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# **Modality and the Structure of Tense in San Lucas Quiaviní Zapotec\***

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## **1. Overview**

In San Lucas Quiaviní Zapotec (SLQZ), an Otomanguean language spoken in Oaxaca, Mexico, verbs with certain aspect markers receive either indicative or modal readings depending on their syntactic context. This paper will propose a syntactic account for this phenomenon.

In non-negated matrix clauses, for instance, verbs with the Irrealis aspect (realized as a verbal prefix) receive indicative future readings:

- (1) I-to'oh Gyeihlly ca'rr  
irr-sell Mike car  
"Mike will sell the car"

The same verb forms receive modal, rather than indicative, readings, however, when used as complements of modals or certain intensional verbs such as "want":

- (2) R-ca:az i-to'oh Gyeihlly ca'rr  
hab-want irr-sell Mike car  
"Mike wants to sell the car"

It is interesting to note that the class of SLQZ verbs that subcategorize for Irrealis complements with modal interpretations corresponds roughly to the class of verbs that subcategorize for subjunctive complements in Romance.

Another context in which Irrealis-marked verbs obligatorily receive modal interpretations is under standard clausal negation. In SLQZ standard clausal negation is realized by a clause-initial negative specifier *ciity*, followed by the verb, followed by the negative head *dya'* incorporated into the verb, then the subject or pronominal subject clitic. Example (4), the negated version of (3),

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shows this pattern. Most SLQZ aspects (including the habitual aspect, shown below) do not undergo any change in modal interpretation under clausal negation:

- (3) R-ap-u' be'cw  
habitual-have-2s dog  
"You have a dog"
- (4) **Ciity r-ap-dy-u' be'cw**  
**neg hab-have-neg-2s dog**  
"You don't have a dog"

Negated Irrealis verbs that appear under the clausal negation pattern in (4), however, receive only modal, rather than indicative future, readings. Irrealis verbs only appear under standard clausal negation in embedded clauses, as seen in (5):

- (5) R-eihpy-a' Gyeihlly [ **ciity i-to'oh-dya'** Gyeihlly ca'rr]  
hab-tell-1s Mike [ neg irr-sell neg Mike car]  
"I told Mike not to sell the car"

A morphologically distinct negation pattern — only used with Irrealis verbs — allows negated indicative future readings, as seen in (6):

- (6) **Ciity-dya'** Gyeihlly i-to'oh ca'rr  
**neg-neg** Mike irr-sell car  
"Mike will not sell the car"

In contrast to the standard clausal negation pattern shown in (4), in the Future Irrealis negation pattern, the negative specifier and head, *ciity* and *dya'*, appear directly adjacent to one another rather than before and after the verb, and the subject precedes, rather than follows, the verb.

Before continuing, I should clarify the definitions of "indicative" and "modal" readings relevant for this paper. The definitions I assume in this paper are adopted from Farkas's (1992) work on complement mood selection. In her terms, indicative readings result when "a proposition is anchored to the real world of some model." She defines such readings as MODALLY SPECIFIC, and defines modal specificity as follows:

**MODAL SPECIFICITY:** A proposition *p* is in a modally specific environment iff it is added to an actual context. In this case, *p* is extensionally anchored to the real world of some model *M*.

In (1), for instance, the verb "sell" refers to an event assumed to take place in the actual world containing Mike and the speaker. The proposition of Mike selling the car is in a modally specific environment since the sentence is interpreted as referring to a real event in the real world.

Adopting Farkas's terminology (originally formulated to define the interpretation of Romance subjunctive complements), I will define modal readings as those that result "when a proposition  $p$  is in a modally non-specific environment," with modal non-specificity defined as follows:

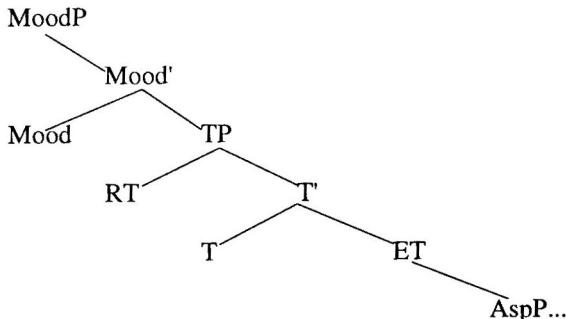
MODAL NON-SPECIFICITY: A proposition  $p$  is in a modally non-specific environment iff it is added to some set of contexts  $K$ . In this case  $p$  is intensionally anchored to the set of worlds  $W_k$ .

In (2), for example, the event of Mike selling the car is not extensionally anchored to the actual world in which Mike exists (since it's a potential, rather than actual, event) but rather is intensionally anchored to the set of possible worlds denoted by Mike's desire.

While most SLQZ aspects do not vary in modal interpretation under negation or as complements of different predicates, two other SLQZ aspects — the Subjunctive and the Definite, which will be defined and described below — do show similar alternations in interpretation according to syntactic context. Following Black's (1994) analysis of Quiegolani Zapotec (a related but mutually unintelligible language) I will thus label this group of aspect markers the "modal" aspects, since they potentially express relations between events and possible worlds, rather than merely the temporal structure of events. This paper will propose a correlation between syntactic structure and indicative versus modal interpretations, and will suggest that indicative and modal interpretations result from movement among separate, interacting projections for Tense, Aspect, and Mood.

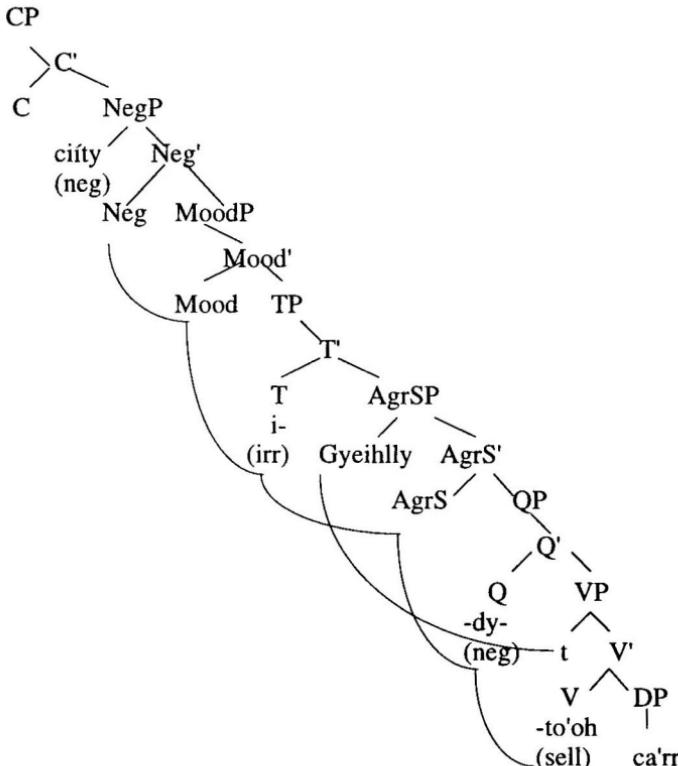
## 2. Proposal

I will propose the following. First, Tense, Aspect, and Mood are distinct, interacting syntactic projections that appear in the following configuration:



Definitions for the functions of these projections — and evidence for this structure — will be provided in the following sections.

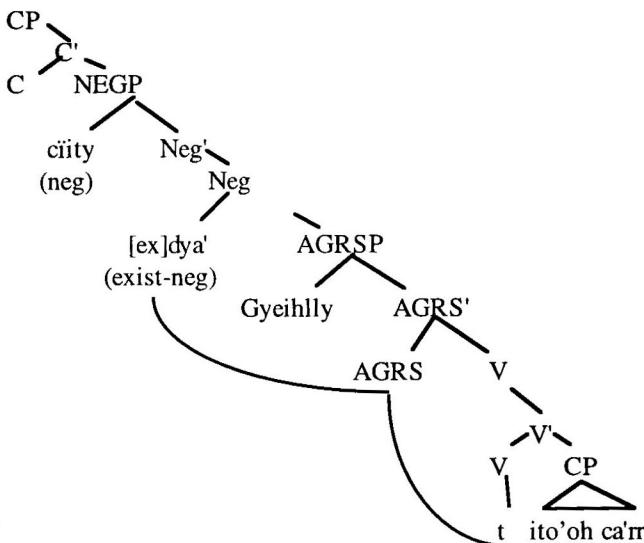
Next, raising of V out of T in modal aspects gives modal, rather than indicative future, readings, since T must raise through MoodP:



*ciity ito'ohdya Gyeihlly ca'rr , "...(for Mike) not to sell the car"*

In the tree above, which is the syntactic representation for the embedded negated Irrealis clause in (5), the verb raises from VP through the head of the negative Q, then through the heads of AGRS and TP. In non-negated indicative contexts, the verb remains in the head of T and thus receives an indicative reading. Since SLQZ is a negative concord language, however, in (5) the verb must raise to the head of NegP in order for *dya'* and *ciity* to appear in a specifier-head configuration. In order to avoid a head movement constraint violation, the verb must first raise through the head of MoodP. Thus, Irrealis verbs acquire a modal, rather than indicative future, reading when they raise to NegP.

Indicative future readings do result with Irrealis-marked verbs, however, under the negation pattern shown in (6). I will account for this pattern as follows: In this structure, a covert existential verb undergoes clausal negation (and thus appears between *ciity* and *dya'*), and the Irrealis verb itself stays in T (within the complement clause of the negated existential verb). Thus, the Irrealis verb does not raise through MoodP, and its non-modal future reading is preserved.



*Ciity-dya' Gyeihlly i-to'oh ca'rr, "Mike will not sell the car"*

Finally, I will propose that the obligatory modal interpretation of Irrealis complements of modals and certain verbs results because these verbs and modals subcategorize for complements with filled MoodPs. Thus, Irrealis complements of modals obligatorily raise to MoodP and get modal, rather than indicative future, readings. I will also show that this analysis can be extended to the other modal aspects as well.

### 3. Background

Before continuing, I will provide a brief overview of SLQZ word order and morphology. SLQZ is a VSO language that allows the option of other word orders. Subject agreement markers, which are verbal suffixes, only appear when the subject is pronominal. In (7), for example, the first-person singular marker *-a'* appears, marking the subject "I", but no such marker appears on the verb in (8), in which the subject is lexical, rather than pronominal:

- (7) (Na:a') b-guhty-a' bzihny  
1s perf-kill-1s mouse  
"I killed a mouse"

- (8) Bzihny b-guhty li:u'w  
mouse perf-kill you  
"A mouse killed you"

Following the standard analysis of this phenomena in Zapotec linguistics (for instance, Marlett 1994), I will assume that pronominal subject agreement markers are bound pronominal clitics. "Independent" subject pronouns that optionally appear in SLQZ (such as *na:a'*, "I", in (7)) are adjuncts that cannot appear in argument positions, such as between verbs and direct objects:

- (9) B-ta'z Lieeb na:a'  
perf-hit Felipe 1s  
"Felipe hit me"
- (10) (Na:a') b-ta'z-a' Lieeb  
(Is) perf-hit-1s Felipe  
"I hit Felipe"
- (11) \*B-ta'z-a' na:a' Lieeb  
perf-hit-1s 1s Felipe  
"I hit Felipe"

To reiterate, basic clausal negation is formed with the negative specifier *ciity*, followed by the verb, the negative head *dya'*, and the lexical subject or pronominal subject clitic:

- (12) **Ciity r-auhw-dy-ing** gueht  
neg hab-eat-neg-3s tortilla  
"He doesn't eat tortillas"
- (13) **Ciity r-auhw-dya' Jwaany** gueht  
neg hab-eat-neg Juan tortilla  
"Juan doesn't eat tortillas"

### 3.1 Verbal morphology

The Zapotec languages have traditionally been labelled "aspect-marking" as opposed to "tense-marking" languages because their overt verbal morphology reflects the internal structure of events, rather than their relation in time to the speaker. For instance, a verb marked with the Progressive aspect can be used to express past, present, or future progressive events, depending on conversational context:

- (14) Ca-beez-a' li:u'w  
prog-wait-1s you  
"I am/was/will be waiting for you"

SLQZ has seven aspect markers, which appear as prefixes on the verb stem:

<u>Non-modal:</u>		<u>Modal</u>	
habitual	r-	subjunctive	ny-/n-
perfective	b- /gu-	irrealis	i-/g-/ch-
progressive	ca-	definite	z-/s-
neutral	n-		

I will divide these aspect markers into two groups: the non-modal and the modal aspects. The non-modal aspects denote the internal temporal structure of events, while the modal aspects denote the relation of an event to sets of possible worlds.<sup>1</sup>

These two groups of aspect markers differ both in syntactic distribution and interpretation. The following sections will describe some of these differences and propose an account of them.

#### 4. Distribution of modal and non-modal readings of Irrealis

To reiterate, non-modal future readings of Irrealis verbs always result when Irrealis aspect appears on matrix verbs:

- (15) I-cwa:a:a' Lieeb coloory liihahzh-ni'  
 irr-throw Felipe color house-refl.poss  
 "Felipe will paint his house"

These readings also result when Irrealis aspect appears in complements of predicates that do not require modal aspect marking in their complements (16) and when the Future Irrealis negation pattern is used (17):

- (16) N-aann Lieeb da'ru' i-to'oh Gyeihlly ca'rr  
 neut-know Felipe soon irr-sell Mike car  
 "Felipe knows Mike will soon sell the car"

- (17) Ciity-dya' Gyeihlly i-to'oh ca'rr  
 neg-neg Mike irr-sell car  
 "Mike will not sell the car"

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<sup>1</sup> Even though these verbal "aspect" markers can denote tense and modality as well as aspect, I will defer to the established convention of Zapotec linguistics and refer to these collectively as aspect markers.

Modal readings of Irrealis verbs, on the other hand, always result when Irrealis aspect appears in complements of modals or verbs requiring complements with one of the modal aspects, such as *rca:az*, "want":

- (18) R-ca:az Gyeihlly i-to'oh ca'rr  
 hab-want Mike irr-sell car  
 "Mike wants to sell the car"

Modal readings of Irrealis-marked verbs also result when Irrealis verbs undergo standard clausal negation:

- (19) Reihpy Lia Pamm la:a'ring [ciity g-wu:all-dya- rïng liebr]  
 tell Ms. Pam 3p neg irr-read-neg-3p book  
 "Pam told them not to read the books"

Two generalizations fall out from the preceding data. First, the contrasting readings of Irrealis verbs under the two different clausal negation patterns show that modal and non-modal readings of Irrealis verbs are determined by the presence or absence of verb movement out of TP: if the Irrealis verb stays in TP (as it does in non-negated matrix clauses and under the Future Irrealis negation pattern exemplified in (17)) a non-modal reading results. On the other hand, if the verb raises out of TP to NegP, as seen in the standard clausal negation pattern in (19), a modal reading of the verb results.

Second, certain predicates can require Irrealis complements, and can require these complements to receive modal interpretations. This fact, combined with the sensitivity of modal and non-modal readings of Irrealis verbs to movement, suggests that the modal interpretation of Irrealis verbs is structurally motivated. In the following section, I will argue for a structure that accounts for the preceding data.

## 5. The syntactic structure of Tense, Aspect, and Mood

The correlation between verb movement and the modal interpretation of Irrealis verbs suggests that mood is syntactically as well as semantically salient. The ability of modal features to be activated by movement — in addition to being selected as complements of certain verbs — is analogous to the behavior of [+Q] complementizers: these too are activated by movement (for instance, in English and French yes/no questions) and are selected as complements of certain predicates (for instance, *wonder*). Modal features, then, could be said to be activated within a functional projection MoodP directly above TP: Modal features are activated when the verb raises through MoodP. The three modal aspects, then, can be characterized as having (potentially) active MoodPs, while the non-modal aspects lack MoodP or have MoodP inactive or necessarily constrained to ranging over the actual world. This would account for the fact that verbs marked with non-modal aspects can raise to NegP under standard clausal negation without any change in modal interpretation. Modals and verbs subcategorizing complements with modal Irrealis verbs, then, can be defined as predicates subcategorizing complements with filled MoodPs.

As previously noted, SLQZ aspect markers encode aspect and tense features, as well as modal features. I will argue that these, too, are represented as distinct functional projections. The syntactic realization of Aspect can be justified by the fact that Aspect is always realized in the verbal morphology.

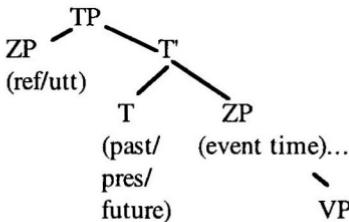
While Tense is not morphologically realized in SLQZ, it nonetheless plays a role in distinguishing the different aspects, and is a salient feature in a number of grammatical constructions. For instance, SLQZ has tense-shifting effects involving Irrealis and Subjunctive complements of modals and verbs such as "want": Irrealis aspect appears on the complement verbs when the matrix verb is marked with Habitual aspect (thus denoting a present state, as seen in (20)), but Subjunctive aspect is required when the matrix verb is marked with Perfective aspect (thus denoting an already completed event or state, as seen in (21)):

- (20) R-ca:a'z Gyeihlly **i**-to'oh ca'rr  
hab-want Mike **irr**-sell car  
"Mike wants to sell the car"
- (21) Gu'-cla:a'z Gyeihlly **n**-to'oh ca'rr  
perf-want Mike **subj**-sell car  
"Mike wanted to sell the car"

The sensitivity of complement aspect selection to the event time of the matrix predicate points to the presence of a tense feature that must be checked by (or inherited from) the matrix predicate. These examples also show that modal aspects in SLQZ express temporal structure as well as modality: they depict not only possibility and obligation, but also the relation of a (hypothetical) event to a reference time in a possible world. The Subjunctive aspect, then, can be considered the past form of the Irrealis. A more detailed analysis and comparison of the modal aspects will be presented in the following section.

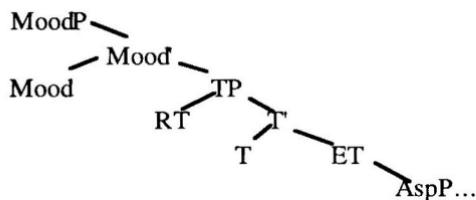
I will assume the internal structure of TP proposed by Stowell (1994). In his model, Tense is a two-place predicate taking as its arguments an Event Time (ET) represented as a functional category ZP or "Zeit-phrase" complement of TP and a c-commanding Reference Time (RT) represented as another ZP in the specifier of TP. The head T itself establishes an ordering relation between RT and ET. For instance, PAST orders RT after ET, while PRESENT establishes RT and ET as simultaneous or overlapping:

(22)



This structure will motivate the positions I will propose for the Aspect and Mood projections. Since Aspect directly describes the internal temporal structure of events, its corresponding functional projection (AspP) can be posited as the complement of ET in the structure given above. Since MoodP is higher than TP (as shown in the preceding sections), and, as seen in examples (20) and (21), temporal relations can be expressed within the worlds denoted by a modal feature, MoodP can be posited to take TP as its complement. This gives the following structure for the three projections together:

(23)



This structure allows the three modal aspects to be defined in terms of three features: Mood, Tense, and Aspect. It also provides structural correlates to their different possible interpretations, depending on whether V stays within TP or raises further to Mood.

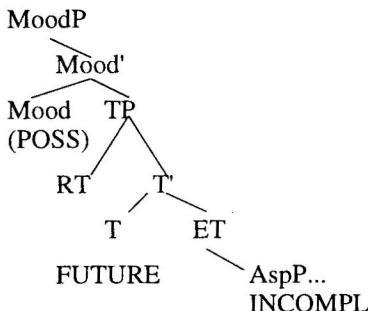
## 6. The structure of the modal aspects

### 6.1 The Irrealis aspect

The above structure can be used to account for the two readings of the Irrealis aspect in the following way: Irrealis aspect, as previously noted, gets either future or modal interpretations, depending on syntactic context. Below I will show that these two readings are derived from the same structure and features, and differ only in whether or not the Mood feature is activated by verb-raising.

Consider a typical SLQZ sentence in which an Irrealis verb receives a future interpretation, such as the example below:

- (24) I-dauw-*inn* gueht  
 irr-eat-1p tortilla = "We will eat tortillas"

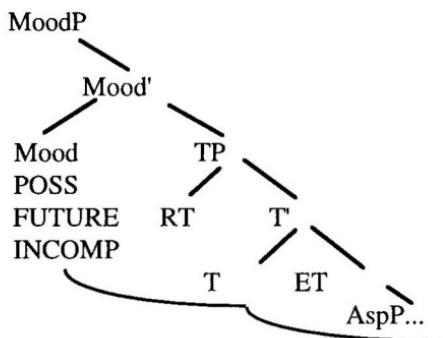


In this case, the Tense projection clearly contains FUTURE tense properties, since the sentence unambiguously describes an event ordered after the utterance time. The Mood feature is inactive, since the verb does not raise through MoodP. (Justification for the POSSIBLE modal feature will be presented below.)

The Aspect projection contains the aspectual feature INCOMPLETE, since future Irrealis sentences describe incomplete events. A potential argument against this claim is that future events are by nature incomplete at the reference/utterance time, and that their incompleteness is a side effect of tense, rather than an independent aspectual feature. In SLQZ, however, a range of aspect markers are employed to express the aspectual features of future events: for instance, future progressives, as seen in (14), are expressed with Progressive aspect; and future perfectives (such as 'I will have eaten') are expressed with Perfective aspect. Irrealis aspect cannot be substituted for Progressive or Perfective in these contexts.

This leaves the issue of defining the modal feature of Irrealis aspect. The example below is a typical Irrealis modal complement:

- (25) Z-a:alle'eh g-wu:all Jwaany  
def-can irr-sing Juan = "Juan can (=has permission to) sing"



The modal Irrealis verb, like the non-modal example that precedes it, denotes an incomplete event in the future. Unlike its indicative future counterpart, however, the modal Irrealis verb denotes not an incomplete future event in the actual world, but in a possible world introduced by the modal 'can'. Thus, the activated Mood feature in modal Irrealis verbs indicates a set of possible worlds in which a future event may take place.

## 6.2 The Subjunctive aspect

Just as the different readings of the Irrealis aspect can be accounted for by a set of common features in slightly different syntactic configurations, so can the different readings of the other modal aspects.

The Subjunctive aspect differs from the Irrealis only in its tense features. Like the Irrealis, the Subjunctive aspect acquires different readings in matrix, modal complement, and negated clauses. In matrix clauses, it expresses incompleted events in the past:

- (26) N-to'oh Gyeihlly ca'rr  
subj-sell Mike car  
"Mike was going to sell the car" (but didn't)

Under clausal negation, subjunctive clauses are interpreted as negated past events:

- (27) Ciity n-to'oh-dya' Gyeihlly ca'rr  
neg subj-sell-neg Mike car  
"Mike didn't sell the car" ( $\neq$  Mike wasn't going to sell the car)

Either subjunctive or perfective aspect can be used to express negated past events. According to my SLQZ consultant, there is no difference in meaning or usage between the two:

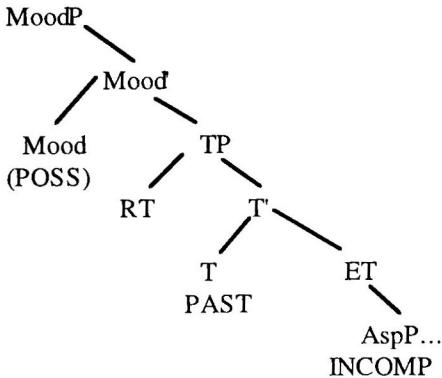
- (28) Ciity b-to'oh-dya' Gyeihlly ca'rr  
 neg perf-sell-neg Mike car  
 "Mike didn't sell the car"

When subjunctives appear as complements of modals or verbs whose complements require modal readings, they express incomplete actions in the past in the possible worlds denoted by the modal:

- (29) Gu-cla:az-a' n-ta'z-a' Lieeb  
 perf-want-1s subj-hit-1s Felipe  
 "I wanted to hit Felipe"
- (30) N-aa pahr n-ta'z-a' Lieeb  
 neut-be for subj-hit-1s Felipe  
 "I should have hit Felipe"

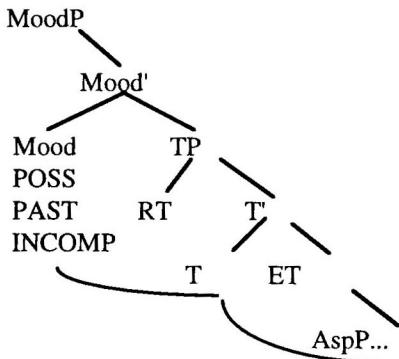
Thus, the Subjunctive aspect can be assigned the following underlying structure. Since matrix Subjunctive verbs denote incompletely completed events in the past, the Aspect projection contains the feature INCOMPLETE and the Tense projection contains the feature PAST. In matrix Subjunctive clauses, as in matrix Irrealis clauses, verbs remain in T, and the Mood feature is inactive.

- (31)



When Subjunctive verbs appear in complements of modals, however, the verb denotes incompletely completed actions in the past in a possible world (as in (29)), rather than in the actual world. Thus, the activated Mood projection contains the feature POSSIBLE:

(32)



This accounts for the seemingly odd fact that negated Subjunctive clauses can be used interchangeably with negated Perfectives to express negation of past events: they give the reading "it was not possible for the event to be completed," which in most semantic environments is indistinguishable from the negated perfective reading, "the event did not occur."

### 6.3 Definite aspect

The third and last modal aspect to be accounted for is the Definite aspect. In its most common use (in non-negated matrix clauses) it gives "emphatic future" readings:

- (33) S-to'oh Gyeihlly ca'rr  
def-sell Mike car  
"Mike will definitely sell his car"

The "emphatic future" reading is preserved under clausal negation:

- (34) Ciity s-to'oh-dya' Gyeilly ca'rr i-ca'a' Lieeb tienn la:a Lia  
neg def-sell-neg Mike car irr-receive Felipe because focus Ms.

Pamm i-ca'-ih  
Pam irr-receive-it

"Mike definitely won't sell the car to Felipe because he's selling it to Pam"

Definite aspect reflects stronger speaker presupposition about the reality of future events than the Irrealis aspect:

- (35) A g-uhcnee Lieeb muully Gyeihlly naa ciity-dya' Gyeihlly  
already perf-lend Felipe money Mike now neg-neg Mike

i'-to'oh ca'rr  
irr-sell car

"(Since) Felipe already lent Mike money, now Mike (probably) won't sell the car"

Definite aspect is also used to express future events in complements of epistemic verbs such as *rralloh*, "believe":

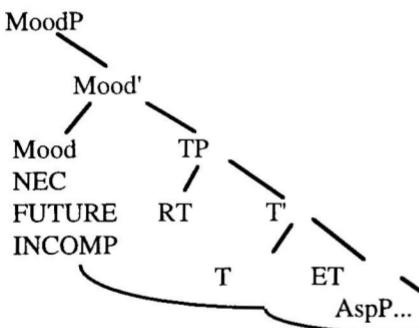
- (36) R-ralloh Lieeb s-to'oh Gyeihlly ca'rr  
hab-believe Felipe def-sell Mike car  
"Felipe believes Mike will sell the car"

- (37) \*R-ralloh Lieeb i-to'oh Gyeihlly ca'rr  
hab-believe Felipe irr-sell Mike car  
"Felipe believes Mike will sell the car"

Thus, unlike other modal aspects, Definite aspect-marked verbs have a single, modal interpretation in matrix, embedded, and negated clauses: in all these contexts, they express speaker belief that the event described must necessarily happen (or, in the case of negated Definites, definitely not happen).

This can be accounted for as follows: the Mood proejction of Definite verbs contains the feature NECESSARY (requiring expressions denoted by Definite verbs to be true in all possible worlds). Verbs marked with Definite aspect always raise through Mood (even in matrix clauses) and may potentially raise higher (to Focus) in non-negated clauses:

- (38)



There is ample evidence that Definite-marked verbs raise to higher positions in matrix clauses than verbs with other aspect markers. For one, while

SLQZ allows the option of preverbal subjects relatively freely, preverbal subjects are not allowable in clauses with Definite-marked verbs:

- (39) S-ta'z Gyeihlly Lieeb  
def-hit Mike Felipe  
"Mike will (definitely) hit Felipe"
- (40) \*Gyeihlly s-ta'z Lieeb  
Mike def-hit Felipe  
"Mike will (definitely) hit Felipe"
- (41) I'-ta'z Gyeihlly Lieeb  
irr-hit Mike Felipe  
"Mike will hit Felipe"
- (42) Gyeihlly i'-ta'z Lieeb  
Mike irr-hit Felipe  
"Mike will hit Felipe"

Further evidence comes from the inability of Definite-marked verbs to allow focus constructions. Contrastive focus is expressed in SLQZ by raising of the focused constituent to a preverbal focus position (as seen in the contrasting subject positions in (43) and (44))<sup>2</sup>:

- (43) Laa:a' i-to'oh Gyeihlly ca'rr?  
quest irr-sell Mike car  
"Will Mike sell the car?"
- (44) Laa:a' Gyeihlly i-to' ca'rr  
quest Mike irr-sell car  
"Will MIKE (as opposed to someone else) sell the car?"

This option is not allowed, however, when the clause contains a Definite verb:

- (45) Laa:a' s-to' Gyeihlly ca'rr?  
quest-def-sell Mike car  
"Will Mike sell the car?"
- (46) \*Laa:a' ca'rr s-to' Gyeihlly?  
quest car def-sell Mike  
"Will Mike sell THE CAR (as opposed to the boat)?"

These data show that Definite verbs surface in a higher syntactic position than Irrealis verbs (or, for that matter, verbs with any other aspect marker — to my knowledge, verbs with other aspects allow preverbal subjects and preverbal contrastive focus without problem).

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<sup>2</sup>The fact that a subject is focused here is not relevant. Objects and adverbials may also receive contrastive focus by being fronted to preverbal position.

## 7. Summary

This paper, then, has given the following account for the alternation between modal and indicative readings of the 'modal' aspects in different syntactic contexts:

- Tense, Aspect, and Mood are distinct, interacting syntactic projections.
- Raising of V out of T in modal aspects gives modal readings.
- The interpretations of the three modal aspects can be derived from the interaction of features in Tense, Aspect, and Mood projections.

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