

Possibility Modality in Saamáka*

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1. Introduction

Saamáka is what linguists call a ‘radical creole’: in comparison with other creoles it has remained reasonably free of external influences since its creation. The language holds an almost mythical position in the debate on creole formation. However, it is remarkable how little is known about the structure of Saamáka. Aspects of the tense, aspect and modality system (TMA) have been discussed elsewhere (see e.g. Byrne 1987, Veenstra 1996, McWhorter 1997), but this paper aims to present a systematic overview of the expression of possibility modality in Saamáka on the basis of recent insights in the study of modality in the world’s languages. The data presented in this study is based on recent fieldwork using tests specifically designed to study TMA.

Saamáka is a creole language spoken along the Suriname river, Suriname. Although often classified as an English-based creole, 30% of its vocabulary on a Swadesh list is Portuguese derived. The main substrate languages are Gbe and Kikongo (see e.g. Smith 1987). The language is strictly SVO and tense, aspect and modality morphemes occur in between the subject and the verb (see e.g. Byrne 1987, Veenstra 1996). Saamáka expresses lexical tone and it differentiates between high and low tones¹. Possibility modality in Saamáka is expressed through adverbs, bi-clausal structures and the modal morpheme *sa*. The former two ways are left aside in this paper, and I concentrate on the modal *sa*. It is three ways ambiguous and depending on the context, *sa* expresses dynamic ability modality (1), deontic permissive modality (2), and speculative epistemic modality (3) (in the sense of Palmer 2001).

- (1) Ée a kÍsi mÓni nÓo a sa gÓ a wÓsu.
if 3SG catch money NARR 3SG MOD go LOC house

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'If s/he gets money, s/he can go home'.

- (2) I sa butá dí pusipúsi a dóo.
2SG MOD put DET cat LOC outside
'You may put the cat outside'.

- (3) Context: Someone wants to know where is Lathoya? The speaker doesn't know where she is, but s/he does know that Lathoya loves to go fishing in the afternoon.
A sa gó a húku.
3SG MOD go LOC hook
'She might have gone fishing'.

This paper investigate in detail how possibility modality is expressed in Saamáka, and how modality contributes to the temporal interpretation of a proposition. The close relation between tense and modality, and aspect and modality has been elaborately discussed in recent studies (see e.g. Condoravdi 2002, Stowell 2004, Arregui 2007, Borgonovo and Cummins 2007, Laca 2008). A research topic addressed in these papers is the interaction between modal morphemes and the temporal reference of an event embedded under a modal. The pattern that arises is that epistemic modality cannot embed a PAST tense operator. In order for a language to convey a past time reference of the embedded event, the event needs to be modified by the perfect (see e.g. Condoravdi 2002, Arregui 2007, Borgonovo and Cummins 2007, Laca 2008). Although the focus has been on familiar languages like English, French and Spanish, I show that Saamáka is not so different from these languages. A striking feature of (1) - (3) is the difference in temporal orientation of the event embedded under the modal *sa*. In the ability and permissive reading, the event time is future, and in the epistemic reading it is past. In the surface structure there does not seem to be a difference in the circumstantial reading of (1) and (2) on the one hand and the epistemic reading in (3) on the other, i.e. no other overt TMA marking is present. I provide evidence that Saamáka has a morphological null perfect and this null morpheme is obligatorily present in the underlying structure of propositions like (3), where it is not in sentences like (1) and (2). Its presence is triggered by the requirement of the epistemic reading of the modal to embed a stative complement. As in other languages, the perfect creates the illusion of a past tense being embedded under an epistemic modal morpheme. Furthermore, Migge and Winford (2009) examine possibility in the Surinamese creoles; Sranan, Ndyuka, Pamaka and Saamáka. Their study shows variation across these languages in the expression of possibility modality. This paper follows up on their work and gives a Kratzer (1977, 1991) style analysis of the possibility modal *sa*. I claim that in Saamáka not only does the conversational background influence the choice of modal base i.e. whether the modal base is circumstantial or epistemic, but that also aktionsart i.e. whether the verb is stative or nonstative, and the temporal interpretation of an event embedded under possibility modal *sa* influences this choice.

This paper is organised as follows. Section 2 presents data concerning the meaning and

¹For a study of the phonological and tonal system of Saamáka, I refer the interested reader to Smith (1987) and subsequent work, and Good (2004) and subsequent work.

usage of the modal *sa*. Section 3 discusses the contribution of modals on the temporal interpretation of a proposition. A solution to the problem of a difference in event time between a circumstantial modal base and an epistemic modal base is given in Section 4. Section 5 ends this paper with a summary and a conclusion.

2. Meaning and classification of *sa*

This section studies the several readings of the possibility modal *sa*. The classifications and definitions in Palmer (2001) are taken as a guideline for the descriptive part of this paper. He defines modality as grammaticalisation of the subjective opinions and attitudes of a speaker towards the proposition (Palmer 2001, 8). First, the ability interpretation of *sa* is studied, followed by a discussion of the permissive and epistemic use of this modal. A Kratzer style analysis of *sa* is given in the second part of this section.

Dynamic modality refers to the conditioning factors which are internal to the agent. Ability refers to capacity of the agent of doing what is expressed by the predicate. Ability includes physical and mental ability, as in (4) and (5). Moreover, Palmer describes ability also as ‘*general circumstances that make the action possible or impossible rather than the actual ability of the subject*’ (Palmer 2001, 70), as in (6)².

- (4) Dǐ wómi de sa wáka faa dé ku suáki sééi.
DET man there MOD walk FU.3SG BE with ill even
‘That man is able to walk in spite of his illness’.
- (5) Dǐ míi de sa lési búnu.
DET child there MOD read good
‘That child can read well’.
- (6) Mi ábi móni nóo hén da mi sa gó a dí fesa.
1SG have money NARR NARR than 1SG MOD go LOC DET party
‘I have money, so I am able to go to the party’.

Deontic modality depends on an authority. As a result, it refers to conditioning factors external to the agent. Deontic modality includes directives, which implies that we want others to do certain things for us. Permissive together with obligation fall under the category directives. Permissive implies that we are talking about “laws” which are optional, not obligatory.

- (7) Dǐ Gaamá táa u sa gó.
DET granman COMP 1PL MOD go
‘The Granman said that we may go’.
- (8) Ée i ké nóo i sa gó a lío gó peé.
if 2SG want NARR 2SG MOD go LOC river go play

²The following abbreviations are used in the glosses: SG = singular; PL = plural; MOD = modal marker; PST = past; IMP = imperfective; NEG = negation; BE = copula; COMP = complementizer; DET = determiner; ART = article; LOC = locative; Q = question marker; NARR = narrative marker.

Mother to child: 'If you want you may go to the river and play'.

Epistemic modality expresses the degree of commitment of the speaker towards the truth value of the proposition. As epistemic marker, *sa* conveys a speculative reading. It indicates uncertainty of the speaker towards the proposition. A possible conclusion based on evidence is drawn by the speaker (Palmer 2001, 25).

- (9) Context: A man lost his knife. He had it before he went to the forest. So he might have lost it there. However, he did not use it in the forest and therefore is not sure whether he took the knife with him. Thus there is also a possibility that he left it at home.

A sa lási í fáka a mátu kandé a dé a wósu tu.
3SG MOD lost DET knife LOC forest maybe 3SG BE LOC house also
'He might have lost the knife in the forest, maybe it is at home too'.

- (10) Context: You baked a cake this morning, because your friend comes to visit you. You left the cake in the kitchen. If you return to the kitchen to get the cake, you see that only a few crumbs of the cake are left. So, someone has eaten the cake. You don't know who has eaten the cake, but you do know that the children had the opportunity to come into the kitchen. Therefore, you tell your friend:

Déé míi nóo sa nyá dí góma.
DET.PL child NARR MOD eat DET cake
'The children may have eaten the cake'.

To summarize, *sa* has three different interpretations: dynamic ability, deontic permissive and speculative epistemic. Palmer (2001) argues that cross-linguistically it is common for modal markers to convey several different readings. Moreover, Bybee et al. (1994) show that cross-linguistically modal morphemes follow a developing path from one modality to another modality. For example, an ability morpheme can develop into a permissive morpheme and/or an epistemic morpheme. Thus, from a cross-linguistic perspective the ambiguity of *sa* is not uncommon.

Kratzer (1977, 1991), however, argues that modal morphemes which can convey several interpretations are not ambiguous, but they are vague. According to her the context in which a proposition is uttered will trigger the correct interpretation of a multi-interpretable modal. The context is provided by modal force and conversational background. The former differentiate between possibility and necessity modality. The modal operators \square , which denotes necessarily, and \diamond , which denotes possibility, are introduced. The former can be interpreted as the universal quantifier \forall , and the latter as the existential quantifier \exists over possible worlds. A difference between quantifiers and modal operators is that quantifiers relate individual variables and they quantify over individuals. Modal operators scope over possible worlds. They deal with the quantificational force of a statement, e.g. whether the proposition expresses possibility, necessity or grades of these. A conversational background provides the context in which a proposition, including a modal element, should be interpreted. It '*uniquely determines an accessibility relation*' (Kratzer 1991, 642). A

conversational background includes a modal base and an ordering source. The former ‘*determines for every world the set of worlds which are [...] accessible from it*’ (Kratzer 1991, 644). A modal base can have circumstantial or an epistemic interpretation. The former refers to what can/must happen in a world regarding the circumstances under consideration. An epistemic modal base refers to the knowledge of the speaker with respect to what may/must be in a world. An ordering source ‘*induces an ordering on the set of worlds accessible from that world*’ (Kratzer 1991, 644). An ordering source can be deontic, stereotypical, bouletic, theological, dynamic, empty etc. An empty ordering source implies that the proposition is either purely epistemic or purely circumstantial, depending on whether the proposition expressed has an epistemic or circumstantial modal base. An ordering source is stereotypical if it refers to ‘*the normal course of event*’ (Kratzer 1991, 644). The notions of necessity and possibility are defined with respect to the notions of modal base f and ordering source g by Kratzer. Necessity expresses ‘*for all $u \in \cap f(w)$ there is a $v \in \cap f(w)$ such that $v \leq_{g(w)} u$ and for all $z \in \cap f(w)$: if $z \leq_{g(w)} v$, then $z \in p$* ’. Possibility is interpreted as ‘ *p is not a necessity in w with respect to f and g* ’ (Kratzer 1991, 644).

From Palmer’s classification, we concluded that *sa* has three different usages: ability, permissive and epistemic. Kratzer argues that modals like *sa* are not polysemous. These type of modals convey a general modal meaning and a context is necessary to trigger the specific modal interpretation. This context is provided by a conversational background and its elements modal base and ordering source. Sentences (5), (7), and (9) are repeated here and they are analyzed in a Kratzer style approach.

- (5) Dí míi de sa lési búnu.
DET child there MOD read good
‘That child can read well’.

As a dynamic morpheme, *sa* conveys an ability interpretation. Ability implies that the circumstances are in such condition that they make an action to be possible in world w . In view of the mental ability of the child in (5), s/he is able read well. This proposition has an existential quantificational force and a circumstantial modal base. The ordering source expresses what is consistent with the child’s abilities i.e. dynamic.

- (7) Dí Gaamá táa u sa gó.
DET granman COMP 1PL MOD go
‘The Granman said that we may go’.

In its deontic use, *sa* conveys a permissive reading, as in (7). The addressee has the opportunity to do a certain thing because someone with a source of law and order allows her/him to do this. However, the addressee is not obliged to do what is expressed by the proposition, but s/he has the option to do this. In view of what the Granman permits the addressees are allowed to leave. As a result, in this proposition the modal element *sa* has an existential quantificational force. The proposition refers to what can happen given certain circumstances in world w . The modal base of (7) is circumstantial. The ordering source

expresses what is consistent with what the Granman allows i.e. deontic.

- (9) Context: A man lost his knife. He had it before he went to the forest. So he might have lost it there. However, he did not use it in the forest and therefore is not sure whether he took the knife with him. Thus there is also a possibility that he left it at home.

A sa lási í fáka a mátu kandé a dé a wósu tu.
 3SG MOD lost DET knife LOC forest maybe 3SG BE LOC house also
 ‘He might have lost the knife in the forest, maybe it is at home too’.

In (9), the speaker is not certain whether the agent of the proposition has lost his knife in the forest, but there are reasons to belief that there is a possibility in world w that the man has lost his knife in the forest. As epistemic marker, *sa* expresses the uncertainty of the speaker towards the truth value of the proposition. In view of what the speaker knows it is possible for the agent to have lost his knife in the forest. Therefore, *sa* in (9) has an existential quantificational modal force. The speaker refers to what may be in world w given what s/he knows. This proposition has a epistemic modal base. The ordering source is epistemic.

From (5), (7), and (9), we can conclude that *sa* has, in all its readings, an existential quantificational modal force, i.e. a proposition including *sa* is not a necessity in a world w with respect to a modal base f and an ordering source g , but it is a possibility. Depending on the context the modal base f can refer to the knowledge a speaker has in a world w , as in (9) i.e. an epistemic modal base. It can also refer to what can happen given the circumstances under consideration in a world, as in (5) and (7) i.e. a circumstantial modal base. Furthermore, *sa* tolerates a wide range of ordering sources. The semantic derivation of *sa* is shown in (11).

- (11) $SA_{MB} \phi$ is true for (w) iff there exist w' such that $w' \in f(w), g(w)$ and ϕ is true in (w') .

The analysis of *sa* in a Kratzer style approach to modality is summarized in Table 0.1.

	modal force	modal base	ordering source
<i>sa</i>	possibility	no restrictions	no restrictions

Table 0.1: *Sa* in possible world semantics

A flaw in Kratzer’s approach is that she does not discuss the interaction of modality with tense and aspect, nor the influence of aspectual class on the modal reading. In the rest of this paper, I show that there is a strong correlation between the choice of modal base and aktionsart in Saamáka i.e. epistemic *sa* requires to embed a stative complement. Furthermore, the interaction between tense and modality and aspect and modality, and the restriction of epistemic modality to only combine with stative predicates gives crucial information about the TMA paradigm in Saamáka i.e. the presence of a morphological null perfect morpheme embedded under epistemic *sa*.

3. Temporal interpretation of Modals

The data in Section 1 and 2 show that there is a difference in temporal orientation of an event embedded under circumstantial *sa* and under epistemic *sa*. In the former, an event receives a future orientation and in the latter a past orientation. In previous literature, it has been pointed out that the notions of tense and modality are not independent. Propositions containing a modal have two time intervals, one modifying the modal time and another modifying the event time (see e.g. Condoravdi 2002, Stowell 2004, Borgonovo and Cummins 2007, Laca 2008). This section discusses the contribution to the temporal interpretation of a proposition of both the modal *sa* and the predicate. First, an outline of previous literature on the influence of modals on the temporal interpretation of a proposition is given. This is followed by a discussion of the data in Saamáka.

A clause in which a modal occurs has two time intervals; a temporal perspective and a temporal orientation (see e.g. Condoravdi 2002, Laca 2008). The former refers to '*time from which the modal background is accessed*' i.e. modal time. Temporal orientation refers to '*the time at which the temporal property is instantiated*' (Laca 2008, 4) i.e. event time. Tense influences the modal time and aspect the event time (see e.g. Borgonovo and Cummins 2007, Laca 2008). These two time intervals do not need to overlap, as in (12) and (13) which are taken from Condoravdi (2002, 63).

(12) He may/might win the game.

(13) He might have won the game.

(12) '*take[s] the perspective of the present, possibly with a future orientation*' and is a modal for the present. (13) is an example of a modal for the past and '*take[s] the perspective of the present with a past orientation*' (Condoravdi 2002, 60). Thus, there are forward and backward shifting modals. A modal for the present shifts the time at which the proposition is evaluated (topic time (TT), in the sense of Klein 1994) from an anchor point or it does not shift this topic time. In the default case, this anchor point is the time of utterance (TU). A forward shifted reading is the result of the former, or a simultaneous reading is the result of the latter, e.g. $TT > \text{anchor point}/TU$ or $TT \circ \text{anchor point}/TU$. The forward shifting effect is due to the modal (see e.g. Condoravdi 2002, Laca 2008). A modal for the past shifts the topic time backward from this anchor point, i.e. $TT < \text{anchor point}/TU$. This backward shifting effect is due to the interaction between epistemic modals and the perfect. When they combine, the perfect falls under the scope of the epistemic modal. As a result, the perfect triggers a past orientation of the complement (see e.g. Condoravdi 2002, Laca 2008). In addition, the aspectual class of a verb determines whether temporal orientation of an event is future (and thus forward shifting from the anchor point) or present (and thus simultaneous with the anchor point). Eventive verbs will trigger a forward shifting effect and stative verbs a simultaneous effect (see e.g. Condoravdi 2002, Laca 2008).

The rest of this section examines the Saamáka data closely. A difference occurs with regard to the event time when *sa* has a circumstantial modal base and when it has an epistemic

modal base. (1) - (3) are repeated here.

- (1) Ée a kísi móni nóo a sa gó a wósu.
if 3SG catch money NARR 3SG MOD go LOC house
'If s/he gets money, s/he can go home'.
- (2) I sa butá dí pusipúsi a dóo.
2SG MOD put DET cat LOC outside
'You may put the cat outside'.
- (3) Context: Someone wants to know where is Lathoya? The speaker doesn't know where she is, but s/he does know that Lathoya loves to go fishing in the afternoon.
A sa gó a húku.
3SG MOD go LOC hook
'She might have gone fishing'.

The event time of (1) and (2) is future, and that of (3) is past. The pattern in Saamáka is similar to the pattern in for example English. However, (3) has a past event time without any extra overt TMA morphology. Whereas in the English translation, a perfect would be embedded under an epistemic modal to convey a past reading of the event. This section investigates in detail the interaction between modality and the aktionsart of the pre-adjacent proposition. I argue that in Saamáka not only does the conversational background influence the choice of modal base (in the sense of Kratzer 1977, 1991), but also aktionsart and event time. Two examples are studied in this section. Both are ambiguous between a permissive and an epistemic reading. The first example contains a stative verb, and the second a non-stative verb.

Example (14) combines *sa* with the stative verb *dé* ("to be"). For both the permissive and epistemic interpretation, the modal time (ModT) has a present perspective and the event time (EvT) a present orientation.

- (14) A sa dé a wósu.
3SG MOD BE LOC home
a. 'S/he is allowed to be at home'.
b. or 'It may be that s/he is at home'.

The underlying structure of (14) is:

- (15) a. Circumstantial: ModT = present; EvT = present
b. Epistemic: ModT = present; EvT = present

Since there is no difference in both the surface and underlying structure of (14), it is the conversational background that triggers the difference in interpretation (in the sense of Kratzer 1977, 1991). However, a difference occurs when *sa* embeds a nonstative predicate, as in (16). In the permissive reading, the modal time is present and the event time is future. In the epistemic reading, the modal time is also present, but the event time is past.

- (16) A sa gó a lío.
 3SG MOD go LOC river
 a. ‘S/he is allowed to go to the river’.
 b. or ‘It may be that s/he has gone to the river’.

the proposition in (16) has the following underlying structure:

- (17) a. Circumstantial: ModT = present; EvT = future
 b. Epistemic: ModT = present; EvT = past

From the underlying structure, we can conclude that circumstantial *sa* embeds a future event time, and epistemic *sa* a past event time. There is no difference in overt morphology between these two readings. One would expect either an overt future time reference morpheme or an overt past time reference morpheme to be present in one of the two structures to account for this difference. In Section 4, I argue that Saamáka has a null perfect morpheme which occurs in the underlying structure of the epistemic reading. This morphological null perfect triggers a past orientation of the event embedded under epistemic *sa*.

To summarize, the modal base of *sa* can be either circumstantial or epistemic. A proposition containing modal *sa* expresses a present modal time. Furthermore, the event time is future in the case of a circumstantial modal base and past for epistemic modals. There is a strong correlation between the modal base and the complement embedded under *sa* in Saamáka. A complement embedded under epistemic *sa* has a past time reference for nonstative verbs and a present time reference for stative verbs. In contrast, permissive *sa* has a future time reference for nonstative verbs and a present/future time reference for stative verbs. The pattern that occurs in Saamáka is shown in Table 0.2.

Aspectual Class	Modal Base	Modal Time	Event Time
stative	circumstantial	present	present/future
	epistemic	present	present
nonstative	circumstantial	present	future
	epistemic	present	past

Table 0.2: Aktionsart, Modal Base and Event Time

This section has shown that in Saamáka not only does the conversational background trigger the correct modal base. This choice also depends on eventuality and temporal orientation of an event embedded under the possibility modal. However, this does not solve the problem of the difference in underlying structure for nonstative verbs embedded under *sa*, as in (16). The next section makes a suggestion to solve this problem.

4. Solution: Null perfect story

In the previous section, I addressed the problem of the difference in event time between nonstative verbs embedded under circumstantial *sa* vs. nonstative verbs embedded under

epistemic *sa*. The former combination results in a future event time and the latter in a past event time. The reasoning that this difference is only due to a difference in modal base is rather unsatisfying. What in Saamáka is the element that triggers the past orientation of an event embedded under epistemic *sa*? I argue that Saamáka has a null perfect which is obligatorily present in the underlying structure when *sa* has an epistemic modal base.

In Saamáka, an unmarked verb form has the characteristics of a perfect (in the sense of Smith 1997, Giorgi and Pianesi 1998). Unmarked predicates express a result state. Result state implies that we are talking about ‘*the state of e’s having culminated*’ (Parsons 1990). The event is relevant at the time of utterance³. It is aktionsart sensitive, stative verbs convey a present time reference as in (18) and nonstatives a past time reference, as in (19) - (21)⁴.

- (18) Mando feée dí dágu.
Mando fear DET dog
‘Mando fears the dog’.
- (19) Dí wómi wáka a mátu.
DET man walk LOC forest
‘The man has walked in the forest’.
- (20) The window is open but A has not noticed it, A asks B: why is it so cold in the room?
Mi yabí dí fénse.
1SG open DET window
‘I have opened the window’.
- (21) It is cold in the room. The window is closed. A enters the room and asks B:
a. %I yabí dí fénse?
2SG open DET window
‘Have you opened the window?’
b. I bi yabí dí fénse?
2SG PST open DET window
‘Had/did you open(ed) the window?’

I claim that this perfect interpretation is not an inherent feature of an unmarked verb. Oth-

³For some speakers (21-a) is grammatical. For these speakers, the use of the perfect has broadened. Moreover, unmarked predicates can co-occur with temporal adverbs. Thus, the perfect in Saamáka is an Italian style perfect and not an English style perfect (in the sense of Giorgi and Pianesi 1998).

⁴This difference in temporal orientation depending on aktionsart is also seen in other phenomena like temporal interpretation of predicates in embedded clauses (see e.g. Gennari 2003, Enç 2004), discourse semantics of tense (see e.g. Portner 2003), temporal interpretation of perfect (see e.g. Portner 2003), and interpretation of present tense in English (Gillian Ramchand p.c.). In these phenomena, eventive predicates have a shifted reading and stative predicates can have a shifted or a simultaneous reading. Portner (2003) argues that these differences in temporal interpretation are not part of the meaning of these above mentioned phenomena, but are due to a difference in aktionsart. According to Taylor (1977) states and events have different semantics. States are true at a moment and events are true at a subinterval larger than a moment. Thus, aktionsart contributes to the temporal interpretation of propositions. For a more detailed description of the perfect in Saamáka, I refer the reader to van de Vate (in progress).

erwise the temporal orientation of the event in examples (4) - (7) could not be explained. These examples have a future orientation of the event, and not a past orientation. Furthermore, unmarked predicates embedded under complementizer *fu* have a future time reference, as in (22) (see e.g. Damonte 2002, Aboh 2006, van de Vate 2008). In conditionals, the event time is also future, as in (23).

(22) Mi musu kulé fu mi gó a dí bési.
 1SG MOD run FU 1SG go LOC DET bus
 'I have to run to catch the bus'.

(23) Ée i butá wán sitónu a dí tási u mi, a o boóko.
 if 2SG place ART stone LOC DET bag FU 1SG 3SG MOD break
 'If you put a stone in my bag, it will break'.

If perfect is an inherent feature of predicates in Saamáka, a past time reference for all predicates in each context would be expected. How can we account for this difference in temporal orientation? I assume that every clause is obligatorily tensed and that every language has a T node. T indicates a relation between topic time and an anchor point i.e. between AspP and FinP. I postulate that Saamáka has a null tense operator which expresses an overlap relation, i.e. TT = anchor point. In the default, this anchor point equals the time of utterance i.e. anchor point = TU. Since T can only express an overlap relation it follows that T has one lexical entry which expresses PRESENT. T cannot convey a precede relation i.e. T cannot be a PAST tense operator. Furthermore, time of utterance in Saamáka is a moment and not an interval. Since only states can be true at a moment (events require a subinterval of a moment), T cannot combine with events (in the sense of e.g. Taylor 1977, Bach 1986, Portner 2003, Hallman 2009). The English present tense can only combine with states since it asserts that the time of utterance denotes a moment. The combination of present tense and eventive verbs in English gives rise to a habitual reading which denotes a derived state (see e.g. Parsons 1990). If T in Saamáka is like the English present tense, then it makes sense that the language would have to build a derived state in order to combine with T. Lexical states on the other hand would not require this. I argue that Saamáka has a null perfect morpheme. This morpheme is triggered by the stativity required of present tense. I postulate that perfect creates a derived state which is the result state of *e* (in the sense of Parsons 1990). I assume that Asp chooses a time point within an event. Asp involves the temporal ordering relation between Result state *e* and topic time, i.e. between PerfectP and AspP.

null perfect

Rstate_{*e*} partly included in TSit
 Rstate_{*e*} IN TT WITHIN TU
 this entails that $e < TU$

The presence of a null perfect in the underlying structure allows us to solve the puzzle of epistemic *sa*. I propose that epistemic *sa* is required to embed a stative complement. In order for eventive verbs to be modified by epistemic *sa*, they have to be coerced into

a state. This stativity requirement triggers the presence of the morphological null perfect morpheme in the underlying structure. It creates a derived state of the embedded eventuality satisfying the stativity requirement. Moreover, the composition of perfect explains the past time reference reading for the embedded eventuality. Cross-linguistically, it is quite common for epistemic modals to combine with a perfect to trigger a past orientation of an event embedded under a modal (see e.g. Condoravdi 2002 for English, Borgonovo and Cummins 2007, Laca 2008 for French and Spanish, Eide forthcoming for Norwegian). Condoravdi (2002) even claims that epistemic modality cannot co-occur with past tense. Palmer argues that ‘*the proposition can be made in the past, but the modality (judgement) cannot*’ (Palmer 2001, 33). Since T influences the modal time and a judgment of the speaker towards the truth value of the proposition is made at and refers to the time of utterance, epistemic modality and a past T operator cannot co-occur. When in Saamáka the past time reference morpheme *bi* precedes the modal *sa*, *bi* pushes the modal time back to some contextual relevant past moment. In combination with the past time reference marker *bi* only the circumstantial reading of *sa* is possible, as in (24).

- (24) A bi sa téi dí móni.
 3SG PST MOD take DET money
 ‘S/he was able to take the money’.
 *‘She might have taken the money’.

In order for the event time to have a present time reference when it is embedded under epistemic *sa*, the predicate must be modified by the imperfective marker *ta*, as in (25). Again, a derived state is created, i.e. an “in progress state” (in the sense of Parsons 1990).

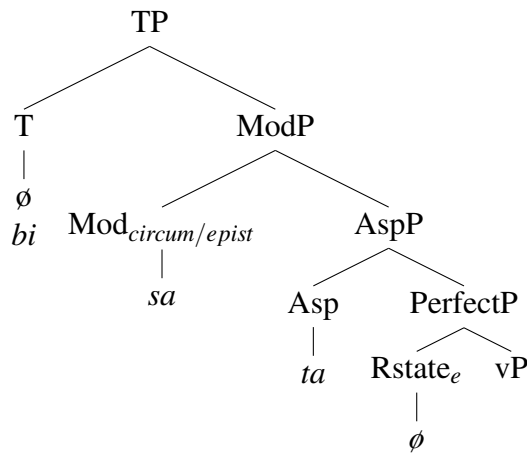
- (25) Situation: You and your sister are at your vegetable garden in the forest. Your oldest daughter goes to school and will join you after school is finished. Around the time that she is coming, you see that it is going to rain. You say to your sister:
 Dí mii sa ta kulé gó a bákase bigá tyúba ta kó.
 DET child MOD IMP run go LOC backside of village because rain IMP come
 ‘The child might be running to our vegetable garden, because rain is coming’.

From these representative examples we can conclude two things. First, epistemic *sa* is obliged to embed a stative complement. This can be either a derived state, as for nonstative verbs combined with either the null perfect or imperfective *ta*, or a non-derived state, as for stative verbs. Furthermore, Saamáka is not different from other languages in that also in Saamáka aspect influences the event time. Perfect shifts the event time backwards and imperfective triggers a simultaneous reading. This analysis predicts that T is outside the modal. A past T morpheme shifts the modal time back. As a result, the past time reference marker *bi* cannot combine with epistemic *sa* in Saamáka.

5. Conclusion

The possibility modal morpheme *sa* can convey a dynamic ability, deontic permissive and speculative epistemic reading. According to Kratzer, this type of modal is not polysemous,

but it is vague. A context provided by the conversational background, triggers the right interpretation. I have shown that in Saamáka, the choice of modal base is not purely pragmatic, but is strongly constrained by whether a verbal complement embedded under *sa* is stative or nonstative i.e. epistemic *sa* obligatorily embeds a stative complement. Cross-linguistically, the constraint for epistemic modals to combine with stative predicates is not uncommon. This restriction does not follow from Kratzer’s approach or any other formal semantic approach, as far as I know. It might be a feature in the lexical interpretation of epistemic modals that requires this e.g. the meaning of epistemic is derived from the fact that it combines with a state. However, for modals like *sa* which can convey different interpretations, different lexical entries would be unsatisfying. I leave this problem for further research. Secondly, a different temporal orientation of the event embedded under the modal also triggers a different modal base, i.e. future orientation results in a circumstantial modal base and past orientation in an epistemic modal base. Overt tense morphology in Saamáka directly affects the modal time, and aspect the event time. Thus, TP scopes over ModP and AspP over vP in the underlying syntactic structure. Contrary to the functional hierarchy in Cinque (1999, 2004), there is in Saamáka no evidence that there is a (epistemic) ModP above TP. I speculate that this is not a language specific fact, but reflects the universal ordering of functional elements in the syntax-semantics of the clause. The structure of the IP domain in Saamáka is as follows⁵:



⁵In other work I argue that the past time reference marker *bi* is an anchor point shifter which is located in FinP (in the sense of Enç 1987, 2004). Thus, *bi* is not a T operator. However, for reasons of simplicity, I have placed *bi* under TP in this paper. The different position of *bi* in the underlying structure has no influence on the argumentation with regard to the interaction between TP and ModP as given in this paper. I refer the reader to van de Vate (in progress) for a detailed investigation of the functional hierarchy in Saamáka.

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