Towards a feature geometric account of Infl in Yucatec Mayan

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In this paper I propose the beginning of a feature geometric account of Infl in Yucatec Mayan. I adopt Cowper's (2005) feature geometry, arguing that it can successfully accommodate Yucatec Mayan data if some new features are introduced for further specification of contrast, and some existing features are given a slightly different interpretation. The implication of the present analysis is that the difference between such typologically diverse languages as English and Yucatec Mayan is minimal and can be attributed to one or two features encoding the contrast.

1. Introduction

This paper deals with features of Infl in Yucatec Mayan (YM), and proposes an account of this system within Cowper's (2005) theory of feature geometry of inflectional features. Unlike the languages that this theory was originally based on, YM does not encode tense in its inflectional system, but, on the other hand, has a fairly extensive number of aspect and modality markers. The main challenge for the feature geometry, therefore, is to encode the difference between two types of languages in a coherent and logical way, using the principle of contrast which is the underlying principle of the feature geometry.

The paper will concentrate on the featural semantics of a certain class of inflectional elements called aspect-mood (AM) markers, which encode all the features of Infl of a given clause in YM. I argue that in order to account for the YM data within the framework of the feature geometry, further specification of contrasts has to be made, and propose new features to encode the contrast. I also show that the feature geometric approach can render the difference between languages such as Spanish and English on the one hand and YM on the other hand minimal and elegantly encode it by a very small number of features.

The paper is organized as follows. In section 2 I give the necessary background on YM inflectional system, as it is presented in Bohnemeyer (2002); section 3 gives a brief overview of Cowper’s (2005) feature geometry; section 4 is the feature geometric analysis of Infl in YM; and section 5 concludes the paper.

* I would like to thank Elizabeth Cowper for many helpful comments on this paper.
2. Background on YM inflectional system

2.1. Aspect-Mood markers in Yucatec Mayan: an overview

There is no overt tense marking in YM. Aspect and modality in YM are encoded by the interaction of the preverbal aspect-mood (AM) markers and inflectional suffixes called ‘status’ suffixes, as shown in the following example:

AM-marker     status-suffix
(1) Táan u ts’íib-t-ík le kàarta le x-ch’úupal-o’
PROG 3SG write-APP-INC(3SG) DEF letter DEF female.child
“The girl is/was/will be writing a letter.”

In this sentence, the verb is marked with the incompletive suffix –ík, and is preceded by a preverbal AM marker, the progressive táan. The combination of these gives the sentence a progressive reading which can be interpreted in any tense.

Every verb belongs to one of the five classes – active, inactive, inchoative, positional, and transitive – and is inflected for one of the five ‘status’ suffixes – incompletive, completive, subjunctive, imperative, extrafocal. In addition, every main clause must have one and only one AM marker. Bohnemeyer (2002) distinguishes fifteen AM markers, and classifies them as following:

(2) AM markers:
 a. Bound:
    perfective t/-h-
    imperfective k-
 b. Aspectual:
    progressive táan
    terminative ts’o’k
    prospective bikah/mikah/mukah
 c. Modal:
    predictive bíín
    penative óolak
    obligative yan
    necessitive k’a’náan
    desiderative táak
    assurative he’…-e’

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1 Unless noted otherwise, all the information about YM grammar and all the YM examples are from Bohnemeyer (2002).
d. Temporal distance predicates:
proximate future ta’itak
immediate past táant(ik)… -e’
recent past sáam
remote past úuch

As Bohnemeyer notices, AM markers are clearly inflectional elements: they are obligatory, occur in a fixed position, and are mutually exclusive. There are, however, some restrictions on their distribution. Thus, if the main predicate of the clause is stative, no AM marker may appear, as in the following example, where the main predicate is k’ahóol ‘acquaintance’:

(3)  A k’ahóol-en, aw ohel máax-en?
2SG acquaintance-1SG 2SG knowledge who-1SG
“Do you know me, do you know who I am?”

AM markers cannot appear in embedded clauses. The embedded clause aw uk’ik ha’ in (4) below does not have an AM marker:

(4)  T-uy u’b-ah Ø aw uk’ik ha’.
PRV-3 hear-CMP(3SG) AM 2SG drink-INC(3SG) water
“He heard you drinking water.”

A striking fact is that stative predicates are similar to AM marker in that they cannot appear in embedded clauses either – they have to be turned into eventive predicates first. Thus, the adjective k’oha’n ‘ill’ in (5) below is turned into an inchoative verb in subjunctive status by means of the suffix –chahak, and appears as a predicate of an embedded clause. In (6) the stative predicate x-ch’úup ‘be a woman’ has to turn into an inchoative ‘become a woman’ taking the inchoative suffix –tal, in order to be embedded.

(5)  H ts’o’k ka’-p’éel k’iin sèen k’oha’n-chahak.
PRV end(3SG) two-INANIM sun very ill-INCH-SUBJ(3SG)
“It’s two days ago that he got seriously ill.”

(6)  Bíin u ts’íib+óol-t x-ch’úup-tal xib-o’b.
PRED 3 write+soul-APPLIC(3SG) FEM-female-INCH.INC male-PL
“The men shall wish to become women.”

These facts about the distribution of AM markers and stative predicates – they are in complementary distribution in main clauses, but neither can appear in embedded clauses – lead Bohnemeyer (2002) to conclude that AM markers are themselves stative predicates, and that they are main predicates of the sentence taking the verbal core as

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3 In YM, the distinction between stative and eventive predicates is more fundamental than the distinction between the lexical categories of verbs, adjectives and nouns. Only verbs can be eventive predicates, while all nouns and adjectives (and some verbs) are stative.
their complement. However, since his analysis does not cancel the fact that AM markers are a closed inflectional class while stative predicates are an open lexical class, I am going to ignore Bohnemeyer’s proposal for the purposes of this paper. The similarity between AM markers and stative predicates will be addressed further in section 4 and incorporated into the feature geometry. Let us now look in some more detail at different examples of AM markers and their interaction with status-suffixes.

2.2. Aspectual markers

Bohnemeyer distinguishes three aspectual markers: progressive, terminative and prospective. I also include perfective and imperfective under this class. The reason that Bohnemeyer treats the latter two differently than the aspectual markers is because of their prosodic status: while all other AM markers are independent phonological words, the perfective t- and the imperfective k- must be prefixed to the subject pronouns immediately following them. Bohnemeyer also excludes the bound perfective and imperfective markers from his analysis of AM markers as the main predicates of the sentence. However, while the difference between bound and independent AM markers definitely deserves attention, for the purposes of this paper I am not going to distinguish between the two, and therefore, I include the bound perfective and imperfective markers under the class of aspectual markers.

Perfective AM marker t-/h- refers to the event denoted by the predicate as a punctual event, without entering its internal structure. It occurs with the completive suffix on the verb:

(7) T-in xok-ah le periýöodiko-o’.
PRV-1SG read-CMP(3SG) DEF newspaper
“I read the newspaper”.

Imperfective provides a habitual or generic interpretation, and occurs with incompletive status suffix on the verb:

(8) K-in xok-ik le periýöodiko-o’.
IMPF-1SG read-INC(3SG) DEF newspaper
‘I (used to) read the newspaper.’

Progressive AM marker táan is used to present an event as ongoing with respect to some reference point. It occurs with incompletive status suffix on the verb:

(9) Táan in xok-ik le periýöodiko-o’.
PROG 1SG read-INC DEF newspaper
“I am/was/will be reading the newspaper.”

Terminative AM marker, like perfective, denotes an event that has been completed, however, unlike the perfective marker, terminative refers to the post-state of
that event rather than to the event itself. Terminative triggers incomplete status suffix on the verb:4

(10) Ts’o’k in xok-ik le periyòodiko-o’.  
TERMIN 1SG read-INC DEF newspaper  
“I have/had/will have read the newspaper.”

Prospective AM marker mukah is a mirror image of the terminative marker, in that it refers to a pre-state of a prospective event.5 Prospective occurs with incomplete suffix on intransitive verbs, and with subjunctive status on transitives (11):

(11) Mukah in xok-Ø le periyòodiko-o’.  
PROSP 1SG read-SUB DEF newspaper  
“I am/was/will be going to read the newspaper.”

2.3. Modal markers

There are six modal markers: obligative, necessitive, desiderative, assurative, predictive and penative. Obligative, necessitive, desiderative and assurative modal AM markers occur with incomplete suffix on the verb (as in (12) – (15)); predictive and penative markers require subjunctive status suffix (as in (16) as in (17)).

(12) Yan in xok-ik le periyòodiko-o’.  
OBL 1SG read-INC DEF newspaper  
“I have/had/will have to read the newspaper.”

(13) K’a’náan in xok-ik le periyòodiko-o’.  
NEC 1SG read-INC DEF newspaper  
“I need/needed/will need to read the newspaper”.

(14) Táak in xok-ik le periyòodiko-o’.  
DES 1sg read-INC DEF newspaper  
“I want/wanted/will want to read the newspaper.”

(15) He’ in xok-ik le periyòodiko-o’.  
ASS 1SG read-INC DEF newspaper  
“I promise/promised/will promise to read the newspaper.”

(16) Bíin in xok-Ø le periyòodiko-o’.  
PRED 1SG read-SUB DEF newspaper  
“I will/would read the newspaper.”

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4 See section 4.5 for more differences between terminative and perfective AM markers, and the challenges that these present for a feature geometric approach.

5 See section 4.5 on prospective and terminative AM markers.
(17) Oolak in xok-Ø le periyòodiko-o’.
   PEN 1SG read-SUB DEF newspaper
   “I (will have) almost read the newspaper.”

Since modal AM markers will not be dealt with in this paper, I do not discuss the details of their meaning here.

2.4. Temporal distance markers

There are three AM markers that denote a temporal distance of an event from the reference point: proximate future, immediate past, recent past and remote past. Proximate future and immediate past AM markers trigger incompletive suffix on the verb (as in (18) and (19)), while recent past and remote past markers trigger subjunctive status ((20) and (21)).

(18) Ta’itak in xok-ik le periyòodiko-o’.
    PROX 1SG read-INC DEF newspaper
    “I have/had/will have almost read the newspaper.”

(19) Táant in xok-ik le periyòodiko-o’.
    IMM 1SG read-INC DEF newspaper
    “I have/had/will have just read the newspaper.”

(20) Sáam in xok-Ø le periyòodiko-o’.
    REC 1SG read-SUB DEF newspaper
    “I read/had read/will have read the newspaper a while before then.”

(21) Uuch in xok-Ø le periyòodiko-o’.
    REM 1SG read-SUB DEF newspaper
    “I read/had read/will have read the newspaper a long time before then.”

2.5. AM markers and ‘status’ suffixes: summary

Bohnemeyer (2002) argues that the aspectual and modal properties of a clause are the result of the interaction of AM markers and status suffixes. However, it is obvious, and he himself notices that this interaction is in many cases idiosyncratic. Thus, for instance, while it seems motivated that progressive, imperfective and terminative AM markers all trigger incompletive status suffix on the verb, it is harder to account for the fact that immediate past and proximate future markers also trigger incompletive suffix, while recent past and remote past trigger subjunctive suffixes. Moreover, since every AM marker is compatible with only one status-suffix, there is no contrast that would show that status-suffixes actually contribute something to the interpretation of the clause. I will, therefore, ignore these elements altogether in the rest of the paper and assume that AM markers bear all the necessary features of Infl of a given clause.

In the following sections I will attempt to provide a feature geometric analysis of aspectual and ‘temporal distance’ AM markers. The treatment of modal AM markers, while of equal importance, is beyond the scope of this paper.
3. Cowper’s (2005) feature geometry

In this section I provide a brief overview of Cowper’s (2005) geometry of inflectional features. The geometry consists of a set of universal features. All the features are monovalent and belong to one of the three groups: those encoding aspeсtual information, mood and tense. Aspeсtual information is encoded by the features [Event] and [Interval]; the features [Precedence] and [Entirety] encode tense, and the features [Proposition], [Finite], [Irrealis], [T-deixis] and [P-deixis] encode mood. The features in the geometry are connected by entailment relationship and encode a system of contrast employed by a given language. Cowper (2005) proposes (22) as the maximal dependency structure for Infl:

(22) Cowper’s (2005) feature geometry:

```
   Infl
    |   
   ---|---
   |   
 Proposition | Precedence | Event
   |       |       | 
 Finite | Entirety | Interval
   |       |       | 
 T-deixis
   |       | 
 P-deixis
   
 Irrealis
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The feature [Event] distinguishes events from states, and therefore does not appear in stative clauses. The feature [Interval], the dependent of [Event], “forces the event to be taken as linked to an interval, that is, a nonsingleton set of moments, rather than to a single moment” (Cowper 2005: 15). This feature, thus, encodes imperfective aspect. It is important to note, though, that since all the features in the geometry are monovalent, the interpretation of a feature that does not have a dependent crucially depends on whether the dependent is available in the given language. Thus, for instance, if the feature [Interval] is active in the language, then the interpretation of a bare [Event] node in this language would be ‘non-Interval’ or ‘Moment’, and would encode perfective aspect. However, if [Interval] is not employed by this language at all, then a bare [Event] node would be underspecified as encoding either [Moment] or [Interval].

The feature [Precedence] means that “at least one moment associated with the event denoted by the clause precedes the temporal anchor of the clause” (Cowper 2005: 15). Precedence encodes past tense in English. Its dependent [Entirety] means that all moments associated with the event or state must precede the temporal anchor. This feature, according to Cowper (2005), is not used in English, but is active in Spanish, encoding preterite past tense.
The feature [Proposition] “distinguishes bare states and events from their cognitive manifestations” (Cowper 2005: 16). Only clauses that bear the feature Proposition can have truth values. All matrix clauses have this feature. The feature [Finite] is a syntactic feature, and it “licenses structural subject case and φ-features on the verb” (Cowper 2005: 17). The dependents of the feature [Finite], the features [T-deixis] (temporal deixis) and P-deixis (personal deixis), “set the temporal and/or personal anchor of the clause to the deictic center of the utterance/discourse” (Cowper 2005: 17). The feature [Irrealis] encodes modality. Since modal AM markers are not dealt with in this paper, I do not discuss this feature here.

4. The features of Infl in Yucatec Mayan

4.1. The beginning of the analysis

In this section I show that Cowper’s feature geometry, which was originally based on Spanish and English, can successfully account for the inflectional system in Yucatec Mayan if further specifications of contrasts are made and some new features are introduced. I argue that the geometry in (23) below represents the maximally specified7 Infl in YM:

\[
\text{(23) Maximal dependency structure in YM:}
\]

\[
\text{Infl}
\]

\[
|\text{Proposition} | \text{Precedence} | \text{Event} |
\]

\[
|\text{Finite} | \text{Entirety} | \text{Interval} |
\]

\[
|\text{P-deixis} | \text{Non-hodiernal} | \text{Homogeneity} |
\]

\[
|\text{Irrealis} | \text{Distal} |
\]

Thus, the following sections will argue that in order to adequately account for the Infl in Yucatec Mayan, the Cowper’s (2005) feature geometry needs to be further specified with the features [Homogeneity] as a dependent of [Interval], and the features [Non-hodiernal] and [Distal] as dependents of [Entirety]. I will also justify the absence of the feature [T-deixis] in the feature geometry for YM.

While defending this maximal dependency structure is a major concern of the rest of this paper, here it is useful to start with a question of what would be a minimal specification of Infl in YM. This brings us back to the discussion of stative vs. eventive predicates and the distribution of AM markers. Recall that there is certain similarity between AM markers and stative predicates: they are in complementary distribution in

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6 For a detailed treatment of the feature Proposition see Cowper and Hall (1999) and Hall (2001).
7 By ‘maximally specified’ I mean, of course, ‘based on the evidence examined in this paper’.
the matrix clauses but neither of them can appear in embedded clauses. This last factor – the inability to appear in embedded clauses – suggests that both AM markers and the Infl of stative clauses carry the feature Finite. This, of course, does not really explain this strange similarity between inflectional AM markers and lexical stative predicates, but for our purposes it elegantly accounts for the complementary distribution of AM markers and stative predicates in matrix clauses. Since both these elements spell out Finite, it is expected that they cannot co-occur within one clause – there cannot be two instances of Finite in the Infl of the same clause. This, of course, also makes a prediction that all embedded clauses in YM will be non-finite. In this paper, however, I concentrate only on main clauses.

The matrix clause that contains a stative predicate will have the Infl in (24a), and the matrix clause that contains an AM marker will have an Infl with minimal dependency structure in (24b):

(24) a. Infl
    Proposition
    Finite

b. Infl
    Proposition     Event
    Finite

Thus, the difference between a matrix clause that contains a stative predicate, and a matrix clause that contains an AM marker is that the latter spells out Event, in addition to Finite and Proposition.

As predicted by Cowper’s feature geometry, and as will be discussed in more detail below, the structure in (24b) is the specification of perfective AM marker. I will now turn to deriving the rest of the geometry and justification of the new features proposed in (23) above.

4.3. The feature [Precedence] and its dependent(s) in a tenseless language

In Cowper’s (2005) feature geometry, the feature [Precedence] encodes past tense. Precedence means that at least one moment of the event precedes the reference time. The reference time is, in its turn, determined either by a higher clause or by the feature T-deixis. The question is, therefore, what would be the function of the feature Precedence in a tenseless language, such as YM, and how can the difference between languages that
mark tense and those that do not be expressed formally within the feature geometric approach.

As noted above, none of the fifteen AM markers encode tense, and all of them can be interpreted in all tenses. I propose, therefore, that the absence of any temporal anchor in YM sentences is due to the absence of the feature T-deixis in YM feature geometry. This automatically allows all other features be interpreted as temporally unbound. Thus, if the feature T-deixis is not available, but the feature Precedence remains part of the system, this predicts that there exists a lexical item which gives a given clause an interpretation along the lines of “at least one moment of the event associated with the clause precedes some unspecified reference point”. This prediction is, indeed, borne out; YM has not one but three such lexical items: these are the three ‘temporal distance’ AM markers: recent past, immediate past, and remote past. Examples of all three are repeated below:

(25) Immediate past:

**Táant** in xok-ik le periyòodiko-o’.
**IMM** 1SG read-INC DEF newspaper
“I have/had/will have just read the newspaper.”

(26) Recent past:

**Sáam** in xok-Ø le periyòodiko-o’.
**REC** 1SG read-SUB DEF newspaper
“I read/had read/will have read the newspaper a while before then.”

(27) Remote past:

**Uuch** in xok-Ø le periyòodiko-o’.
**REM** 1SG read-SUB DEF newspaper
“I read/had read/will have read the newspaper a long time before then.”

As evident from these examples, all three ‘temporal distance’ markers involve reference to some event that happened before a reference time, and all three sentences can be interpreted in any tense. Under the proposal advocated here this is accounted for by the absence of the feature T-deixis from the geometry and the subsequent reinterpretation of the feature Precedence. In fact, it seems to be the case that all these three elements also spell out Entirety (which, as a dependent of Precedence, is also interpreted with no specified reference time): the events denoted by these sentences are located entirely before the unspecified reference time.

If all the three ‘temporal distance’ markers (immediate past, recent past and remote past) spell out the feature Entirety, then the next question is how to encode the difference

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8 There are, in fact, four temporal distance markers: the forth one is proximate future marker. Since the distribution of space among the temporal distance markers is asymmetric (three markers refer to temporal distance in the past and only one in the future), I assume that they probably should not be encoded using the same features. I leave the analysis of proximate future marker for further research, and will only deal with the three past markers here.
between them. In order to answer this question, let us take a closer look at the feature Entirety and what it encodes.

According to Cowper (2005), Entirety is not present in English, but plays an important role in Spanish inflectional system, marking the contrast between imperfective and preterite past tenses: the former spells out bare Precedence node, and the latter spells out Entirety, indicating that the event associated with the clause is located entirely before the reference time, or if it is a state, then it no longer holds at the reference time. Here are some examples of Spanish preterite (from Cowper (2005)):

(28) a. Miguel fue presidente el año pasado.
Miguel be1.PRET.3SG president the year passed
“Miguel was president last year (but is no longer president).”

b. Ayer anduve más de quince kilómetros.
yesterday walk.PRET.1SG more of fifteen kilometers
“Yesterday I walked more than fifteen kilometres.”

c. El problema fue difícil.
the problem be1.PRET.3SG difficult
“The problem was difficult (but we solved it).”

Notice that even though all these sentences encode events that occurred prior to a reference time, there is a difference in their interpretation. Thus, the sentence in (a) specifies that the state of being a president held last year; (b) indicates that the walking event took place yesterday, and the interpretation of (c) is entirely flexible: the state of the problem being difficult could have held last year, yesterday or just five minutes ago. Thus, Spanish inflectional system does not specify degrees of remoteness of a given event or state from the reference time. YM, on the other hand, distinguishes three degrees of remoteness in the past: immediate, recent and remote. These are further specifications of contrast within the feature Entirety, and some new features need to be introduced in order to encode this three way contrast.

In order to specify this three-way contrast between the three temporal distance markers Entirety must have two more dependent features. One of the temporal distance markers will be spelled out by the bare Entirety node. The question is now, which of the three is the unmarked one, and which two has to be specified with the additional features. Let us look at some semantic properties of the three elements in more detail. According to Bohnemeyer (2002), immediate, recent and remote past markers are not absolute, but should be interpreted relative to each other – thus, remote is farther from the reference point than recent, and recent is farther than immediate. There are, however, some clues as to how to interpret and use them. Thus, according to Bohnemeyer, native speakers consistently use the immediate past marker túaant with reference to events that happened just before or at least on the same day as the reference time; events referred to using the remote past AM marker úuch should precede reference time by three or more days, and any more recent event that is not just before the reference time can be referred to by the recent past marker súam. It would seem from this distribution of meanings that the recent past AM marker is the more semantically unmarked one. It even might be the case that it
is not really ‘recent’ past that this marker encodes, but just default past, that is neither too close nor too far from the reference time. It is thus very tempting to say that the recent past marker is the least marked one, and it also seems reasonable that crosslinguistically the unspecified past marker (if the recent past marker is indeed unspecified past marker) would appear more often than the more specific categories of immediate past and remote past. If the recent past marker is the least marked semantically then in the feature geometry it would spell out Entirety, and the other two markers would spell out some dependents of the feature Entirety.

This analysis, however, cannot be maintained for two reasons, one of these reasons is theoretical, and the other comes from the data. The theoretical problem that this analysis would cause for the feature geometry is the following. In order to make the recent past marker the least semantically marked, a feature must be posited that would contrast the recent past marker on the one hand, and the immediate and remote markers on the other hand (and then another dependent feature would contrast between the last two). The problem is that immediate and remote markers do not form a natural class (in the same way as past tense and future tense are not a natural class), and there is unlikely to be a language that would have the same lexical item for the two, thus contrasting the recent (or unspecified-remoteness) past and specified-remoteness past (where the latter one can be either immediate or remote). This is theoretically very awkward.

An even stronger argument for not making the recent past past the least marked one comes from negation. Examples with all three temporal distance markers under negation are the following:

(29) Immediate past marker under negation:

Ma’ táantik u sùut le kôombi-o’, …h ts’o’k óox-p’ëel óora
NEG IMM 3SG turn\ATP DEF van PRV end.3SG three-CL.in hour
“It is not just a moment ago that the bus returned,… it is (in fact) three hours ago.”

(30) Remote past marker under negation:

Ma’ úuch inw il hun-túul chak+mo’l te k’áax-o’…
NEG REM 1SG see.3SG one-CL.AN red+claw LOC:DEF jungle
“Not long ago I saw a jaguar in the jungle….”

(31) Recent past marker under negation:

Ma’ sáam u sùunak le kôombi-o’, …h ts’o’k mëediya òora
NEG REC 3SG turn\ATP.3SG DEF van PRV end.3SG half hour
“It is not a while ago that the bus returned,… it was half an hour ago.”

As these examples show, when in a clause with a temporal distance AM marker is negated, the interpretation is not that the event in question did not happen at all, but that it did not happen at the temporal distance specified by the AM marker. Thus negating the immediate past marker táantik renders ‘not immediately before the reference time’ (29), and the remote past marker úuch under negation renders the reading ‘not long ago’ (30).
As (31) shows, the recent past marker *sāam* is no exception to this: when negated, it does not mean that the event did not take place at all, but just that it took place ‘not a while ago’. This suggests that the recent past marker is not a default marker as might have been understood from its use with relation to the other two markers. Therefore, it does not have to be the least marked one.

I propose, therefore, that the immediate past marker, which denotes an event that is minimally distanced from the reference time, is the least marked of all the three temporal distance markers. I posit two features to encode the contrast between the three temporal distance predicates. The first one can be called either Non-hodiernal (that is, pertaining to the day other than today), or Non-immediate: it will mark the contrast between immediate past marker and the other two distance markers. I will call it Non-hodiernal for now, however a closer look at the semantics of the recent past marker is needed in order to determine the name of this feature. Non-hodiernal is a direct dependent of the feature Entirety. Further, a feature that might be called Distal, a dependent of Non-hodiernal, marks the contrast between recent and remote past markers. The featural dependencies associated with all three temporal distance markers are shown below:

(32) a. Immediate past marker *tāantik*

```
Infl
   |
   |
  Proposition  Precedence  Event
    |       |       |
   Finite  Entirety
```

b. Recent past marker *sāam*

```
Infl
   |
   |
  Proposition  Precedence  Event
    |       |       |
   Finite  Entirety  Non-hodiernal
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The feature Distal is used in Cowper’s (2002) nominal feature geometry to mean “in the background of the discourse”. The pronoun *that* in English encodes [Distal].
The immediate past marker in (32a) spells out [Finite], [Entirety] and [Event]. Notice that this feature specification of the immediate past marker looks identical to the specification of preterite in Spanish. However, while in Spanish the feature Entirety has no dependents and thus does not specify the temporal distance, in YM the availability of the dependent feature [Non-hodiernal] makes [Immediate] or [Hodiernal] the default interpretation of the bare Entirety node. The recent past marker (32b) spells out [Finite], [Non-hodiernal] and [Event]. The availability of the dependent feature [Distal] makes the default interpretation of bare [Non-hodiernal] node something like [Non-hodiernal Non-distal] meaning ‘something that happened not today but not too long ago’. Finally, the remote past marker (32c) is the most featurally complex according to this geometry. It spells out [Finite], [Distal] and [Event].

Thus, in this section I have proposed a feature geometric representation of three temporal distance markers – immediate past, recent past and remote past – which involves the introduction of the features [Non-hodiernal] and [Distal] into the existing geometry. I have also argued that the absence of the feature T-deixis allows the feature Precedence and its dependents to be interpreted without a specified reference time. In the next section, which deals with imperfective and progressive AM markers, I argue that the feature Interval needs to be reanalyzed in order to adequately represent these AM markers in the feature geometry.

4.4. Imperfective and Progressive: reanalysis of the feature [Interval]

YM has five AM markers encoding aspect. These are perfective t-/h-, imperfective k-, terminative ts'o'k, prospective bikah/mukah, and progressive táan. Prospective and terminative markers present a special challenge for feature geometry for reasons that will be discussed in section 4.5. Here I would like to discuss a feature geometric representation of perfective, imperfective and progressive markers, focusing particularly on the contrast between imperfective and progressive.

For Cowper (1998), (2005), simple present tense in English, which is interpreted imperfectively, spells out the feature Event with its default reading Moment. Simple past
tense, which is interpreted perfectively, spells out Event and Precedence. Sentences in simple present tense such as the one in (33) are interpreted as punctual events simultaneous with the reference time or speech time:

(33) John drives to work.

The fact that the events denoted by such sentences are not, technically, perceived as simultaneous with the moment of speech is explained in Cowper (1998) by positing a principle that she calls the Principle of Non-simultaneity of Points:

(34) *The Principle of Non-Simultaneity of Points:*
    
    No tense morpheme or other functional element in any language can impose simultaneity on two temporal points.

That is, when the given event is punctual, as events denoted by English simple present are in Cowper’s analysis, it cannot possibly be interpreted as simultaneous with the moment of speech. The habitual interpretation of present tense is provided by adverbials and the irrealis time line.

YM, unlike English, has distinct perfective and imperfective markers and has no tense (no T-deixis, as discussed above) Perfective can be interpreted in any tense, and, unlike with English past tense that has a default perfective reading, perfective in YM does not have to spell out Precedence. Even though it would be normally translated into English as past tense, this is because it is the only way English can encode perfectivity, and not because, perfective in YM spells out Precedence. The feature specification of perfective in YM is given below:

(35) Featural specification of the perfective AM marker *t-*/h-:

```
Infl
     
| Proposition                | Event |
    |                            | Finite|
```

YM imperfective also differs significantly from the simple present in English. First of all, like perfective, it can be interpreted in any tense:

(36) **K-in xok-ik le periyōodiko-o’**
    
    IMPF-1SG read-INC(3SG) DEF newspaper
    “I (used to) read the newspaper.”

Imperfective in YM gives the sentence a habitual or generic interpretation. It obviously spells out the feature Event. In order to distinguish it from perfective on the one hand and from progressive on the other, I propose to reanalyze the feature Interval, a dependent feature of Event in the feature geometry.
According to Cowper (2005) the feature Interval “forces the event to be taken as linked to an interval, that is, a nonsingleton set of moments, rather than to a single moment” (Cowper 2005: 15). In English, Interval is spelled out by progressive. I propose that in YM the feature Interval creates a contrast between progressive and imperfective AM markers on the one hand and perfective AM marker on the other hand. That is while perfective is associated with only one moment, both progressive and imperfective can be viewed as associated with a set of moments, if “non-singleton set of moments” is interpreted more broadly so as to include both sets of continuous moments such as progressive, and non-continuous, such as the habitual and generic reading of imperfective. In order to further distinguish imperfective and progressive, I propose the feature Homogeneity. Homogeneity indicates that the interval is homogeneous – namely, that all moments in the interval pertain to the event denoted by the clause. That is, when this feature is available, the default interpretation of Interval is Non-homogenous, which is habitual or generic. Bare Interval node is spelled out by the imperfective AM marker as in (37a), while Homogeneity is spelled out by progressive as in (37b):

(37)  a. Imperfective AM marker կ-:

```
   Infl
     |     
  Proposition -- Event
     |     
    Finite -- Interval
```

b. Progressive AM marker տաան:

```
   Infl
     |     
  Proposition -- Event
     |     
    Finite -- Interval
          |     
           Homogeneity
```

Under this approach the contrast between Imperfective and Progressive is minimal and is expressed by the single feature Homogeneity. This proposal has an important consequence for languages (such as, for example, Russian and Hebrew) where the same form is used both for imperfective and progressive. In these languages the feature Homogeneity is not part of the system, so that Interval is ambiguous between homogeneous and non-homogeneous events.
4.5. Terminative and Perfective, Prospective and Terminative: some challenges for the feature geometry

There are two aspectual markers that were not discussed in the previous section: terminative and prospective. These present a challenge for feature geometry because their meaning – even though it is clearly featural and not lexical – is too complex and cannot be expressed in the geometry in any immediately obvious way.

The use of the terminative AM marker ts’o’k overlaps to a certain extent with that of perfective t-/h-: both refer to completed events. The important difference between them is that terminative refers not to the event itself, but rather to the post-state of the event. Perfective is usually ambiguous between referring to the event and to the post-state of the event. Thus, in the following sentence either terminative or perfective can be used:

(38) **H** kim-ih / **ts’o’k** u kim-il.

<table>
<thead>
<tr>
<th><strong>PRV</strong> die-3SG</th>
<th><strong>TERM</strong> 3SG die-INC</th>
</tr>
</thead>
<tbody>
<tr>
<td>“He died / has died.”</td>
<td></td>
</tr>
</tbody>
</table>

Bohnemeyer notices that terminative AM marker cannot be used in contexts where the sentence can only be understood as referring to event time. Thus, in the following sentence the terminative ts’o’k cannot be used instead of perfective t-, because what the speaker wants to know is whether the event of meeting took place yesterday, and not whether the state resulting from this event held yesterday:

(39) **T-aw** il-ah in suku’n ho’lheak, he’bix t-a tukul-ah-e’?

| **PRV**-2SG see-CMP.3SG 1SG elder.brother yesterday like **PRV**-2SG think-CMP.3SG |
| “Have you met my brother yesterday, as you had planned?” |

Moreover, terminative cannot be used if the post-state of the event denoted by the clause no longer holds at the reference time. Thus, in the following example, according to Bohnemeyer, terminative cannot be used instead of perfective:

(40) “**T-a** k’ahóol-t-ah in tátatah,

| **PRV**-2SG be acquainted-APP-CMP(3SG) 1SG father |
| le máax kim t-e ha’b <h> máan-o’?” |
| DEF who die(3SG) LOC-DEF year PRV PAST(3SG)-D2 |
| - “Míin chen hun-téen-ili’ t-inw il-ah.

| **DUB** only one-times-ID **PRV**-1SG see-CMP.3SG |
| “Have you (ever) met my father, who died last year?” – “I think I only met him once.” |

It is not clear at this point how feature geometry would be able to encode the meaning of the terminative AM marker. It refers to state rather than event, but it must spell out Event node, because otherwise it would be grouped with stative predicates.
which, as discussed above, are incompatible with AM markers. It refers to a state but entails the event that the state is the result of. It is even less clear how to present an overlap in the functions of perfective and terminative: perfective is ambiguous between referring to the event and to the post-state of the event. There is also a further complication to the relationship between terminative and perfective: according to Bohnemeyer, the choice between the two often depends on whether the event is expected or not (if it is, terminative is used).

Prospective AM marker presents another challenge for a feature geometric approach. Prospective is, essentially, a mirror image of terminative: while the latter refers to post-state of an event, the former refers to pre-state. As Bohnemeyer puts it, prospective “makes reference to the pre-state of a prospective situation, which may either consist in the speaker’s intention or be witnessed by her (p.291)”. An example is in (41) below:

(41) Táan k il-ik bèey-o’, pews, mukah chúun-ul uy iik’-al le siklòon-o’, (…) PROG 1PL see-INC.3SG thus well PROSP.3SG start-INC 3SG wind-REL DEF cyclone
   “So we were realizing, well, the storm of the hurricane was about to begin, (…)”

Like terminative, prospective apparently refers to a state (a state preceding the event), but it entails the event itself. Interestingly, both terminative and prospective have something to do with the speaker’s expectations about the event. It is possible that this should be the starting point of a unified analysis of terminative and prospective. This is as much as I have to say about these two AM markers at this point, and in order not to make here any further stipulations, I simply leave this issue to further research.

5. Conclusions

I have shown above that Cowper’s (2005) feature geometric approach can successfully account for the inflectional system in YM if some new features are introduced and some existing features are interpreted in a slightly different way. The beginning of the feature geometric analysis presented here involves the following modifications of the feature geometry. I argued that the feature T-deixis is not part of the system in YM, and consequently the feature Precedence is reinterpreted meaning that ‘at least one moment of the event precedes some unspecified reference point’. The features Non-hodiernal and Distal were introduced as dependents of Entirety, in order to mark a three way contrast between ‘temporal distance’ markers immediate past, recent past and remote past. I have also proposed that the feature Interval be interpreted more broadly to include both imperfective and progressive. The feature Homogeneity was then introduced to differentiate progressive from imperfective.

Clearly, at this point there are more questions than answers about the feature geometry of Infl in YM. Just to point out the most obvious problem of the analysis presented here, it predicts many combinations of features that simply do not exist in the language (even though they are logically possible). Thus, for instance, there is no AM marker that spells out Homogeneity and Distal, or Entirety and Interval. It is not clear at
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this point how to prevent this. This issue, therefore, along with many others, must await a further study.

References
Bohnemeyer, Jurgen. 2002. The grammar of time reference in Yukatek Maya. LINCOM EUROPA.