visit]
Tz'utujiil *xk'axa-aj* 'lo oyó' [hear]	Mam (Tacana) *txi q'olb'el te* 'lo visitó' [visit]
KCH (Nahuala) *xok'oxo.m.a-j* 'lo entendió' [understand]	Mam (Ostuncalco) *ma tq'olb'e* 'lo visitó' [visit]
PQM (Palin) *xik'axa.m.a-j* 'lo entendió' [understand]	Mam (Cajola) *ma txa'j q'olb'il te* 'lo visitó' [visit]

(7) a. **yi-la-ji**   *yilaaj*   ' it was seen / witnessed by' (Piedras Negras, Panel 3: J1)
     b. **IL-la-a**   *ila[j]*   'it was seen / witnessed by' (Seibal, Stela 10: B7)
     c. **IL-ji-CHAK-TOK'**   *il[aa]j chak took'*   'Chak Took' saw / witnessed it' (Dumbarton Oaks, Panel: J6)
     d. **IL-a-K'UH-PUH-AJAW**   *ila[j] k'uh[ul] puh ajaw*   'it was seen / witnessed by Divine Lord of Tollan' (Seibal, Stela 8: A5)
     e. **IL-u-ba-hi**   *il[aj] ubaah*   'seen was the image of' (Seibal, Stela 8: A3)

On the whole, the data seem to suggest that originally the extension was 'to hear / to understand', so the original metaphor in Mayan languages would have been UNDERSTANDING IS HEARING. At the same time, if we take into account five centuries of bilingualism and biculturalism, it is not surprising that the other mapping also appears in Mayan languages nowadays, possibly as the result of influences from Spanish, where the UNDERSTANDING IS SEEING metaphor has been identified.

Other linguistic manifestations of conceptual metaphor

As has already been discussed above, speakers of English conceptualize the social status of a person as a spatial elevation and in particular, they regard high social status in terms of an upward orientation, while low social status in terms of a downward one, which results in such linguistic expressions as: *the headmaster*, *the head of state*, *the upper echelons, the lower ranks*. Similarly, in ancient Maya texts there is a series of elite titles that employ the word *baah* 'front, top, first; face; image' + 'head' for some languages (Kaufman 2003: 276; Macri and Looper 2003: 76):

(8) | | | | |
|---|---|---|---|
| *baah ajaw* | 'first king' | *baah te'* | 'first staff (warrior)' |
| *baah che'b* | 'first brush' | *baah te'm* | 'first throne' |
| *baah kab* | 'first of the world' | *baah took'* | 'first flint' |
| *baah pakal* | 'first shield' | *baah tuun* | 'first stone' |
| *baah pom* | 'first of the incense' | *baah tz'am* | 'first throne' |
| *baah sajal* | 'first *sajal*' | *baah uxul* | 'first sculptor' |

(based on Boot 2009: 28-31).

The meaning of the titles is not well-understood, but number-wise there are, e.g., fewer *baah sajal* than plain *sajal* in inscriptions: a quantitative analysis of 130 assorted texts from the Classic period

(AD 250-900) turned in 28 texts with 33 hits for the word *sajal*, out of which only 3 were combined with the modifier *baah*. This may be indicative of a stratification within the category, and because there are fewer of them, it is likely that a person who has the *baah sajal* title is more important than a person who has the *sajal* title (see Houston 2000: 152, 154), analogously to *the head teacher* and *a teacher* or *the head painter* and *a painter*.

However, it is not obvious how to elaborate the primary metaphor Social status is physical elevation, as the glosses in (9) already show: does a *baah sajal* mean a 'top *sajal*' (up-down orientation), or does it mean a 'face *sajal*' (front-back orientation). On one hand, if social status is perceived in terms of spatial relations, then – as Heine points out – "the human body provides the most important model for expressing concepts of spatial orientation" (1997: 40). This is why in English the general metaphor Social status is physical elevation is elaborated by more specific metaphor High status is up, instantiated by such linguistic expressions as *the headmaster* or *the head of state* – the person who is at the top of the social hierarchy.

However, besides the anthropocentric model, there is also "the zoomorphic model, which takes the bodies of animals as the structural template for spatial orientation" (Heine 1997: 40), so if a table is perceived as an animal, things lie on the table's back, not on top. In other words, the word for 'head' does not necessarily denote 'top', but it may also denote 'front', while the concept of 'top' or 'up' is expressed by the word for 'back' because it is the animal's back that faces up. The zoomorphic model has been identified in Chalcatongo Mixtec and Tzeltal as a supplementary model used along with the anthropomorphic one (Heine 1997: 40, 140). If it is also true for Classic Mayan, then the elaboration might be not High status is up, Low status is down but High status is front, Low status is back. Thus, it is necessary to search for other evidence to support the former or the latter interpretation.

Non-linguistic manifestations of conceptual metaphor

Being a general cognitive phenomenon, the conceptual metaphor manifests itself in the way people organize their environment (see Kövecses 2005: 7). Thus, in architecture, buildings (temples, palaces, pyramids) strive for the sky, with the highest Maya pyramids reaching 79 metres (i.e., the Danta pyramid at El Mirador) because the higher the building, the more powerful the ruler who can build such marvels.

Similarly, in Maya iconography, we find numerous representations of kings being depicted both bigger in size (Important is big) and higher in space (Important is up) than other figures (see Figure 3 and Table 3), while captives are shown smaller and crumpled at the feet of the victorious king. Kings are depicted fully dressed and adorned, frequently equipped with military gear, sitting on raised platforms (thrones) or towering over captives who are cowering half-naked at their feet. It would be difficult to invent a more conspicuous way to manifest iconographically the high status and power of the ruler.

Consequently, the non-linguistic evidence suggests that in Classic Maya inscriptions the primary metaphor Social status is physical elevation is elaborated by the more detailed metaphor High Status is up, although the existence of one specific elaboration does not exclude the existence of the other one.

Difficulty no. 2

Thus, the second difficulty we encounter when reading an ancient text is noticing and deciphering the mapping between the source domain, which is clearly manifest in the linguistic code (e.g. the vertical elevation or a journey), and the target domain, which is hidden in the encyclopaedic knowledge of the culture (e.g. the social status, life or death). The source-target mappings that result from our embodied experience (such as Good is up) are relatively easy to decipher, since – as the result of human

Figure 3. Cancuen Panel 3 depicting the king visibly bigger in size and sitting on the throne higher than other figures (photograph by Harri Kettunen).

Table 3. Selected non-linguistic manifestations of HIGH STATUS IS UP and POWER IS UP conceptual metaphors in Maya iconography.

Monument	Description
Bonampak, Lintel 1, 2, 3; La Mar, Stela 3; La Pasadita, Lintel 1; Yaxchilan, Lintel 8	Fully clothed and armoured king is towering over and holding the hair of the captive lying or sitting on the floor.
Bonampak, Stela 3; Palenque, Temple XVII Panel; Yaxchilan, Lintel 16, 44, 46; Yaxchilan, Stela 10, 11 back	Fully clothed king is towering over the captive sitting on the floor.
Dos Pilas, Stela 16; Naranjo, Stela 24; Seibal, Stela 11	Captive crumpled at the bottom of the image, not interacting directly with the main image.
Bonampak, Sculpted stone 1; Cancuen, Panel 3; Laxtunich, Panel 1; Piedras Negras, Panel 3; Ceramics: K1398, K1453, K1728, K2784, K4996, K5453, K9144	King seated on a raised platform while others are sitting on the floor or kneeling.
Piedras Negras, Panel 2; Site R, Lintel 3; Yaxchilan, Stela 1	King standing, others kneeling.
Yaxchilan, Hieroglyphic Stair 3, step 1	Captive kneeling alone.

physiology – they tend to be (near) universal across languages. As Pasamonik (2012: 79) puts it, "the unique human body and perception conditions determine cognitive structures, i.e. conceptualization and thought in general". Thus, the orientational (providing coherence to the system; see Kövecses 2010: 40) conceptual metaphor GOOD IS UP can be expected to be found in languages all over the world.

On the other hand, these source-target mappings that are based on cultural models are created by the local society and can be very different in different cultures (Pasamonik 2012: 80). For example, Lovick (see 2012: 104) contrasts German (an example of Standard Average European language) with Upper Tanana Athabascan (a Native American language spoken in parts of Alaska): in the former dogs are generally connoted with being faithful, in the latter – with being inattentive. Thus, when a German speaker says "to follow someone like a dog", they mean 'faithfully', while when a speaker of Upper Tanana says "You guys are dog people", they mean 'inattentive'. These are metaphorical mappings which are culturally determined and can be only inferred from the encyclopaedic knowledge of the culture they are part of.

THE METONYMIC NATURE OF LANGUAGE

Another conceptual mechanism generously employed by language users is **metonymy**, which is defined as "a cognitive process in which one conceptual entity, the **vehicle**, provides mental access to another conceptual entity, the **target**, within the same idealized cognitive model" (Radden and Kövecses 1999: 21), an ICM (idealized cognitive model) being understood as "people's encyclopaedic knowledge of a particular domain but also the idealized cultural models they are part of" (ibid.). Like metaphor, metonymy is a conceptual phenomenon, so it represents "part of the ordinary, everyday way we think and act as well as talk" (Lakoff and Johnson 1988: 38). As part of our cognitive system, it is therefore manifested not only in language but also in thinking and behaviour and, consequently, in all products of human mind.

As Radden and Kövecses (1999: 24) notice, metonymy is the basis of language itself, since "we have no other means of expressing and communicating our concepts than by using forms", consequently "language as well as other communication systems are of necessity metonymic". While observing the environment we form certain mental representations of the objects and events, e.g. after having seen a (e.g. deciduous) tree, we form the concept of 'a tree', which is done via the CONCEPT FOR THING/EVENT conceptual metonymy. The concept will need to be re-formed after we have observed a coniferous tree, a palm tree, a Christmas tree and finally a family tree (Figure 4), which is an abstract concept, but the elasticity of the conceptual system helps to maintain its coherency (see Taylor 1989: 53-54). Next,

Figure 4. Recategorization of the concept of 'a tree' as our knowledge of the world develops: extension from a) to d) by extending the boundaries of the category, extension to e) via the PEOPLE ARE PLANTS conceptual metaphor based on certain perceived similarity between trees-plants and family trees.

when we need to describe this mental representation, we choose a certain phonetic, graphic or other form to "express our thoughts", e.g. we pronounce the word /triː/ in English or /te'/ in Classic Mayan, we draw a tree, or we write [tree] in English or with a logogram in Classic Mayan. This is done via the FORM FOR CONCEPT conceptual metonymy. Metonymy as the basis of writing will be discussed in detail below.

Metonymic semantic extension

Consider the following examples:

(9)   a.   *The Queen* denied the rumours.
        b.   *Buckingham Palace* denied the rumours (from Evans and Green 2006: 312).
        c.   *The Crown* denied the rumours.

The three sentences are practically synonymous, although the human agent in (9a) is replaced with a place name in (9b) and an object in (9c). Nevertheless, none of the paraphrases strikes one as unusual or incomprehensible because the mechanisms of conceptual metonymy allow one to interpret them correctly. What is more, the choice of possible substitutions for the human agent is not completely arbitrary. Sentence (9b) is an instantiation of PLACE FOR INSTITUTION metonymy, where the metonymic vehicle 'Buckingham Palace' (the residence of the monarch) provides mental access to the metonymic target 'the British monarch' within the "British monarchy" domain (or ICM). Sentence (9c) constitutes an instance of SALIENT PART FOR WHOLE metonymy, where the metonymic vehicle 'the Crown' (a characteristic accessory of a monarch) also provides mental access to the same metonymic target. As the consequence of the meaning extension, *Buckingham Palace*, originally designating a place, and *the crown/Crown*, originally designating a headdress, both receive another (but related) meaning 'the British monarch' and therefore become polysemous.

Linguistic manifestations of metonymy

Since conceptual metonymy is a cognitive phenomenon (see above) and language is part of human cognition (see above), metonymy is amply manifested in language (after Evans and Green 2006: 175, 313):

(10)   PART FOR WHOLE
        a)   Lend me *a hand*.
        b)   She's not just *a pretty face*.
        WHOLE FOR PART
        c)   *England* beat *Australia* in the 2003 rugby World Cup final.
        d)   *The European Union* has just passed new human rights legislation.
        EFFECT FOR CAUSE
        e)   He has *a long face*.
        f)   Her *face is beaming*.
        CONTROLLER FOR THE CONTROLLED
        g)   *Schwarzkopf* defeated Iraq.
        PLACE FOR INSTITUTION
        i)   *Downing Street* refused comment.
        j)   *Paris* and *Washington* are having a spat.
        PRODUCER FOR PRODUCT
        k)   Pass me the *Shakespeare* on the top shelf.
        l)   I've just bought a new *Ford*.

In (10a) it is not really a hand that is expected to help but the whole person, and (10b) refers to the whole of a woman whose main characteristics is "having a pretty face". Sentences (10c) and (10d) do not refer to the whole of England, Australia and the European Union but, respectively, the English and Australian rugby teams and the EU Parliament. Sentences (10e) and (10f) describe certain emotional states – sadness and happiness – but not by naming the states directly, but by mentioning certain physical consequences of these states: the face of a sad person is perceived as somewhat longer than normally, while the face of a happy person is perceived as radiating with this emotion, a lot like the sun radiates heat. In (10g) it is not the commander himself who defeats the enemy and, additionally, his army does not defeat the whole country (Iraq) but its armed forces, which is another example of the WHOLE FOR PART metonymy. Sentences (10i) and (10j) employ a characteristic place name (street or city) instead of the name of an institution residing in this particular place (respectively: British Prime Minister's office, French and American governments/authorities). In (10k) and (10l) it is not a person (long dead in this case) that is on the shelf or that we buy, but a certain product labelled with their name. Obviously, all of the examples in (10) could be expressed in a more literal, down-to-earth way, but it seems that humans consistently favour the use of metonymy over other linguistic means and talk of countries, cities and streets doing things, of producers (writers) actively enjoying afterlife and controllers performing heroic deeds, etc., which confirms that conceptual metonymy is an important part of human linguistic repertoire.

One of the topics frequently covered by classic Maya inscriptions is royal accession. It is described in terms of wrapping a (white) paper headband around the head of the ruler (11a) or in terms of sitting on the throne (11b) (see, e.g. Stuart 2012).

(11)	a.	**K'AL-ja**	*k'ahlaj*	'wrapped is'
		HUN-na	*huun*	'the paper/ headband'
		tu-BAH	*tu baah*	'on the head (of)'
	b.	**u-CHUM-TZ'AM?-?**	*uchum tz'am*	'he sits on the throne (at)'
		SAK-nu-ku-NAAH	*sak nuhkul naah*	'White Skin House'

The texts, in fact, do not explicitly mention the person becoming king, but instead they focus on a salient stage of the accession ceremony, namely the wrapping of the royal headband (or crown) on the head of the new ruler, or sitting on the royal throne of his ancestors. Nevertheless, whichever linguistic expression is used, we do understand that it is not the single stage (wrapping or sitting) that is meant, but that the text refers to the whole action (accession ceremony), which is understood through the SALIENT STAGE FOR WHOLE ACTION conceptual metonymy. Furthermore, the ceremony itself is not the target either, because it is the result that is essential: the result of the ceremony is that a person acquires certain new qualities, i.e. becomes king, which is understood via the CAUSE FOR EFFECT conceptual metonymy. Thus, linguistic expressions *k'ahlaj huun tu baah* 'wrapped is the headband on his head' and *uchum tz'am* 'he sits on the throne' are motivated by two conceptual metonymies: SALIENT STAGE FOR WHOLE ACTION and CAUSE FOR EFFECT.

Diphrastic kennings: TWO PARTS FOR WHOLE

One of the characteristic features of Mayan languages is the use of diphrastic kennings, defined by Hull (2003: 412) as "the combination of two narrowly defined terms used metaphorically for a broader or more general concept distinct in meaning from its individual components". They are found in classic, colonial and modern Mesoamerican languages, and not only in written (hieroglyphic or alphabetic) texts, but also in everyday speech (see Helmke 2013). Notice the following examples (based on Hull 2003):

(12) a. *took' pakal* 'flint + shield' = army
  b. *pohp tz'am* 'mat + throne' = rulership, authority
  c. *kab ch'een* 'earth + cave' = territory, polity
  d. *chan ch'een* 'sky + cave' = world (lit. 'what is above, what is below')
  e. *chan kab* 'sky + earth' = everywhere (between sky and earth)
  f. *k'in haab* 'day + year' = time, calendar
  g. *k'in ak'ab* 'day + night' = all the time
  h. *we' ha'* 'food + drink' = fiesta

Each of expressions in (12) picks two salient features of a thing and combines them to provide a new meaning, which is a special case of Part for whole conceptual metonymy, namely Two salient parts for the whole. For example, an army consists of warriors and two most characteristic pieces of equipment of a Maya warrior, which differentiate him from other people, are a shield and another weapon made of flint, which is illustrated in Figure 5.

Indeed, in classic Maya inscriptions the *took' pakal* expression often appears in war contexts, as in the following clauses:

(13) a. **ju-bu-yi u-TOK'-PAKAL AJ-LAKAM HA'**
   jubuuy utook'upakal aj lakam ha'
   'brought down is the flint and shield of He of Lakam Ha''
   (Bonampak, Lintel 4)

  b. **chu-ku-ja-u?-TOK'?-PAKAL [K'AN]a-?-CHAN-na-TOK' xu-ka-la-NAH**
   chuhkaj utook'upakal k'an ? chan took' xukalnaah
   'captured is the flint and shield of Yellow ? Sky Flint (of) Bonampak'
   (Bonampak, Sculpted Stone 4)

  c. **ju-bu-yi u-TOK'-PAKAL yi-ICH'AK-K'AK' K'UH-ka-KAN-AJAW**
   jubuuy utook'upakal yich'aak k'ahk' k'uhul kan ajaw
   'brought down is the flint and shield of Yich'aak K'ak' Divine Lord of Calakmul'
   (Tikal, Temple 1 Lintel 3)

  d. **ju-bu-yi? u-TOK'-PAKAL-nu-u-JOL-CHAK**
   jubuuy utook'upakal nuun ujool chahk
   'brought down is the flint and shield of Nuun Ujool Chahk'
   NAB?-ja-u-CH'ICH'-li WITZ-ja-u-JOL-li
   nahbaj uch'ich'il wihtzaj ujoolil
   'blood is pooled, skulls are mountained'
   (Dos Pilas, Hieroglyphic Stairway 2, West Stairs, Step 4)

Examples in (13) follow the pattern of: war verb + *took' pakal* + name (+ place name), with (13d) followed by a visually rich image of pools of blood and mountains of skulls as a result of the event described earlier. The context is definitely military, so translating *took' pakal* as 'the army' seems to be absolutely justified, providing the final translation for the sentences in (13) as: "the army of X (from place Y) was brought down/captured".

Similarly, to build a town the Maya needed a piece of land (*kab / chab*) and a cave or well (*ch'een*), since in Classic times most towns were located near caves and/or wells for ritual purposes (see Hull 2003: 427, Miller and Taube 2011: 57), but probably also for practical reasons, since water is necessary for all sorts of everyday purposes. In the following sentence the *kab ch'en* 'earth-cave/well' seems to refer to a part of town or a place within the town:

Figure 5. A Maya warrior with a shield and a flint axe, a figurine on the lid of a censer. Didrichsen Art Museum, Helsinki (after Kettunen and Helmke 2012: 257).

(14)   **8-AJAW-SUT?-yi   tu-KAB-CH'EN-u-USIJ[WITZ]**
         waxak ajaw sutuuy?   tu kab ch'een usiij witz
         (on) 8 Ajaw it is founded(?) in the earth-cave of Usiij Witz (Bonampak)
         (Bonampak, Sculpted stone 1)

A similar expression *chan ch'een* 'sky-cave/well' is listed in (15). The word *ch'een* itself is polysemous, as it may denote a cave, a well or even a grave (see Stone and Zender 2011: 133), so combining the two words creates a new, very rich meaning.

(15) a. **i-u-ti-LAKAM?-HA' CHAN-na-CH'EN-na   tu-CH'EN?-na**
          i uhti lakam? ha' chan ch'een   tu ch'een
          then it happened at Lakam Ha' sky-cave in the cave
          (Palenque, Temple of Foliated Cross)

      b. **WAL-ya NAL?-K'AWIL-la? NUK-NOJOL CHAN-na-CH'EN-na**
          waliiy   nal k'awiil nuk nojol   chan ch'een
          Nal K'awiil got set up in the great south sky-cave
          (Palenque, Temple of Cross)

      c. **u-3-TAL-la TZAK-wa-K'UH PAT-la-ja LAKAM?-HA'? CHAN-na-CH'EN-na**
          uux tal tzakaw k'uh   patlaj   lakam ha' chan ch'een
          (it is) the 3rd conjuring of god made (in) Great Water sky-cave
          (Palenque, Temple of Sun)

Example (15a) shows that a 'sky-cave' cannot be the same as a 'cave', since they are used in the same clause: the event took place at Great Water sky-cave in the cave. In (15b) and (15c) the sky-cave is again the place where an important ritual takes place.

Thus, in Maya languages diphrastic kennings are a productive way of lexis formation by compounding two salient features of a thing to produce a higher-level term via the PART FOR WHOLE conceptual metonymy, e.g. the army is called *took' pakal* 'flint and shield' of a ruler, towns or communities are called *kab ch'een* 'earth-cave' or *chan ch'een* 'sky-cave', etc.

Metonymy in writing

As has already been mentioned, metonymy is the basis for writing systems, and the three most common metonymies employed for this purpose include FORM FOR CONCEPT, PART FOR WHOLE and SALIENT STAGE FOR WHOLE ACTION.

In writing, a certain form is conventionally used to represent a concept. For example, the concept of a 'jaguar' can be written down in many different ways:

(16) a. [jaguar]   in the Latin alphabet (lg. English or Polish)
      b. [ягуар]   in the Cyrillic alphabet (lg. Russian)
      c.   in Maya glyphs (lg. Classic Mayan)
                                (glyph after Kettunen and Helmke 2011: 81)

The relationship is arbitrary but conventional, sanctioned by common use, thanks to the FORM FOR CONCEPT conceptual metonymy.

Furthermore, the Maya writing being so obviously iconographic, the system also - in a very evident way - depends on the PART FOR WHOLE metonymy, or *pars pro toto* principle (see Houston 2004: 284). So called full-figure glyphs (representing, e.g., the whole body of a jaguar) are relatively rare and considered highly ornamental. For everyday purposes it was enough to *tz'ihb* 'draw or write' a salient part, e.g. the head of the animal to represent the whole of it (see 16c).

A more specific instantiation of the PART FOR WHOLE metonymy is employed when representing actions, namely SALIENT STAGE FOR WHOLE ACTION. Because of the temporal aspect of actions, it is necessary to choose a representative stage of this action to freeze it in writing. Thus, the act of writing is represented by a hand with a brush, the act of seeing is represented by an eyeball, the act of scattering incense shows a hand and drops or pieces falling down.

aj tz'ihb
'he of the writing, scribe'

il
'to see'

chok
'to scatter, to throw'

(glyphs after Kettunen and Helmke 2011: 44, 82, 85).

Metonymy in iconography

Metonymy is a powerful mechanism which helps to analyse various kinds of images. As has already been discussed in section "Visual perception", Figure 2 depicting a hand knocking on a door can be identified as such thanks to the PART FOR WHOLE and SALIENT STAGE FOR THE WHOLE ACTION conceptual metonymies. In fact, all pictures, paintings and photographs show a "frozen image" of a certain stage of some action or process and need to be interpreted to recover the full meaning of the image. Just like we were able to come up with an incredible wealth of information on Figure 2 based on our encyclopaedic knowledge of our world, similarly, a Classic-period Maya person would be able to provide all sorts of detail about the depiction of – for example – a king dancing with a bird staff.

What is more, Stone and Zender (2011: 7) claim that "[s]ymbols populate Maya art with an intensity and flair not seen in any other art tradition", thus, an image as important as a lintel in the royal palace must be packed with meanings, small elements that symbolize big things, many of them culturally-determined, so potentially incomprehensible for an outsider. The accompanying text mirrors and complements the image, the interplay between writing and iconography being a common feature of Maya inscriptions (Stone and Zender 2011: 11-12), thus analysis of the former can potentially inform understanding of the latter and vice versa.

One of characteristic features of Maya iconography is the tradition to symbolically represent physical (visual, audible, and even olfactory) qualities of objects, instead of realistic depictions, through the use of embedded hieroglyphic symbols which Stone and Zender (2011: 13-15) call "property qualifiers". Thus, objects are routinely labelled with small hieroglyphic signs for *te'* 'wood', *tuun* 'stone', *baak* 'bone' or 'jade' depending on the material they are made of. Colour is coded with logographs for *ihk'* 'black' or *k'an* 'yellow, pale, ripe'. Even certain hidden properties can be marked this way, e.g. nocturnal animals are labelled with *ak'ab* 'darkness, night' marker. As Stone and Zender (2011: 15) state, "there can be little doubt that these compositions evoked strong emotional responses in the literate Maya viewer, who would have negotiated such symbols with ease and revelled in seeing a familiar world writ large in clever pictures". This clearly shows the blurred boundaries of the categories of text and imagery – in fact, in the Maya culture, they are one: *tz'ihb* 'writing, painting'.

Difficulty no. 3

Thus, the third difficulty we encounter is the lack of knowledge of the intra-domain mappings, i.e. the link between a certain metonymic vehicle (e.g. a crown) and the intended metonymic target (the monarch). Metonymy may be even more difficult to notice and understand than metaphor because it is fully motivated by cognitive and cultural (not biological) factors; e.g. in the case of the PART FOR WHOLE metonymy (see examples (10a) and (10b)), the selection of a particular part of the body as the metonymic vehicle (e.g. *hand* or *face*) may be motivated culturally and be distinct in various cultures, however, the very selection of PART to represent the WHOLE is motivated cognitively.

Thus, without explicit information it is impossible to understand the significance of dance in the Maya culture and, e.g., the meaning of different parts of clothing and accessories of dancers. Is it significant that the king's name is *Yaxuun* 'Cotinga' and he dances with a bird staff? The linguistic code does not carry this kind of information – it was hidden in the minds (or conceptualizations) of the people who created these texts and those who were supposed to read them twelve hundred years ago.

CONCLUSIONS

Thus, the challenges of reading ancients texts stem from the very nature of language. Firstly, language is a fairly imperfect tool of thought representation. The linguistic code underspecifies conceptualizations it codes, in other words, our thoughts are so much richer than the words we put them in. Hence it is difficult to express one's thoughts in speech, but it is even more difficult to understand what another person wants to communicate.

Secondly, languages are inherently metaphoric and metonymic with the abstract areas of human life almost exclusively expressed by figurative language. We use our basic bodily experience to describe abstract aspects of life, e.g. the conceptual metaphor HIGH STATUS IS UP allows us to talk about *climbing the social ladder* or *being at the bottom of society* and is the reason why the king is sitting higher than others. Conceptual metaphorical mappings help us describe the world – they "bridge the known and the unknown" (Mühlhäusler 2012: 9), and while conceptual metaphor performs mainly understanding function via inter-domain mapping function, metonymy has a mainly referential function via intra-domain mappings. Both seem to be equally widely used in English and in Mayan languages alike.

Thirdly, conceptual metaphor and metonymy are mechanisms of semantic extension and as such result in polysemy, which makes polysemy another inherent feature of language. Metonymic semantic extensions make our language even more figurative and difficult to understand without the cultural context (e.g. *a white house* vs. *White House*, or *a crown* vs. *the Crown*), but even such simple everyday words as prepositions (see examples of *over* in (2)) exhibit several related meanings.

The classic Maya language and thinking, being so maximally diverse in time and space from SAE (Standard Average European) linguistic experience of the 21st century, may have been partially ruled by a set of different conceptual metaphors and metonymies, which is one of the reasons why it is so difficult to understand the ancient texts without this vast encyclopaedic knowledge that was lost to the passage of time and to historical events which disturbed the cultural development (the so called "Maya collapse" and the European conquest).

How polysemy reveals patterns of thinking

As has been already discussed above, metonymy and metaphor are two basic mechanisms of semantic extension resulting in polysemy, defined as "a number of more or less discrete, though related meanings, clustering in a family resemblance category" (Taylor 1989: 22). Thus, wherever there is polysemy, we can suspect it is motivated by some intra-domain or inter-domain mapping, the former being metonymic, the latter metaphoric.

Table 4 offers some examples of Mayan words which exhibit several meanings. The first group comprises of words where polysemy does not appear: in the case of *took'* 'chert, flint, chalcedony' and *tz'ihb* 'writing, painting', the meanings are related but they are not distinct enough to produce polysemy. These are examples of differences in categorization between English and Mayan languages: where English has two words – write and paint, the Maya saw one – *tz'ihb* (see, e.g., Stone and Zender 2011: 115), where English differentiates between three different rocks – chert, flint and chalcedony – the Maya had one category – *took'*, probably based on common functionality or/and appearance.

Table 4. Examples of the lack of polysemy in case of different category boundaries versus polysemy motivated by metaphoric or metonymic extensions (based on Kettunen and Helmke 2011; *tzutz* after Stuart 2011: 269).

Linguistic expression	Polysemous meanings	Kind of extension	Motivated by
took'	chert, flint, chalcedony	simple	different categorization
tz'ihb	writing, painting	simple	different categorization
il	to see, to witness	metaphoric	WITNESSING IS SEEING
ik'	air, wind, breath	metaphoric	EARTH IS A LIVING BEING LIFE IS BREATHING
ch'ok	youth, sprout	metaphoric	PEOPLE ARE PLANTS
kelem	strong, youth, rooster?	metaphoric	PEOPLE ARE ANIMALS
chok	scatter, sow	metaphoric	KINGS ARE FARMERS
tzutz	to repeat, do over, replant	metaphoric	KINGS ARE FARMERS
taj	pine, (pine) torch	metonymic	MATERIAL FOR OBJECT
te' / che'	tree, wood forest family tree	metonymic metonymic metaphoric	MATERIAL FOR OBJECT PART FOR WHOLE PEOPLE ARE PLANTS
waaj	tamale, bread, maize dough	metonymic	MATERIAL FOR OBJECT
huun	paper, book, headband	metonymic	MATERIAL FOR OBJECT
jul	spear, to pierce	metonymic	INSTRUMENT FOR ACTION
k'an	yellow, ripe	metonymic	EFFECT FOR CAUSE
kab / chab	land, earth bee, honey	metonymic metonymic	MATERIAL FOR OBJECT PRODUCER FOR PRODUCT

The other examples in Table 4 exhibit proper polysemy with meanings both related and distinct. The polysemy of *il* 'to see, to witness' results from the extension of the perception verb into the domain of social contacts and seems to be motivated by the WITNESSING IS SEEING metaphor. The polysemy of *ik'* 'air, wind, breath' stems from the Mesoamerican belief that the Earth is a living being and wind is its breath (Miller and Taube 2011: 186, Stone and Zender 2011: 175), so it is motivated by personification: EARTH IS A LIVING BEING, in addition to LIFE IS BREATHING.

On the other hand, "Mesoamericans saw themselves as part of a seamless universe" (Stone and Zender 2011: 175), so it is hardly surprising to find extensions which compare people to wildlife: *ch'ok* 'youth, sprout' seems to be motivated by PEOPLE ARE PLANTS metaphor and *kelem* 'strong, youth, rooster(?)' might be motivated by PEOPLE ARE ANIMALS metaphor if the third meaning is confirmed, although that metaphor distinctly postdates the European conquest. The former may be also present in the extension of the word *te'* 'tree, wood' found in the expression *yajawte'* 'the lord of the tree' which has been interpreted as "the lord of the family" (see Grube and Martin 2001: 158). Similarly, Bolles (2010: 160-161) compares the expression <*u chun che*> 'the trunk of a tree' with the expression <*u chun u uinicil*> appearing in the *Book of Chilam Balam of Chumayel* and chooses to translate is as 'the progenitor of a lineage'. This suggests that – analogously to English – *te'* 'tree' may also mean 'family tree' or at least 'royal dynasty'.

Finally, agriculture being an important part of the Maya world, kings seem to have been conceptualized as farmers which is instantiated by the *chok* 'scatter, sow' extension, underlining the generative powers of the scattering rites performed by kings (see Stone and Zender 2011: 69). As Stuart (2011: 269) points out, this belief also resurfaces in the linguistic expression *tzutz* 'to repeat,

do over, replant', used in contexts of the ceremonies of period endings when "[k]ings did not simply 'end' periods of time such as k'atuns and tuns; they 'replanted' or 'repeated' them, in the sense that they actively tended to the periods to ensure their proper coming and going".

The third group comprises of words whose polysemy may be motivated by metonymic extensions. A very productive metonymy is MATERIAL FOR OBJECT with words such as: *taj* 'pine' but also 'a torch made of pine wood', *te'* 'wood' and 'tree, forest', *waaj* 'maize dough' and 'food products made of maize dough', *huun* 'paper' as well as 'book' and 'headband made of paper'. The polysemy of the linguistic unit *jul* 'a spear, to pierce' is motivated by the INSTRUMENT FOR ACTION – the object stands for the activity. The polysemy of *k'an* 'yellow, ripe' is motivated by EFFECT FOR CAUSE – when maize ripens, it turns yellow: being yellow is the effect, being ripe is the cause and the property which is important (compare also examples (10e) and (10f)). Finally, the first two meanings of *kab / chab* 'land, earth' seem to be unrelated, but the other two – 'bee, honey' – may be a rather unusual example of the PRODUCER FOR PRODUCT metonymy: bees produce honey (compare also (10k) and (10l)).

Final remarks

Having identified the main sources of difficulties with reading ancient texts, the next challenge would be to attempt to recreate the metaphorical system of the ancient Mayan language. What conceptual metaphors and metonymies ruled the ancient Maya language? Can we bring them back to inform the decipherment? What conceptual metaphors and metonymies do contemporary Maya people "live by"? Can colonial sources help to filter out Spanish influences that are the result of five centuries of bilingualism and biculturalism? If we managed to recreate the metaphorical system of Mayan languages, we would gain insight "into the minds of ancients" (see Houston 2000).

APPENDIX

List of conceptual metaphors and metonymies discussed in the text

Metaphor: **X is Y** where X is the target domain and Y is the source domain.
Metonymy: **X for Y** where X is the metonymic vehicle and Y is the metonymic target.

Metaphor	Metonymy
CONTROL IS UP	CAUSE FOR EFFECT
EARTH IS A LIVING BEING	CONTROLLER FOR THE CONTROLLED
GOOD IS UP	EFFECT FOR CAUSE
HIGH STATUS IS UP	FORM FOR CONCEPT
HIGH STATUS IS UP	INSTRUMENT FOR ACTION
KINGS ARE FARMERS	MATERIAL FOR OBJECT
LIFE IS BREATHING	PART FOR WHOLE
LOW STATUS IS BACK	PLACE FOR INSTITUTION
LOW STATUS IS DOWN	PRODUCER FOR PRODUCT
PEOPLE ARE ANIMALS	SALIENT STAGE FOR WHOLE ACTION
PEOPLE ARE PLANTS	WHOLE FOR PART
POWER IS UP	
SOCIAL STATUS IS PHYSICAL	
UNDERSTANDING IS HEARING	
UNDERSTANDING IS SEEING	
WITNESSING IS SEEING	

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