

The Syntax of Modal Auxiliaries in Tlacolula Valley Zapotec*

Mario E. Chávez-Péón

University of British columbia
mariochp@interchange.ubc.ca

Calisto Mudzingwa

University of British columbia
calliee@interchange.ubc.ca

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1. Introduction

This paper investigates the clausal architecture in Tlacolula Valley Zapotec¹ (TVZ) focusing on structures containing a modal auxiliary (Munro, 2006), such as examples (1) and (2).

- | | | |
|---------------------------------|------------------------------|---------------------------|
| (1) <i>R-ìi'le'eh r-gwèe'</i> | Chiecw Dìi'zhsa ² | 'Chico can speak Zapotec' |
| HAB ³ -AUX HAB-speak | Chico Zapotec | |
| (2) <i>R-quìi'ny ny-a'u=wa'</i> | | 'I should have eaten' |
| HAB-AUX SUBJ-eat=1s | | |

In TVZ, modal auxiliaries and main verbs obligatorily appear with an aspect/mood prefix; henceforth, inflectional prefixes. The absence of an inflectional prefix, either in the complement verb, or in the auxiliary verb, results in an ungrammatical sentence. Consider examples (3) and (4).

- | | | |
|------------------------------------|---------------|--|
| (3) a. * <i>R-ìi'le'eh -gwèe'</i> | Chiecw Dizhsa | b. * - <i>ìi'le'eh r-gwèe'</i> Chiecw Dizhsa |
| | | |
| (4) a. * <i>R-quìi'ny -a'u=wa'</i> | | b. * - <i>quìi'ny ny-a'u=wa'</i> |
| | | |

The pattern above differs from the one observed in other languages, where in an auxiliary plus complement verb construction, only the auxiliary contains inflectional

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¹ Tlacolula Valley Zapotec is an Otomanguean language spoken in southern Mexico, in the Tlacolula District of Oaxaca. Most data come from the variety of the language spoken in the pueblo of San Lucas Quiavini, some examples are from San Bartolomé Quialaná and Santa Ana del Valle. Munro (2006), on which my paper is largely based, states that the basic description of the data presented here is valid for the whole language group as a whole.

² All Zapotec data come from personal fieldwork unless indicated otherwise.

³ The glosses used in this paper are as follows: ADV=Adverb, APPL=Applicative, ASPP=Aspect Phrase, C=Complementizer, CAUS=Causative, CONJ=Conjunction, DEF=Definite, DIR=Directional, HAB=Habitual, INFL=Inflectional, INT=Intensifier, IP=Inflectional Phrase, IRR=Irrealis, MP=Mood Phrase, NEUT=Neutral, PERF=Perfective, POSS=Possessive, PROG=Progressive, SUBJ=Subjunctive, T=Tense, V=Verb.

information, such as tense and agreement. For instance, English constructions display this pattern and these constructions are analyzed as monoclausal (see, e.g., Radford, 1988, and Stowell, 2004). TVZ constructions which obligatorily require inflectional information on both the auxiliary and the main verb raises the following question: What is the nature of the clause structure in TVZ in constructions involving auxiliaries: biclausal or monoclausal?

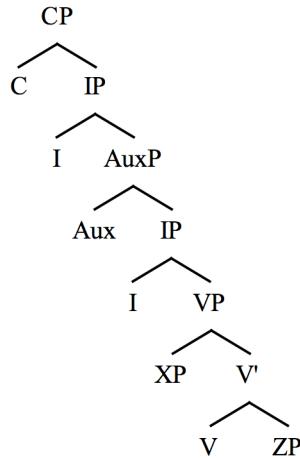
This paper then aims to analyze the syntax of modal auxiliaries in TVZ. The analysis adopted in this paper is founded on the Principles and Parameters framework (Chomsky 1981), in its minimalist version (Chomsky & Lasnik, 1993; Chomsky, 1995).

Based on language internal evidence, we claim that inflectional prefixes in TVZ are generated under *I*. Further, we argue that a Modal Auxiliary projects its own phrase, *Auxiliary Phrase (AuxP)*; Radford, 2004: 112). It is also shown that TVZ auxiliaries always take inflected verbs as complements, which are analyzed as *IPs*. This can be schematized in the following subcategorization frame.

(5) Modal Aux: [__ IP]

As both the auxiliary verb and the complement have inflectional prefixes (are inflected), we assume that they constitute a biclausal structure; a position that the paper argues for. In order to account for this structure, we adopt a reduced clausal approach, arguing that the complement of the *Aux*, namely the *IP*, is a reduced clause, which does not project a *CP* (see, Wurmbrand, 2003 for discussion regarding reduced clauses); the lack of projection of a *CP* follows from the fact that no constituent can appear between auxiliary and the inflected verb. This is illustrated in (6).

(6) Modal (auxiliary) construction



This study contributes to a deeper understanding of modal auxiliaries in TVZ (based on Munro, 2006). It sheds light on the data by providing a theoretical analysis of the syntax of auxiliary verbs in the language, including implications of this analysis for clausal architecture of TVZ, in particular (cf. Lee, 2006), and in natural languages in general.

The paper is organized as follows: Section 2 provides a TVZ background, presenting characteristics of the language that will be relevant for the analysis. The following section presents particular characteristics of main and auxiliary verbs in TVZ. Section 4 presents a description of modal auxiliaries in TVZ, based on Munro

(2006). In section 5, we lay out the analysis of the inflectional prefixes that we will assume. Section 6 presents the analysis of modal auxiliaries, followed by the consequences of this proposal and the conclusion.

2. TVZ Background

This section presents a brief overview of the morphosyntactic characteristics of TVZ. This study largely draws from the San Lucas Quiaviní Zapotec dictionary (Munro, Lopez, *et al* 1999), as well as from Lee (2006); the orthography used in this paper is from Munro, Lopez, et al 1999).

Zapotecan languages are verb initial languages (VSO), as illustrated below. Verbs in TVZ obligatorily appear with an inflectional prefix.

(7)	R-gwè'	Chie'cw	Dìi'zhsah	V_S_O
	HAB-speak	Chico	Zapotec	
	"Chico speaks Zapotec"			

In the literature, aspectual and mood prefixes are classified under the broad category of aspectual prefixes (Munro 2006)⁴. We shall call these prefixes inflectional prefixes (see section 4.1 for the evidence in favor of this analysis). Table 1 illustrates the seven inflectional prefixes of TVZ, along with the verbal paradigm of *rtàa'az* 'beats'.

Table 1. TVZ Inflectional prefixes (adapted from Lee, 2006: 11)

Terminology from (Munro, Lopez, *et al*, 1999)

		Prefix	-tàa'z (beat)	Translation
Aspect	Habitual	r-	rtàa'za'	'I beat (regularly)'
	Progressive	ca-	catàa'za'	'I am/was beating'
	Perfective	b-, w-, gu-, m-	btàa'za'	'I beat'
	Neutral ⁵	n-, Ø-	—	
Mood	Irrealis	y-, chi-, g-, l-	ytàa'za'	'I will beat'
	Definite	s-, z-	stàa'za'	'I will surely beat'
	Subjunctive	n-, ny-	ntàa'za'	'I was going to beat'

Another important characteristic of TVZ is that it is not permissible to stack prefixes of the same kind. Furthermore, there are neither bare nor infinitive forms.

3. Characteristics of TVZ Verbs and Auxiliaries

The purpose of this section is to show that TVZ modal auxiliaries are different from main verbs. Evidence comes from their verbal morphology and their subcategorization characteristics.

Adapted from Lee (2006: 27), (8) schematizes the internal structure of TVZ verbal morphology. Consider examples (9) and (10).

⁴ Lee (2006) argues that the syntactic distribution of a subset of the inflectional prefixes indicates tense (covertly).

⁵ The neutral prefix appears on a small number of mostly stative or locational verbs. It also has been analyzed as a form used to derive adjectives (Rosa Rojas and Thomas Smith-Stark, p.c.).

- (8) TVZ verbal morphology (based on Lee, 2006: 27)
- INFL (DIR/CAUS) ROOT (APPL/INT)(ADV)(SUBJECT CLITIC)(OBJECT CLITIC)
- (9) r-z-ihnnih=a'
 HAB-CAUS-root(gets light)=subject clitic(s/he)
 "I turn on (a light)"
- (10) bdàu'wëngi
 b-dàu'=eng=i
 perf-root(taste)=subject clitic(s/he)=object clitic(it)
 "s/he ate it"

3.1 Morpheme co-occurrence: Verbs vs. Auxes

The goal of this section is to compare the affixes that can be attached to main verbs and those that can appear with auxiliaries. The differences will help in defining the characteristics of an auxiliary verb in TVZ.

In what follows, we illustrate the morpheme co-occurrence of main verbs using the verb *rda'uh* 'eats' in perfective form. Examples are presented on the left hand side, whereas morpheme labels appear on the right hand side.

- (11) *B-da'uh*⁶ nàa' **INFL-ROOT**
 PERF-eat 1s
 'I ate'
- (12) *B-t-a'uh* nàa' **INFL-DIR-ROOT**
 INFL-DIR-ROOT
 PERF-DIR-eat 1s
 'I went to eat / I went and ate'
- (13) *B-z-a'uh* nàa' Gye'eihlly **INFL-CAUS-ROOT**
 INFL-CAUS-ROOT
 PERF-CAUS-eat 1s Mike
 'I made Mike eat'
- (14) *B-da'uh=a'* **INFL-ROOT=SUBJECT CLITIC**
 INFL-ROOT=SUBJECT CLITIC
 PERF-eat=1s
 'I ate'

As the examples above illustrate, main verbs can co-occur with different prefixes and suffixes. In comparison, auxiliary verbs can only co-occur with a subset of affixes: inflectional prefixes. As an illustration, we present the auxiliary *rii'lle'eh* in habitual form.

- (15) *R-ii'lle'eh* r-gwèe' Chie'cw Dìi'zhsah **INFL-AUX**
 HAB-AUX HAB-speak Chico Zapotec
 'Chico can speak Zapotec'

⁶ For this root, an obstruent appears when the root is preceded by another obstruent.

- (16) *R-i'cy⁷-i'il'e'eh r-gwèe' Chie'cw Dìi'zhsah *INFL-DIR-AUX
 HAB-DIR-AUX HAB-speak Chico Zapotec
 intended: '*Chico can go to/and speak Zapotec'
- (17) *R-z-ìi'il'e'eh r-gwèe' Chie'cw Dìi'zhsah *INFL-CAUS-AUX
 HAB-CAUS-AUX HAB-speak Chico Zapotec
 intended: '*Chico can causes (somebody?) to speak Zapotec'
- (18) R-ìi'il'e'(*=ih) r-gwèe'*(*=ih) Dìi'zhsah *INFL-AUX=SUBJ CLITIC
 HAB-AUX=3S HAB-speak =3s Zapotec
 intended: '*S/he can speak Zapotec'

The above comparison between main and auxiliary verbs is summarized in the table below.

Table 2. Morpheme co-occurrence: Summary table.

Verbal form	Auxiliary form
INFL-ROOT	INFL-AUX
INFL-DIR-ROOT	*INFL-DIR-AUX
INFL-CAUS-ROOT	*INFL-CAUS-AUX
INFL-ROOT=SUBJECT CLITIC	*INFL-AUX= SUBJECT CLITIC

3.2 Subcategorization: Verbs vs. Auxes

Now we turn to the differences between main and auxiliary verbs in terms of the complements they take, namely, their subcategorization patterns. First, main verbs select Determiner Phrases (DPs), illustrated in (19) and schematized in (20).

- (19) R-inydyahg [Rrodriiegw Lia Esther] V_S_O
 HAB-listen Rodrigo girl Esther
 'Rodrigo listens to Esther'
- (20) Verb [___DP (DP)] e.g. *rinydyahg* 'listens to' [___ DP DP]

In contrast, auxiliaries cannot take DPs as complements:

- (21) *R-quìi'ny [Rrodriiegw (Esther)] *Aux_S_O
 HAB-AUX Rodrigo Esther
 intended: '*Rodrigo should (to/of) Esther'
- (22) *Aux [___DP (DP)]

Recall that auxiliary verbs select inflected verbs with its arguments (IP):

⁷ Directional affixes change depending on the prefix that precedes them; *i'cy-* is a common directional form after habitual, *r-*.

- (23) R-quìi'ny⁸ [n-inydyahg Rrodriiegw Lia Esther] Aux_V_S_O
 HAB-AUX SUBJ-listen Rodrigo girl Esther
 'Rodrigo should listen to Esther'

The following table shows that main verbs can take DP's as arguments whereas auxiliaries cannot; instead, the latter select inflected verbs. (A subset of main verbs can also select inflected verbs; this fact, however, is not significant for the purpose of this paper.)

Table 3. Subcategorization: Summary table

	DP	Inflected verbs
Verb	✓	X ⁹
Aux	X	✓

Main and auxiliaries verbs are different. The former exhibit a full range of affixes and primarily selects DP's as arguments; whereas the latter have a reduced morphology and are unable to take nominal arguments. Instead they select inflected verbs as complements (arguments). In sum, we assume these characteristics as necessary conditions for a verb to be classified as an auxiliary in TVZ: reduced morphology and selecting verbs as complements.

4. Modal Auxiliaries Classification

Having established that auxiliaries are different from main verbs, we now turn to present a description of the TVZ auxiliaries and present evidence for the internal classification based on semantic characteristics (Munro 2006; see this article for a detailed description of modal expression in general in Valley Zapotec).

TVZ encodes modality in two different ways (Munro, 2006): by means of a subset of inflectional prefixes (see table 1) or by means of auxiliaries. All auxiliaries in this language express modality and Munro calls them modal auxiliaries. We will adopt this term. Further, she groups TVZ modal auxiliaries into two classes (2006: 189): *necessity* (or obligation) and *possibility* (or capability) modal auxiliaries. In what follows, the characteristics of each class are described.

4.1. Necessity modal auxiliaries

In order to describe the TVZ necessity modal auxiliaries, first, we present a list of these verbs, table 4 below, followed by their inflectional characteristics; finally, we show the selectional properties of these verbs, namely, the kind of complements they take.

⁸ There is an apparent contradiction in the use of *Rquìi'ny* (as well as other auxiliaries). It can be used as a main verb, but with a different meaning:

- (a) R-quìi'ny Rrodriiegw rrefre'scw 'Rodrigo (usually) drinks soda'
 HAB-drinksRodrigo soda

For these cases, I assume there are two different lexical entries for the verb *rquìi'ny*, one as a main verb (non-modal use) and another as an modal auxiliary. This is the criteria for all auxiliaries in the present paper. See Radford (2004: 119), among others, for similar treatment of English verb *have*.

⁹ I remebered I went

Table 4. Necessity modal auxiliaries
 (Munro, 2006: 31; Munro, Lopez, *et al*, 1999)

Entry	Translation
<i>rquìi'ny</i>	should, needs to
<i>ryàall</i>	should, deserves to, should get a turn to
<i>ruhnygaan</i>	should, had better
<i>nàa pahr</i>	must, ought to, should
<i>nàa cwe'enn</i>	is supposed to
<i>nadìi'zh</i>	is supposed to, ought to, has to

Necessity modal auxiliaries are invariant in their form and, as the table above shows. They have two patterns, those that are used in habitual form only: *rquìi'ny*, *ryàall* and *ruhnygaan*; and those that are used in neutral form only *nàa pahr*, *nàa cwe'enn* and *nadii'zh*.

(24) Necessity auxiliaries inflectional pattern:

habitual form (only):	<i>r-quì'ny</i> HAB-AUX	'should / need'
or neutral form (only):	<i>nàa pahr</i> NEUT.AUX prep	'must'

It is of particular interest that two of these auxiliaries are compound forms: *nàa pahr* and *nàa cwe'enn*. The former consists of *nàa*, a copular form, plus the preposition *pahr* 'for' (borrowed from Spanish preposition *para*). The latter begins with the same copular form, followed by the verb *cwe'enn* 'to count' (also from Spanish). Both compounds, however, function as an auxiliary encoding an obligation meaning. According to Munro (2006: 191), "their modal uses are metaphorical or lexically derived". The specific derivation of these compounds, however, is beyond the scope of this paper.

Lastly, regarding their selectional properties, these auxiliaries take verbs in irrealis or subjunctive form only, as illustrated below:

4.2. Possibility modal auxiliaries

There are three possibility modal auxiliaries in TVZ, listed below.

Table 5. Possibility auxiliaries
(Munro, 2006: 31, Munro, Lopez, et al, 1999)

Entry	Translation
<i>r-ii'lle'eh</i>	can
<i>r-ahc</i>	can
<i>r-ahcgaan</i>	can (succeeds in (doing); completely (does))

In contrast with necessity modal auxiliaries, possibility ones vary in their form, taking different inflectional prefixes, as shown below:

- (29) HAB: *r-* *-ii'lle'eh*¹⁰ 'can'
 DEF: *Z-*
 IRR: *ch-*
 PERF: *gu-*

The selectional properties of possibility modals also differ in comparison to the necessity ones. The inflectional prefix of the complement verb agrees with that of the possibility auxiliary, illustrated in the following examples.

- (30) *R-ahc* [*r-bèe'b* *Jwaany* *caba'i*] 'John can ride the horse.'
HAB-AUX **HAB-ride** John horse
- (31) *Gìu'-lle'eh* [*b-zh:ùu'nny=a'*] 'I could run'
PERF-AUX **PERF-run=1s**
- (32) *Ch-ii'lle'eh* [*y-zhye'ill=yuu'* *bentaañ* *jèe?*] 'Can you open the window?'
IRR-AUX **IRR-open-2s** window Q

Example (30) shows the inflected modal and the main verb in habitual form; (31) illustrates the pattern in perfective and (32) in irrealis.

In sum, in terms of their form, TVZ modal auxiliaries take different inflectional prefixes. Necessity modals seem to be invariant in form, some in habitual and others in neutral forms; whereas possibility modals vary in terms of the prefix they take. As for the complements they select, necessity modals require verbs in irrealis or subjunctive forms only; whereas possibility modals have to have the same inflectional prefix as their complement verb.

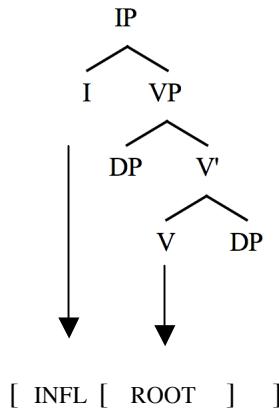
5. TVZ Inflectional Prefixes

In TVZ, modal auxiliaries and main verbs obligatorily appear with an inflectional prefix (table 1); thus, in order to explain the syntax of TVZ modals, first it is necessary to

¹⁰ The first vowel of the verb *rii'lle'eh* have changes according to the prefix: def. *zàa'lle'eh*, irr. *chi'lle'eh*, perf. *gìu'lle'eh* (Munro, Lopez, et al 1999).

analyze those prefixes. The goal of this section is to present arguments in favor of the claim that inflectional TVZ prefixes form a unified morphosyntactic class (see Chávez-Péón, 2006 for more details), and as such, we argue that they occupy the same syntactic position. The syntactic tree below illustrates that the head of *IP* is obligatory and unique, and thus, elements that occupy *I* are in complementary distribution.

(33) Syntactic structure of inflectional prefixes



The claim is based on the following pieces of evidence:

- a. An *Infl* prefix is obligatory to form a grammatical predicate
- b. *Infl* prefixes are in complementary distribution
- c. Apart from the prefixes in table 1 (*Infl* prefixes), there are no other (mood/tense/aspect) morphemes attested in this language

5.1 TVZ Inflectional prefixes as a unified syntactic class

In what follows, we discuss in more detail the arguments provided above.

- a. An *Infl* prefix is necessary to form a grammatical predicate

As mentioned in section 2, one inflectional prefix must be attached to a verbal root in order to be a well-formed verb. The grammatical sentence in (34a) shows an inflected verb, in contrast, (34b), where the verb is uninflected, is ungrammatical.

- (34) a. r-ùa'll nàa'
HAB-read 1s
'I read (habitually)'
- b. *ùa'll nàa'

Both Munro, Lopez, *et al* (1999) and Lee (2006) indicate that there are no bare forms or infinitives in this language.

- b. *Infl* prefixes are in complementary distribution (No stacking)

As presented in table 1, TVZ has seven different inflectional prefixes (habitual, progressive, perfective, neutral, irrealis, subjunctive and definite). One of them must be attached to the verb in order to have a grammatical verbal form. However, the presence of more than one of these prefixes with a single verb root results in ungrammaticality,

suggesting the complementary distribution of these markers. To illustrate this matter, we present the paradigm of the verb *rzh:ùu'nn*y ‘runs’, followed by ungrammatical forms with more than one inflectional prefix¹¹.

- (35) Habitual: *rzh:ùu'nn*y ‘runs’
 Perfective: *bzh:ùu'nn*y ‘ran’
 Progressive: *cazh:ùu'nn*y ‘is running’
 Neutral: —
 Irrealis: *yzh:ùu'nn*y ‘will run’
 Subjunctive: *nzh:ùu'nn*y ‘(if...) had run’
 Definite: *x:ùu'nn*y ‘will surely run’

- (36) irrealis plus habitual:

**i-r-zh:ùu'nn*y=ih
IRR-HAB-run=3s
intended: *‘He will run (regularly)’

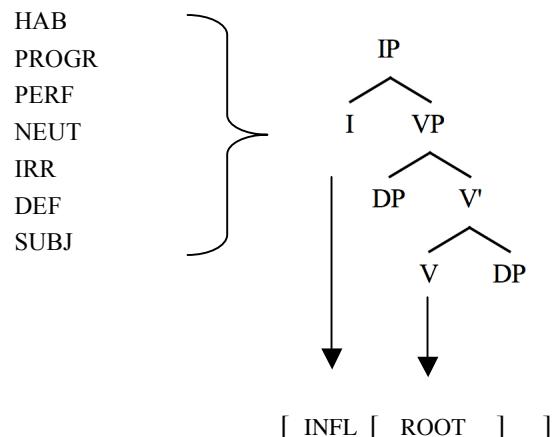
- (37) progressive plus perfective:

**ca-b-zh:ùu'nn*y=a'
PROG-PERF-run=1s
intended: *‘I will have run’

The examples above illustrate that a single verb cannot take more than one inflectional prefix. In other words, this language allows no stacking of these prefixes.

If these prefixes all instantiate the same syntactic head, then it is predicted that they are in complementary distribution. This morphosyntactic proposal is schematized as follows (cf. Lee, 2006):

- (38) Complementary distribution of TVZ *Infl* prefixes



On the assumption that productive word formation processes occur at the syntactic level, this suggests that inflectional prefixes occupy the same syntactic position.

¹¹ In the current paper, I just present two ungrammatical examples of stacking; however, all possible combinations of these prefixes with different verbs, were tested resulting ungrammatical.

c. There are no other *Infl* (mood/tense/asp) morphemes attested in TVZ

The last argument in favor of the analysis of inflectional markers as a unified class is that only these prefixes, the seven aspect/mood markers shown in table 1, encode inflectional information that provides grammaticality to the sentence, no other inflectional markers are attested in TVZ.¹²

5.2 Alternative analysis

In this section, we discuss two alternatives to the analysis outlined above regarding the syntax of TVZ inflectional prefixes: a morphological restriction (template) approach and a multiple functional projections perspective. The former alternative predicts that these prefixes are in complementary distribution based on a morphological restriction: only one prefix per verb is allowed due a morphological template. This possibility, however, is rejected based on the fact that two prefixes may precede the verb.

- (39) r-z-ihnnih=a' INFL-CAUS-ROOT
 HAB-CAUS-gets light=3s
 'I turn on (a light)'

- (40) r-gu-èi'ny=ih INFL-DIR-ROOT
 HAB-DIR(go)-does=3s
 'The goes and does (it)'

In the examples above, the first prefix in both cases is an (habitual) inflectional marker, but crucially not the second; either a causative or directional prefix optionally occupies this position. Moreover, the latter prefixes are not sufficient to render the example grammatical. The presence of an inflectional prefix is necessary, as shown below.

- (39)' *z-ihnnih=a' *CAUS-ROOT
 CAUS-gets light=1s

- (40)' *gu-èi'ny=ih *DIR-ROOT
 DIR(go)-does=ih

The other possible syntactic representation for TVZ inflectional prefixes is the multiple functional projections approach (a la Cinque, 1999), i.e., MoodP > TP > AspP (see Lee, 2006 for a comparable approach); under this analysis, modal prefixes will be generated under the syntactic head Mood, aspectual ones under Asp. This approach, however, predicts the co-occurrence of inflectional prefixes; nevertheless, stacking of these prefixes is not attested in Zapotecan languages (Kaufman, 1994; Smith, 1994).

¹² Munro (2006: 193) notice that Valley Zapotec express epistemic modality by means of the clitic =*zhyi*.

- (a) *B-da'uh=zhy=ëng* *bxàady.* (Munro, 2006: 194)
 perf-eat=epis=3s.prox grasshopper
 'He must have eaten the grasshopper.'

Even though the suffic =*zhy* encodes modality, it does not belong to the same category of that of inflectional affixes in that the presence of =*zhy* is not sufficient to obtain a grammatical form once it is attached to a verb: ((a')*-da'uh=*zhy*=ëng); an inflectional prefix is still required. This suggests that the suffix =*zhy* is not in *Infl*. The specific syntactic analysis of this suffix is left aside for future research.

6. The Syntax of TVZ Modal Auxiliaries

In this section, we propose a unified analysis of the syntax of all modal auxiliaries, both necessity and possibility. Recall that a modal construction in TVZ consists of two inflected verbs, the auxiliary followed by the main one, and the complement(s) of the main verb. This is exemplified in (1), repeated below as (41).

- (41) *R-ìi'lle'eh r-gwèe' Chie'cw Dìi'zhsah* Aux_V_S_O
 HAB-AUX HAB-speak Chico Zapotec
 "Chico can speak Zapotec"

English modals, on the other hand, take bare verbal forms as their complements. A fairly standard assumption is to analyze these structures as monoclausal (Radford, 1988). See the following examples.

- (42) a. He can go b. *He can goes

- (43) [IP He [I can] [VP [V go]]]

In Zapotec, however, both the auxiliary and the complement verb have to be inflected in a modal construction; namely, they must be preceded by an inflectional prefix. Therefore, modal auxiliaries cannot take bare forms as complements. The absence of an inflectional prefix on either the auxiliary or the main verb results in ungrammaticality. Consider examples 44 and 45.

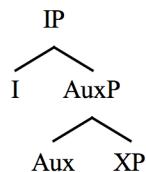
- (44) *R-ìi'lle'eh -gwèe' Chie'cw Dìi'zhsah

- (45) *-ìi'lle'eh r-gwèe' Chie'cw Dìi'zhsah

If, as stated in the previous section, inflectional prefixes in TVZ form a single morphosyntactic class, namely *Infl* (I), and no more than one *Infl* prefix is allowed per clause, then it must be the case that a modal auxiliary plus complement verb construction is biclausal, as both the modal and the verb are inflected. In order to illustrate this idea, first, we present the structure of auxiliaries and then the syntax of the modal construction as a whole.

We have established (previous section) that inflectional prefixes form a single syntactic class that occupy I. Furthermore, in section 4, it was shown that auxiliary verbs consist of an auxiliary root plus an inflectional prefix that attaches to them. Necessity modals appear with a habitual or neutral prefix, and possibility modals show a diverse range of prefixes (HAB, PERF, DEF, IRR). Given that inflectional prefixes are generated under I, this suggests that auxiliaries are generated in a different syntactic phrase. In order to capture this idea, we assume the existence of an Auxiliary Phrase (AuxP), where auxiliaries are generated (Radford, 2004). This is illustrated below:

- (46)

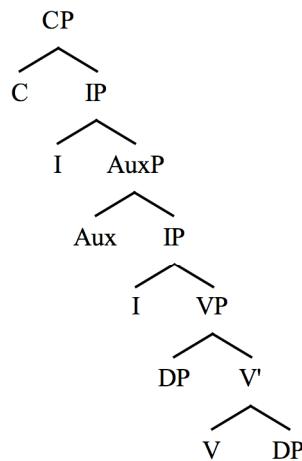


In terms of the selectional properties of auxiliaries, we have observed that all main complement verbs have to be inflected as well. Consequently, we propose that modal auxiliaries select IP's, instead of VP's (see example (44)). This can be represented in the subcategorization frame below:

- (47) Modal Aux: [__ IP]

The implementation of this structure requires a reduced clausal approach, as the embedded clause does not project a CP (Wurmbrand, 2003: 11; see also Tappe, 1984, Fanselow, 1989, Rooryck, 2000). The embedded IP is where the main/complement verb and its arguments originate. The idea can be schematized as follows:

- (48) [CP [IP [AuxP [IP [VP []]]]]]



Alternatively, modal auxiliaries might select CP's as their complements (instead of IP's). However, no constituent can appear between the modal auxiliary and the complement verb. We illustrate this fact with examples of focus (noticed by Munro, 2006: 188) and questions (see appendix 1 for more details).

In order to focus the subject of the sentence in (41), *Chie'cw*, it has to be fronted before both the modal auxiliary and the main verb, shown in (49a). In contrast, the presence of the subject between auxiliary and complement verb is ungrammatical (49b).

- (49) a. [*Chie'cw*] r-ii'lle'eh r-gwèe' Dìi'zhsah
 Chico HAB-AUX HAB-speak Zapotec
 "Chico can speak Zapotec"
- b. *R-ii'lle'eh [*Chie'cw*] r-gwèe' Dìi'zhsah
 HAB-can Chico HAB-speak Zapotec
 "Chico can speak Zapotec"

In regard to questions, wh-words are obligatorily fronted in TVZ; wh-in-situ is disallowed (Lee 2006: 7, see also ch. 4). Below, the wh-subject appears at the beginning

of the sentence, whereas its presence between the modal auxiliary and the main verb is disallowed.

- (50) a. [*Tu*] R-ii'lle'eh r-gwèe' Dìi'zhsah? 'Who can speak Zapotec?'
 WH.ANIM HAB-AUX HAB-speak Zapotec

b. *R-ii'lle'eh [*tu*] rgwèe' Dìi'zhsah? '*Who can speak Zapotec?'
 HAB-AUX WH.ANIM HAB-speak Zapotec

The above data suggest that there is no landing position between the modal aux and the complement verb; hence, no CP (along with any other projection on the 'left periphery' (Rizzi 1997), e.g. topicalization, force, negation in some languages, among other).

7. Consequences

The analysis adopted in this study has implications for the linear order, as well as case assignment in TVZ. In turn, each of these is discussed in detail, beginning with linear order.

7.1. Linear order in TVZ

The question of how VSO word order —prevalent in Zapotecan languages— is derived has been long debated by linguists. Following the VP-Internal Subject Hypothesis (Kitagawa, 1986; Koopman & Sportiche, 1991), in VSO languages the verb has to move from its base generated position in order to precede its subject. Under this approach, current proposals can be reduced to three possibilities: the verb may move outside the VP to C(omplementizer), to I(nfl), or it may move outside the VP to some higher projection above its complements, but below I. Irish is a typical example of the first case: V to C movement (McCloskey, 1983 & 2003); Classic Arabic has been analyzed as a case of V to I movement (Koopman & Sportiche 1991); finally, Berber is an example of verb movement, where the verb moves from the head position in VP, to a left edge position below IP (Elouazizi 2004, 2006). The landing position of the verb in the last case is commonly assumed to be a functional projection simply called *FP* (Uriagereka, 1995 & 1997; Ouhalla, 2005, *inter alia*). This is summarized below:

- ### (51) Verb movement in VSO languages

1. V -> C (e.g. Irish; McCloskey, 1983 & 2003)
2. V -> I (e.g. Classic Arabic; Koopman & Sportiche, 1991)
3. V -> F (e.g. Berber; Elouazizi, 2004 & 2006)

In TVZ, there is no indication in favor of V to C movement. In fact, there is evidence against this possibility as other constituents, such as auxiliary verbs and negation, regularly precede the verb in this language. Auxiliary verbs have been analyzed in section 6, and in TVZ negation, is presented below. (See appendix 1 for more detail about the interaction of these constituents and the main verb.)

- (52) Queity r-gwè'e'-di Chie'cw Dii'zhsah "Chico doesn't speak Zapotec"
 NEG HAB-speak-NEG Chico Zapotec

A TVZ negative sentence starts with *que'ity* "not", and next comes the verb with the suffix *-di'* (Munro, Lillehaugen and Lopez, 2006: 105; see Lee, 2006: ch. 4, for a detailed analysis of negation in TVZ).

Regarding V to I movement, the most significant indication for this analysis is subject-verb agreement (e.g. Classic Arabic), but this morphosyntactic characteristic is absent in TVZ. As a result, the verb in TVZ must move from the VP to some higher projection below IP. We adopt the FP (Uriagereka, 1995, 1997) mentioned above to represent TVZ derivation.

- (53) R-gwèe' Chie'cw Dii'zhsah V_S_O
 HAB-speak Chico Zapotec
 "Chico speaks Zapotec"

- (54) [CP [IP [₁R-] [FP [_Fgwèe'] [VP Chie'cw [_Vgwèe'] Dii'zhsah]]]]



The example above, shows how the verb moves from its base generated position within VP to F, obtained the surface linear order in this language.

7.2. Case assignment

According to Case Theory (Chomsky, 1981), case is not just morphological case but rather an abstract property of all licit nominal expressions. Overt nominals have to bear abstract Case (Rouveret & Vernaud, 1980). Therefore, although TVZ has no morphological case, it is necessary to account for the assignment of abstract case.

Within the Principles and Parameters framework, the verb assigns accusative case to the DP object and I(nfl) commonly assigns nominative case to DP subject. The former is assumed without problems in TVZ; the latter, however, requires additional discussion.

I(nfl) assigns nominative case to the subject via spec-head agreement. Nonetheless, in TVZ there is no subject-verb agreement, common condition for I to assign nominative case. Moreover, we propose (previous section) the existence of two IPs in modal constructions, which only have one DP subject (see figure (48)). If I(nfl) were the nominative case assigner in this language one might expect the existence of an expletive subject in the case of the higher IP in these constructions; however, this is never the case in TVZ.¹³ To accommodate this problem we argue that C(omplementizer) assigns nominative case in TVZ (this has been proposed by several scholars for different languages: Alboiu in press, Kornfilt (2001) for Turkish, McCloskey (1983) for Irish, inter alia).

Within the Minimalist Program (Chomsky, 1995), it is assumed that case is an uninterpretable ([*-interpretable*]) feature of D, and uninterpretable features have to be checked (deleted). We argue that in TVZ the assignment of nominative case by C occurs via AGREE¹⁴ (Chomsky, 1999, 2000), a relation between two matching categories eliminating the uninterpretable features. Importantly, this relation consists of a feature matching without movement (Wurmbrand, 2000). Adapted from Carstens (2001), the following are the characteristics of this mechanism:

¹³ See Bobajik and Jonas 1996 for discussion about transitive expletive constructions.

¹⁴ AGREE (Chomsky 2000: 122)

- i. Matching is feature identity
- ii. The domain of a probe P is the sister of P
- iii. Locality: closest c-command

(55) Feature checking via AGREE

- a. A probe α has uninterpretable ϕ -features.
- b. A goal β has matching ϕ -features.
- c. Uninterpretable ϕ -features are valued, and delete.

Zapotec

C

DP_{subject}

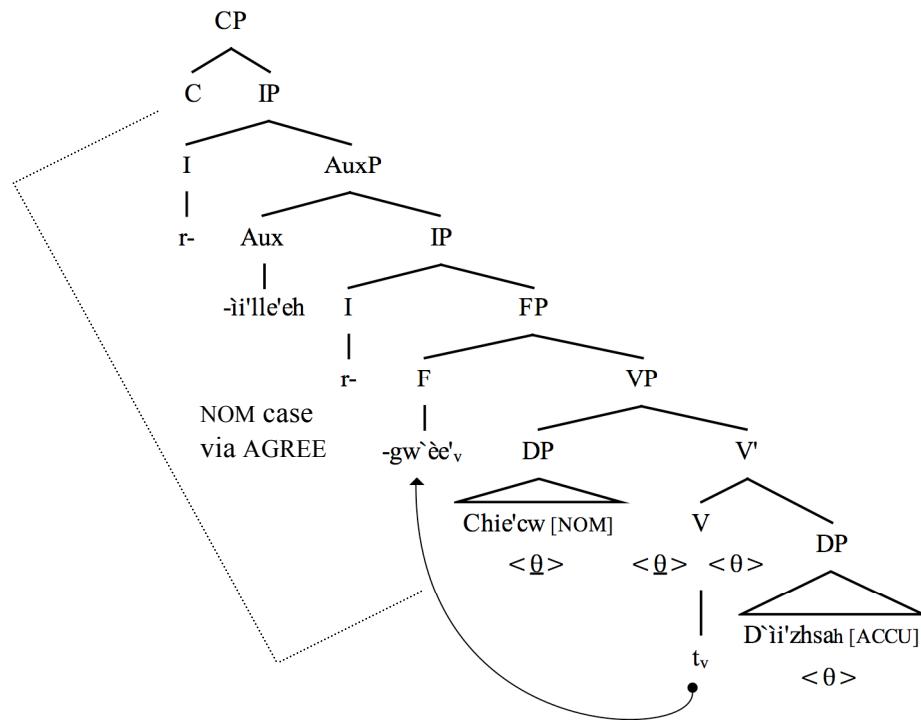
In TVZ, the probe is the Complementizer, which finds its goal in the DP subject. A feature matching takes place between these two categories via AGREE and their features are deleted.

7.3. Full derivation

To conclude this section, we present a full derivation of a TVZ sentence containing a modal auxiliary, taking into account the issues explained above: linear order as well as case assignment.

- (56) R-ì'lle'eh r-gwè' Chie'cw Dìi'zhsah Aux_V_S_O
 HAB-can HAB-speak Chico Zapotec
 "Chico can speak Zapotec

(57)



Thematic roles are assigned within VP without further complexity; it is a commonplace that auxiliaries do not assign theta roles (Heine, 1993; Wurmbrand, 2003). As we established, the verb assigns ACCU case and C assigns NOM case (via AGREE).

Finally, to obtain the correct linear order in this language, the verb moves outside the VP to a functional projection below IP, V to F movement, preceding its complements.

8. Conclusions

In this paper, we presented an analysis on the Syntax of modal auxiliaries in Tlacolula Valley Zapotec. First, we claimed that inflectional prefixes in TVZ (table 1) are generated under *I*. Second, we argued that modal auxiliaries project its own phrase, Auxiliary Phrase, and select *IPs* based on the fact that complement verbs are always inflected. Third, as both the auxiliary verb and the complement verb are inflected in a modal construction, we assume they form a biclausal structure; the lower *IP* (complement main verb) constitutes a reduced clause that does not project a *CP*.

This analysis provides a unified syntactic account for all modals in TVZ, though they display different individual syntactic and semantic characteristics. Further consequences of this approach include the existence of a functional projection below *IP* that provides a landing position for the verb, as well as nominative case assignment by *C*. Finally, an avenue for future research is the semantics of modal auxiliaries.

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Appendix 1: More on Syntactic properties of Modal auxiliaries

This appendix presents the interaction of modal constructions with respect to the position of subject, negation and questions. Crucial examples for the analysis of modal auxiliaries were already presented in the paper; this section provides complementary data.

The following sentence will be base for the whole section.

(58) ✓ R-ii'lle'eh r-gwè'e' Chie'cw Dìi'zhsah HAB-AUX HAB-speak Chico Zapotec	"Chico can speak Zapotec"
--	---------------------------

a) *Subject interaction:*

(59) a.* Rii'lle'eh Chie'cw rgwè'e' Dìi'zhsah	"Chico can speak Zapotec"
b. R-ii'lle'eh (* <u>Chie'cw</u>) r-gwè'e' <u>Chie'cw</u> Dìi'zhsah	"Chico can speak Zapotec"

- c. ✓ R-ii'lle'eh r-gwèe'=ih Dii'zhsah
=3s (clitic) "He (out of sight) can speak Zapotec"
d. * R-ii'lle'=ih r-gwèe' Dii'zhsah "He (out of sight) can speak Zapotec"
e. R-ii'lle'(*=ih) r-gwèe'=ih Dii'zhsah "He (out of sight) can speak Zapotec"

In sum, only one subject (or one subject clitic) is allowed in a modal construction, and it has to follow the complement verb (or precede the auxiliary if it is focused).

b) Negation

A TVZ negative sentence begins with the word *que'ity* "not", followed by the verb with the suffix *-di'* (Munro, Lillehaugen and Lopez, 2006: 105; see also Lee 2006: ch. 4)

The following examples illustrate the interaction of negation with modals.

- (61) a. ✓ Queity r-ii'lle'eh-di r-gwèe' Chie'cw Dii'zhsah
 NEG HAB-AUX-NEG HAB-speak Chico Zapotec
 "Chico can't speak Zapotec"

b. * Queity Rii'lle'eh rgwèe'di Chie'cw Dii'zhsah "Chico can't speak Zapotec"

c. * Queity ri'lle'eh rgwèe' Chie'cw Dii'zhsah "Chico can't speak Zapotec"

d. (* Rii'lle'eh) queity rgwèe'(di) Chie'cw Dii'zhsah "Chico can't speak Zapotec"

All in all, the negation word *que'ity*, "not", must precede the modal (sentence initial) and the particle/suffix -di must attached to the modal.

c) *Questions*

Questions in TVZ require wh-words to be fronted; wh-in-situ is disallowed (Lee 2006: 7, see also ch. 4). See examples below.

- (62) Bi'llxeng li'ibr. “He read the book”
 B-ii'llx-ëng li'ibr
 PERF-read-3s.prox book

(63) Xi bii'llxeng? “What did he read?”
 Xi b-ii'llx-ëng
 what PERF-read-3s.prox

(64) *B-ii'llx-ëng xi? “What did he read?”
 PERF-read-3s.prox what

Below, we present examples of questions with modals.

-Wh Object

- (65) a. ✓ Xi (dizh) rì'i'le'eh rgwèe' Chie'cw?
WH.inanimate

"What Chico can speak?"

- b. (* Rii'lle'eh) Xi (dizh) rgwèe' Chie'cw?

"What Chico can speak?"

-Wh Subject

- (66) a. ✓ Tu Rii'lle'eh rgwèe' Dìi'zhsah?
WH.animate

"Who can speak Zapotec?"

- b. * Rii'lle'eh Tu rgwèe' Dìi'zhsah?

"Who can speak Zapotec?"

As observed above, no wh-constituent is allowed between modal auxiliary and complement verb.

The table below, based on the data above, shows that no constituent is allowed between a modal auxiliary and its verb complement.

Table 6. Summary table

Modal Aux	(*subject)	complement V
	(*focused constituent)	
	(*neg)	
	(*wh word)	

Mail contact:

Mario E. Chávez-Péón
Department of Linguistics
University of British Columbia
phone: (604) 822 4256
email: mariochp@interchange.ubc.ca
E270 1866 Main Mall
Vancouver, BC V6T 1Z1
Canada