



**Tense, Aspect and Modality
in a Radical Creole:
The Case of Saamáka**

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Acknowledgments

*‘Lately more or less I’m feelin’ less incomplete
I got no direction so I follow my feet
When I think on everything my heart skips a beat’*

From ‘Lately’ by Isobel Campbell & Mark Lanegan

My journey to try to understand how creole languages arose and why they seem (on a superficial level) similar started in the fall of 2002 when Norval Smith became my MA thesis supervisor. Throughout the years, he has nourished my desire to figure out these questions and I am very grateful for his encouragements and support. At a certain moment, I realised that although the creole genesis question is a very fascinating one, it is unanswerable unless one has access to thorough descriptions of individual creole languages. As a result, this dissertation does not directly contribute to the creole genesis debate, but I hope to have contributed to a better understanding of the tense, aspect and modality system in an individual creole language (and which might be taken as base for a cross creole comparison in future research).

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¹From ‘All my friends’ by LCD Soundsystem

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Abbreviations

ART	Article
BE	Copula
COMP	Complementizer
DET	Determiner
EvT	Modal evaluation time
FU	prepositional complementizer <i>fu</i>
FUT	future time reference
IMP	Imperfective morpheme
LOC	Locative morpheme
MOD	Modal morpheme
ModT	Modal anchor time
NARR	Narrative morpheme
NEG	Negation
PL	Plural
PRES	present time reference
PST	past time reference
Q	Question morpheme
Rstate _e	Result State of an eventuality
SG	Singular
TSit	Time of Situation
TT	Topic Time
TU	Time of Utterance

Chapter 1

Introduction

1.1 Goal of the dissertation

This dissertation aims to provide an empirically driven and theoretically informed study of the Tense, Aspect and Modality system of Saamáka, an English/Portuguese-based creole language spoken along the Suriname river. The ambition of this dissertation is three-fold; first, to explore the semantic interpretations and syntactic distribution of each individual (core) Tense, Aspect and Modality morpheme in Saamáka. Second, this dissertation will establish the hierarchy of functional projections in the IP domain of Saamáka. Third, it will validate whether Saamáka conforms to the universal hierarchy of functional projections as proposed by Cinque (1999, 2001). These goals are intertwined such that in order to validate the universal hierarchy of functional heads, it is necessary to investigate the semantic and syntactic characteristics of each individual TMA morpheme first. In this respect, it is important to be explicit about the definitions regarding the terminology adopted and to be explicit about the expectations regarding semantic and syntactic characteristics that are assigned to a certain functional head. Once it has been determined what the characteristics of a certain functional item are, it is possible to establish the overt manifestation of clausal functional heads of Saamáka which can be compared to Cinque's universal sequence. A strong semantic and syntactic study of the IP domain of Saamáka not only contributes to the description of an underrepresented language and therefore to the understanding of language structure in general, but also makes a comparison with other languages more accessible. Such a comparison is relevant for the field of linguistics in general in that it will be informative regarding possible language structures which will contribute to the universal grammar debate and it is also relevant for the field of Creole Studies in that a comparison with other creole languages and/or substrate languages con-

tributes to the creole genesis debate.

Moreover, the contribution of this dissertation is two-fold; first, to document an underrepresented language and second, to expand our knowledge regarding the grammatical structure of creole languages, which is much needed in order to deepen our understanding of the emergence of these languages. The study of underrepresented languages can shed new light on established theoretical assumptions within the field of linguistics in general and more specifically within a formal framework. The data presented in the present study is used to validate well-accepted theoretical analyses and assumptions which will result in a better understanding of certain functional items in Saamáka specifically and in language more generally. This dissertation demonstrates that in order to explain all of the semantic and syntactic characteristics of the core TMA morphemes in Saamáka, a superficial analysis does not always provide satisfying explanations and as a result certain established assumptions (also in the field of Creole Studies) need to be adjusted. These adjustments will lead to a better understanding of the behaviour and grammatical structure of language in general. Regarding the second contribution, in creole studies the debate of creole genesis has played an important role and in order to answer this highly complex question, descriptions of individual creole languages are extremely important. Although Saamáka is called a ‘radical creole’ by creolists, meaning that in comparison with other creole languages, it has remained reasonably free of external influences since its creation, it is remarkable how little is known about its grammatical structure (however see Byrne 1987 on complementation and Veenstra 1996 on serial verb constructions and complementation). This dissertation is not only the first study to the Tense, Aspect and Modality system in Saamáka, but it is also the first formal theoretical study in the syntax-semantic interface of the TMA system in a creole language. Once the semantic and syntactic characteristics of functional items in the IP domain have been established, the outcome of the present study can be taken as a base for a cross-linguistic comparison of the IP domain in other (creole) languages. The outcome of such a study will contribute considerably to the creole genesis debate.

This chapter is organised as follows: Section 1.2 presents the theoretical framework in which this dissertation is couched; Chomsky’s (1995) Minimalist Program in combination with the Cartographic approach (in the sense of Rizzi 1997; Cinque 1999). The focus of Section 1.3 are previous studies on TMA systems across creole languages. Section 1.4 gives a short overview of the socio-historical background of Saamáka and of the grammatical structure of the language. Background information with regard to the fieldwork which has been undertaken for this dissertation

is presented in Section 1.5. This chapter ends with Section 1.6, in which I present an outline of this dissertation.

1.2 Theoretical framework

This study is framed within the framework of the Minimalist Program (Chomsky 1995) and the Cartographic approach to language structure (Rizzi 1997; Cinque 1999), and it is situated at the syntax-semantic interface. It aims to investigate the mapping between morpheme order and compositional semantics. Cinque (1999, 2001) explores the order of clausal functional heads expressing Tense, Aspect and Modality categories in a sample of 75 of the world's languages and concludes that the order in which these functional items occur in all of these languages is compatible with a single overall order. Cinque's assumption of a rigidly fixed universal hierarchy is taken as a guideline and I will investigate whether Saamáka provides additional evidence to this universal order of functional projections.

This section continues with an overview of Cinque's (1999; 2001) ideas (Section 1.2.1), a study of the Gungbe (Niger-congo, Akan) IP domain (Section 1.2.1.1) and a study of the Jamaican Creole IP domain (Section 1.2.1.2). These studies by Aboh (2004) and Aboh and Nauze (2008), and Durrleman (2000) on Gungbe and Jamaican Creole respectively, aim to test the validity of a universal functional sequence as proposed by Cinque (1999, 2001). The main reason to compare Saamáka to these two languages is that these studies also adapt a formal framework and assume a cartographic approach to language structure which will, hopefully, make a comparison easier. Gungbe is one of Saamáka's substrate languages (see e.g. Smith 1987) and in light of the creole genesis debate it is important to determine whether the similarities between these two languages are more than an accidental pattern. In this respect, it is also relevant to establish the exact nature of the (assumed) similarities between Saamáka and another creole language, Jamaican Creole, and how these similarities can be accounted for.

1.2.1 Cinque's universal hierarchical order of functional heads

Under the cartographic approach, it is assumed that there exists an extended array of functional projections in the clausal domain (Rizzi 1997; Cinque 1999). To come to this assumption, finer distinctions within the clausal domain were introduced. Each individual functional head is associated with a number of specific semantic and syntactic characteristics. Furthermore, it is postulated that these functional heads are organised in a universal hierarchical sequence. This functional sequence

is assumed to be present in the underlying structure of each individual language. This does not imply that each individual language overtly exploits all of these functional heads. Up to now, no language has been discovered which expresses all of these functional categories via functional elements. Even though a language might not express a certain functional head morphologically, *‘the functional projection was nonetheless taken to be structurally present’* (Cinque, 1999, 141). Consequently, the array of functional projections that are overtly and covertly expressed are language specific (Rizzi 1997; Cinque 1999).

To establish this universal hierarchy of functional heads, Cinque (1999, 2001) explores the interaction of adverbs, bound functional morphemes and free functional morphemes which are located in the IP domain of the clause in 75 of the world’s languages, which together represent most of the world’s language families. By taking into account empirical and conceptionally driven data, Cinque observes that adverbs and functional morphemes expressing Tense, Aspect and Modality categories are organised in a hierarchical order and each functional element is located in a specific position in the functional sequence of the clause. In order to determine a hierarchically organised functional sequence, Cinque considers pairwise orders of functional items in individual languages and after establishing a functional structure for every single language, he compares these individual hierarchies. He is only interested in the orders of functional elements, if there is overt evidence for such an order. After investigating the functional expressions in all of the languages in his sample, he concludes that his findings are compatible with a single hierarchically universal order. Before I present the universal sequence of functional projections, as determined by Cinque (1999, 2001), I illustrate Cinque’s methodology.

Cinque establishes the order of functional heads in an individual language before he compares this with his findings for other languages. For Korean, Cinque (1999, 53-54) studies the following morphemes: the passive voice suffix *-hi*, the anterior/PAST Tense suffix *-ess*, the epistemic modality suffix *-keyss*, the evidential mood suffix *-ti*, and speech act suffixes expressing interrogative *-kka* and declarative *-(t)a*. When these suffixes co-occur, they do so in a fixed order, as illustrated in (1).

- (1) Ku pwun- i caphi- si- ess- keyss- sup- ti-
 the person- NOM catch- PAST- AGR- ANT- PAST- EPISTEMIC-
 kka?
 AGR- EVID- Q
 ‘Did you feel that he had been caught?’ (Cinque, 1999, 53)

express conditional mood and deontic mood which are situated in Force and Fin, respectively. The modal auxiliaries *sìgán* and *dó-ná* express possibility modality and necessity modality respectively. A sentence containing the former can convey a speculative epistemic modality reading, a permissive deontic reading and an ability dynamic reading and a sentence containing the latter can express a deductive epistemic modality reading and an obligation deontic reading. These two modal auxiliaries cannot be stacked (Aboh and Nauze 2008), as illustrated in (6).

- (6) ?É dó-ná sìgán dú wè.
 3SG MOD MOD dance dance
 Intended reading: ‘He must be able to dance!’
 or ‘It must be that he is allowed to dance’ (Nauze, 2008, 53).

The possibility modal *sìgán* can co-occur with FUTURE Tense *ná* and when they do, the former always follows the latter, as illustrated in (7). The reverse order is ungrammatical (Aboh and Nauze 2008).

- (7) Súrù má ná sìgán kù mótò cè wá fí.
 S NEG FUT MOD drive car 1SG.POSS come here
 ‘Suru will not be able to drive my car here’ (Aboh and Nauze, 2008, 224).

The necessity modal *dó-ná* and FUTURE Tense *ná* are mutually exclusive, as demonstrated in (8), which is due to a semantic incompatibility restriction of these two morphemes¹ (Aboh and Nauze 2008).

- (8) ??Súrù má ná dó-ná kù mótò cè wá fí.
 S NEG FUT MOD drive car 1SG.POSS come here
 Intended reading: ‘Suru must not drive my car here’ (Aboh and Nauze, 2008, 224).

Gungbe has four aspectual categories which are expressed via functional morphemes: habitual, progressive, prospective and perfective. The latter is expressed via the unmarked verb form. A sentence with a nonstative verb conveys a past time reference reading while one with a stative verb conveys a present time reference reading. According to Aboh (2004) and Aboh and Nauze (2008), temporal

¹Since the necessity modal in Gungbe is also mutually exclusive with the possibility modal, I wonder whether it would be possible to analyse FUTURE Tense *ná* as a modal morpheme. This hypothesis is not investigated by Aboh (2004) (unlike the future-tense-as-aspect analysis, which is). A modal analysis might be able to explain why *dó-ná* and *ná* cannot co-occur. Both morphemes, in this case, would belong to the same category and thus would compete for the same position in the functional sequence. As a result, they would be mutually exclusive. However, such a hypothesis would not explain why FUTURE Tense *ná* can co-occur with the possibility modal *sìgán*. I leave this for further research.

interpretation correlates with aktionsart (stative vs. eventive) and viewpoint aspect (Imperfective vs. Perfective). An eventive verb conveys a past time reference interpretation which comes about because the verb is Perfective, and a stative verb conveys a present time reference interpretation which comes about because the verb is Imperfective. The authors are unclear with regards to how this perfective/imperfective distinction is structurally implemented. It is only mentioned that they do not assume a zero perfective morpheme. The aspectual categories of habitual, progressive and prospective are overtly realized and all three head a functional projection. These morphemes can co-occur and when they do, they occur in a strict HAB > PROG > PROSP order. Furthermore, all three aspect morphemes are preceded by Future Tense *ná*, as exemplified in (9).

- (9) Àsíbá ná nò tò lésì nà d'ù.
 A FUT HAB PROG rice PROSP eat-NR
 'Asiba will always be about to eat rice (whenever we meet him)' (Aboh, 2004, 170).

The aspectual morphemes can also co-occur with the necessity and possibility modal auxiliaries. When they co-occur the modals embed the aspectual morphemes, as demonstrated for the possibility modal *sìgán* and the habitual morpheme *nò* in (10). This example indicates that the ability reading of *sìgán* does not arise when the modal co-occurs with the habitual morpheme. This reading is also not felicitous when the progressive morpheme is embedded under the possibility modal (Aboh and Nauze 2008).

- (10) Súrù sìgán nò kùn mótò yì wéxòmè.
 S MOD HAB drive car go school
 'Suru may habitually drive to school'. (deontic)
 or 'Suru might well be driving to school'. (epistemic)
 or ??'Suru is habitually able to drive to school'.
 or *'Suru is able to habitually drive to school' (Aboh and Nauze, 2008, 235).

To summarize, Gungbe has a future Tense morpheme, two modal auxiliaries (necessity and possibility) and three aspect morphemes (habitual, progressive and prospective). The following restrictions hold: modal auxiliaries cannot be stacked, and the necessity modal and the Future Tense morpheme cannot co-occur. Furthermore, Future Tense and the modals can combine with Aspect. When they do, they do so in a fixed T > M > A order. The overt manifestation of clausal functional heads in Gungbe is presented in (432).

- (11) [Mood_{conditional} [Mood_{deontic} [T(Future) [Mood_{necessity} [Mood_{possibility} [Asp_{habitual} [Asp_{progressive} [Asp_{prospective}]]]]]]]] (Aboh and Nauze, 2008, 225)

1.2.1.2 The functional sequence in Jamaican Creole

Durrleman (2000) discusses functional projections in the Jamaican Creole IP domain and her main focuses are the distributional properties of TMA morphemes as well as the interpretations of these morphemes. In Jamaican Creole, TMA morphemes are free morphemes which are situated in between the subject and the verb. These morphemes occur in a fixed order.

Jamaican Creole possesses two Tense categories; PAST Tense expressed by *did* or *en*, and FUTURE Tense expressed by *wi* or *(g)o*². Since these morphemes cannot co-occur, it is assumed that PAST Tense and FUTURE Tense are in complementary distribution (Durrleman 2000). The functional category of Modality is subdivided into three groups which are associated with distinct distributional features. Modal morphemes belonging to Mod₁ convey an epistemic reading. All end with *-a*, which is presumably derived from *ha* (=‘to have’) and grammaticalised. Propositions containing an epistemic modal morpheme have a past time reference interpretation. Epistemic modals precede Tense morphemes, as illustrated in (12) for the Mod₁ modal *shuda* and the Past Tense morpheme *did* (Durrleman 2000).

- (12) Jan shuda did love dat.
 J MOD₁ PST love that
 ‘John should have loved that’ (Durrleman, 2000, 203).

Modal morphemes of the Mod₂ category convey an obligation reading. They follow Mod₁ and Tense morphemes and precede Mod₃ morphemes, as demonstrated in (13) for the Mod₂ modal *mos*.

- (13) Im wi mos hafi tek dat.
 3SG FUT MOD₂ MOD₃ take that
 ‘S/he will be obliged to take that’ (Durrleman, 2000, 212).

A sentence containing a Mod₃ modal conveys an ability or permissive reading. These modals follow Mod₁, Tense and Mod₂ morphemes, as illustrated for Mod₃ modal *kyan* in (14).

- (14) Im shooda muss kyan get tru.
 3SG Mod₁ Mod₂ Mod₃ get through

²Jamaican Creole has a number of different varieties and these morphemes denote two different varieties of Jamaican Creole.

‘He must surely be able to succeed’ (Durrleman, 2000, 206).

Any order that deviates from this $\text{Mod}_1 > T > \text{Mod}_2 > \text{Mod}_3$ order is ungrammatical (Durrleman 2000).

Jamaican Creole has four aspectual morphemes: progressive *a*, prospective *a (g)o*, retrospective *jus*, and completive *done*. While the former three aspect morpheme are situated prior to the verb, the latter can be situated either before the verb or in sentence final position. Aspect morphemes can co-occur and when they do, they appear in a fixed order: $\text{RETRO} > \text{PROG} > \text{PROSP} > \text{COMPL}$, as exemplified in (15) and (16) (Durrleman 2000).

- (15) Wentam mi reach, im did jus done nyam i’.
 when 1SG reach 3SG PST RETRO COMPL eat it
 ‘When I arrived, s/he’d just finished eating it’ (Durrleman, 2000, 219).

- (16) Mine! Im a go done nyam di whole a i’!
 Mind 3SG PROG PROSP COMPL eat DET whole of it
 ‘Careful! S/he is going to finish eating all of it’ (Durrleman, 2000, 219).

The progressive morpheme *a* cannot co-occur with the modal morphemes, except for epistemic modals when they are merged with PAST Tense. PAST Tense precedes Progressive, as illustrated in (17).

- (17) a. *Jan wuda a ron.
 J Mod₁ PROG run
 b. Jan wuda did a ron.
 J Mod₁ PST PROG run
 ‘John would have been running’ (Durrleman, 2000, 215).

To sum up, Jamaican Creole possesses two Tense morphemes, one expressing PAST and one expressing FUTURE, which are mutually exclusive. Moreover, modal morphemes are organised in three different Modality categories and modals belonging to a single category cannot be stacked. Aspect morphemes are situated low in the functional sequence and precede all other functional TMA categories. The order of the TMA morphemes in Jamaican is rigid and fixed: $\text{Mod}_{\text{epistemic}} > T > \text{Mod}_{\text{root}} > \text{Asp}$ (Durrleman 2000). The overt manifestation of clausal functional heads in Jamaican Creole is presented in (433).

- (18) [Mod_{epistemic} [T(PAST)/ T(FUTURE) [Mod_{necessity} [Mod_{obligation} [Mod_{ability/permission}
 [Asp_{anterior} [Asp_{continuative} [Asp_{retrospective} [Asp_{generic/progressive} [Asp_{prospective}
 [Asp_{completive}]]]]]]]]]]] (Durrleman, 2000, 224).

1.2.2 Summary

One of the goals of this dissertation introduced in Section 1.1 is to test whether my findings regarding the hierarchy of functional projections support the universal sequence of heads proposed by Cinque (1999, 2001). The outcome of this comparison will not only be relevant for the field of linguistics in general but also for the field of Creole Studies, and especially for the creole genesis debate. In the conclusion of this dissertation, I will return to the sequence of functional projections in Gungbe as proposed in Aboh (2004) and Aboh and Nauze (2008) and compare it to my findings for Saamáka. Such a comparison between Saamáka and Gungbe, one of its substrate languages, might be informative to determine whether the (assumed) structural similarities between these two languages are more than accidental or whether they can be accounted for by assuming a Universal Grammar. Determining the nature of these structural similarities is highly relevant for the creole genesis debate in general, and important for establishing which processes influenced the emergence of Saamáka more specifically. In this respect it is also relevant to test the validity of the assumption that creole languages are structurally similar. Therefore, in the conclusion of this dissertation, I will also compare my findings for Saamáka to those of Durrleman (2000) for Jamaican Creole. Once the exact nature of the similarities between Saamáka and Jamaican Creole is determined, we can begin making well-founded claims about the origin of (Caribbean English-based) Creoles and similarities amongst them.

1.3 Previous studies on TMA in creole languages: Bickerton (1981, 1984)

The study of TMA in creole languages has long been at the core of Creole Studies. A reason for the profound interest in these functional items is that the (assumed) similarities across TMA systems in creole languages have been very difficult to interpret under substrate or superstrate hypotheses of creole genesis. In this section, I present an overview of a universals-oriented analysis which aims to explain these similarities in the TMA system of creole languages: Bickerton (1981, 1984) who postulates that the assumed similarities across creole languages are due to features of innateness and whose hypothesis has influenced the creole genesis tremendously.

Bickerton (1981, 1984) argues that every human is born with a blueprint for language in her brain and without this blueprint, it is impossible to learn a language. He refers to the genetic inheritance on which his theory is based as the Language Bioprogram Hypothesis (LBH) with which he aims to explain the (assumed) similarities across creole languages. The LBH has several basic default settings which the child will use when the input she is getting is incomplete. Con-

sequently, it is important that the LBH can convert into every possible existing language. With reference to creole languages, the input children receive from adults is an incomplete language with very little structure which Bickerton refers to as a pidgin. He assumes that adults have a deficient second language acquisition because of the unavailability of infrastructure of second language learning. In this respect, the plantation context, in which most creole languages arose, is a very important factor. First, the slave population on plantations was much larger than the European population. Consequently, the accessibility of the slaves to the superstrate language was minimal. Second, the plantation society was stratified which implies that lower ranked slaves (usually those working on the field) had minimal to zero contact with native speakers of the superstrate language. Third, slaves are assumed to have different language backgrounds³. Consequently, (slave) children born in these communities were forced to use their innate blueprint to create a ‘new’ language with more grammatical structure than the pidgin spoken by the adults. As a result, children are the creators of creole languages (Bickerton 1981, 1984). The LBH has a number of basic default settings and here I consider only those that are relevant to the topic of this dissertation; the tense, aspect and modality system⁴. These parameters have an unmarked form and a marked form. Tense expresses [\pm anterior], while Aspect expresses [\pm punctual] and Modality [\pm realis]. Unmarked verbs are interpreted as expressing a non-anterior, punctual and realis eventuality. For the interpretation of the unmarked verb form, the stative vs. eventive distinction is very important. The former are interpreted as expressing non-past, while the latter express past and refer to a ‘*single action that happened at a moment in the past that may or may not be specified but should not predate any action simultaneously under discussion*’ (Bickerton, 1975, 28). With regard to the functional category of Tense, Bickerton argues that creole languages have a relative tense system which implies that not the time of utterance is taken as an anchor time but rather some contextually relevant time (which might be the time of utterance). In combination with stative verbs, [+anterior] results in a simple past interpretation, while in combination with eventive verbs [+anterior] gives rise to a past-before-past interpretation. The category of Aspect in creole languages distinguishes between punctual and non-punctual eventualities. The former, which is the unmarked form, refers to a single, completed eventuality and the latter, which is the marked form, to an eventuality which has a ‘*measurable duration or is repeated*’ (Bickerton, 1984, 182). Stative verbs are not expected to be marked for non-punctual, because this would result in a mismatch between the interpretation of a stative eventuality and non-punctual aspect. Modality discerns between an

³I refer the interested reader to work by e.g. Jacques Arends (1989; 1995 and subsequent work) for counter examples of this argument.

⁴I refer the interested reader to Bickerton (1975, 1981, 1984) for an overview of the other default settings.

unmarked form which expresses realis and a marked form which expresses irrealis. The former denotes eventualities which actually have taken place or are taking place, while the latter denotes future eventualities, conditionals and/or imagined eventualities. Unlike the other two categories, the stative vs. eventive distinction does not influence the interpretation of $[\pm \text{realis}]$. Additionally, Bickerton argues that these TMA morphemes are situated between the subject and the verb and that when they co-occur they do so in a fixed order; Tense-Modality-Aspect

For a different universal view regarding the assumed similarities across creole languages and their TMA systems, I refer the interested reader to Muysken (1981) who postulates that creole languages express the unmarked TMA sequence in language. Muysken opposes against Bickerton's idea that creoles by default only express one Aspect distinction (punctual vs. non-punctual) and he demonstrates that the creole languages in his sample express different Aspect distinctions. Furthermore, he argues that the default Tense category across creole languages is not, as proposed by Bickerton, Anterior Tense, but Present Tense.

Although, currently not many creolists assume that the default parameters as proposed by Bickerton hold for every individual creole language, Bickerton's (1975; 1981; 1984) ideas have influenced the creole genesis debate tremendously⁵ and because he was so explicit about these default parameters and their values it was not difficult to test his hypothesis for individual creoles (and to oppose against it).

1.4 Socio-historical background and language structure

Saamáka is a creole language spoken along the Suriname river and the estimates regarding the number of speakers vary from 26.000 (ethnologue.com) to at least 50.000 (Aboh et al. to appear). Although the language is often classified as English-based, 30 percent of its vocabulary on a Swadesh-list is Portuguese derived (Smith 1987). The high percentage of Portuguese derived elements in Saamáka is caused by the Jewish Portuguese plantation owners who immigrated to Suriname in 1665 and 1667 (Smith 1999). The main substrate languages of Saamáka are Kikongo and Kwa (Smith 1987). Saamáka is a maroon creole language which implies that it was created by slaves who fled the plantations. According to anthropologist Richard Price (1983), 1690-1710 were the formative years of Saamáka. Since Suriname was initially colonised by the English in 1651 (and in English hands until the Treaty of Breda in 1667 when it came into Dutch ownership), it is often assumed

⁵I refer the interested reader to Veenstra (2008) for an overview of the impact of the LBH within the field of Creole Studies.

that the formation of Saamáka provides evidence in favour of a rapid creolisation process and against a gradual creolisation process⁶. For a more detailed study of the socio-historical background of Saamáka, I refer to the work of Richard Price (1983; 1990; 1991) and Norval Smith (1987; 1999; 2009).

I continue this section with a brief overview of the grammatical structure of Saamáka. Here, I only discuss those features that are of relevance to this dissertation. For an introduction to the Saamáka language and its structure I refer the interested reader to Bakker et al. (1995) and Aboh et al. (to appear) for an overview.

The basic clause structure in Saamáka is Subject-Verb-Object. The language has no verb inflection and TMA is expressed via free morphemes which appear in between the subject and the verb. Negation is situated very high in the clause structure. Saamáka is a tonal language and it has two tones; high and low⁷.

1.5 Fieldwork Background

In this section, I provide basic sociolinguistic information regarding the village in which I conducted my fieldwork (Section 1.5.1) and I present an overview of the fieldwork methodology adopted in this study (Section 1.5.2).

1.5.1 Fieldwork Community

The data discussed in this dissertation is based on data gathered during two fieldwork trips in 2008 and 2009 (totaling 26 weeks) to Suriname. I conducted fieldwork in Pikin Slee, a Saamáka village along the Suriname river in the jungle of Suriname. The village is located approximately 200-250 kilometers south of Paramaribo and it is reachable by taking a bus and boat (daily except for Sundays) or by plane and boat (three times a week). The village has 3500 inhabitants and it is one of the two biggest villages along the Suriname river. Most of the inhabitants are monolingual Saamáka speakers and some of them have knowledge of one or more of the following languages; Dutch which is the official language and therefore the primary language in the educational system, Sranan which is the lingua franca of Suriname and French which is the official language of French Guyana where Saamáka people seek temporary and/or constant employment. The literacy level

⁶I refer the interested reader to work by Smith (1999; 2009 and subsequent work) for arguments in favour of the former, and by Arends (1995 and subsequent work) for arguments in favour of the latter).

⁷For studies of the phonological system of Saamáka I refer the interested reader to work by Smith (1987 and subsequent work) and Good (2004 and subsequent work).

of the inhabitants is, in general, very low. In the Saamáka society, most people work and live from their land. However, it is not uncommon for Saamáka men to spend some part of their lives in Paramaribo and/or French Guyana to seek employment and to support their family back home. Pikin Slee has no running water and electricity is only available in the evening for a couple of hours a day (and only when gasoline is available to run the generator). Remarkably, mobile phones have been available in the village since December 2007 and this has made the outside world very accessible. Since 1980, Pikin Slee has had a primary school⁸, but unfortunately Saamáka children who want to continue their education are obliged to go to Paramaribo. Since the children have to live in boarding schools there, and this is very expensive according to Saamáka standards, not many children in the village attend secondary school.

During my stay in Suriname, I divided my time between Pikin Slee and Paramaribo and usually spent 3 to 4 weeks in the village, and 1 week in the city. In Paramaribo, I started my analysis of the data and collaborated with a native Saamáka woman to transcribe the recordings I made in Pikin Slee. This woman also transcribed recordings by herself for which she was financially compensated.

1.5.2 Data collection

The data presented in this dissertation are a mixture of natural occurring data and data from elicitation sessions. The former are recordings of interviews with and personal anecdotes of monolingual Saamáka speakers (middle-aged to elderly people). These sessions were undertaken with help of a translator/guide, who engaged in a conversation with my consultants while I was present to record the sessions. These recordings describe the daily life (past and present day) by both women and men, the experience people had during the flood in 2006, and explanations of certain specific tasks people have in the village. In total, I recorded 21 interviews, totaling 560 minutes, of which 13 interviews have been completely transcribed and translated, totaling 297 minutes, which were analysed for this dissertation. These interviews were made with the help of two translators/guides which were both male. My first guide (born in 1979; Pikin Slee) finished primary school and lived in French Guyana for some time and he speaks some French and some Dutch. My other guide was a young boy (born in 1996; Pikin Slee) who attended the last form of primary school and who speaks Dutch fluently. I did not engage in elicitation sessions with both of the translators/guides.

⁸Like many primary schools along the Suriname river and other parts in the interior of Suriname, the school was closed during the civil war (1986-1992).

A second type of natural occurring data which is analysed in this dissertation is taken from Saamáka folk-tales and traditional stories published by the Summer Institute of Linguistics, and two wordlists, one Dutch-Saamáka and one Saamáka-Dutch, by Adrianus de Groot (1977, 1981).

Although natural occurring data is an important source for positive evidence, certain aspects of a language are difficult to establish with these types of utterances, therefore I also conducted elicitation sessions. These elicitation sessions consisted of two parts; translations and judgments, and were conducted using Dutch as meta-language. All of my consultants who participated in these elicitation sessions were bilingual Saamáka and Dutch speakers, and most of them also speak Sranan with a high level of competence. An overview of my principal consultants⁹ is presented in Table 1.1^{10, 11}.

Name	Sex	Age	Education	Born	Grew up	in Pikin Slee since
AJ	M	b1980	teacher	Pokigron	Paramaribo	2004
EJ	F	b1979	teacher	Nieuw Aurora	Paramaribo	2004
FD	M	b1952	primary	Brokopondo	Tjaikonde	1992
GM	F	b1981	primary	Paramaribo	Botopasi	-
JD	F	b1974	primary	Pikin Slee	Pikin Slee	-
JE	M	b1955	teacher	Futu-na-baka	Botopasi	1980-1986/ 2001
JN	F	b1978	teacher	Brokopondo	Paramaribo	2002
KL	M	b1963	secondary	Nieuw Aurora	Nieuw Aurora	2007
MD	M	b1969	primary	Pikin Slee	Pikin Slee	-

Table 1.1: List of Consultants

⁹Consultants FD and JE were only consultants during my fieldwork-trip in 2008; and consultant GM and JD only in 2009. Furthermore, consultant GM is of native american origin and was adopted at a very young age by a Saamáka family. She is married to a Saamáka man and lives with him and their children in Brownsweeg. During my stay in 2009, she and her two youngest children visited her family in Pikin Slee for several months.

¹⁰All the villages, except for Paramaribo, in which my consultants lived prior to their stay in Pikin Slee are Saamáka communities, or communities where the primary language of communication is Saamáka. Botopasi, Futu-na-baka, Nieuw-Aurora, Pokigron and Tjaikonde are located along the Suriname river and Brokopondo is the area around the Brokopondo Reservoir. The primary language of these consultants at home was Saamáka while at school it was Dutch. Paramaribo is the capitol of Suriname where Dutch and Sranan (depending on the area) are the most commonly heard languages on the street. Of the consultants who grew up in Paramaribo, EJ and JN would speak Saamáka at home, while AJ was obliged to speak Dutch with his father while his father spoke in Saamáka to him.

¹¹I would like to express my thanks to Peter Bakker (personal communication) who was so kind to give me one of his Dahl (1985) questionnaire which he elicited in 1988 from a native Saamáka speaker living in the Netherlands.

In addition to consultants in Pikin Slee, I also collaborated with a consultant (born in 1971; Pikin Slee) in the Netherlands who was available while I was not in Suriname. This consultant was born and raised in Pikin Slee until the age of 15 after which he moved to Paramaribo to continue his education. He moved to the Netherlands in 2004 to continue his higher education.

The translations and judgments were provided in a discourse context adapting a Dahl (1985; 2000) style inspired questionnaire. I elicited 13 questionnaires which contained 46-75 sample sentences each. I used a subset of questionnaires developed by Dahl (1985, 2000) who designed a number of questionnaires to elicit Tense-Aspect-Modality readings, by Bouquiaux and Thomas (1992) which focused on the verb phrase and by Bettina Migge and Donald Winford (personal communication) who designed a questionnaire to elicit modal readings. In addition, I developed a number of questionnaires myself following Dahl's methodology by providing an explicit context to guarantee a translation which represents the intended interpretation (see also Matthewson 2004 on semantic fieldwork methods). These questionnaires were especially developed to achieve a better understanding of the semantics regarding the expression of modality and regarding the interaction of TMA morphemes. Secondly, my consultants were asked for their judgments to test whether a Saamáka sentence was grammatical and felicitous in a certain discourse context. If the sentence was ungrammatical, consultants were asked to construct a grammatical sentence in the provided discourse context and if the sentence was infelicitous, consultants were asked to construct a discourse context in which the sentence would be felicitous. These questionnaires were cross-checked with at least six consultants. The questionnaires are attached as Appendix A of this dissertation.

1.6 Outline of the dissertation

The overall aim of this dissertation is to explore the mapping between morpheme order and compositional semantics in the IP domain of the Saamáka clause. Each chapter investigates the semantic interpretation and syntactic distribution of an individual TMA morpheme.

Chapter 2 focuses on the difference in temporal interpretation of unmarked stative verbs and unmarked eventive verbs. The former contributes a present time reference reading to a proposition and the latter, a past time reference reading. I will demonstrate that a proposition containing a unmarked eventive verb has the characteristics of what is expected from a present perfect and therefore I argue that the difference in temporal interpretation between stative and eventive verbs is explained by assuming a morphological null Perfect morpheme in the underlying structure.

The focus of Chapter 3 is the imperfective morpheme *ta* which conveys a habitual, inchoative and progressive interpretation. I will explain these different readings by arguing that inchoative and progressive indicates a singular eventuality while habitual indicates a plural eventuality (in the sense of Ferreira 2005).

I continue in Chapter 4 with an investigation of the functional category of Tense and I will argue that Saamáka has a morphological null Tense morpheme which always expresses a topic time equals anchor time ordering relation, which in the default, equals the time of utterance. Consequently, default Tense in Saamáka always expresses PRESENT. Furthermore, I investigate the semantic and syntactic characteristics of the morpheme *bi* which gives rise to a past time reference interpretation of the eventuality. It will be demonstrated that the characteristics of this morpheme cannot be explained by assuming it to be a PAST Tense morpheme and in order to elucidate all of its characteristics, I will argue that it is a situational pronominal which establishes the anchor time directly such that it is not the time of utterance but some contextually relevant past moment.

In Chapter 5, the characteristics of the modal morphemes *musu* and *sa* are investigated. Both morphemes are ambiguous and the former expresses deontic obligation and deductive epistemic modality while the latter expresses dynamic ability, deontic permission and speculative epistemic modality. To explain this different readings, I adapt Hacquard's (2006; 2010) ideas, which combine a cartographic approach (in the sense of Rizzi 1997; Cinque 1999, 2001) with possible world semantics (in the sense of Kratzer 1977, 1991, to appear) to argue in favour of a unified analysis of the different readings of a modal morpheme.

In Chapter 6, I continue with the study of the future time reference morpheme *ó* which is four-way ambiguous and expresses a simple past reading, a future-in-the-past reading, a past-in-the-future reading and a assumptive epistemic modality reading. I will investigate whether the characteristics of this morpheme can be explained under a Future Tense analysis or under a Modal analysis, arguing in favour of the latter.

Lastly, Chapter 7 summarizes this dissertation and it attempts to give a complete overview of the distributional properties of the core TMA morphemes in Saamáka. Furthermore, it is investigated whether Saamáka conforms to the universal hierarchy of functional projections as proposed by Cinque (1999, 2001).

Chapter 2

The unmarked verb form

2.1 Introduction

The focus of the present study is the IP domain in Saamáka. The semantic and syntactic characteristics of the different tense, aspect and modality morphemes in Saamáka are studied. This discussion starts with investigating the characteristics of morphological unmarked verbs. In Saamáka, as in many other creole (and non-creole) languages, verbs are often unmarked for tense. However, in an out-of-the-blue context, nonstative verbs convey a past time reference reading, while stative verbs convey a present time reference reading, as in (19) and (20) respectively (see also e.g. Byrne 1987; Rountree 1992; Veenstra 1996).

- (19) Dí wómi mbéi wán bóto.
DET man make ART boat
'The man has made a boat'.
or 'The man made a boat'.
- (20) Dí wómi sábi nénégtóngo.
DET man know Sranan
'The man knows Sranan'.

Since in these examples there is no overt tense, aspect or modality morpheme present, we must address the question of what triggers the temporal interpretation of these sentences, and of how the difference between stative and nonstative verbs might be explained. A superficial conclusion might be that this temporal difference between stative and nonstative verbs is due to a null Tense operator. I will argue, however, that it is not due to a null Tense operator. A close examination of the characteristics of unmarked verbs shows that there is more going on than what we would expect from a simple Tense operator, a functor expressing a temporal ordering relation between topic time and an anchor time (in the sense of Klein 1992;

1994). Furthermore, it would be elegant to find one operator which can explain the temporal characteristics of both unmarked stative and unmarked nonstative verbs. Thus, arguing that the temporal difference between stative and nonstative verbs is due to a Tense operator would be difficult. Veenstra (1996) suggests that Saamáka has a null aspectual morpheme in its TMA paradigm. However, what he means with the concept of null aspectual morphemes, and the consequences of his assumption are not made clear. The implications of the assumption that Saamáka has a null aspectual morpheme will be investigated in the present study.

This phenomena is not a bizarre quirk in Saamáka but a common pattern across creole languages. The difference in temporal interpretation between stative and nonstative verbs has been described for many creoles (see Holm and Patrick 2007 for an overview, and e.g. Bickerton 1975; Patrick 1999; Winford 2000b; Hackert 2004 for descriptions of individual creole languages). In most Caribbean English-based Creoles, the default temporal interpretation of a proposition with an unmarked stative verb is a present time reference, and with an unmarked eventive verb is a past time reference¹. The following Guyanese Creole examples in (21) and (22) demonstrate this.

- (21) Mi na no wai dem a du dis ting.
 ‘I don’t know why there are doing this’ (Bickerton 1975, 29).
- (22) Dem mek i stap.
 ‘They made him stop’ (Bickerton 1975, 30).

According to Dahl (1985) and Bybee et al. (1994, 153), there exists a ‘*default correlation between perfective and simple past*’. By default, nonstative verbs in the perfective have a past time reference and stative verbs have a present time reference (Bybee et al. 1994, 92). The claims made in Dahl and Bybee et al. are commonly adopted in Creole Studies. As a result, the most common label for the features expressed by unmarked verb forms in creole languages is Perfective Aspect.

The observed difference with regard to temporal interpretation between stative and nonstative verbs is not an isolated phenomenon. This correlation is interesting for readings that emerge where little morphology is involved. Since this phenomenon is common cross-linguistically, an explanation is necessary. I have done detailed fieldwork on Saamáka and I focus on this language in the present study. In the next section, I lay out my theoretical assumptions regarding the composition of

¹In certain discourse contexts, stative verbs can refer to a past moment and eventives can refer to a present moment. I will not go into this here, but I refer the interested reader to Bickerton (1975); Patrick (1999); Winford (2000b); Hackert (2004) for discussion and descriptions of Guyanese Creole, Jamaican Creole, Sranan and Bahamian Creole respectively.

Tense and Aspect which are adapted from ideas presented in Klein (1992, 1994) and Demirdache and Uribe-Etxebarria (2000, 2007).

2.1.1 Assumptions concerning the composition of Tense and Aspect

The theoretical assumptions adapted in the presented study are based on ideas by Klein (1992; 1994) and Demirdache & Uribe-Etxebarria (2000; 2007). I assume that aspect is concerned with the temporal perspective of an eventuality (see e.g. Comrie 1976; Smith 1997). Aspect can refer to viewpoint aspect and situation type aspect (Smith 1997), or outer and inner aspect (Travis 1991; MacDonald 2008). Viewpoint aspect views an eventuality as a whole (i.e. perfective) or in its subparts (i.e. imperfective). Situation type aspect refers to aktionsart, which is the way a predicate is structured in relation to time (Dowty 1979; Comrie 1976; Smith 1997; MacDonald 2008). Tense is a temporal characteristic which locates a certain eventuality at a certain time. This moment can be located before, after or simultaneously with an anchor time. When this anchor time equals the time of utterance, this is absolute tense, while when this anchor time equals some other reference time, this is relative tense (see e.g. Comrie 1985). In Klein's (1992; 1994) system of temporal interpretation, three time spans are distinguished: time of utterance (TU), topic time (TT) and time of situation (TSit). The former refers to the moment when a proposition is uttered. Topic time refers to the time for which a particular utterance makes an assertion. It expresses a time span to which the assertion made is constrained (Klein 1992, 535-538). Time of situation is the time at which an eventuality occurs.

I postulate Tense and Aspect to be '*dyadic spatiotemporal ordering verbs taking time-denoting phrases as arguments*' (Demirdache and Uribe-Etxebarria 2000, 162, see also Zagana 1995; Stowell 1996). The external argument of Aspect is topic time and its internal argument is time of situation. Time of utterance is the external argument of Tense and topic time is Tense's internal argument (Zagana 1995; Stowell 1996; Demirdache and Uribe-Etxebarria 2000). Viewpoint aspect conveys a temporal ordering relation between topic time and time of situation. Perfective aspect indicates that topic time fully includes the time of situation, or formally, TT ON TSit. For imperfective aspect, topic time is fully included in the time of situation, or, TT IN TSit (in the sense of Partee 1984; Klein 1994; Kratzer 1998; Zagana 2007). The temporal ordering relations expressed via viewpoint aspect are presented in Table 2.1.

TT fully includes TSit	perfective	ON
TSit fully includes TT	imperfective	IN

Table 2.1: Aspect relations

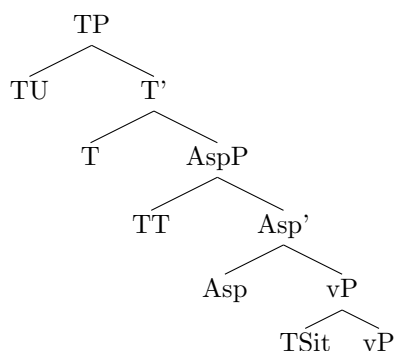
Tense orders the time of utterance with regard to the topic time. This relation can be one of precedence or simultaneity. Past tense expresses that the time of utterance is located after the topic time, or, TU AFTER TT; and present tense indicates a simultaneous relation between time of utterance and topic time, or, TU WITHIN TT. When the time of utterance is located prior to the topic time, future tense is expressed; TU BEFORE TT (in sense of Demirdache & Uribe-Etxebarria 2000; 2007). The temporal ordering relations expressed via tense are presented in Table 4.1.

TT precedes TU	past	AFTER
TU simultaneous with TT	present	WITHIN
TU precedes TT	future	BEFORE

Table 2.2: Tense relations

The phrase structure of Tense and Aspect is shown in (23) and is adapted from Demirdache & Uribe-Etxebarria (2007, 333). It is modified so that the relations are labeled according to the terminology used in the present study.

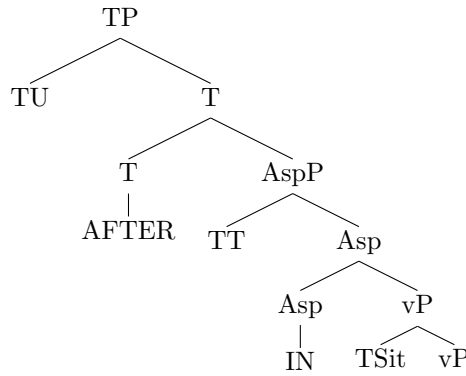
(23)



This phrase structure is exemplified in (24). Here, Tense denotes PAST and Aspect denotes IMPERFECTIVE. The temporal relation denoted by topic time and time of utterance expresses a precedence relation, i.e. ,TU AFTER TT. The relation ex-

pressed via Aspect between topic time and time of situation denotes imperfective, i.e. TT IN TSit.

- (24) a. Henry was building a house (Demirdache and Uribe-Etxebarria, 2000, 166).
b.



In this chapter, I examine different ways of formalizing the decomposition of non-stative and stative verbs with regard to their temporal interpretation. Nonstative verbs express a past time reference interpretation and stative verbs a present time reference interpretation, as in (19) and (20) respectively. In the following sections, I lay out the two most natural hypotheses to explain this phenomenon. In Section 2.2, I discuss the selection for a covert perfective hypothesis. This hypothesis argues that stative verbs select for an imperfective aspectual head and nonstative verbs select for a perfective aspectual head. Section 2.3 discusses the selection for covert past hypothesis. This hypothesis argues that stative verbs select for [+present] tense and nonstative verbs for [+past] tense. I demonstrate that both hypotheses have empirical as well as conceptual problems. Therefore, I formulate an alternative which argues that the temporal difference between stative and nonstative verbs is to be explained by assuming a morphological null Perfect morpheme in Saamáka's TMA paradigm (Section 2.4). This chapter ends with a summary.

2.2 Hypothesis I: Selection for covert perfective

This section discusses how one might account for the difference in temporal interpretation between stative and nonstative verbs under the hypothesis that nonstative verbs come with a default perfective specification. This hypothesis is based on ideas presented in Dahl (1985) and Bybee et al. (1994), who argue that there exists a strong correlation between past time reference and perfective aspect. Dahl characterizes the prototypical perfective as ‘a single event, seen as an unanalyzed

whole, with a well-defined result or end-stage, located in the past' (Dahl, 1985, 78). Furthermore, Bybee et al. point out that prototypically stative verbs do not combine with perfective. However, '*when perfectives do apply to stative verbs, the effect is usually to signal a present state, not a past one*' (Bybee et al., 1994, 92). In this section, I investigate whether the assumptions in Dahl (1985) and Bybee et al. (1994) with regard to the correlation between perfective and past can account for the difference in temporal interpretation between stative and nonstative verbs in Saamáka.

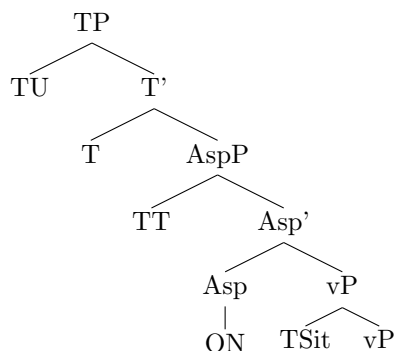
This section continues with an overview of the literature on perfective aspect (Section 2.2.1) and on aktionsart, as well as the influence of aktionsart on the temporal interpretation of a proposition in Saamáka (Section 2.2.2). In Section 2.2.3, I present certain problems with this hypothesis and arguments against. The section ends with a summary.

2.2.1 Perfective Aspect

Perfective aspect views an eventuality as a whole, from the outside. An eventuality modified by perfective is usually a complete action and all parts of an eventuality are viewed as a single whole including the initial and final endpoints of this eventuality (in the sense of Comrie 1976; Smith 1997). More formally, perfective has been analysed as expressing a temporal ordering relation of inclusion between time of situation and topic time; or, TT ON TSit (Partee 1984; Kratzer 1998; Zagana 2008), as demonstrated in (25).

(25) a. Mrs Ramsey wrote a letter (Smith, 1997, 170).

b.

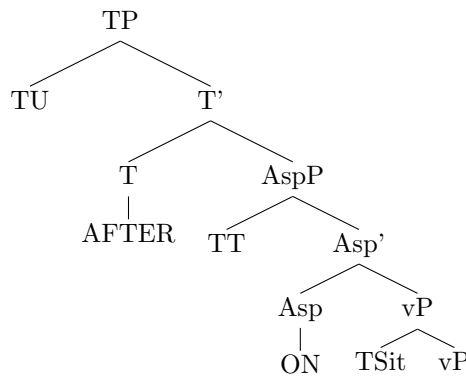


The hypothesis investigated in this section states that verbs select for a certain aspectual head. The nature of these selectional features depends on whether a verb is stative or nonstative. Nonstative verbs select for [+perfective] aspectual head, and stative verbs for another (presumably imperfective) aspectual head. The

former contributes a topic time enclosing the time of situation relation, TT ON TSit; and the latter contributes a time of situation enclosing topic time relation, TT IN TSit. I postulate that verbs indirectly, via Aspect, select a Tense head. Following Bybee et al. (1994), I assume that the default tense interpretation of perfective aspect is past tense for nonstative verbs. Correspondingly, the default value of Tense for the other value of Aspect would be PRESENT. Thus, it follows that the default interpretation of Tense is time of utterance following topic time for [+perfective], or, TU AFTER TT; and time of utterance simultaneous with topic time for the other value of Aspect, or, TU WITHIN TT. The syntactic structure of (25) is repeated below, but extended with a temporal ordering relation between time of utterance and topic time in Tense.

(25) a. Mrs Ramsey wrote a letter.

b.



To evaluate the proposed hypothesis, I investigate whether there is independent evidence that the class of eventive verbs in Saamáka is perfective. The next section studies the influence of aktionsart on the temporal interpretation of a proposition.

2.2.2 Situation type Aspect

Situation type aspect is concerned with inherent aspectual features of verbs, especially the internal temporal structure of an eventuality² (Comrie 1976; Parsons 1990; Smith 1997; MacDonald 2008). Vendler (1957) distinguishes four aspectual classes: states, activities, accomplishments, and achievements (see also Dowty

²The term eventuality is used as cover-term for states, events and processes. The term state refers to stative eventualities, and the term event to event/process eventualities throughout this study (in the sense of Bach 1986a).

1979)³. These four primitive semantic categories are distinct from each other in denoting different values for the lexical aspectual parameters of dynamicity, durativity, and telicity. Each parameter has two values. Dynamicity refers to eventualities which need a constant input of energy, as in (26). Stativity is the opposite of dynamicity and it refers to eventualities that do not need any energy to obtain, as in (27).

(26) Mary swims in the ocean (Smith, 1997, 41).

(27) Ellen believes in ghosts (Smith, 1997, 41).

Durativity addresses the length of an eventuality, or how long (or short) it lasts. Punctual implies that an eventuality holds at a point in time, but there is no interval at which the eventuality holds. A punctual eventuality has no internal structure, as in (29). Situations that have duration are true at a time interval and they have internal structure, as in (28).

(28) The door opened slowly (Smith, 1997, 42).

(29) The clock struck at noon (Smith, 1997, 42).

Telicity presents an eventuality as completed. Telic eventualities have a natural endpoint, while atelic eventualities do not have a natural endpoint (see e.g. Vendler 1957; Smith 1997), as in (30) and (31) respectively. A natural endpoint implies that the eventuality cannot continue after this point is reached. Atelic eventualities can continue unless they are interrupted by something/someone.

(30) John is making a chair (Comrie, 1976, 44).

(31) John is singing (Comrie, 1976, 44).

To sum up, states are eventualities which hold for an unspecified period. There is no culmination of the eventuality and stative eventualities do not have a natural endpoint. Activities report a process. They have some characteristics of achievements and accomplishments, in that they are happenings, but on the other hand they are similar to states in that activities do not have a natural endpoint. Accomplishments and achievements have in common that the eventuality they express has a natural endpoint, and they indicate a change of the eventuality. The difference between accomplishments and achievements is that the latter is instantaneous, and the former is a process with internal transitions (Comrie 1976; Parsons 1990; Smith

³In recent years, Vendler's classification, although still very accurate, has been expanded. Smith (1997) classifies the class of semelfactive verbs as a specific class. Semelfactives are dynamic, atelic and punctual. van Valin (2006) subdivides achievements into those with agents and those without agents. These additional verb classes do not add anything to the point made here.

1997; MacDonald 2008). This is exemplified for English in (32) with examples of a state, activity, accomplishment and achievement predicate respectively.

- (32) a. The baby was asleep at noon (Smith, 1997, 44-47).
 b. Emily pushes the cart (Smith, 1997, 44-47).
 c. Sam opened the door with a key (Smith, 1997, 44-47).
 d. Mary deliberately broke the glass (Smith, 1997, 44-47).

The four primitive semantic categories and their binary values for the lexical aspectual properties of dynamicity, durativity, and telicity are presented in Table 2.3 (Smith, 1997, 20).

	Static	Durative	Telic
States	+	+	-
Activities	-	+	-
Accomplishments	-	+	+
Achievements	-	-	+

Table 2.3: Aktionsart

2.2.2.1 Situation type Aspect in Saamáka

This section studies Aktionsart in Saamáka. I demonstrate that the difference in temporal interpretation between (19) and (20) is based on the dynamicity of a predicate. The two other parameters, durativity and telicity, do not seem to influence the temporal interpretation of propositions in Saamáka. All aspectual verb classes, states, activities, accomplishments and achievements are investigated. I start this discussion with some examples from stative verbs. This is followed by a description of activity, accomplishment and achievement verbs in Saamáka. States continue endlessly, and they do not need a constant input of energy. In Saamáka, adjectivals can also be used as stative verbs, as in (35). As (33) - (35) demonstrate, a sentence containing a stative verb conveys a present time reference reading.

- (33) Dí kúnunu akí dé a páu míndi.
 DET mountain here BE LOC tree middle
 ‘This mountain lies in the middle of the forest’.
- (34) Senni ké wán ápa.
 Senni want ART apple
 ‘Senni wants an apple’.

- (35) Nóo dí wáta a ló a héi móo éside.
 NARR DE water LOC river 3SG high more yesterday
 ‘The water in the river is higher than yesterday’.

Activity verbs need a continuous input of new energy, otherwise they cannot continue. They do not have a natural endpoint, and thus they are unbounded, as in (36). A sentence containing an unmarked activity verb denotes a past time reference interpretation of the eventuality.

- (36) Context: What did the boy do this afternoon after school?
 Dí womímíi sún a ló.
 DET boy swim LOC river
 ‘The boy has swum in the river’.
- (37) Context: What did the girl do at the bookodidia yesterday?
 Dí muyémíi baya.
 DET girl dance
 ‘The girl has danced’
- (38) Context: What did your wife do today?
 Kapie wooko a goón tide.
 K work LOC vegetable garden today
 ‘Kapie has worked on her vegetable garden today’.

Accomplishments need a constant source of energy to continue. Unlike stative and activity verbs, accomplishment verbs are telic and have a natural endpoint, as exemplified in (39) - (41). This implies that the eventuality is completed. Furthermore, sentences containing an accomplishment verb indicate a goal and they convey a past time reference reading.

- (39) Context: What did your brother do yesterday evening?
 A sikífi dí bíífi a wán yúu déndu.
 3SG write DET letter LOC ART hour inside
 ‘He has written the letter in an hour’.
- (40) Apanabi kule a matu ko dou a wi
 A run LOC forest come arrive LOC 1PL
 ‘Apanabi has run in the forest toward us’.
- (41) Context: The speaker is sharing a hunting story. He was almost attacked by a wild pig.
 Hén mi túwe di awaá a dí sitónu liba
 NARR 3SG throw DET kind of palm fruit LOC DET stone top
 ‘Then I have thrown an awaa on top of the stone’.

Achievements are punctual which implies that they do not denote duration. They indicate that an eventuality has a natural endpoint and this endpoint is reached without prior activity of the achievement verb, as exemplified in (42) - (43). These sentences convey a past time reference reading.

- (42) Context: The speaker is talking about traveling to Paramaribo in the old days when it could take several weeks.
 Yu musu waka longi bifo yu findi én
 2SG MOD walk long before 2SG find 3SG
 ‘You had to walk long before you found it’.
- (43) Context: Speaker F is asking his mother for a story which she used to tell to him when he was a young boy.
- a. Te ndeti nóo a ta dé ku faya
 when night NARR 3SG IMP BE with fire
 F: ‘In the evening, it is with fire’.
- b. Mi feekéte di sondi e
 1SG forget DET thing NARR
 B: ‘I have forgotten these things, you know’.
- U si wánlo sembe. U bi tei halfu fu go pasa daka. Hii fu
 1PL see some person 1PL PST take half FU go pass day all FU
 didé sembe déde a gandá.
 that person die LOC village
 ‘We saw some people. We took something to pass the day. Someone in the village passed away’.

To sum up from (33) - (43), I conclude that the lexical aspectual parameters of telicity and durativity do not influence the distinction that leads to a difference in temporal interpretation. This temporal difference is influenced by dynamicity only. Stative verbs give rise to a present temporal interpretation of a proposition, and nonstative verbs give a past temporal interpretation. The influence of stativity/dynamicity on the temporal interpretation of a proposition is not uncommon cross-linguistically. In embedded clauses in English for example, eventive verbs convey a shifted reading while stative verbs have a shifted or simultaneous reading with regard to the tense of the matrix clause (Enç 1987; 2004; Gennari 2003). The data presented here confirms that the temporal distinction between (19) and (20) is based on the dynamicity of a predicate. Since I have demonstrated that there exists a correlation between stativity of a verb and its temporal interpretation, we can continue to investigate our current hypothesis. This hypothesis argues that verbs select for a certain aspectual head depending on the stativity of the predi-

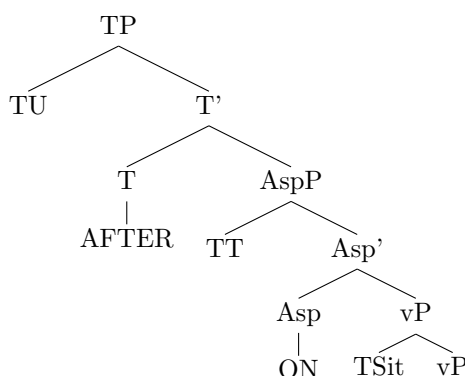
cate: nonstative verbs select for a perfective head, and stative verbs for some other—presumably imperfective— aspectual head.

2.2.3 Problems and discussion

Under the current hypothesis, unmarked nonstative verbs are perfective and the ordering relation expressed by Aspect between topic time and time of situation is one of full inclusion, or, TT ON TSit. Verbs must indirectly (i.e., via Aspect) select for a certain Tense head. Nonstative verbs select for [+past] value in Tense. The relation in Tense between topic time and time of utterance is one of precedence, i.e., TU AFTER TT. The phrase structure for eventive verbs would then be as is demonstrated in (44).

(44) a. SUBJECT nonstative VERB vP

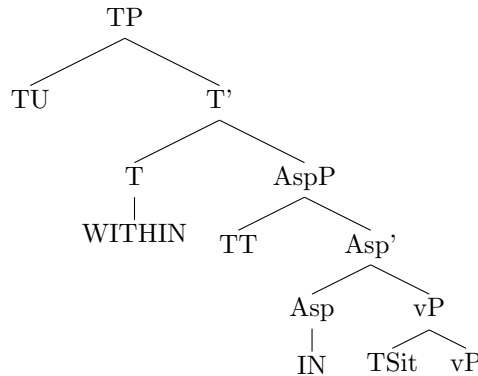
b.



To account for the difference in temporal interpretation of nonstative and stative verbs, stative verbs would need to select another aspectual head. I stipulate that this head express Imperfective Aspect. The relation between topic time and time of situation for imperfective also implies one of full inclusion, the time of situation completely encloses the topic time: TT IN TSit. Stative verbs also indirectly select for a value in Tense, to be more precise for [+present]. I assume the relation in Tense to be one of simultaneity between topic time and time of utterance: TT WITHIN TU. The phrase structure of a proposition with an unmarked stative verb is presented in (45).

(45) a. SUBJECT stative VERB vP

b.



The analysis proposed here runs into a number of problems, three are pointed out in the present study; two empirical problems and a logical deductive problem. First, a characteristic of perfective is that it expresses boundedness of an eventuality. Boundedness implies that an eventuality has endpoints, an initial point and a final point. It does not indicate the termination of an eventuality (Comrie 1976; Binnick 1991; Smith 1997; Bhat 1999). Telicity denotes the natural endpoint of an eventuality. Since both perfective and telicity emphasize the boundaries of an eventuality, there is a natural correlation between them. This implies that perfective splits between telic and atelic eventualities (see Bohnemeyer and Swift 2004 for discussion). Thus, it follows that the expectation that activities and states, which are atelic, behave similarly; and that accomplishments and achievements, which are telic, behave similarly. In Section 2.2.2.1, I showed that in Saamáka the lexical aspectual property of dynamicity influences the temporal interpretation of a proposition while the other parameters, telicity and durativity, do not. In Saamáka, all eventive verbs including activity verbs convey a past time reference reading of the eventuality when they are unmarked, as in (36) - (43). Accomplishments and achievements are telic events. However, activities are atelic, as exemplified in (47)⁴.

- (47) a. Wán hǐ yúu lánɡa a sún a dí lío.
 ART whole hour long 3SG swim LOC DET river
 ‘For a whole hour, s/he has swum in the river’.
- b. *A wán yúu déndu a sún a lío.
 LOC ART hour inside 3SG swim LOC river

⁴Accomplishment verbs can co-occur with a temporal adverbial expressing ‘in an hour’, as demonstrated in (46).

- (46) A wán yúu déndu a sún akí gó alá.
 LOC ART hour inside 3SG swim here go there
 ‘In an hour, s/he has swum for here to there’.

Intended interpretation ‘In an hour, s/he has swum in the river’.

Bohnenmeyer and Swift (2004) study the correlation between event structure and default viewpoint aspect. They investigate the default viewpoint aspect reading of verbs when they are unmarked for aspect. Their conclusion indicates a strong correlation between perfectivity and telicity. Accomplishment and achievement verbs have a perfective reading when they are unmarked for aspect. Atelic verbs, like states and activities, can be realized under both imperfective and perfective viewpoint aspect, *‘but since imperfective and perfective form an entailment scale with respect to realization, clauses that encode atelic verbs and are not marked for perfective aspect are interpreted imperfectively’* (Bohnenmeyer and Swift 2004, 264-265). Thus, the way viewpoint aspect is assigned depends on telicity. Moreover, in the assumed tenseless languages Chinese and Senčáθen (Salish), viewpoint aspect plays an important role in the temporal interpretation of a proposition. The default viewpoint aspect in these languages depends on aktionsart, or to be more precise, telicity. Stative and activity verbs have a present time reference and are argued to be interpreted imperfectively, while accomplishment and achievement verbs have a past time reference and a perfective reading, as the Chinese examples in (48) and (49) respectively demonstrate (see Smith 1997; Lin 2005 for Chinese and Kiyota 2008 for Senčáθen).

- (48) Ni da lanqiu ma?
 you play basketball Q
 ‘Do you play basketball?’ (Lin, 2005, 3)
- (49) Zhangsan dapuo yi-ge huaping.
 Z break one.CL vase
 ‘Zhangsan broke a vase’ (Lin, 2005, 3).

The data presented in Section 2.2.2.1 demonstrated that Saamáka splits between stative and nonstative verbs when it comes to the default temporal interpretation of a proposition. This split is not based on telicity, which would be expected if it were perfectivity that influenced the time reference of a proposition. Based on this, it will be difficult to argue that all nonstative verbs in Saamáka are perfective.

Secondly, unmarked eventive verbs can co-occur with temporal adverbials referring to the time of utterance, as exemplified in (50) - (52). Under a hypothesis which assumes that unmarked verbs convey a Perfective Aspect reading, this is unexpected.

- (50) Senni go a huku nóúnóu.
 Senni go LOC hook now
 ‘Now, Senni has gone fishing’.

- (51) Context: At the end of our conversation with Ayaai, he says:
 U findi wán oto da nóúnóu aki. Nóo hén da di Saamáka
 2PL find ART story give now here NARR 3SG BE DET S
 nénge libi.
 person live
 ‘Now you have received a story here. It is the life of the Saamaka people’.
- (52) Context: In this extract the speakers are talking availability of electricity in the village. Electricity is provided via gas engine and only in the evening it is turned on.
- a. Fá de ta sendé hén té wán písi de tapá hén.
 how 3PL IMP turn on 3SG at a certain moment 3PL stop 3SG
 Nóo neen dá u bóó.
 NARR LOC.3SG give 3PL rest
 T: ‘With how they turn it on and at a certain moment they turn it off. Then it gives us rest’.
- b. Kuma fá dí telefón kó akí nóúnóu. Wán óto anténe
 like DET telephone come here now ART other antennae
 u hópo a Seei akí.
 FU lift LOC Pikinslee here
 L: ‘Like the phone which has come here now. They have placed another telephone mast here in Pikinslee’.

Since Perfective Aspect refers to a complete situation, a perfective eventuality cannot be temporally located at the time of utterance. The temporal adverbial *nóúnóu* (‘now’) refers to time of utterance. These types of temporal adverbials modify topic time (in the sense of Musan 2001; Demirdache and Uribe-Etxebarria 2007; Zagona 2007). This implies that topic time equals time of utterance, and the temporal ordering relation in Tense expresses PRESENT Tense. If unmarked eventive verbs were to be Perfective, there would be a mismatch. The internal semantics of Perfective Aspect make it impossible for Perfective to combine with PRESENT Tense (Comrie 1976; Smith 1997). As a result, propositions as in (50) - (52) cannot be explained under a covert perfective hypothesis.

Thirdly, the temporal relation between topic time and time of utterance in Tense is based on the assumption that there is a correlation between perfective and past tense (as argued for in Bybee et al. 1994). However, it should be clear from the composition of Tense and Aspect assumed here that perfective does not

automatically imply PAST tense⁵. Perfective views eventualities as complete, that is, as one unit with no focus on the internal complexity. However, perfective does not imply that an eventuality is in the past, or terminated (Comrie 1976; Smith 1997; Youssef 2003). For perfective aspect, all points of an eventuality are equally important. Perfective views an eventuality as a single whole (Comrie 1976; Binnick 1991; Smith 1997; Bhat 1999). Although in many languages (e.g. Chinese, Senčáθen) perfective in the unmarked tense refers to an eventuality located before the time of utterance, i.e. $e < TU$; as in (49). In other languages (such as Kiowa⁶ and Russian) unmarked perfective can also indicate an eventuality located at a moment after the time of utterance: $e > TU$, as in (53)⁷ and (54).

- (53) Ja ub'-ju tebj-a.
1SG kill.1SG 2SG.ACC
'I shall kill you' (Comrie, 1976, 18).
- (54) Ja napišu statju k ponedel'niky.
1SG PFV-write-PRES.1SG article by monday
'I will have written the paper by Monday' (Borik, 2006, 200).

This correlation between perfective and PAST tense cannot be derived logically from its semantic decomposition. Perfective indicates that topic time fully encloses time of situation, or, TT ON TSit. It does not locate an eventuality in relation to time of utterance. While Aspect conveys a topic time completely enclosing time of situation relation, the temporal relation in Tense between time of utterance and topic time can be one expressing AFTER, WITHIN or BEFORE for a perfective eventuality. Perfective does not make any predictions about the relation between time of utterance and the eventuality expressed. The syntactic structure of (49) and (53) is given in (49-b) and (53-b) respectively. The relation between time of utterance and topic time in (49-b) denotes that the former is located after the latter, TU AFTER TT. While this temporal relation in (53-b) expresses time of situation to precede topic time, TU BEFORE TT.

- (49) a. Zhangsan dapuo yi-ge huaping.
Z break one.CL vase

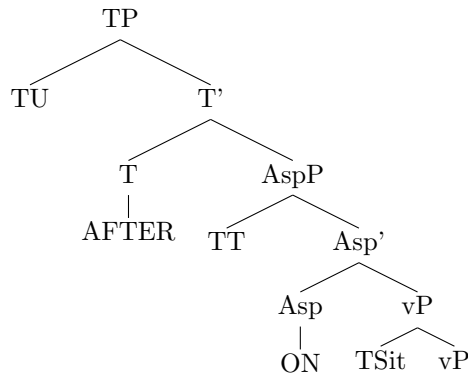
⁵Youssef (2003, 84) argues that *'while past tense is often associated with perfective by virtue of the fact that what is complete is often also past, there is no necessary relationship between the two; perfectives can occur in the future'*. I completely agree with her.

⁶I refer the interested reader to Watkins (1984) for a study of Kiowa (Kiowa-Tanoan).

⁷Thanks to Inna Tolskaya (personal communication) for providing the glosses and explaining the structure of this sentence to me. In (53), *u-* is a lexical prefix, which makes the verb stem perfective. It is, however, lexicalized. The verb root *bi-* means 'to hit', while *u+bi-* means 'to kill'. *-ju* expresses first person singular for both present and perfective future.

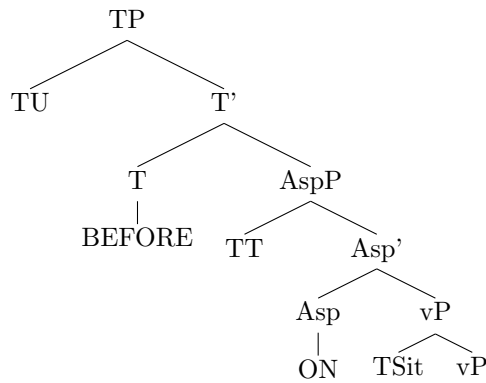
‘Zhangsan broke a vase’ (Lin, 2005, 3).

b.



- (53) a. Ja ub'-ju tebj-a.
 1SG kill.1SG 2SG.ACC
 ‘I shall kill you’ (Comrie, 1976, 18).

b.



These examples indicate that Perfective Aspect does not necessarily denote an eventuality that is situated prior to the time of utterance. Since Perfective Aspect falls under the category of viewpoint Aspect, and viewpoint Aspect express a temporal ordering relation between the topic time and the time of utterance, this does not imply that a perfective eventuality entails PAST Tense. This is also pointed out by Bhatt (1999, 48) who argues that ‘*there is a tendency for perfective verbs to indicate past events, and also events that are punctual or resultative, and for imperfective verbs to indicate progressive and durative events, or events that do not terminate in a result. However, neither of these two sets of characteristics is essential for the perfective or imperfective to occur in a given context*’. In other words, Viewpoint Aspect does not locate an eventuality in time. Therefore to

complete the analysis, we would have to stipulate a selectional relationship between Perfective Aspect and PAST Tense. In this respect, conditional clauses in Saamáka would be problematic. Unmarked verbs occur in the antecedent and are interpreted with a future time reference, as exemplified in (55).

- (55) Ée dí wómimíí féni dí móni nóo a o báí wán kado
 if DET boy find DET money NARR 3SG MOD buy ART present
 dá dí máti feen.
 give DET friend FU.3SG
 ‘If the boy gets money, he will buy something for his friend’.

Under an analysis which assumes a selectional relationship between Perfective Aspect and PAST Tense, the future time reference of unmarked verbs in conditional clauses cannot be explained.

2.2.4 Summary

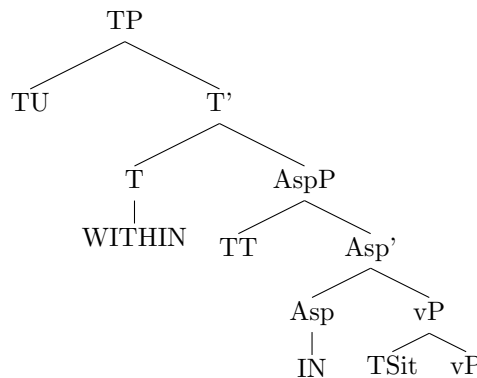
Based on Dahl (1985) and Bybee et al. (1994), I investigated the assumption that perfective aspect indicates simple past for eventive verbs and simple present for stative verbs. A hypothesis that the difference in temporal interpretation between stative and nonstative verbs is driven by selectional features was formulated. Under this hypothesis, nonstative verbs would select a [+perfective] aspectual head and stative verbs would select for an [+imperfective] aspectual head. Furthermore, verbs would indirectly select for a Tense head. For nonstative verbs Tense would express PAST, and for stative verbs PRESENT. I have discussed a number of arguments against this hypothesis. First, Perfective Aspect correlates with the lexical aspectual parameter of telicity (in the sense of Bohnemeyer and Swift 2004). However, all eventive verbs in Saamáka convey a past time reference, but not all of them are telic. Problematic are activity verbs which are atelic and convey a past interpretation. Secondly, unmarked eventive verbs co-occur with temporal adverbials referring to the time of utterance. Since Perfective aspect views an eventuality as complete it cannot be located at the time of utterance neither can it be modified by PRESENT Tense. As final argument against this hypothesis, I demonstrated that Perfective Aspect does not logically imply PAST Tense. The functional node Aspect relates topic time to time of situation, but it does not give any indication of the relationship between time of situation and time of utterance. Although in many languages perfective aspect expresses simple past, this correlation does not follow from the logical decomposition, and hence has to be stipulated independently and functionally motivated. Thus, this proposal reduces to the hypothesis in Section 2.3 which is discussed next.

2.3 Hypothesis II: Selection for covert past tense

This section studies the hypothesis that verbs in Saamáka directly select for a Tense head. Tense indicates a temporal ordering relation between two time-denoting arguments and it relates time of utterance to topic time. This relation is one of precedence or simultaneity and can express AFTER, WITHIN and BEFORE. Thus, an eventuality can be located in the past, present or future respectively. Based on the data presented in Section 2.2.2.1, we saw that the selectional features of verbs may depend on the stativity of a verb. Under this hypothesis, nonstative verbs select for a precedence relation between time of utterance and topic time, or, TU AFTER TT. Stative verbs would thus select for a time of utterance which is simultaneous with the topic time relation, i.e., TU WITHIN TT. Moreover, the value in Aspect should correlate with the telicity of an eventuality (in the sense of Bohnemeyer and Swift 2004). Thus, accomplishments and achievements should have a [+perfective] value in Aspect and a temporal ordering relation denoting TT ON TSit, and states and activities should have an [+imperfective] value and a temporal ordering relation expressing TT IN TSit. This results in three different phrase structures, one for states, one for activities and one for accomplishments and achievements. Under this hypothesis, the temporal ordering relation in Tense for stative verbs would indicate a present temporal interpretation of a proposition. Thus, the relation between topic time and time of utterance in Tense must be one of simultaneity: TT WITHIN TU. The relation in Aspect would express an imperfective viewpoint. The topic time is fully included in the time of situation: TT IN TSit. The syntactic structure of a sentence containing a stative verb is given in (56).

(56) a. SUBJECT stative VERB vP

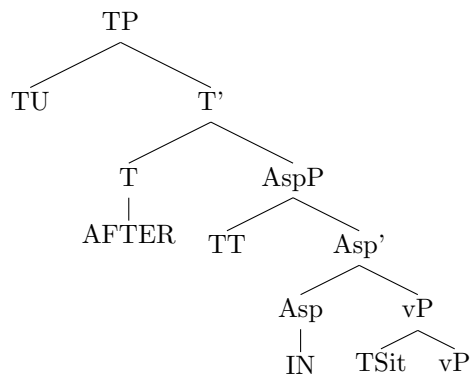
b.



Activity verbs convey a past time reference and are atelic. The relation between time of utterance and topic time is one of precedence, i.e. TU AFTER TT. Since activities are atelic, the temporal relation in Aspect is interpreted as imperfective and expresses simultaneity between the topic time and time of situation; TT IN TSit. The syntactic structure of a sentence containing an activity verb is exemplified in (57).

(57) a. SUBJECT activity VERB vP

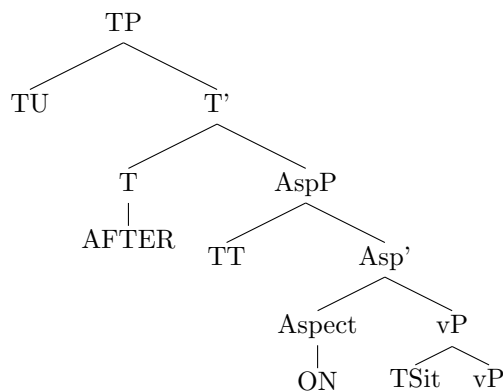
b.



Accomplishments and achievements are both telic and denote a past time reference of an eventuality. The temporal ordering relation between time of utterance and topic time locates the former after the latter, i.e. TU AFTER TT. The value in Aspect denotes a perfective viewpoint. The relation between topic time and time of situation indicates full inclusion of the latter by the former, i.e. TT ON TSit.

(58) a. SUBJECT telic VERB vP

b.



In the next section, I will discuss a number of problems for this hypothesis.

2.3.1 Problems and discussion

The most important argument against this hypothesis is that in any formal theory selection takes place locally. In the phrase structure of (56) - (58), Tense, Aspect, and vP have a value. The value of Tense depends on the stativity of the predicate in vP; stative verbs select a [+present] Tense head and nonstative verbs a [+past] Tense head. Thus, vP selects for Tense directly. The value of Aspect depends on the telicity of the predicate in vP; telic verbs select a [+perfective] Aspect head and atelic verbs a [+imperfective] Aspect head. If selection takes place locally, we expect that vP selects an Aspect head, and that Aspect selects a Tense head. Indirectly, vP is able to select a Tense head, but this should arise via Aspect. In this hypothesis, vP directly selects a Tense head, while Aspect also has a value. In any formal theory, it will be very difficult to implement this kind of selection in a nonlocal manner.

Another problem for this hypothesis is that it argues for the selectional feature on verbs to always select for a certain Tense feature depending on the stativity of the predicate. As a result, it assumes that stative verbs always convey a present time reference, and nonstative verbs convey a past time reference. However, this does not hold for Saamáka. When unmarked nonstative verbs are embedded under embedding complementizer *fu* or appear in a conditional clause, they are interpreted as expressing non-past. In conditional clauses, unmarked verbs appear in the antecedent and they give rise to a present/future temporal interpretation, as illustrated in (59) - (61). Verbs in the consequent are marked by the future time reference morpheme *ó*.

- (59) a. Ée dí tyúba á kaí nóo dí alísi u mi deé pói.
 if DET rain NEG fall NARR DET rice FU 1SG dry very
 ‘If it doesn’t rain my rice will dry out’.
- b. *Ée dí tyúba á o kaí nóo dí alísi u mi deé pói.
 if DET rain NEG MOD fall NARR DET rice FU 1SG dry very
 ‘If it will not rain my rice will dry out’.
- (60) Ée a sí mi abítímóo nóo a o fan ku mi.
 if 3SG see 1SG in a while NARR 3SG MOD talk with 1SG
 ‘If s/he sees me later, s/he will talk with me’.

- (61) Ée hén féni móni hén a o báí wán soní dá hén
 if 3SG find money NARR 3SG MOD buy ART thing give 3SG
 kiiyámúyée.
 girlfriend
 ‘If s/he gets money, then s/he will buy something for her/his girlfriend’.

Since the main verbs in the antecedent of (59) - (61) are eventive, it would be expected, based on the data presented so far, that these sentences would convey a past time reference reading. However, the eventualities in these sentences convey a future interpretation. Moreover, (59-b) exemplifies that the presence of the future time reference marker *ó* is ungrammatical in these sentences. The temporal adverbial *abítímóo* (‘in a while’) in (60) might trigger the future interpretation. However, in an out-of-the-blue context, unmarked verbs cannot co-occur with temporal adverbials denoting a future moment⁸. This would also not explain why the eventualities in (59) - (61) are also situated after the time of utterance. A temporal adverbial does not occur in both sentences. I postulate that in these examples, it is the sentence type (conditional) that triggers the future time reference of the eventuality in the antecedent. Aktionsart, or to be more precise, dynamicity, has no influence on the temporal interpretation of conditionals⁹.

Secondly, the embedding complementizer *fu* can embed something as small as a DP and as large as a CP. Verbs embedded under this complementizer convey a future reading, as illustrated in (63) and (64).

- (63) Mi ké fu a gó a sikóo.
 1SG want COMP 3SG go LOC school
 ‘I want that he goes to school’.
- (64) Té fu hén a kó nóo dí nyanyá kóto.
 when FU NARR 3SG come NARR DET food cold
 ‘When s/he comes the food will be cold’.

Since in (63) and (64) an eventive verb occurs, a past interpretation would be expected. I assume that the complementizer *fu* has an inherent irrealis feature,

⁸In Saamáka, the combination of unmarked eventive verbs and temporal adverbials denoting a future moment are judged ungrammatical by my informants when they occur in an out-of-the-blue context, as in (62).

- (62) *Amanya a waka a matu.
 tomorrow 3SG walk LOC forest
 Intended reading: ‘Tomorrow s/he walks/ has walked in the forest’.

⁹Winford (2000b) makes a similar claim for conditionals in Sranan. In Jamaican Creole, however, verbs occurring in conditional convey a past time reference (Patrick 1999).

which has scope over the whole clause embedded under *fu* (see also Damonte 2002; Aboh 2006; van de Vate 2008). This irrealis feature triggers the future interpretation of the proposition. Thus, irrespective of aktionsart, complementizer *fu* indicates a future time reference in the sentence. The propositions in (60) - (64) indicate unmarked eventive verbs also convey a future time reference when they occur in a certain discourse context. Thus, it follows that the selectional features on verbs discussed in this section must be default features or optional. This is not something that selection by feature checking is usually assumed to do.

2.3.2 Summary

This section studied whether the difference in temporal interpretation between stative and nonstative verbs in Saamáka is due to a selectional Tense feature on verbs. Under this hypothesis, stative verbs would select for a PRESENT tense, and nonstatives for a PAST tense. Moreover, the value in Aspect would depend on telicity. Telic verbs would have a perfective viewpoint and atelic verbs would have an imperfective viewpoint. Two problems arose for this hypothesis. First, propositions (59) - (64) demonstrate that unmarked eventive verbs in Saamáka do not always convey a past interpretation. In an out-of-the-blue context they do; however, in the context of a conditional statement or embedded under the complementizer *fu*, nonstative verbs denote a future time reference. This would indicate that selection is optional or verbs must possess default features. Secondly, selection takes place locally. This hypothesis assumes a nonlocal selection. The hypothesis that unmarked verbs in Saamáka have an inherent selectional Tense feature depending on stativity of the verbs cannot account for the temporal interpretation of verbs in Saamáka.

In Section 2.4, I investigate whether the difference between stative and nonstative verbs can be accounted for by postulating a morphological null Perfect morpheme. I demonstrate that unmarked verbs in Saamáka have the characteristics of the present perfect. As a result, the language has a morphological null Perfect morpheme in its TMA paradigm.

2.4 An alternative: The morphological null Perfect hypothesis

In this section, I will explore a hypothesis explaining the difference in temporal interpretation between stative and nonstative verbs in Saamáka, which involves the use of a morphological aspectual null head. A preliminary suggestion that Saamáka has an aspectual null head was made by Veenstra (1996) and this idea

will be developed in the present study. I demonstrate that this morphological aspectual null morpheme has the characteristics of perfect (in the sense of Comrie 1976; Parsons 1990; Smith 1997; Giorgi and Pianesi 1998; Iatridou et al. 2003; Portner 2003). Before I discuss the hypothesis for which I will argue in more detail, an overview of the characteristics of perfect in the literature will be presented (Section 2.4.1). I demonstrate that unmarked verbs in Saamáka convey different perfect readings (Section 2.4.1.1). My theoretical assumptions are laid out in Section 2.4.2 and the decomposition of Perfect in Section 2.4.3. Section 2.4.4 discusses an apparent counter argument against the morphological null perfect hypothesis. However, I demonstrate that this is actually an argument in favour of the morphological null Perfect hypothesis. This section ends with a summary.

2.4.1 Interpretations of Perfect

Perfect is usually classified as an aspectual category, however it differs from other aspectual categories, such as perfective and imperfective, in that it has both a temporal and an aspectual interpretation. Comrie (1976, 52) defines Perfect as something which ‘*tells us nothing directly about the eventuality itself, but rather relates some state to a preceding situation*’. The phenomenon that is called perfect has been intensively studied in the literature. However, no uniform analysis of the perfect exists. This is partly due to the fact that the characteristics of this phenomenon differ cross-linguistically. Studies comparing Perfect in several Germanic (and Romance) languages show that the phenomenon that is called perfect in these languages is different from language to language (see de Swart 2007 for a comparison between Dutch, English, French and German; and Rothstein 2008 for a comparison between English, German and Swedish). What the Germanic languages do have in common is the manner in which Perfect is expressed, which is via an auxiliary and a past participle. The auxiliary is the equivalent of HAVE and/or BE in these languages. Since the auxiliary is marked for tense, it indicates whether we are dealing with a past, present or future Perfect. In general, it is argued that the past participle in the perfect construction denotes an anteriority interpretation of the construction (Musan 2001; Rothstein 2008). The composition of the present perfect in the Germanic languages is shown in (65).

- (65) VP + [*anteriority* PAST PART. + [auxiliary HAVE/BE]] + PRES (Musan, 2001, 393).

Studies investigating the perfect differ in how they assign a meaning to it. It has been analysed in the traditional Reichenbachian framework (Klein 1994), assuming an Extended Now (Portner 2003; Iatridou et al. 2003; Pancheva and von Stechow 2004; Rothstein 2008) or as expressing a Result state (Comrie 1976;

Parsons 1990; Kamp and Reyle 1993; Musan 2001). In a Reichenbachian framework, present perfect denotes that the time of situation precedes the topic time, and that the topic time is simultaneous with the time of utterance, i.e. $TSit < TT = TU$ (Klein 1992, 1994). Extended now theory assumes that the perfect expresses a time span, such as the perfect time span (as in Iatridou et al. 2003). The eventuality referred to is placed within this time span. The time span has a left and a right boundary. For English, the right boundary ends at the time of utterance (for present perfect), and the left boundary is unspecified. The eventuality modified by the perfect falls within this perfect time span. The eventuality is located with regard to the topic time, which is indicated via a Tense feature on the auxiliary, and it cannot be positioned after the topic time (Portner 2003; Iatridou et al. 2003; Pancheva and von Stechow 2004; Rothstein 2008). The Result state analysis argues that perfect expresses a result state from a previous eventuality. Parsons (1990, 231) postulates that *‘because the state in question is a resultant state, the sentence requires for its truth that some event has happened prior to the time indicated by the tense of the sentence’*. Thus, the eventuality from which a result state has been created must be located prior to this Result state. Note that result state¹⁰ differs from target state in the following way: *‘If I throw a ball onto the roof, the target state of this event is the ball’s being on the roof, a state that may or may not last for a long time. What I am calling the Resultant-state is difference; it is the state of my having thrown the ball onto the roof, and it is a state that cannot cease holding at some later time’* (Parsons, 1990, 235). In this study, I adapt Parsons’ (1990) assumptions regarding perfect and argue in favour of the assumption that Perfect is a derived state, or to be more precise, a Result state.

Four different types of perfect readings are classified in the literature (Comrie 1976; Smith 1997; Iatridou et al. 2003). Experiential perfect implies that the agent is in a state of a certain experience and it indicates a noncontinuous reading. Universal perfect, however, is obliged to give a continuous reading. It specifies an eventuality which began at a moment prior to the time of utterance, but still obtains at the time of utterance. The eventuality is true for each point in time of this interval. Thirdly, perfect of recent past indicates temporal closeness. Perfect of result expresses a result state which has come about from a prior eventuality. The result of this prior eventuality still continues at the time of utterance. Table 2.4 shows the different readings of the perfect in English (Comrie, 1976, 56-61). Klein (1994) argues that these different readings are not part of the core meaning of the perfect. These readings indicate a difference in distance between topic time and time of situation, or in other words, a different distance between topic time and time of situation indicates a different perfect reading (see also Musan 2001; Zagona

¹⁰In Parsons’ (1990) terminology, result state is referred to as resultant state.

Bill has been to America.	experiential perfect
I have been waiting for hours.	universal perfect
Bill has just arrived.	perfect of recent past
I have had a bath.	perfect of result

Table 2.4: Different Perfect readings

2007). From the literature, we can also conclude that cross-linguistically there is a correlation between aktionsart, or to be more precise stativity, and the different readings of perfect (Iatridou et al. 2003). Stative verbs convey a universal perfect reading, and nonstative verbs an experiential perfect reading, as these German examples in (66) and (67) demonstrate.

- (66) Ich habe Dich schon immer geliebt.
 I have you particle always loved
 ‘I have always loved you’ (Rothstein, 2008, 146).
- (67) Ich habe Faust dreimal gelesen.
 I have Faust three-time read
 ‘I have read Faust three times’ (Rothstein, 2008, 146).

How to analyse the Perfect has been debated tremendously in the literature, with many disagreements. What people do agree about are the characteristics and the behaviour of the Perfect. In the following subsection, I focus on different Perfect readings of the unmarked verb form in Saamáka (Section 2.4.1.1), and then this is followed by my ideas regarding the decomposition of Perfect (Section 2.4.2).

2.4.1.1 Perfect Readings in Saamáka

As said in the beginning of this chapter, in Saamáka, unmarked nonstative verbs convey a past time reference reading, and unmarked stative verbs a present time reference reading, as in (19) and (20) respectively, which are repeated here.

- (19) Dí wómi mbéi wán bóto.
 DET man make ART boat
 ‘The man has made a boat’.
 or ‘The man made a boat’.
- (20) Dí wómi sábi nénéngétongo.
 DET man know Sranan
 ‘The man knows Sranan’.

In Section 2.2 and Section 2.3, I argued against a covert perfective hypothesis and a covert past tense hypothesis to explain the difference in temporal interpretation between a stative and nonstative predicate. Problematic for both hypotheses is that they select rigidly for Perfective Aspect or PAST Tense. As a result, they cannot explain the constructual flexibility of unmarked verbs in a discourse context. Another piece of evidence against both hypotheses is that unmarked verbs in Saamáka can combine with a temporal adverbial denoting the time of utterance, as in (68).

- (68) Mi líbi féifi yáa a fóto ma nóúnóu mi tooná kó a
 1SG live five year LOC Paramaribo but now 1SG return come LOC
 mi kónde.
 1SG village
 ‘I lived five years in Paramaribo, but now I have returned to my village’.

Temporal adverbials denoting the time of utterance specify the topic time (Musan 2001; Demirdache and Uribe-Etxebarria 2007; Zagana 2007). In (68), the temporal adverbial, *nóúnóu* (‘now’), refers to the speech moment. In order for (68) to be grammatical, the topic time must coincide with the time of utterance. Otherwise there would be a mismatch between the time denoted by the temporal adverbial (which is ‘now’), and the time denoted by the topic time (which would be ‘not now’). As a result, the temporal ordering relation under Tense between the time of utterance and the topic time must express PRESENT tense. In (68), the time of the predicate *tooná kó* (‘to return’) is located prior to the time of utterance. Since time of utterance and time of situation are not ordered directly to each other, but via topic time with topic time equalling time of utterance in (68), time of situation must precede topic time. This superficial analysis of (68) indicates that in Reichenbachian terms we are dealing with a present perfect i.e. TSit < TT = TU.

In the Germanic languages, a present perfect can combine with a temporal adverbial denoting the speech moment, as exemplified for Swedish¹¹ and Dutch in (69) and (70) respectively.

- (69) Jag har klarat testet nu.
 1SG have pass test.DET now
 ‘I have passed the test now’.
- (70) Nu heeft Jan de taart opgegeten.
 now has J DET cake up.eat.PP
 ‘Now John has eaten the cake’.

¹¹Thanks to Björn Lundquist (personal communication) for providing this Swedish example.

Furthermore in German and Dutch, present perfect can also combine with temporal adverbials denoting a past moment, as in (71) and (72).

- (71) Hans hat gestern einen Brief geschrieben.
 H has yesterday a letter written
 ‘Hans wrote the letter yesterday’ (Musan, 2001, 360).
- (72) In 1988 heeft Nederland het Europees Kampioenschap gewonnen.
 in 1988 has Netherlands DET european championship won
 ‘In 1988, The Netherlands won the European Cup’.

The combination of present perfect and temporal adverbials denoting a past moment is not possible in English and mainland Scandinavian. This phenomenon is called the present perfect puzzle (Klein 1992, 1994; Giorgi and Pianesi 1998; Portner 2003 for discussion). Temporal adverbials denoting a past moment specify the time of situation (Musan 2001; Demirdache and Uribe-Etxebarria 2007; Zagona 2007). Unmarked nonstative verbs in Saamáka can also combine with a past temporal adverbial, as illustrated in (73) and (74).

- (73) Ai éside mi bóí bifó mi baáa kó a wósu.
 LOC.DET yesterday 1SG cook before 1SG brother come LOC house
 ‘Yesterday I cooked before my brother came home’.
- (74) De palí mi a 1969.
 3PL give.birth 1SG LOC 1969
 ‘I was born in 1969’ (Lit. ‘They gave birth to me in 1969’).

The temporal adverbials in (73) and (74) modify the time of situation. It provides extra information to locate the eventuality at a specific past moment in time. Furthermore, eventualities expressed by unmarked verbs in Saamáka are relevant at the time of utterance, as exemplified in (75)¹² - (77). Current relevance implies that an eventuality expressed by the verb has a certain connection with the conversation topic under discussion. The consequence of a previous eventuality are still felt at the moment of speech.

- (75) It is cold in the room. The window is closed.
 a. %I yabí dí féense?
 2SG open DET window
 ‘Did you open the window?’

¹²Some of my consultants judge (75-a) to be grammatical, while others judge this proposition in this context ungrammatical. Those who judge (75-a) to be ungrammatical say that the use of the unmarked verb *yabí* indicates that the window is still open. Each individual consultant is consistent in her/his judgement of this proposition in this context.

- b. I bi yabí dí féense?
 2SG PST open DET window
 ‘Did you open the window?’
- (76) The window is open but A has not noticed that; A asks B: why is it so cold in the room?
- a. Mi yabí dí féense.
 1SG open DET window
 ‘I have opened the window’.
- b. *Mi bi yabí dí féense.
 1SG PST open DET window
 ‘I (had) opened the window’.
- (77) Déé muyée bi ta fón alísi dí tén dí Gaama dóu
 DET.PL woman PST IMP hit rice DET time when Granman arrive
 akí.
 here
 ‘The women were pounding rice when the Granman arrived here’.

According to my consultants, the use of the unmarked verb in (77) indicates that the Granman is still in the village. In order for the hearer to interpret (77) as a proposition in which the Granman has left already at the time of utterance, the verb *dóu* must be marked by the past time reference morpheme *bi*, as in (78).

- (78) Déé muyée bi ta fón alísi dí tén dí Gaama bi
 DET.PL woman PST IMP hit rice DET time when Granman PST
 dóu akí.
 arrive here
 ‘The women were pounding rice when the Granman arrived here’.

The propositions in (68) and (73) - (77) indicate that unmarked verbs in Saamáka denote a perfect reading. In the rest of this section, I investigate whether perfect readings as perfect of recent past, experiential perfect and universal perfect (as indicated by Comrie 1976; Smith 1997; Iatridou et al. 2003 for other languages) are possible in Saamáka.

Perfect of recent past in Saamáka is usually indicated by an adverbial, as in (79) and (80). Here, the adverb *dyúnsu* (=‘just now’) indicates that the eventuality happened right before the time of utterance.

- (79) Dyúnsu de dí wómi gó.
 just.now there DET man go
 ‘The man has just left’.

- (80) Dyúnsu de dí wómi kó dóu.
 just.now there DET man come arrive
 ‘The man has just arrived’.

Unmarked verbs in Saamáka can convey an experiential perfect reading, as exemplified in (81) - (83). Experiential perfect implies that the agent is in a state of a certain experience which holds at the time of utterance (in the sense of Comrie 1976; Iatridou et al. 2003).

- (81) Mi nyá kási wán dáka.
 1SG eat cheese ART day
 ‘I have eaten cheese once’.
- (82) Mi libi feifi yaa a foto ma mé ta dé ala moo.
 1SG live five year LOC Paramaribo but 1SG.NEG IMP BE there more
 ‘I lived in Paramaribo for five years, but now I’m not there anymore’.
- (83) Mi lési dí gádu búku.
 1SG read DET god book
 ‘I have read the bible’.

Since stativity plays an important role in the temporal interpretation of a proposition, and stative verbs, in an out-of-the-blue context, are interpreted with a present time reference, one might wonder if stative verbs can also occur under Perfect. In the right context, unmarked stative verbs convey a universal perfect interpretation, as in (84) - (86). An eventuality expressed by universal perfect can be understood as one which started prior to time of utterance and continues into this time. The eventuality expressed is true for each time point within this time interval (in the sense of Comrie 1976; Iatridou et al. 2003).

- (84) Mi sábi Senni sénsi dí tú dúsu yáa.
 1SG know Senni since DET two thousand year
 ‘I have known/ know Senni since the year 2000’.
- (85) Díí yáa lóngi mi líbi a fóto kaa.
 three year long 1SG live LOC Paramaribo already
 ‘Three years already, I live in Paramaribo (and still do)’.
- (86) Context: Why do you looks so tired?
 Díí néti kaa mé duumí.
 three night already 1SG.NEG sleep
 ‘I haven’t slept for three nights already’.

To summarize, (75) - (86) have in common that they convey a reading in which an eventuality occurred prior to the time of utterance and which is relevant at the

time of utterance, or put differently, the discourse topic is such that it includes the eventuality expressed by the verb. I assume that the unmarked verb expresses a Result state of the embedded eventuality and Result state implies that we are talking about ‘*the state of e ’s having culminated*’ (Parsons 1990, 234). Unmarked verbs can convey a perfect of result, an experiential perfect, a perfect of recent past and a universal perfect reading. From the data presented here, I conclude that there is a correlation between the stativity of verbs and the temporal interpretation of a proposition. First, nonstative verbs convey an experiential perfect, perfect of recent past and perfect of result reading. The morphological null Perfect gives two different options for stative verbs: they indicate present time reference of an eventuality, or express a universal perfect reading. The characteristics of unmarked verbs in Saamáka are summarized in Table 2.5.

unmarked verbs		
indicate that e is relevant at TU		
express result state of e		
aktionsart sensitive	→ stative	present time reference
		universal perfect
	→ eventive	experiential perfect
		perfect of recent past
		perfect of result

Table 2.5: Characteristics of unmarked verbs in Saamáka

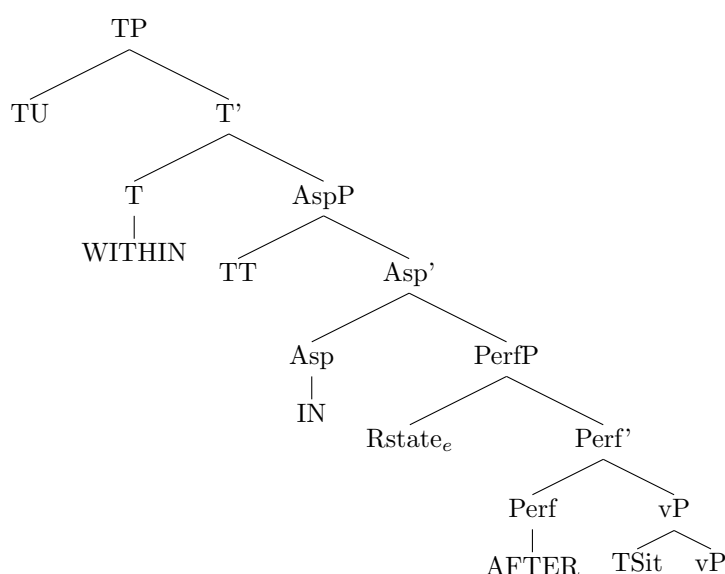
2.4.2 Theoretical assumptions

I assume that the semantics of the perfect are as in Musan (2001), which is spelled out in terms of syntactic heads in a Kleinian (1992; 1994) structure. In Musan’s (2001) decomposition, Perfect is a separate head. She follows Parsons (1990) in that Perfect denotes a Result state of a prior eventuality. I postulate that the Perfect consists of three elements: Tense, Aspect and Perfect (in the sense of Parsons 1990; Musan 2001). I argue that all three components are functional heads and express a temporal ordering relation between two time denoting arguments. The Perfect head creates a Result state ($Rstate_e$) of a previous eventuality and relates $Rstate_e$ to time of situation. This ordering relation is telicity dependent and can be one expressing precedence or partly inclusion. Accomplishment and achievement verbs contribute a precedence relation; $Rstate_e$ is located right after time of situation has ended. Activity and stative verbs determine a partial inclusion relation;

$Rstate_e$ starts a moment of an interval after time of situation has begun. Aspect is interpreted as expressing an inclusion relation between topic time and $Rstate_e$. When topic time encloses $Rstate_e$, perfective aspect is expressed and when $Rstate_e$ encloses topic time, an imperfective aspect reading is conveyed. Tense denotes a temporal ordering relation between time of utterance and topic time. This is a precedence or simultaneous relation and is interpreted as past (AFTER), present (WITHIN) or future (BEFORE). The syntactic structure of a Perfect proposition is presented in (87).

- (87) a. Henry has built a house (Demirdache and Uribe-Etxebarria, 2000, 168).

b.



An argument in favour of the assumption that Saamáka has a morphological null Perfect morpheme in its TMA paradigm comes from the temporal interpretation of propositions containing modal morphemes. When a modal morpheme conveys a circumstantial reading, the temporal orientation of the modal evaluation time has a future reference. Whereas the epistemic reading of a modal morpheme gives rise to a past temporal orientation of the modal evaluation time, as exemplified for the possibility modal *sa* in (88) and (89) respectively.

- (88) Context: My translator is explaining to the person that we are interviewing why we are recording our conversation. He tells her that she can listen to the recordings when we have finished.

- a. Té i kabá u fan nóo i sa yei andi i taki.
 when 2SG finish FU talk NARR 2SG MOD hear what 2SG say
 ‘When you have finished talking then you can listen to what you have said’.
- b. EvT = Future
- (89) 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. A sa lási í fáka a mátu kandé a dé a wósu
 3SG MOD lost DET knife LOC forest maybe 3SG BE LOC house
 tu.
 also
 ‘He might have lost the knife in the forest, maybe it is at home too’.
- b. EvT = Past

There is no other overt TMA morphology present in these sentences except for the modal morpheme *sa*. The question that has to be answered here is: how can this difference in the temporal orientation be accounted for? Cross-linguistically, it is quite common for epistemic modals to combine with a present perfect to trigger a past orientation of an event embedded under a modal (see Condoravdi 2002 for English; Borgonovo and Cummins 2007; Laca 2008 for French and Spanish; Eide to appear for Norwegian). To explain the difference in temporal orientation between (88) and (89), I postulate that the morphological null Perfect morpheme is present in the underlying structure of the clause in (89). Its presence gives rise to the past temporal orientation of the embedded eventuality. The morphological null Perfect morpheme is absent in the underlying structure of (88). The future temporal orientation of this clause is due to the modal itself. Modal morphemes expand the modal evaluation time into the future (as in Palmer 2001; Condoravdi 2002; Hacquard 2006). This difference in temporal orientation is completely expected under the hypothesis that Saamáka possesses a morphological null Perfect morpheme. A detailed analysis of the interaction between modality and verbs is presented in Chapter 5.

To conclude, (88) and (89) do not only demonstrate that verbs in Saamáka have different temporal interpretations depending on the modal context in which they occur, but it also provides extra evidence in favour of the morphological null Perfect morpheme hypothesis.

I postulate that the morphological null Perfect is required by a stativity requirement placed by PRESENT Tense on its complements. PRESENT Tense is re-

stricted in that it only embeds stative predicates, i.e., eventive verbs cannot merge with PRESENT Tense in Saamáka. Taylor (1977) argues that states and events have different semantics. The former are true at a moment, while the latter are true at a subinterval larger than a moment. Since states are assumed to be durative ‘*it is unnecessary to take more than a single moment into consideration to ascertain whether a certain state holds in the world*’ (Hallman, 2009, 19). States do not have the property of temporality; events, however, do (see also Bach 1986b; Dowty 1986; Hallman 2009). It is a universal characteristic of the time of utterance that it expresses a moment in time and not an interval (Prior 1967; Dowty 1979; Mittwoch 1988; Hallman 2009). In English, PRESENT Tense is restricted to combine with states only. Events, modified by PRESENT Tense, convey a habitual interpretation which denotes a derived state (in the sense of Parsons 1990), as illustrated in (90) and (91) respectively.

(90) Max is here (Hallman, 2009, 7).

(91) Max runs (Hallman, 2009, 7).

English PRESENT Tense expresses a moment and therefore constraints are placed on the type of complement it modifies. Since events need a subinterval of a moment to become true they cannot be true at a moment and are therefore coerced into a state. States have no internal structure and combine with PRESENT Tense without any problems.

For Saamáka, I postulate that the language possesses a covert Tense head denoting an identical temporal ordering relation between topic time and time of utterance, or, $TU = TT$ expressing PRESENT. As in English, PRESENT Tense in Saamáka denotes a moment and it is, thus, constrained to embed only stative predicates. In order for an eventive verb to be taken as complement, it has to be turned into a state. Perfect creates a derived state of its embedded eventuality, i.e., a Result state (in the sense of Comrie 1976; Parsons 1990; Musan 2001). This Result state satisfies the stativity requirement of PRESENT Tense and thus can be taken as complement of PRESENT Tense. From the composition of Perfect, it follows that the eventuality is located prior to the time of utterance. Since stative verbs already fulfill the stativity requirement, they combine unproblematically with PRESENT Tense and they convey a present time reference. Stative verbs can be optionally embedded under Perfect. The stative/nonstative distinction follows from the stativity requirement placed by PRESENT Tense on its complements. This is summarized in Table 2.6.

verb type	Tense		
nonstative	PRESENT	PERFECT	$e < TU$
stative	PRESENT		$e \bigcirc TU$

Table 2.6: Relation between Tense and the dynamicity of a verb

My assumptions regarding the temporal ordering relation in Tense are more elaborately discussed in Chapter 3.

2.4.3 The composition of the morphological null Perfect morpheme in Saamáka

The phrase structure of perfect was laid out in (87). As said before, I argue that Perfect denotes a Result state of a prior eventuality (in the sense of Parsons 1990; Musan 2001). Unlike Klein (1994) and Demirdache and Uribe-Etxebarria (2000) who argue Perfect to consist of two components, a Tense and an Aspect head, I postulate that Perfect is built up from three components: Tense, Aspect and Perfect (in the sense of Parsons 1990; Musan 2001). All three components are functional heads and they express a temporal ordering relation between two arguments. Perfect creates a result state of an eventuality. It relates $Rstate_e$ to time of situation and this relation is telicity dependent. Accomplishments and achievements contribute a $Rstate_e$ AFTER time of situation relation, while the $Rstate_e$ of statives and activities begins at a subinterval of a moment after time of situation started (implying that the eventuality continues after $Rstate_e$ has started). Since Perfective Aspect is incompatible with PRESENT Tense, Aspect expresses an inclusion relation between topic time $Rstate_e$ and denotes Imperfective, i.e. TT IN $Rstate_e$. The temporal ordering relation in Tense between time of utterance and topic time is one of simultaneity, i.e. $TU = TT$ expressing PRESENT Tense. This entails that topic time follows time of situation, and that the eventuality e precedes time of utterance.

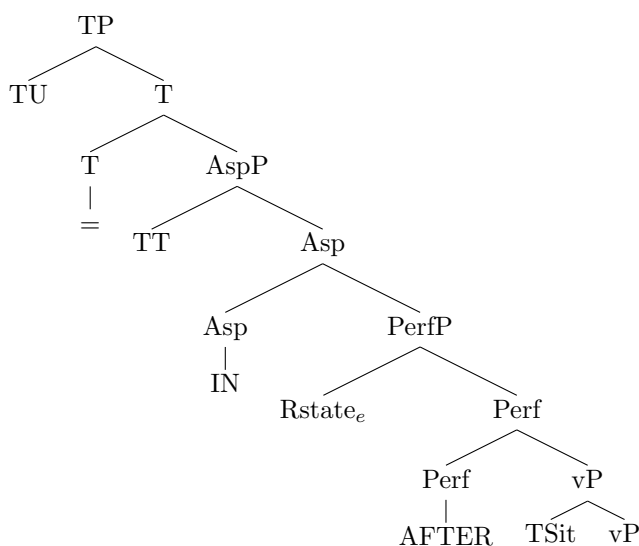
morphological null perfect $Rstate_e$ partly included in TSit
 $Rstate_e$ IN $TT = TU$
 this entails that $e < TU$

The phrase structure of (19), which is repeated below, is presented in (19-b).

- (19) a. Dí wómi mbéi wán bóto.
 DET man make ART boat

‘The man has made a boat’.

b.



2.4.4 Narratives: A counter argument against the null Perfect hypothesis?

This section discusses a possible argument against the morphological null perfect hypothesis. I focus on discourse data and demonstrate that unmarked verbs can occur as sequentially ordered events. Since I assume that Perfect expresses a Result state of a prior eventuality, and states cannot move a narrative forward in time (Hinrichs 1986; Kamp and Reyle 1993), I might have to adjust the morphological null perfect hypothesis. However, it is argued that other elements in the clause indicate a sense of progression in time. First, I discuss background literature on sequential ordered events, this is followed by a discussion of examples from Saamáka.

In narratives, events and states behave differently. Events create a new topic time and as a result a feeling of progression is created. States however do not mark another step in a narrative. Their topic time is anchored to the topic time of the previous event or state. This illustrated for English in (92).

- (92) Jameson entered the room_{e₁}, shut the door carefully_{e₂} and switched off the light_{e₃}. It was pitch-dark around him_{s₁} because the Venetian blinds were closed_{s₂} (Hinrichs, 1986, 68).

The narrative in (92) denotes five eventualities, three events and two states. The events create a new topic time and the states are anchored to the topic time of

the previous eventuality. Event e_1 is the first eventuality in the narrative and it sets the topic time (TT_{e_1}) to a certain value. The tense morphology on *enter* indicates that event e_1 is located prior to the time of utterance, $TT_{e_1} < TU$. Event e_2 creates a new topic time (TT_{e_2}) which temporally follows TT_{e_1} , $e_1 < e_2$. The third eventuality indicates another event, e_3 , which also creates a new topic time and moves the narrative a step forward in time, $e_2 < e_3$. The following eventuality denotes a state and this implies that the narrative cannot temporally progress in time. State s_1 is anchored to the topic time of event e_3 , TT_{e_3} ; $e_3 = s_1$. State s_2 is a state which holds throughout the whole narrative, and therefore it is anchored to the topic time set by event e_1 , $TT_{e_1} = TT_{s_2}$. The proposition in (92) has the following representation $e_1 < e_2 = s_1 = s_2$. Events advance the topic time and thus the narrative and every new event introduces a new topic time which is located right after the topic time of the previous event. States, however, do not shift the topic time because they are anchored to the topic time of the previous eventuality. In other words, states cannot advance a narrative in time (Hinrichs 1986; Kamp and Reyle 1993).

Previously in this section, I argued that Saamáka has a morphological null Perfect morpheme which is obligatory present in the underlying structure of the clause when eventive verbs are unmarked for TMA. I assume that perfect expresses a Result state and consequently unmarked eventive verbs, as exemplified in (19), express a (derived) state. It is unexpected for stative predicates to occur in a sequential ordering. Thus, it would be expected that unmarked eventive verbs in Saamáka cannot be embedded by the morphological null Perfect morpheme if they indicate temporal development of a narrative. This expectation is not borne out. The morphological null Perfect morpheme does appear in narrative. However, other elements in the clause establish a new anchor time for each eventuality and convey a sense of progression in time.

The propositions in (93) and (94) have a bi-clausal structure.

- (93) Dí wómi kisi físi bigá a gó a húku tidé.
 DET man catch fish because 3SG go LOC hook today
 ‘The man caught fish, because he went fishing today’.
- (94) Jacky gó wási láí dyúnsu mi sí a pasá gó a ló ku
 J go wash thing just.now 1SG see 3SG pass go LOC river with
 láí a hédi.
 thing LOC head
 ‘Jacky went to do the dishes. Just now I saw her pass by to the river with things on her head’.

A close examination of (93) and (94) reveals that they do not express two distinct eventualities which have their own reference time. In (93), event e_1 indicates that the man caught fish and event e_2 implies that this man went fishing today. Event e_1 is the result of the action which was undertaken in event e_2 . Thus, event e_2 took place prior to event e_1 , i.e. $e_2 < e_1$. However, using our knowledge of the world, I argue that event e_1 and event e_2 in (93) do not each have their own topic time and that there is an overlap between these two eventualities. We know that when one engages in the activity of fishing one might come to the achievement of catching a fish while still being involved in the activity of fishing. Therefore, it can be logically deduced that there is an overlap between event e_1 and event e_2 in (93), and that the former is included in the latter, i.e. $e_1 \subset e_2$ ¹³.

A similar argument can be made for (94) which hosts three events. Event e_1 expresses that Jacky is on her way to do the dishes, event e_2 indicates that the speaker has seen Jacky, and event e_3 informs us that Jacky passed the speaker. Since event e_3 expresses the event the speaker saw in event e_2 , the latter includes the former, $e_3 \subset e_2$. One could argue that event e_1 is ordered in a subsequent relation with event e_2 , however, the use of the verb *gó* indicates that the speaker doesn't actually refer to the activity of doing the dishes, but to the activity of Jacky being in the process of going to do something. Thus in (94), the three events are simultaneous and event e_3 is included in event e_2 , $e_3 \subset e_2 = e_1$. Therefore, (93) and (94) are not real examples of sequentially ordered eventualities.

Below in (95), two eventualities are also expressed.

- (95) Mi sísa tooná kó nóo a dé a u písi.
 1SG sister return come NARR 3SG BE LOC 1PL place
 'My sister returned and she is staying with us'.

The proposition in (95) contains an event which indicates that the speaker's sister has returned, event e_1 , and a state which indicates that the sister is staying with the speaker at the moment, state s_1 . States do not move an eventuality forward in time. The topic time of state s_1 is anchored to the topic time of event e_1 ; $e_1 = s_1$. These two eventualities, event e_1 and state s_1 , are conjoined by the morpheme *nóo*. *Nóo* is an introducer for an explanatory clause¹⁴. It indicates that what follows reveals something which is of relevance for the discourse context. Thus, (95) is also not an example of sequentially ordered eventualities.

- (96) Senni wégi wán hondo kiló hén a wíni.
 S weigh ART hundred kilo NARR 3SG win

¹³Thanks to Judith Tonhauser (personal communication) for pointing this out to me.

¹⁴This description is taken from the Summer Institute of Linguistics English-Saamáka dictionary. The dictionary can be found at <http://www.sil.org/americas/suriname/Saramaccan/English/SaramEngDictIndex.html>.

‘Senni lifted one hundred kilos and then he won’.

The proposition in (96) contains two events, event e_1 indicates that Senni lifted a hundred kilos, and event e_2 expresses that he won. The relation between event e_1 and event e_2 is one of causation. Due to the fact that Senni was able to lift a hundred kilos and, apparently none of the other competitors was able to follow his example, Senni won the competition. In (96), event e_1 and event e_2 have their own topic time. These two topic times are ordered in a precede relation, $e_1 < e_2$. Two problems arise here. First, I argued that unmarked verbs in Saamáka are covertly marked by a morphological null Perfect morpheme which expresses a Result state_e and states take the topic time of the preceding eventuality as anchor time, they do not introduce a new temporal step in the narrative. However, this problem can be solved by answering the second problem which relates to what the conjuncture, *hén*, is doing. *Hén* is a ‘*conduction used at beginning of clause to indicate another step in the narrative*’¹⁵. In (96), *hén* introduces a new topic time and it relates two stative eventualities and places them in a subsequent relation which results in a feeling of temporal progression. Thus, not the predicate, which expresses Rstate_e, indicates a new temporal step in the story-line of (96), but the narrative morpheme *hén*. The following two extracts in (97) and (98) - (101) demonstrate the use of unmarked verbs in narratives. The story-line in (97) is elicited. Event e_1 is introduced by the temporal adverbial *dí* (=‘when’) which situates the whole story-line in time. All the following eventualities are modified by the narrative marker *hén*. Its presence indicates a new step in the narrative, as each time it introduces a new topic time to which the embedded eventuality is anchored to.

- (97) Dí mi gó a mátu. Hén mi sí wán sindéki. Hén a
 when 1SG go LOC forest NARR 1SG see ART snake NARR 3SG
 nyá mi a fútu. Hén mi téi wán kódyo vínde náki hén kí.
 eat 1SG LOC foot NARR 1SG take ART stone throw hit 3SG kill
 ‘When I went to the forest. I saw a snake which bite me in my foot. I
 took a stone and threw it to the snake and killed it’.

The extract in (98) - (101)^{16, 17} is taken from an interview. What is interesting is that many propositions start with the narrative marker *hén*. As in the previous

¹⁵This description is taken from the Summer Institute of Linguistics English-Samáka dictionary. The dictionary can be found at <http://www.sil.org/americas/suriname/Saramaccan/English/SaramEngDictIndex.html>.

¹⁶The following abbreviations are relevant for this extract. F = Fonteni, my guide and interpreter; B = Boobo, a middle-aged monolingual woman and main narrator.

¹⁷Since this narrative is situated prior to the time of utterance, the future time reference morpheme *ó* is translated into English with ‘would’. The semantic and syntactic characteristics of this morpheme are studied in Chapter 6.

examples, the task of this marker is to indicate progression in time. It creates a new topic time to which an eventuality can be anchored to. This newly created topic time starts right after the prior eventuality. As a result, a sense of progression in time is created. Besides the topic time introduces *hén*, this extract contains a number of other narrative markers/phrases. The conjunction *nóo* which introduces an explanatory clause. The phrase *té u kabá* (=‘when we have finished’) indicates the completion of an eventuality. The phrase *té u kumútu* (=‘when we have come out’) indicates the transition to another eventuality. All of these markers advance eventualities in time.

- (98)
- a. Mi gó seei gewoonu gó a goón déndu gó a pandási
 1SG go self normally go LOC vegetable garden go LOC fieldwork
 té u kumútu.
 until 1PL come.out
 B: ‘I went just went to my vegetable garden to do fieldwork until we came out’.
 - b. Kó sindó bóí sondí nyá.
 come sit cook thing eat
 ‘I came and sat down and cooked something to eat’.
 - c. Kó píí pindá.
 come gather peanut
 ‘I went and gather peanuts’.
 - d. Hén u kó a gangása kó butá fáya a gufálu
 NARR 1PL come LOC open hut come put fire LOC bale-fire
 té u kabá.
 until 1PL finish
 ‘Then we went to the hut to make a bale-fire until we were done’.
 - e. Nóo hén u kó.
 NARR NARR 1PL come
 ‘Then we went’.
 - f. Nóo hén di u kumútu.
 NARR NARR when 1PL come.out
 ‘Then when we came out’.
 - g. Hén kó gó a kíki gó ba wáta u bebé té u
 NARR come go LOC creek go scoop water FU drink until 1PL
 kabá.
 finish
 ‘Then we went to the creek to fetch water to drink until we were done’.
 - h. Hén u kó boóko baákáúwí.
 NARR 1PL come break type of leafy vegetable

- ‘Then we collected bakauwii’.
- i. Hén u kó a gandá.
NARR 1PL come LOC village
‘Then we went to the village’.
- (99) Ma wá yéi dí woko móo.
but 2PL.NEG hear DET type of bird more
F: ‘But you didn’t hear the bird anymore.’
- (100) a. Wá yéi hén móo.
1PL.NEG hear 3SG more
B: ‘We didn’t hear it anymore’.
- b. Nóo hén dí u kó de a kónde gandá de.
NARR NARR when 1PL come there LOC village village there
‘Then we arrived in that village’.
- c. Déé mí dá píki u mbéi u gó píi pindá ée
DET.PL child give tell 1PL make FU go gather peanut if
woó gó hon pindá.
1PL.MOD go tear out peanut
‘The children answered: “Let us go and gather peanuts, if we will harvest peanuts”.’
- d. Hén mi táa: Nono mé gó hon pindá móo. Mi
NARR 1SG COMP no 1SG.NEG go tear out peanut more 1SG
ó gó a goón déndu gó téi alísi.
MOD go LOC vegetable garden go take rice
‘Then I said: “No I do not harvest peanuts anymore. I will go to my vegetable garden and collect rice”.’
- e. Hén mi gó a goón déndu ala gó téi alísi té mi
NARR 1SG go LOC vegetable garden there go take rice until 1SG
kabá.
finish
‘Then I went to my vegetable garden to collect rice until I was done’.
- f. Hén mi kó.
NARR 1SG come
‘Then I went’.
- g. Hén mi tyako butá a dóóbúká de a dí
NARR 1SG carry.come put LOC doorstep there LOD DET
máta búka de.
mortar mouth there
‘Then I carried and placed it outside on that mortar’.
- h. Mi gó a gogó wósu.
1SG go LOC backside of a house

- ‘I went to the back of the house’.
- i. Mi si wán hía wasiwási.
1SG see ART many wasp
‘I saw many wasps’.
- j. Hén mi gó téi ameeekánóli.
NARR 1SG go take petroleum
‘Then I went and took petroleum’.
- k. Hén mi túwe de.
NARR 1SG throw there
‘Then I threw it there’.
- l. A kulé kó a dí kamía de.
3SG run come LOC DET place there
‘It ran to that place’.
- m. Hén u kulé sáka huu so.
NARR 1PL run go.down ? so
‘Then we ran away’.
- n. Hén u téi láí valai.
NARR 1PL take thing sound for running away
‘Then we took the things and ran away’.
- o. Hén u kó a gandá no so.
NARR 1PL come LOC village NEG so
‘Then we went to the village, isn’t it?’
- p. Nóo wá bi á apáiti sondí móo.
NARR 1PL.NEG PST have special thing more
‘Then we did not have special things anymore’.
- (101) I bi dá mi wán súti óto.
2SG PST give 1SG ART sweet story
F: ‘You gave me a pleasant story’.

A close examination of Saamáka narratives reveals that the language has many instances of conjunctions *hén* and *nóo* and the completion phrase *té i kabá* (=‘when you have finished’) in discourse. The language, as expected, relies more on these conjunctions than languages like English and Dutch. Since unmarked verbs in Saamáka are (derived) stative, they cannot progress a narrative in time. The task of these conjunctions and completion phrase is to give a sense of progression in time. As a result, the narrative data presented in this section actually support the morphological null Perfect hypothesis.

2.4.5 Summary

This section provided evidence in favour of a morphological null Perfect morpheme in Saamáka's TMA paradigm to explain the difference in temporal interpretation between stative (present time reference) and nonstative (past time reference) verbs. The existence of the morphological null Perfect morpheme follows from the decomposition of PRESENT Tense. In Saamáka, PRESENT Tense expresses a moment in time and is constrained to embed only stative predicates. Since only states are true at a moment and eventive verbs require a non-trivial interval to evolve, the latter cannot combine with PRESENT Tense. In order for them to co-occur with PRESENT Tense, they have to be coerced into a state. This stativity requirement of PRESENT Tense requires the morphological null Perfect morpheme in the underlying structure of the clause. If the morphological null Perfect is not present in the underlying structure the derivation crashes because eventive verbs cannot combine with a momentary PRESENT Tense. When an eventive verb is modified by the morphological null Perfect, a derived state is created: a Result state. This Result state can combine with PRESENT Tense. The decomposition of Perfect is such that it gives rise to a past time reference interpretation of the embedded eventuality. The analysis regarding Perfect proposed in this chapter confirms Parsons' understanding of functional projections of Perfect. It is a complex functor which is built up from three elements; a Tense head, an Aspect head and a Perfect head. Tense indicates a simultaneous relation between time of utterance and topic time denoting PRESENT Tense: TU WITHIN TT, while Aspect expresses an inclusion relation between topic time and $Rstate_e$ denoting IMPERFECTIVE Aspect: TT IN $Rstate_e$, while Perfect creates a Result state of the embedded eventuality. It relates this resulting $Rstate_e$ to the time of situation.

To summarize, the presence of the morphological null Perfect morpheme in the underlying structure of a proposition containing an eventive verb and its absence in the underlying structure of a proposition with a stative verb explains the difference in temporal interpretation between eventive and stative verbs.

2.5 Summary

This chapter investigated morphological unmarked verbs in Saamáka, and it aimed to explain the difference in temporal interpretation between sentences containing a stative verb form (present time reference), and an eventive verb form (past time reference). The two most natural hypotheses to explain this phenomenon were investigated. It was demonstrated that both the covert Perfective Aspect and the covert Past Tense hypothesis could not explain all of the characteristics of the unmarked verb form in Saamáka. The constructual flexibility of unmarked

verbs in Saamáka is very difficult to account for under the assumption that a verb selects rigidly for either Perfective or Past Tense. To elucidate the characteristics of the morphological unmarked verb form, I argued in favour of a morphological null Perfect morpheme in the functional sequence of heads in Saamáka. Due to the stativity requirement placed by PRESENT Tense on its complements, null Perfect is obligatorily present when eventive verbs combine with PRESENT Tense. An advantage of the current analysis is that no mysterious default emerges of the unmarked verb form. The morphological null Perfect hypothesis indicates a very good cut for the stative vs. nonstative distinction. Furthermore, by using the stative vs. nonstative distinction in this way the temporal ordering relation expressed in Tense between time of utterance and topic time does not depend on the dynamicity of the predicate. This temporal ordering relation always denotes PRESENT: TU WITHIN TT. In Chapter 4, I discuss this assumption in more detail.

A question which might have arisen is whether this morphological null Perfect analysis can be transferred to other creole languages. It is my opinion that one should not take for granted that every creole language is considered to be similar. Specific analyses for every individual creole language are necessary in order to answer this question, however, this is out of the scope of the current study and is left for further research.

This dissertation continues with investigation the semantic and syntactic characteristics of imperfective morpheme *ta*.

Chapter 3

Aspect

3.1 Introduction

The overall aim of this dissertation is to provide a study of the functional sequence of heads in the IP domain of Saamáka. The previous chapter discussed the unmarked verb form, the next chapter focuses on the category of Tense in Saamáka, and this chapter studies the category of Aspect. Saamáka has one core aspectual morpheme, imperfective *ta*. The current chapter provides a detailed study of the semantic interpretations and syntactic distribution of this morpheme. Previous literature analysed *ta* as a general imperfective morpheme (see Byrne 1987; Rountree 1992; Veenstra 1996). It is ambiguous between a progressive, a habitual and a continuous reading, as illustrated in (102), (103) and (104) respectively.

- (102) Dí mǐi ta kulé gó a bákase bíga tyúba ta
DET child IMP run go LOC vegetable garden because rain IMP
kó.
come
'The child is running to the vegetable garden, because rain is coming'.
- (103) What do the children eat?
Déé mǐi ta nyá nyanyá.
DET.PL child IMP eat food
'The children eat rice'.
- (104) Sében yáa lóngi kaa dí mi ta líbi akí.
seven year long already DET 1SG IMP live here
'I live here for seven years already'.

These three readings have in common that they are ongoing at time of utterance, and they express subcategories of the imperfective viewpoint aspect (Comrie 1976; Binnick 1991; Smith 1997; Bhat 1999; Deo 2009). Cross-linguistically, it is not un-

common for languages to possess a general imperfective morpheme which conveys a continuous, a habitual and a progressive reading, as indicated by the literature on Gujarati (Indo-Aryan) (Deo 2009), Italian (Bonomi 1997), Russian (e.g. Smith 1997; Borik 2006) and Squamish (Salish) (Bar-El 2004). In Blackfoot (Algonquian), the general imperfective marker *á* conveys a progressive and habitual reading in combination with nonstative verbs, as in (105) and (106) respectively (Dunham 2007; 2008).

- (105) Nit- á- ihpiyi annohk.
 1SG.PRES- IMP- dance now
 ‘I am dancing’ (Dunham, 2008, 3).
- (106) Áa nit- á- ó’tsis.
 yes 1SG.PRES- IMP- smoke
 ‘Yes, I smoke’ (Dunham, 2008, 4).

This morpheme can also combine with stative verbs, resulting in an inchoative reading, as exemplified in (107) (Dunham 2007; 2008).

- (107) Ann- wa Joel á- sspita.
 DEM- AN.SG J PRES.IMP- tall
 ‘Joel gets tall (whenever he takes a magical pill)’ (Dunham, 2008, 6).

The phenomenon of a general imperfective marker is also not uncommon in creole languages. Literature on Guyanese Creole (Sidnell 2002) and Sranan (Winford 2000b) indicate that these creoles have a general imperfective morpheme in their TMA paradigm which conveys a continuous, habitual, and progressive reading, as exemplified for Sranan in (108), (109) and (110) respectively.

- (108) Ma den suma san e libi dya a abraseu na den
 but DET.PL person REL IMP live here LOC other.side COP DET.PL
 M tog? Na deb e libi dape?
 M TAG COP 3PL IMP live there
 ‘But the people who live across the street are the M’s, right? Is it they who live there?’ (Winford, 2000b, 423)
- (109) Want son leisi yu abi den suma san, uh, den e
 for some time 2SG have DET.PL person REL uh 3PL IMP
 afrontu den tongo, tog. Den ne e wani taki Sranan
 turn.against their language TAG 3PL NEG IMP want talk Suriname
 Tongo moro.
 tongue more

‘For sometime you have people who, uh, turn their backs on their language, right? They don’t want to speak Sranan Tongo anymore’ (Winford, 2000b, 424/5).

- (110) Nownow yu e teki en kba nownow?
 now 2SG IMP take 3SG already now
 ‘Are you already taping right now?’ (Winford, 2000b, 422)

This section continues with an overview of the literature regarding the meanings and interpretations of imperfective aspect (Section 3.1.1). This is followed by an overview of the theoretical assumptions concerning the composition of Tense and Aspect adapted in the present study (Section 3.1.2).

3.1.1 The interpretation of Imperfective Aspect

Imperfective aspect makes ‘*explicit reference to the internal temporal structure of a situation*’ (Comrie, 1976, 24). It does not refer to the initial or final endpoints of an eventuality. When an eventuality is in-progress, topic time is located prior to the final endpoint of this eventuality. Imperfective eventualities are unbounded (Comrie 1976; Binnick 1991; Smith 1997), as demonstrated for Spanish¹.

- (111) Juan lleg-a-ba.
 J arrive-theme vowel-IMP.PST
 John was arriving, John used to arrive (Comrie, 1976, 25).

Imperfective viewpoint aspect is subdivided into habitual aspect and continuous aspect (see Comrie 1976). Habitual expresses ‘*a characteristic of an extended period of time*’ (Comrie, 1976, 27) that is, a feature which is a characteristic of a certain time span. An eventuality is seen as habitual if it has occurred several times and refers to a plural event. On a superficial level, one might consider habitual aspect and iterative aspect to be similar. However, iterative aspect expresses a continuously repeated action which must be true for each subinterval of the eventuality, while habitual denotes an eventuality which behaves in a regular manner over a longer time span, as exemplified in (112) and (113) respectively.

- (112) The lecturer stood up, coughed five times, and said (Comrie, 1976, 27)
 (113) John used to work here (Comrie, 1976, 25).

Continuous aspect indicates an ongoing eventuality and is subdivided into non-progressive and progressive. Progressive indicates that an eventuality is ongoing,

¹Thanks to Antonio Fabrégas (personal communication) for providing the glosses.

as demonstrated in (114). Since progressive focusses on the internal stage of a durative, dynamic eventuality, it cannot modify stative verbs (see Comrie 1976; Smith 1997). Nonprogressive implies a continuous eventuality for stative verbs, as exemplified for Gujarati in (115).

(114) Mary was walking in the park (Smith, 1997, 171).

(115) Niśā navsāri- mā rah- e ch- e.
Nisa.NOM.SG Navsari- LOC live- IMP.3SG PRES- 3SG
'Nisa lives in Navsari' (Deo, 2009, 4).

For the English progressive, it has been argued that it cannot merge with stative verbs, as demonstrated in (116). This impossibility would be due to a conflict in interpretation between the dynamicity of the progressive and the stativity of the verb. However, the English progressive can modify stative verbs under certain conditions, as exemplified in (117). In these types of propositions, stative verbs are presented as events. A stative eventuality modified by the progressive is interpreted as a temporal state, while for an unmarked stative verb, no such assumptions are made (Comrie 1976; Smith 1997; Portner 1998).

(116) *He is knowing the answer (Smith, 1997, 171).

(117) That cake is looking done (Smith, 1997, 174).

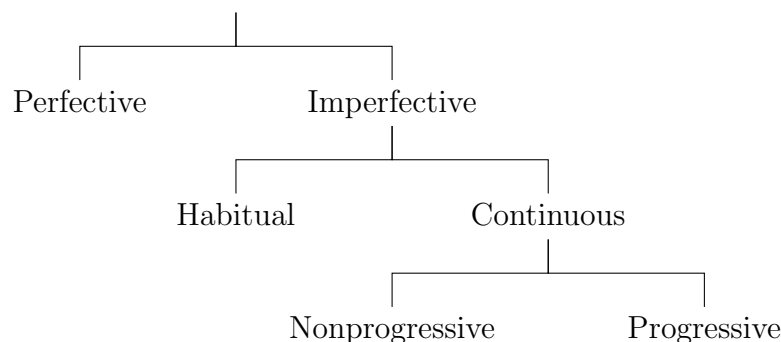
Achievements are true for an instant and they do not have an internal structure. Imperfective aspect applies to an eventuality which denotes duration, therefore, it is unexpected for them to combine. However cross-linguistically, it is not uncommon for achievement verbs to be modified by imperfective, as exemplified for English and Russian in (118) and (119)² respectively (Comrie 1976; Smith 1997). When an achievement verb is merged with Imperfective aspect, the focus is on the preliminary stage of the eventuality.

(118) She was winning the race (Smith, 1997, 75).

(119) Otec umiral, kogda ja
Father.NOM die-IMPERF-PAST.M.SG when 1SG-NOM
vernulsja.
return.PERF-PAST.M.SG-REF
Father was dying when I returned (Smith, 1997, 247).

Comrie's classification schema is presented below.

²Thanks to Inna Tolskaya (personal communication) for providing the glosses of this example.



From Comrie's (1976) classification of Imperfective Aspect, it follows that a morpheme can convey several different imperfective aspect readings. Thus, the three-way ambiguity of imperfective *ta* in Saamáka, as demonstrated in (102) - (104) above, is not unexpected. Comrie's schema is not informative with regard to whether the different readings of imperfective should be analysed as being homonymous or as being ambiguous. The aim of the present study is to provide a detailed study of the core TMA morphemes in Saamáka. It is therefore relevant to establish whether the different readings of *ta* might be explained by arguing that it is a vague morpheme with different readings, or that these readings imply homonymy. Under the former analysis, the different interpretations of *ta* would result in a single position in the underlying structure. Under the latter analysis, these different meanings would result in several distinguished positions in the syntactic structure. If *ta* is analysed in a traditional cartographic approach, a third option is available. The different semantic interpretations would follow from *ta* being a single morpheme which would be located at different heights in the functional sequence of the clause. I will argue in favour of a cartographic approach. Before I discuss the characteristics of the morpheme *ta* in more detail and answer this question, I will first lay out the theoretical assumptions adapted in the present study.

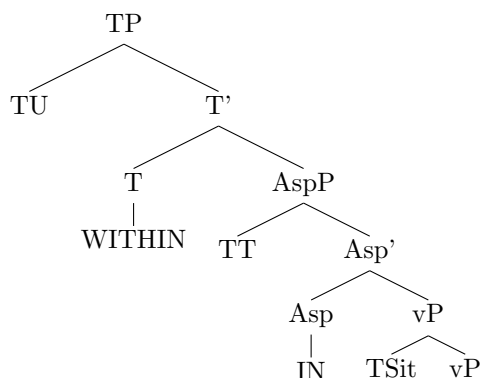
3.1.2 Theoretical assumptions concerning the composition of Tense and Aspect

The theoretical assumptions in the current study regarding the composition of Tense and Aspect are adapted from Klein (1992, 1994) and Demirdache and Uribe-Etxebarria (2000, 2007) and have been previously laid out in Chapter 2. Those of relevance for this chapter are repeated here. Viewpoint aspect refers to the temporal perspective of an eventuality. It expresses a temporal ordering relation between time of situation and topic time which is one of inclusion. For Imperfective Aspect, topic time is fully included in time of situation, or formally, TT IN

TSit. For Perfective Aspect, topic time fully includes time of situation, or formally, TT ON TSit (in the sense of Partee 1984; Klein 1994; Kratzer 1998; Zagana 2007). Tense indicates a temporal ordering relation between time of utterance and topic time. PRESENT Tense expresses a simultaneous relation between time of utterance and topic time, or formally, TU WITHIN TT. PAST Tense and FUTURE Tense denote a precedence relation between these times. In the case of the former, time of utterance follows topic time, or, TU AFTER TT. For FUTURE Tense, time of utterance precedes topic time, or, TU BEFORE TT (in the sense of Klein 1992, 1994, Demirdache and Uribe-Etxebarria 2000, 2007). The English sentence in (120) conveys a present progressive reading. Tense locates time of utterance simultaneous with topic time, or, TU WITHIN TT expressing PRESENT. Aspect denotes an inclusion relation between topic time and time of situation, or, TT IN TSit expressing IMPERFECTIVE.

- (120) a. Henry is building a house (Demirdache and Uribe-Etxebarria, 2000, 165).

b.



This chapter is organized as follows: Section 3.2 provides an overview of the descriptive characteristics of the morpheme *ta*. The semantic interpretation and syntactic distribution of *ta* is discussed in Section 3.3. The decomposition of *ta* is discussed in Section 3.4. The chapter ends with a summary and conclusion.

3.2 Imperfective aspect in Saamáka

The focus of this section is the interpretational characteristics of the morpheme *ta*. I begin by describing general characteristics of the morpheme, and continue by studying the influence of aktionsart on a proposition modified by *ta*.

Propositions containing *ta* express a durative eventuality. This eventuality is interpreted as being in-progress at the topic time. It refers to a non-final subinterval of this eventuality, as exemplified in (121).

- (121) Sénsi a di mámate mi ta bayá.
 Since LOC DET morning 1SG IMP dance
 ‘I have been dancing since this morning’.

In (121), *ta* modifies a durative eventuality. This activity is a characteristic of an unspecified time frame with no reference to its initial or final endpoints. The example in (122) demonstrates that the endpoints of an eventuality embedded under imperfective *ta* are undefined.

- (122) Context: Someone on the phone wants to know what the speaker is doing.
 Mi ta bóí pindá baafu nóo mé kabá éti.
 1SG IMP cook peanut soup NARR 1SG.NEG finish yet
 ‘I’m making peanut soup, but I have not finished yet’.

The second part of the proposition in (122) indicates that a progressive sentence can be continued, by saying that the eventuality has not yet reached its final endpoint. Another characteristic of *ta* is that it indicates that the embedded eventuality can continue beyond the topic time, as illustrated in (123). This proposition conveys a habitual reading.

- (123) Context: What does your friend do every Saturday?
 Híni wán wíki sáta nóo mi máti ta seeká wósu.
 every ART week saturday NARR 1SG friend IMP clean house
 ‘Every Saturday my friend cleans her house’.

To summarize, the morpheme *ta* has the following characteristics: it refers to an eventuality which is ongoing at the topic time, it makes no reference to the endpoints of an eventuality, and the modified eventuality should be able to continue beyond the topic time. In the rest of this section, I study the influence of *aktionsart* on the meaning of the imperfective morpheme; first with activity verbs, followed by accomplishment verbs, achievement verbs and stative verbs.

The combination of an activity verb with the imperfective marker *tá* results in a progressive reading, as in (124) - (125). The eventuality referred to does not undergo a change and it is ongoing at the topic time.

- (124) Context: What is the man doing right now?
 Dí wómi de ta nyá.
 DET man there IMP eat

‘That man is eating’.

- (125) Context: What is the woman doing right now?

Dí muyée ta wáka a mátu dínđu.

DET woman IMP walk LOC forest in(side)

‘The woman is walking in the forest’.

The verbs in (124) - (125) denote activities. This implies that the culmination of the eventuality holds at a subinterval of a moment after the activity started. As a result, the perfect counterpart of (125), *dí muyée wáka a mátu dínđu* (= ‘the woman has walked in the forest’), is also true at topic time. Propositions containing activity verbs which are modified by *ta* can also be interpreted as expressing habitual, as demonstrated in (126) - (128).

- (126) Can you swim in this river? (= Is it possible for anybody to swim in this river?)

Aj, I sa wási a lío bigá mi ta wási híni wán
yes 2SG MOD wash LOC river because 1SG IMP wash every ART
dáka neén.

day LOC.3SG

‘Yes, you can bathe in the river, ’cause I bathe in it every day’.

- (127) Mi ta woóko ndéti ku didía.

1SG IMP work night with day

‘I work day and night’ (de Groot, 1977, 52).

- (128) Dí yáa akí Senni ta peé báali híni wán tén.

DET year here S IMP play ball every ART time

‘Senni plays football this year’.

As (129) - (131) illustrate, imperfective *ta* also merges with accomplishment verbs. These propositions convey a progressive reading³.

- (129) Context: Someone wants to know where Senni is.

Senni ta buwá gó a bakáákónde.

S IMP fly go LOC Netherlands

‘Senni is flying to the Netherlands’.

- (130) Context: People are talking about the flood of 2006 and what happened when the water level was still high.

Bóto dóu de ta púu láí ta túwe a bóto dendú.

boat arrive 3PL IMP pull thing IMP throw LOC boat in(side)

T: ‘A boat arrived, they were pulling and throwing things on the boat’.

³The proposition in (130) is taken from an interview. The topic under discussion is situated prior to the time of utterance. Therefore, the sentence is translated with a past time reference.

- (131) Context: Someone on the phone wants to know what Senni, who is sitting next to you, is doing:
 A ta yáka déé ganía púu a dí wósu.
 3SG IMP chase DET.PL chicken take out LOC DET house
 ‘He is chasing the chickens out of the house’.

In order for an accomplishment to have culminated it must reach its final endpoint and consequently, these propositions do not make reference to the endpoints of the embedded eventuality. With this in mind, it follows that the culmination of these eventualities does not hold at the topic time i.e. the in-progress eventualities in (129) - (131) do not entail their perfect counterparts. Propositions in which an accomplishment verb is modified by imperfective *ta* can also convey a habitual reading, as exemplified in (132) - (135)⁴.

- (132) Context: Someone explains how they make wine out of sugarcane.
 De tá mbéi dí tyéni té de kabá. Nóo i bói de
 3PL IMP make DET sugarcane until 3PL finish NARR 2SG cook 3PL
 kái hén apenkusu. De tá bói dí tyéni.
 name 3SG sugarcane drink 3SG IMP cook DET sugarcane
 ‘They squeeze the sugarcane until they have finished. Then you cook it, that’s called apenkusu. They cook the sugarcane.’
- (133) Context: Talking about hunting in the old days.
 Ku ún péi páu de ta mbéi fáya a mátu?
 with which kind tree 3PL IMP make fire LOC forest
 ‘With what kind of tree did they used to make fire in the forest?’
- (134) So u ta wáka nángo a de kamía de ta kí
 so 1PL IMP walk IMP.go LOC DET.PL place 3PL IMP kill
 gwamba
 wild animal
 ‘So we were walking to the places where they used to kill wild animals’.
- (135) Té sá pate neen mi ta lési dí búku de.
 when evening LOC.3SG 1SG IMP read DET book there
 ‘In the evening, I read that book’.

Achievement verbs in Saamáka also combine with imperfective *ta*. Since achievements are instantaneous and progressive aspect denotes durativity, one might expect that they would be incompatible. However, cross-linguistically the combination of achievement and progressive is not excluded and it often results in an

⁴The propositions in (133) and (134) are taken from interviews. The topic under discussion is situated prior to the time of utterance. Therefore, these sentences are translated with a past time reference.

inchoative reading of the embedded eventuality (Smith 1997). This prediction is borne out for Saamáka, as exemplified in (136) - (138)⁵.

- (136) Nóúnóu dí wómi akí ta dóu a dí kúnunu hédi.
 now DET man here IMP arrive LOC DET mountain head
 ‘This man is reaching the top of the mountain right now’.
- (137) Context: A mother is telling stories to her adult son. He says to her:
 Úndi yu o dá mi móo. Dí mmá mi ta feekéte
 which 2SG MOD give 1SG more DET mother 1SG IMP forget
 déé sondí i bi ta kondá dá mi.
 DET.PL thing 2SG PST IMP tell give 1SG
 ‘Which other one will you tell me? Mother, I am forgetting the things
 you were telling me’.
- (138) Context: People are talking about the flood of 2006 and what happened
 after the water had fallen.
 Dí Pode dí i ta yéi táa de ta tyá konikóni alá.
 when Pode there 2SG IMP hear COMP 3PL IMP carry tractor there
 Hén sééi ta dóu té a Gaamá písi alá.
 3SG self IMP arrive until LOC Grandman place there
 ‘There at Podi’s you were hearing that they were bringing a tractor there.
 He himself was arriving at Grandman’s house there’

In these propositions, imperfective *ta* indicates the preparatory stage of an eventuality to be true at the topic time. The combination of imperfective *ta* and an achievement verb can also result in a habitual reading, as exemplified in (139) - (140).

- (139) Context: Talking about Sven Kramer, the Dutch skater, after the Olympics
 in Vancouver.
 Dí wómi ta wíni híni wán tén.
 DET man IMP win every ART time
 ‘The man always wins’.
- (140) Dí sónu ta kumútu híni wán dáka a síkísi yúu u
 DET sun IMP come out every ART day LOC six hour FU
 mámate.
 morning
 ‘The sun comes up every day at six o’clock’.

⁵The proposition in (138) is taken from an interview. The topic under discussion is situated prior to the time of utterance. Therefore, the sentence is translated with a past time reference.

When the imperfective morpheme *tá* combines with stative predicates, two readings surface: habitual and inchoative.

A habitual stative eventuality is exemplified in (141) - (142). These propositions express a characteristic of the agent.

- (141) Dí mĩ á hĩla sólúgu fanóudu bigá a ta síki hĩla.
 DET child have much care necessary because 3SG IMP ill much
 ‘The child needs a lot of care, because s/he is often ill’.
- (142) Ndéti té mi kó a wósu, nóo mi mamá ta wái.
 night when 1SG come LOC house NARR 1SG mother IMP happy
 ‘When I come home in the evening my mother is happy’.

The second reading available for the combination of stative verbs and imperfective *ta* is the inchoative reading, as exemplified in (143) - (144). In these propositions, *ta* refers to the preparatory stage of a stative eventuality.

- (143) Context: People are asking my interpreter if I can speak Saamáka. He replies:
 A ta sábi dí tóngó.
 3SG IMP know DET language
 ‘She is getting to know the language’.
- (144) Context: The sun has just set and a little boy is sitting on the veranda outside. He is wearing a t-shirt. His father asks him:
 I ta kóto, no?
 2SG IMP cold Q
 ‘You are getting cold, isn’t it?’

To sum up, the propositions in (124) - (144) indicate that *ta* can combine with all four primitive semantic categories, or in other words, it is not selective with regard to the type of eventuality it embeds. Cross-linguistically, the inchoative reading of accomplishments and stative predicates are cases in which aspect coercion takes place. The morpheme *ta* conveys a progressive, habitual or inchoative interpretation, and these three readings have in common that the imperfective *ta* expresses an event *e* which is in-progress at topic time *t*, i.e., $e = t$; or more formally, TT IN TSit. Imperfective *ta* is neutral with regard to temporal specification. Aspect expresses a temporal ordering relation between topic time and time of situation. The relation between topic time and time of utterance is denoted by Tense. There are no restrictions for imperfective *ta* to combine with a PAST, PRESENT or FUTURE Tense. Although in an out-of-the-blue context, the most natural interpretation of a proposition containing *ta* is a present time reference reading, but depending on the context, it can also refer to an eventuality in which the topic

time precedes or follows the time of utterance. In Section 3.3, I demonstrate that *ta* co-occurs with both the past time reference morpheme *bi* and the future time reference morpheme *ó*.

This chapter continues with the semantic and syntactic decomposition of imperfective *ta*. Under a cartographic approach, it is assumed that each interpretation is situated under a separate head in the hierarchy of functional projections. It is assumed that *ta* is a vague morpheme with distinguished positions in the underlying structure. In this functional sequence as proposed by Cinque (1999), habitual aspect is located higher than progressive aspect. I will demonstrate that *ta* is a general imperfective morpheme which is ambiguous in three ways, and occupies a single position in the functional sequence of the clause. The different interpretations of *ta* are accounted for by assuming a Numeral head in the structure which is located below Aspect. This Numeral head indicates whether the eventuality referred to is singular or plural. The former implies progressive aspect and the latter habitual aspect (in the sense of Ferreira 2005).

3.3 Towards a cartographic analysis of imperfective *ta*

This section discusses the syntactic and semantic analysis of imperfective *ta*. Data presented in Section 3.2 demonstrated that the morpheme *ta* conveys, a progressive, a habitual, and an inchoative reading. This is exemplified in (145) which is ambiguous between a progressive and habitual reading⁶.

- (145) Dí wómi ta woóko a poli.
 DET man IMP work LOC medical clinic
 a. ‘The man is working at the medical clinic’.
 b. or ‘The man works at the medical clinic’.

Both readings have in common that they refer to an ongoing eventuality at the topic time. These two readings also have a number of differences. First, they differ with regard to the length of the time span in which the eventuality occurs. Habitual denotes a longer time span than progressive (in the sense of Bonomi 1997; Deo 2009). Secondly, habitual eventualities are complete whereas progressive eventualities are incomplete, i.e., habitual contains sub-eventualities which are culminated at topic time *t* while progressive refers to a single eventuality which

⁶I assume the continuous and inchoative reading of imperfective *ta* both to refer to a single eventuality which is ongoing at the topic time with no intermediate gaps for the whole time span in which the eventuality occurs. They do not express different interpretations.

holds at topic time *t* (in the sense of Parsons 1990; Delfitto 2004). Thirdly, habitual aspect denotes a plural event and progressive aspect denotes a singular event, i.e., habitual refers to re-occurrences of an individual eventuality at different moments in time while progressive refers to an eventuality which occurs at a specific time (in the sense of Ferreira 2005).

These distinctions have to be explained and what the consequences of these distinctions are for the analysis of *ta* need to be investigated. Under a cartographic approach, it would be assumed that *ta* is a vague morpheme which occupies different positions in the functional sequence of heads (in the sense of Rizzi 1997; Cinque 1999, 2001; Starke 2007). Depending on its interpretation, imperfective *ta* would merge with different (functional) elements. In its progressive reading, *ta* would embed a smaller complement than in its habitual reading. Thus, it follows that *ta* would occupy different heights in the syntactic structure. In order to establish whether a cartographic approach can account for the different characteristics of *ta* it is necessary to establish its syntactic distributional features (Section 3.3.1) and its semantics (Section 3.3.2).

3.3.1 Syntactic distribution of imperfective *ta*

This section investigates whether there is syntactic evidence in favour of the claim that the different readings of *ta* result in a different position in the functional hierarchy. To study the syntactic distribution of a functional element, it is important to examine its behaviour when it combines with other functional elements. I discuss propositions in which imperfective *ta* is combined with the past time reference morpheme *bi*, the future time reference morpheme *ó*, the negation morpheme *á* and the morphologically null Perfect morpheme. This section will also investigate whether the position of *ta* depends on its interpretation with regards to these other morphemes.

In combination with the past time reference morpheme *bi*, both the progressive interpretation and the habitual interpretation of *ta* surfaces, as demonstrated in (146) and (147) respectively. When these two morphemes combine, *bi* must always precede *ta* regardless of the interpretation of the latter. Deviations from this *bi ta* order are considered ill-formed.

- (146) a. Mi bi ta léi dí wági u mi, hén óli u mi
 1SG PST IMP drive DET car FU 1SG NARR gasoline FU 1SG
 kabá, té mi bi musu tooná lei óli báka.
 finish when 1SG PST MOD return load gasoline back
 ‘I was driving my car and I ran out of gasoline. I was obliged to fill
 the car with gasoline’.

- b. *Mi ta bi léi dí wági u mi, hén óli u mi
 1SG IMP PST drive DET car FU 1SG NARR gasoline FU 1SG
 kabá, té mi bi musu tooná lei óli báka.
 finish when 1SG PST MOD return load gasoline back
- (147) a. Dí muyée bi ta waka lóngi bifó a dóu neén
 DET woman PST IMP walk long before 3SG arrive LOC.3SG
 goún, ma nóúnóu á ta wáka lóngi móo bigá a
 ground but now 3SG.NEG IMP walk long more because 3SG
 kóti wán goún a zúntu.
 cut ART ground LOC near
 ‘The woman used to walk for a long time before she arrived at her
 vegetable garden, but now she does not walk for a long time anymore,
 she has made one nearby’.
- b. *Dí muyée ta bi wáka lóngi bifó a dóu neén
 DET woman IMP PST walk long before 3SG arrive LOC.3SG
 goún.....
 ground

When *ta* combines with the future time reference morpheme *ó*, both interpretations of *ta* are possible, as exemplified in (148) and (149). The combination of these two morphemes always results in an *ó ta* order. The reverse order is considered ungrammatical.

- (148) What will your brother do when we arrive at his place?
- a. Tidé sápaté nóo mi baáa ó ta sikífi wán biífi.
 today afternoon NARR 1SG brother MOD IMP write ART letter
 ‘My brother will be writing a letter this afternoon’.
- b. *Tidé sápaté nóo mi baáa ta ó sikífi wán biífi.
 today afternoon NARR 1SG brother IMP MOD write ART letter
- (149) Context: Talking about someone who is working on a medical degree.
- a. Dí wómi ó ta woóko a dí poli.
 DET man MOD IMP work LOC DET clinic
 ‘The man will work at the medical clinic’.
- b. *Dí wómi ta ó woóko a dí poli.
 DET man IMP MOD work LOC DET clinic

A progressive and a habitual interpretation of *ta* is available when it co-occurs with the negation morpheme *á* as demonstrated in (150) and (151) respectively. As with the other two morphemes, imperfective *ta* is situated just before the verb. When negation morpheme *á* intervenes, the sentence is considered ungrammatical.

- (150) Context: Someone thinks that the children are near the river. You just saw them at home.
- a. Déé míí á ta sún a lío, de dé a wósu.
 DET.PL child NEG IMP swim LOC river 3PL BE LOC house
 ‘The children are not swimming in the river, they are at home’.
- b. *Déé míí ta á sún a lío, de dé a wósu.
 DET.PL child IMP NEG swim LOC river 3PL BE LOC house
- (151) Context: Talking about the characteristics of the diet of the Rastafarians, who live in Pikinslee. They are not allowed to eat animal products (except for fish) or salt.
- a. Déé rasta á ta nyá satu.
 DET.PL rastafarian NEG IMP eat salt
 ‘Rastafarians do not eat salt’.
- b. *Déé rasta ta á nyá satu.
 DET.PL rastafarian IMP NEG eat salt

A universal perfect progressive and habitual reading is also available for propositions in which *ta* occurs, as illustrated in (152) and (153) respectively.

- (152) Context: She is still watching television! How long does she DO that?
- Dí yúu lóngi kaa a ta lúku teve.
 three hour long already 3SG IMP look television
 ‘Three hours already she has been watching television’.
- (153) Dí wómi ta sumúku 40 yáa lóngi nóúnóu.
 DET man IMP smoke 40 year long now
 ‘The man has smoked for 40 years now’.

This implies that the morphological null Perfect morpheme is present in the underlying syntactic structure. Recall that in its universal perfect reading, the morphological null Perfect morpheme merges with stative verbs. Since I side with the view that Imperfective *ta* creates a derived state of the embedded eventuality (see Section 3.3.2), I postulate that the morphological null Perfect morpheme modifies imperfective *ta*.

From the propositions in (146) - (153), I conclude that the imperfective morpheme in both its progressive reading and its habitual reading follows the past time reference morpheme *bi*, the future time reference morpheme *o*, the negation morpheme *á*, and the morphological null Perfect morpheme. These examples do not indicate that the progressive reading of *ta* has a different position in the underlying structure than its habitual reading. There is no structural ambiguity between these two readings. However, in a more fine-grained structure the different readings of

ta might sit in different positions. Unfortunately, there is no evidence in favour of assuming a more fine-grained structure at this moment, but it cannot be ruled out either. I postulate that *ta* is vague morpheme which, with our current knowledge of the Saamáka IP domain, is located in a single position in the underlying syntactic structure. Its syntactic distribution does not explain the different readings of imperfective *ta*, in this case, progressive and habitual. Section 3.3.2 will investigate whether a semantic account can elucidate these readings. The analysis proposed is founded on event-based semantics (in the sense of Bach 1986b; Parsons 1990).

3.3.2 Event-based semantic analysis

The semantic analysis of the imperfective proposed in the current study is framed in the event-based semantic account of the English progressive (in the sense of Bach 1986b; Parsons 1990). Another possible approach would be the modal semantic approach of the progressive (in the sense of Dowty 1979; Landman 1992; Portner 1998; Ferreira 2005)⁷. I do not reject a modal semantic approach of the progressive, but in my opinion it does not offer a more satisfying account of the imperfective in Saamáka, and it would complicate the semantics. Such an account does not bear on the issues discussed later on in this dissertation. My main goal is to provide a detailed study of the hierarchy of functional projections in the IP domain of Saamáka. If one would like to analyse the Saamáka imperfective morpheme *ta* in a modal semantic approach, I would suggest taking Portner (1998) as a base, for the English progressive, he combines a modal approach (in the sense of Dowty 1979) with an event-based semantic analysis (in the sense of Parsons 1990), and I would combine this with Ferreira's (2005) account of the (English) habitual.

3.3.2.1 An event-based semantic approach of the English progressive

In event-based semantics, *'the relation between the kind of events described by a progressive and those described by a nonprogressive is a primitive fact about the*

⁷A basic idea behind the modal semantic approach of the progressive is that verbs have in their denotation the whole (i.e. complete) eventuality (see Landman 1992). The modal semantic approach uses the idea of inertia worlds (as in Dowty 1979) or continuation branch (as in Landman 1992) to assume that in all possible worlds an eventuality will continue beyond the topic time as normally expected and will reach its final endpoint at a certain unspecified time in the future (in case of telic predicates). Dowty's inertia worlds indicates *'worlds which are exactly like the given world up to the time in question and in which the future course of events after this time develops in ways most compatible with the past course of events'* (Dowty, 1979, 148). Thus, *'x is F-ing is true iff there is an actual event that has a possible F-event on its continuation branch to which x bears the relation ϑ , where ϑ is the thematic role associated with the subject of F'* (Zucchi, 1999, 181). In other words, this approach relates an ongoing eventuality to a possible complete eventuality (including its endpoints) which is located at a future moment from the topic time (see e.g. Dowty 1979; Landman 1992; Portner 1998; Ferreira 2005).

domain of events, and not definable in modal terms' (Portner, 1998, 761). Parsons (1990) describes the English progressive in terms of the underlying event. First, he postulates that the English progressive takes an event and changes it into a state. Unlike the English present perfect, the progressive is very selective in that it only combines with dynamic verbs. An advantage of assuming that the progressive creates a stative predicate is that a state s can hold at a time t . i.e. s HOLD AT t . If progressive refers to a state, there is no implication that this state will culminate at a certain moment located beyond the topic time (opposed to the modal semantic approach of the progressive). An in-progress state holds as long as this state is ongoing. Furthermore, Parsons argues that the relation between culminated and non-culminated eventualities (or complete and incomplete) is a basic distinction which is important for the interpretation of the English progressive. The notions of CULMINATE and HOLD express a relation between an event e and a time t . A progressive eventuality, as in (154-a), is in-progress at topic time. This example contains an accomplishment predicate, and thus (154-a) expresses an incomplete eventuality which holds at a certain time t i.e. $(\exists t)[t=\text{now} \ \& \ (\exists e)[\text{building}(e) \ \& \ \text{Agent}(e,\text{Mary}) \ \& \ \text{Theme}(e,\text{house}) \ \& \ \text{Hold}(e,t)]]$. The proposition in (154-b) conveys a present Perfect reading. It denotes a Result state of an event e and indicates that event e has reach its final endpoint at the topic time and it expresses a complete eventuality which has culminated at a certain time t ; i.e., $(\exists t)[t=\text{now} \ \& \ (\exists e)[\text{building}(e) \ \& \ \text{Agent}(e,\text{Mary}) \ \& \ \text{Theme}(e,\text{house}) \ \& \ \text{Cul}(e,t)]]$ (in the sense of Parsons 1990). The Result state of event e holds forever after the topic time. Since (154-a) contains an accomplishment verb, its perfect counterpart, as in (154-b), does not automatically. Accomplishments are telic and therefore they need to have reached their final endpoint in order for their perfect counterpart to be true.

- (154) a. Mary is building a house.
 b. \Rightarrow Mary has built a house (Parsons, 1990, 167).

The proposition in (155-a) contains an activity verb. Activity verbs are atelic and they do not need to have reached their final endpoint in order for their Perfect counterpart to be true. This implies that the Result state of event e holds at a subinterval of a moment after event e has started. For (155-a), event e holds at time t is true, and event e is culminated at time t is also true if time t indicates a moment which does not equal the final endpoint of event e . For activity verbs, the continuous reading of event e contains the Perfect reading of event e ; i.e., (155-a) \supset (155-b).

- (155) a. Mary is running.
 b. \Rightarrow Mary has run (Parsons, 1990, 184).

Thus, it follows that the meaning of the English progressive is sensitive to the event description. Since Parsons assumes that both the complete and incomplete eventuality are part of the verb denotation, he takes the whole event description into account. This implies that not every (telic) progressive event is assumed to reach its final endpoint (at an unspecified future moment). In the actual world, the context (or whole (overt) event description) can indicate that an eventuality might be interrupted after the topic time. Parsons' take on the English progressive is that it indicates that the eventuality e is a derived state which holds at the current topic time t as long as the eventuality e is ongoing.

3.3.2.2 An event-based semantic analysis of Imperfective *ta*

This section aims to investigate whether the different readings of *ta* might be explained by studying their semantics. The proposition in (156) is ambiguous between a progressive reading and a habitual reading.

- (156) A *ta* *mbéi* (*dí*) *ladio*.
 3SG IMP make DET radio
 a. 'S/he is fixing the radio'.
 b. 'S/he fixes radios'.

The progressive and habitual interpretations of (156) denote a number of differences. First, they differ in whether the embedded eventuality is completed (and culminated) or not. Progressive views an eventuality in-progress which is unculminated at the topic time, i.e. (156-a) has not reached its final endpoint⁸. Habitual refers to a recurring eventuality over a certain time span, as in (156-b). In order for this habitual event e to be true at topic time t_1 , individual event e 's must have culminated before topic time t_1 . Keep in mind that the whole habitual event e must not have reached its final endpoint at topic time t_1 . A second difference is the length of the time span at which the eventuality takes place. In general, a progressive eventuality such as (156-a) refers to a shorter time span than a habitual eventuality, as in (156-b). A close investigation of these two dissimilarities leads to the conclusion that they do not actually demonstrate that the progressive reading differs semantically from the habitual reading of (156). First, in both interpretations the eventuality is ongoing at topic time. Although individual events have culminated in the habitual reading, the whole event is unculminated at topic time. Second, it is questionable whether the duration of time span is taken into account

⁸Recall that whether a progressive eventuality is culminated or not correlates with telicity. Atelic eventualities such as activities and states are unbounded and therefore have culminated a subinterval of a moment after the eventuality started. Whereas telic eventualities such as accomplishments and achievements are bounded and thus need to have reach their final endpoint in order to have culminated.

in a semantic decomposition. In the real world, it is highly likely for a habitual eventuality to have a longer time span than a progressive eventuality, but this is necessary. It is possible to create a progressive eventuality which lasts longer than a habitual eventuality. Consequently, Parsons' (1990) analysis of the English Progressive cannot directly be transferred to explain the difference between the progressive reading of *ta* and its habitual reading. These two different readings are not sensitive to the notion of culmination nor duration. *Ta* in Saamáka simply creates an in-progress state. To elucidate the difference between the progressive and habitual reading, I postulate that the former denotes a singular eventuality and the latter a plural eventuality i.e. a difference in event description (in the sense of Ferreira 2005).

There are two options to explain the difference in the event description: a semantic approach and a syntactic approach. The former would make use aspectual coercion which is a strong semantic tool which is used when there is a selection type mismatch. In certain cases a functional head that selects complements is sensitive to the event description, or in other words, it is selective to combine with certain aspectual classes. In order for this functional head to merge with eventualities that do not fall under the category of eventualities with which it can merge, the eventuality is reinterpreted and the selectional type mismatch is adjusted (de Swart 2000). The English progressive, for example, only merges with dynamic verbs. Consequently, one of the selectional criteria of the English progressive is that the embedded eventuality must be dynamic. In order for the English progressive to combine with stative verbs, as in (117) which is repeated here, the verb is coerced and reinterpreted as a dynamic eventuality⁹.

(117) That cake is looking done (Smith, 1997, 174).

If we were to assume that aspectual coercion would explain the different interpretations of imperfective *ta*, it would imply that an eventuality in Saamáka would either always be interpreted as singular or as plural. In other words, one reading would be interpreted as default interpretation and the other reading would only be able to surface via aspectual coercion. Since the most natural interpretation of a sentence containing *ta* is progressive, it would be logical to assume that Saamáka eventualities are singular. With regard to habitual aspect, this implies that we are dealing with a type of selectional mismatch, therefore, the plural eventuality reading (the habitual) would have to be created via reinterpretation of the singular eventuality to a plural eventuality.

⁹From aspectual coercion it does not follow that the output of the progressive is not a state (in the sense of Parsons 1990). The (English) progressive merges with a (dynamic) verb and changes it into a stative predicate (de Swart 2000).

The syntactic approach, on the other hand, would assume a Numeral head in the underlying structure which would have a singular and a plural value and would be located right below Aspect and it would modify the primary eventuality in vP. When the Numeral node is valued with singular this results in a progressive reading of the eventuality, and when valued with plural it results in a habitual reading (in the sense of Ferreira 2005).

A problem for the aspectual coercion approach is that (156) is actually ambiguous, because the habitual reading is not dependent on ‘mismatch’ to emerge. For this reason, I decide in favour of the syntactic approach. Although I do not postulate that aspectual coercion does not occur in Saamáka (the inchoative reading for achievement and stative predicates are highly likely to arise by way of aspectual coercion), but it cannot account for the difference between a progressive reading and a habitual reading of *ta*.

To summarize, the difference between *ta* in its progressive reading and habitual reading is not due to sensitivity regarding culmination or the duration of the eventuality but to whether the eventuality expresses singular (progressive) or plural (habitual).

3.3.3 Summary

This section’s goal was to account for the different readings of the imperfective morpheme *ta*. The syntactic distribution of *ta* was investigated as a means of explaining this. The data presented in Section 3.3.1 demonstrated that when imperfective *ta* combines with other TMA morphemes, *ta* is located closely to vP and it always follows other core TMA morphemes and the negation morpheme. The progressive reading and the habitual reading of *ta* showed no difference with regard to its position in the overt clause structure. Section 3.3.2 investigated whether an event-based semantic approach might be able to account for these different interpretations. Focus was on the culmination of the eventuality and the time span in which an eventuality occurs. The interpretation of imperfective *ta* is not sensitive to culmination and the duration of the time span, meaning that these characteristics are not relevant for the habitual vs. progressive distinction of *ta*. The morpheme *ta* simply expresses that an eventuality is ongoing at topic time. Furthermore, I postulate that it creates a derived state (in-progress state) of the embedded eventuality (in the sense of Parsons 1990). Consequently, the embedded eventuality *e* (which has been turned into a derived state) holds at a certain time *t* i.e. *e* HOLD AT *t* (in the sense of Parsons 1990). The morpheme *ta* is sensitive to the event description with regard to the singular vs. plural distinction. Progressive refers to a singular eventuality and the habitual to a plural eventuality. I postulated

that this was accounted for by a Numeral head in the syntactic structure. This Numeral head indicates the number of event atoms¹⁰, and is located below Aspect. The Numeral node takes an eventuality, distinguishes between a singular and a plural eventuality and creates a derived state of the embedded eventuality. Since imperfective *ta* is not selective with regards to the element with which it merges, Numeral is also not restrictive.

3.4 Decomposition of Imperfective Aspect

I postulate that the interpretation of *ta* depends on the event description, which is its complement. The progressive reading of *ta* merges with a different complement than the habitual reading of *ta*. Following Ferreira (2005), I assume that progressive aspect denotes a singular eventuality and habitual aspect denotes a plural eventuality. This is connected to the fact that progressive aspect implies a singular eventuality which is ongoing at the topic time while, habitual aspect denotes several occurrences of an eventuality which are regular and ongoing at the topic time. Recall that PRESENT Tense refers to a moment in time (in the sense of Prior 1967; Dowty 1979; Mittwoch 1988; Hallman 2009) and as a result it places a stativity requirement on its complements such that it is restricted to embed stative predicates. Since events need a non-trivial interval to evolve, only states can be true at a moment, events need to be coerced into a state in order to combine with PRESENT Tense. I adapt Parsons' (1990) idea that progressive creates a derived state and assume that imperfective *ta* creates an ongoing state which refers both to a progressive and habitual eventuality depending on the complement embedded under *ta*. Once the stativity requirement is satisfied by a Numeral head which creates a derived state of the embedded eventuality, eventive verbs are able to merge with PRESENT Tense.

In this section, I determine the position of *ta* in the underlying structure of the Saamáka clause. First, I analyse (129) which exemplifies the progressive reading of *ta*. This is followed by an analysis of (132) which displays the habitual reading of *ta*. These sentences have a present time reference and in both propositions, *ta* is merged with an accomplishment verb. The examples are repeated below.

- (129) Senni ta buwá gó a bakáákónde.
 S IMP fly go LOC Netherlands
 'Senni is flying to the Netherlands'.

¹⁰Numeral is different depending on whether the proposition denotes a generic, habitual or iterative eventuality which all indicate a plural eventuality. In Saamáka these three readings are all expressed via the morpheme *ta*.

- (132) De tá mbéi dí tyéni té de kabá.
 3PL IMP make DET sugarcane until 3PL finish
 ‘They squeeze the sugarcane until they have finished.’

From the interaction with other TMA morphemes and the negation marker, I derive that *ta* is situated low in the functional sequence. Based on the propositions in (146) - (153), I assume that *ta* is located right above vP. The fact that *ta* in both its progressive and its habitual readings merges with the morphological null Perfect morpheme which results in a universal perfect reading is very informative (see (152) and (153) above). Recall that when the morphological null Perfect conveys a universal perfect interpretation, it embeds a stative verb. In combination with cross-linguistic data that progressive aspect cannot embed stative predicates (unless aspectual coercion has taken place), I postulate that imperfective *ta* is situated below Perfect in the functional hierarchy. Recall that Perfect has a complex structure and is built up from three elements: Tense, Aspect and Perfect. The latter creates a Result state. Aspect expresses a temporal ordering relation of inclusion between topic time and this Result state, or formally, TT IN Rstate which denotes IMPERFECTIVE. The temporal ordering relation in Tense between topic time and time of utterance indicates PRESENT Tense, or formally, TU WITHIN TT. It follows that Aspect is situated above Perfect in this structure. Consequently, *ta* cannot be situated in Aspect. This assumption is affirmed by the interaction of circumstantial modal morphemes and *ta*, as illustrated in (157) for the necessity modal *musu* which conveys a deontic obligation reading in this sentence. The modal morpheme always precedes the imperfective morpheme, and the reverse order is ungrammatical.

- (157) Déé míi unu musu ta haíka unu mamá e.
 DET.PL child 2PL MOD IMP listen 2PL mother NARR
 ‘Children, you must listen to your mother’.

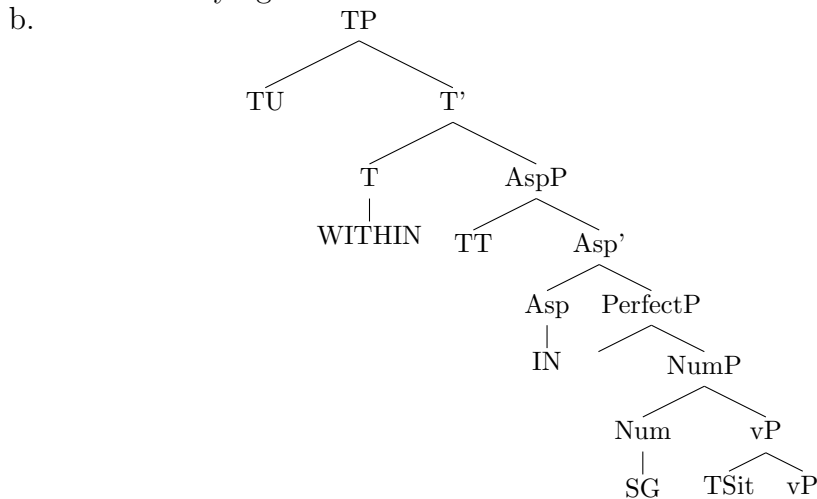
Hacquard (2006, 2010) provides evidence from the interaction of circumstantial modal morphemes and Perfective aspect in French in favour of the assumption that circumstantial modality is situated below Tense and Aspect. I refer to Chapter 5 for a more detailed study of modality in Saamáka. To sum up, the morpheme *ta* is situated in Numeral which is situated below Tense, Aspect and Perfect and just above vP in the functional hierarchy of heads. It does not follow, however, that the value in Aspect is empty. Rather, that Aspect has a default value which denotes IMPERFECTIVE and which is covertly expressed. This value in Aspect is always present in the underlying structure of the clause and follows from the stativity requirement placed by PRESENT Tense on its complements. Recall that the temporal ordering relation in Aspect is telicity dependent, so that atelic verbs (activities and states) correlate with Imperfective aspect and telic verbs (accom-

plishments and achievements) with Perfective aspect (in the sense of Bohnemeyer and Swift 2004). Since PRESENT Tense denotes a moment in time and therefore only combines with stative predicates, the complement embedded in Aspect is often stative and, thus, Aspect always expresses IMPERFECTIVE which is covertly expressed. Consequently, it is unlikely that there would be two different covert aspectual heads, since two different aspectual null heads would be unlearnable.

To sum up, Saamáka has two aspect morphemes. First, imperfective *ta* which is situated in Numeral *n* the functional hierarchy of heads. This Numeral head is located below Tense, Aspect and Perfect. Second, Saamáka has a covert Aspect head which expresses that the topic time is fully included in the time of utterance expressing IMPERFECTIVE, or formally, TT IN TSit. This Aspect head is located in Asp which is below Tense and it is always present in the underlying structure of the clause.

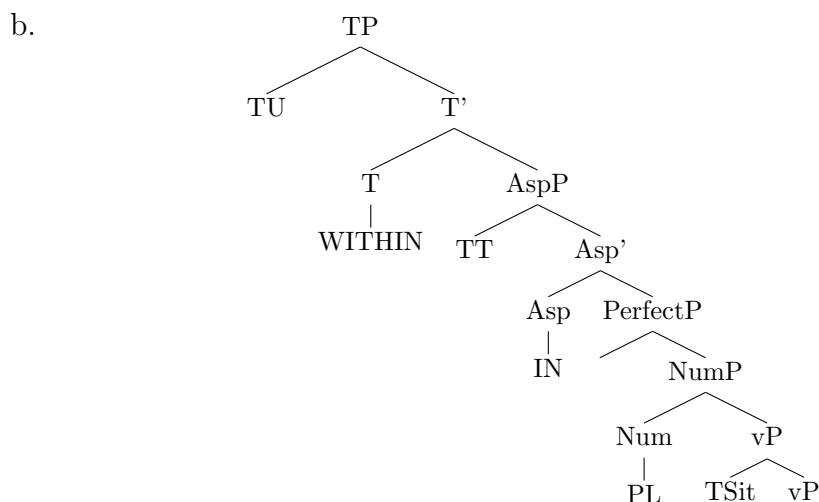
Since the proposition in (129) expresses a progressive eventuality, Numeral indicates a singular eventuality, i.e., SG. This Numeral head creates a stative predicate of the embedded eventuality, i.e. an in-progress state. Aspect expresses the topic time to be fully included in the time of situation, or, TT IN TSit, which expresses IMPERFECTIVE while, Tense expresses a simultaneous temporal ordering relation between time of utterance and topic time, or, TU WITHIN TT, which expresses PRESENT. The syntactic structure for (129) is presented in (129-b).

- (129) a. Senni ta buwá gó a bakáákónde.
 S IMP fly go LOC Netherlands
 ‘Senni is flying to the Netherlands’.



The syntactic structure of (132), which expresses a habitual reading, is exemplified in (132-b). The temporal ordering relations expressed in Tense and Aspect are similar to the ones expressed in (129-b) above. Tense denotes TU WITHIN TT, or, PRESENT, and Aspect denotes TT IN TSit, or, IMPERFECTIVE. Numeral expresses the eventuality to be plural, or, PL.

- (132) a. De tá mbéi dí tyéni té de kabá.
 3PL IMP make DET sugarcane until 3PL finish
 ‘They squeeze the sugarcane until they have finished’.



3.5 Summary

This chapter investigated the category of Aspect in Saamáka. Focus was on the morpheme *ta* which is interpreted as a general imperfective morpheme expressing progressive, habitual and inchoative readings. Its exact interpretation depends on the event description and the context in which the proposition is uttered. Singular eventualities indicate a progressive reading and plural eventualities indicate a habitual reading. It was further postulated that imperfective *ta* creates a derived state of the embedded eventuality. I opted for a cartographic approach in which it is assumed that these different readings imply that *ta* is a vague morpheme which occupies several positions in the functional hierarchy of heads. There was no syntactic evidence which supported the assumption that *ta* occupies different nodes in the syntactic structure. The morpheme is located in Numeral which creates a derived state and denotes whether the eventuality is singular or plural. The former indicates a progressive interpretation and the latter a habitual interpretation.

The Numeral node is located below Tense, Aspect and Perfect in the hierarchy of functional projections.

Furthermore, I postulated that the Aspect head in Saamáka is covertly expressed and it expresses that the topic time is fully included in the time of situation expressing IMPERFECTIVE, or, TT IN TSit. This temporal ordering relation in Aspect is always present in the underlying structure of the clause.

In the next chapter, I investigate whether Saamáka has a functional category of Tense and if so how this category is expressed.

Chapter 4

Tense

4.1 Introduction

The study of the IP domain in Saamáka continues by investigating whether the language has a Tense category. In this chapter, I examine which morphemes can be classified as expressing Tense, which expresses a temporal ordering relation between time of utterance and topic time. This implies that I study how these morphemes might be interpreted and where they might be situated in the functional hierarchy of heads. I will argue that Saamáka has only one Tense morpheme which expresses an identical ordering relation between time of utterance and topic time, or formally, $TU = TT$ expressing PRESENT. This morpheme is not overt but is always present in the underlying syntactic structure of the clause. I will further postulate that the past time reference morpheme *bi* is not a PAST Tense morpheme, but a temporal pronominal which establishes the anchor time directly and makes it not be the time of utterance but some contextually relevant past moment. The eventuality which is modified by *bi* is anchored to this anchor time.

The organisation of this chapter is as follows. First, I lay out my assumptions regarding the temporal ordering relation in Tense and the morphological null PRESENT Tense morpheme (Section 4.2). This is followed by a study of the semantic and syntactic characteristics of the past time reference morpheme *bi* and a proposal for its syntactic decomposition (Section 4.3), and this chapter ends with a summary.

4.2 The temporal ordering relation in Tense: Evidence in favour of a morphological null PRESENT Tense morpheme

Some of the world's languages have been described as tenseless (see Bohnemeyer 2002 on Yukatek Maya, Bittner 2005 on Kalaallisut, Lin 2005 on Chinese). A current discussion in linguistics is whether tenseless languages actually exist or whether it is possible to analyse these languages with the assumption that they possess a covert Tense morpheme in their TMA paradigm. As postulated by Jóhannsdóttir and Mattheson (2007, 10) *'tenselessness cannot be assumed merely based on the absence of obligatory overt tense morphemes, or the absence of a distinction between past and present'*. I side with the view that it is a universal feature of languages to have a Tense head in their functional hierarchy (in the sense of Stowell 1996; Demirdache and Uribe-Etxebarria 2000). A Tense head can be overtly expressed, as in most Indo-European languages, or covertly, as in St'át'imcets (Salish) and Gitksan (Tsimshianic) (see Matthewson (2006) and Jóhannsdóttir and Matthewson (2007), respectively).

This chapter studies what the characteristics of the Tense category in Saamáka are, and how this category is expressed both phonologically and morphologically. Chapter 2 demonstrated that a sentence containing a unmarked eventive verb conveys a past reading and containing a unmarked stative verb a present reading. To explain this difference in temporal interpretation, I argued that Saamáka has a morphological null perfect morpheme in its TMA paradigm. The data presented in Chapter 3 demonstrated that the language has a general imperfective morpheme *ta* which expresses a progressive, habitual and inchoative interpretation. In these two chapters, I presented a preliminary outline of my assumptions regarding the temporal ordering relation expressed by Tense. I argued that Saamáka has a morphological null PRESENT Tense morpheme which is always present in the underlying structure of the clause. This assumption will be explained more elaborately in the current chapter.

This section continues with an overview of the theoretical assumptions regarding the composition of Tense used in the present study (Section 4.2.1) and a discussion on the decomposition of Tense in Saamáka (Section 4.2.2).

4.2.1 Assumptions concerning the composition of Tense

Tense is *'the grammaticalisation of location in time'* (Comrie, 1985, 1). It takes the time of utterance as deictic time or it is anchored to some other time specified by the context. The former implies that we are dealing with absolute tense and the

latter with relative tense¹. While absolute tense is always interpreted in relation to the time of utterance; relative tense is interpreted in relation to a time on the time axis which is contextually determined (Comrie 1985; Bhat 1999). Klein's (1992; 1994) and Demirdache & Uribe-Etxebarria's (2000; 2007) ideas regarding the composition of Tense and Aspect are adapted for the present study. They have been previously laid out in Chapter 2 and the important and relevant features are repeated here. Tense takes two time denoting phrases as its arguments, topic time and time of utterance, and establishes a temporal ordering relation between them. The former being its internal argument and the latter its external argument (Zagona 1995; Stowell 1996; 2007; Demirdache and Uribe-Etxebarria 2000). When time of utterance follows the topic time it expresses PAST Tense, or formally, TU AFTER TT. If the time of utterance precedes the topic time, FUTURE Tense is expressed, or formally, TU BEFORE TT. PRESENT Tense indicates the time of utterance to be simultaneous with the topic time, or formally, TU WITHIN TT. Table 4.1 demonstrates the temporal ordering relations expressed by Tense.

TT precedes TU	past	AFTER
TU simultaneous with TT	present	WITHIN
TU precedes TT	future	BEFORE

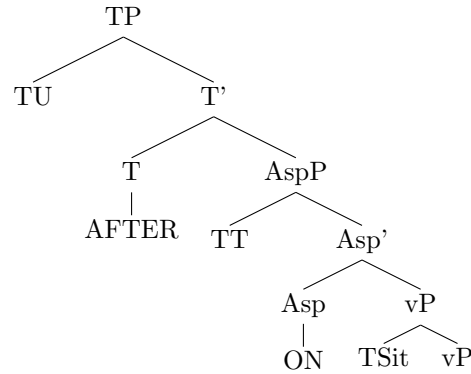
Table 4.1: Tense relations

The phrase structure is illustrated in (133) in which the proposition has a past tense interpretation and a perfective aspect viewpoint. Tense expresses PAST, making the ordering relation between time of utterance and topic time one of precedence, thus TU AFTER TT while, Aspect expresses the topic time to enclose the time of situation indicating PERFECTIVE, thus TT ON TSit.

(133) a. Lily swam in the pond (Smith, 1997, 170).

¹Tense always locates an eventuality in time in relation to another time. This implies that tense is relative to some reference point and therefore, Bhat (1999) prefers to talk about deictic (i.e. absolute) and non-deictic tense (i.e. relative). Although I agree with Bhat that the absolute vs. relative tense distinction might be misleading, I use Comrie's (1985) terminology in the present study, because it is more widely known.

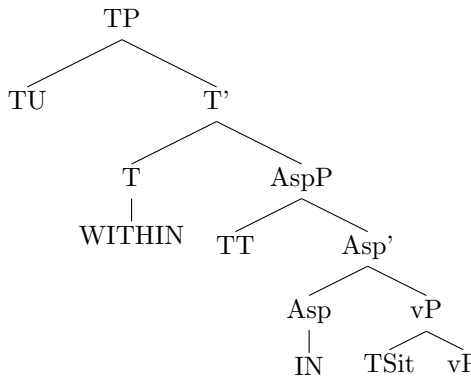
b.



The proposition in (134) conveys a present habitual reading. It has a PRESENT Tense interpretation and an Imperfective viewpoint aspect. Tense conveys a simultaneous temporal ordering relation between topic time and time of utterance thus TU WITHIN TT expresses PRESENT. The temporal ordering relation expressed by Aspect denotes that the topic time is fully enclosed by the time of situation, thus TT IN TSit expresses IMPERFECTIVE.

(134) a. James plays the violin (Smith, 1997, 111).

b.



Recall that stative verbs differ from eventive verbs. The former express duration but do not indicate a change in the eventuality and therefore, states are true at a particular moment. On the other hand, eventive verbs denote a property of temporality and therefore they need a non-trivial interval to evolve. Since events occur at a subinterval larger than that of a moment, their truth conditions cannot be evaluated at a point in time, but must be evaluated at a subinterval (in the sense of Taylor 1977; Bach 1986a; Hinrichs 1986; Portner 2003; Hallman 2009). Furthermore, it is a universal feature that the time of utterance denotes a point

in time (in the sense of Prior 1967; Dowty 1979; Mittwoch 1988; Hallman 2009). Topic time and time of situation differ from time of utterance in that they do not denote a point in time but an interval. Cross-linguistically, languages differ in what PRESENT Tense expresses with regards to moments or intervals. I assume the following; the interval expressed by topic time can be restricted to expresses a moment in certain languages whereas it expresses an interval in others. The temporal ordering relation expressing PRESENT Tense in English expresses identity (in the sense of Hallman 2009), and in Dutch and German within. This identical temporal ordering relation in English denotes a moment and forces topic time, which refers to an interval, to be a moment in time, or in other words, the decomposition of PRESENT Tense in English constrains topic time to be a point in time. Otherwise there would be a mismatch because a moment cannot equal an interval. Only stative verbs can have a momentary topic time, and as exemplified in (135), eventive verbs need a subinterval of a moment to evolve. Consequently, in English, eventive verbs cannot combine with PRESENT Tense. A proposition containing an eventive verb with present tense morphology conveys a habitual reading. In order to combine with PRESENT Tense, eventive verbs are coerced into (derived) states, as demonstrated in (136) (Bach 1986b; Hallman 2009). Habitual Aspect creates a Habitual state of the eventuality (in the sense of Parsons 1990). In order for an eventive verb to indicate that it is ongoing at the time of utterance, the verb is modified by the progressive which creates a derived state, as illustrated in (137).

(135) Susan owns the farm (Smith, 1997, 111).

(136) Mary reads the newspaper (Smith, 1997, 111).

(137) John is singing (Comrie, 1976, 33).

In German and Dutch, time of utterance still denotes a point in time, but topic time refers to an interval. Thus it follows that PRESENT Tense states that the topic interval includes the time of utterance, or more formally, TU WITHIN TT. This simultaneous ordering relation does not constrain the topic time to be a moment and, thus, these languages lack the restrictions regarding aktionsart modification that English PRESENT Tense has. Present tense morphology in these languages can always express an ongoing interpretation even for events. This is illustrated for Dutch in (138) and (139) with an eventive verb and a stative verb respectively.

(138) De jongen loopt in het park.
 DET boy walk.PRES.3SG LOC DET park
 ‘The boy is walking in the park’ (lit. ‘The boy walks in the park’).

(139) Het meisje houdt van chocolade.
 DET girl love.PRES.3SG of chocolate

‘The girl likes chocolate’.

To sum up, it is a universal feature for the time of utterance to express a point in time (in the sense of Prior 1967; Dowty 1979; Mittwoch 1988; Hallman 2009). In principle, topic time and time of situation denote an interval in time, but languages differ in the way PRESENT Tense relates topic time to time of utterance. In certain languages (such as English), topic time is restricted to express a moment, while in others (such as Dutch and German) it expresses an interval. As a result, these languages differ in the aspectual classes which are allowed to combine with PRESENT Tense. Dutch and German do not place any restrictions on aktionsart while in English only stative predicates combine with PRESENT Tense. In order for eventive verbs to combine with PRESENT Tense in English, they have to be coerced into a state.

4.2.2 A morphological null Tense morpheme

I postulate that the temporal ordering relation in Tense is covertly expressed and denotes an identical temporal ordering relation between the topic time and the time of utterance, or formally, $TU = TT$ expressing PRESENT². This covert PRESENT Tense morpheme is always present in the underlying structure of the clause. Furthermore, I assume that Saamáka is similar to English in that PRESENT Tense requires a momentary topic time and not an interval in time (as in Dutch and German). Since only states are true at a moment in time, events need to be coerced into a state in order to be able to merge with PRESENT Tense in Saamáka. I have argued for Saamáka that Perfect and Imperfective *ta* create derived states of the eventualities they modify (in the sense of Parsons 1990). In order for eventive verbs in Saamáka to be able to be modified by PRESENT Tense, they are merged with imperfective *ta* or with the morphological null Perfect morpheme. The advantage of this analysis is that it explains why states and events have a different default temporal interpretation with the covert PRESENT in Saamáka i.e. present time reference for propositions containing stative verbs and past time reference for propositions containing eventive verbs.

A reader who is familiar with TMA systems in other creole languages might wonder how the past time reference morpheme in Saamáka is analysed and whether it would not impose a problem for the current assumptions. In creole studies, past time reference morphemes are often analysed as relative PAST Tense morphemes. It is possible that the past time reference morpheme *bi* in Saamáka expresses PAST Tense and would be the counterpart of the covert PRESENT Tense morpheme.

²This confirms Muysken’s (1981) postulation that the default Tense category in creole languages expresses PRESENT Tense.

However, the next section demonstrates that assuming *bi* to be a Tense head (either as absolute or relative tense) cannot account for all of the semantic and syntactic characteristics of this morpheme. I will formulate an alternative which argues that the past time reference morpheme is a temporal pronominal which establishes the anchor time directly and shifts it to a contextually relevant past moment (in the sense of Partee 1984; Enç 1987; Kratzer 1998; Giorgi 2006).

4.3 ‘Past time reference’ morpheme *bi*

In the previous section, I argued in favour of a covert Tense head which expresses an identical relation between topic time and time of utterance, or, $TU = TT$ indicating PRESENT. This equal relation expressed by Tense is always present in the functional sequence of heads. The focus of the current section is the morpheme *bi*. Since a proposition containing *bi* conveys a past time reference, I aim to establish whether or not *bi* is the counterpart of the covert PRESENT Tense morpheme. In order to do this, the semantic interpretations and syntactic distribution of *bi* will be studied as well as its position in the functional hierarchy of heads.

4.3.1 Distribution and Interpretation

In previous literature, *bi* is described as expressing a simple past reading with stative verbs and a past-before-past with nonstative verbs (Byrne 1987; Veenstra 1996), as in (140) and (141) respectively.

- (140) *Dí muyée bi hánse.*
 DET woman PST beautiful
 ‘The woman was beautiful’ (Veenstra, 1996, 14).

- (141) *A bi wáka gó/ kó a dí ópóláni.*
 3SG PST walk go/ come LOC DET airplane
 ‘He had walked from/towards the airplane’ (Byrne, 1987, 205).

Byrne and Veenstra’s works focused on verb complementation and serial verbs respectively, and only addressed the TMA system of Saamáka briefly. Their assumptions regarding *bi* are highly influenced by Bickerton’s (1984) Language Bioprogram Hypothesis. In this work, Bickerton argues in favour of a universalist account of creole genesis to explain the (assumed) similarities across creole languages. Bickerton analyses morphemes similar to *bi* as anterior tense morphemes, and claims that aktionsart influences the interpretation of these morphemes. They convey a past reading with stative verbs, and a past-before-past reading with non-stative verbs. The precise semantic nature of the label anterior is left unspecified

by Bickerton. However, it is a convenient label, because it both denotes simple past and past-before-past readings. In Bickerton's analysis it is unclear whether these morphemes are ambiguous between a simple past and a past-before-past reading or whether a unified analysis for both interpretations might be given. A close study of the Saamáka data reveals that aktionsart does not influence the interpretation of *bi*. In combination with stative verbs, the proposition containing *bi* can express a simple past reading, as illustrated in (142) - (143).

- (142) Nóo a dí tén u bigí dí rasta a dí 1983
 NARR LOC DET time FU begin DET rastafarian LOC DET 1983
 de di kónde á bi bígi.
 there DET village NEG PST big
 'At the time of the beginning of Rastafarianism in 1983, the village was not big'.
- (143) Éside dí tén dí Senni kó a wósu nóó Freddy bi
 yesterday DET time DET Senni come LOC house NARR Freddy ANT
 dé a woóko éti.
 BE LOC work yet
 'Yesterday when Senni came home, Freddy was still at work'.

In the right context, these propositions can also denote a past-before-past interpretation, as exemplified in (144) and (145)³.

- (144) Éside Senni bi ta woóko. A dí wíki dí bi pasá
 yesterday S PST IMP work LOC DET week DET PST pass
 de a bi suáki.
 there 3SG PST ill
 'Yesterday Senni was working. Last week he had been ill'.
- (145) Bifó di tén de a bi dé só kaa.
 before DET time there 3SG PST BE so already
 'Before that time, it had been so already' (de Groot, 1977, 17).

A similar pattern arises when *bi* combines with eventive verbs. In combination with an activity verb, a simple past reading is the most natural interpretation, as exemplified in (146) - (147).

³The translation and the glosses of the proposition in (145) are mine.

- (146) Vanaf 1983 heñ u bigí ku dí rastafarai a Pikinslee.
 from 1983 3SG FU begin with DET rastafari LOC P
 Omdat u bi woóko a Guyana. Nóo dí u woóko a
 because 1PL PST work LOC G NARR when 1PL work LOC
 Guyana nóo naalá dí tén u Bob Marley.
 G NARR there DET time FU B M
 'In 1983, it began with the Rastafari in Pikinslee, because we worked in
 Guyana. When we worked in Guyana it was the time of Bob Marley'.
- (147) A táa ée de bi gó a fóto a nyónku tén u de. Únfa
 3SG COMP if 3PL PST go LOC P LOC young time FU 3PL how
 u bi wáka. Únfa u bi woóko wáka féndi móni gó a
 3PL PST walk/travel how 3PL PST work walk find money go LOC
 fóto
 P
 'She said in the old days if you went to Paramaribo. How did you travel?
 How did you work and travel and find money to go to Paramaribo'.

A past perfect reading is also possible for activity verbs, as demonstrated in (148) and (149).

- (148) A bi nyá kaa bifó a kó a mi písi.
 3SG PST eat already before 3SG come LOC 1SG place
 'S/he had eaten already before s/he came to my place'.
- (149) Éside dí Freddy kó a wósu a (bi) wéi. A bi
 yesterday when Freddy come LOC house 3SG PST tired 3SG PST
 woóko taánga.
 work strong
 'Yesterday when Freddy came home, he was tired. He had worked hard'.

In the proposition in (149), *bi* directly precedes the stative verb *wéi* (=‘to be tired’) and the eventive verb *woóko* (=‘to work’). In case of the former, the use of *bi* is optional and it indicates that the agent was in a state of tiredness at the moment he arrived home. Whether the eventuality of being tired merges with *bi* or not does not influence the interpretation of this clause. In both cases, the agent was tired yesterday. The position of *bi* before the verb *woóko* (=‘to work’) denotes that this eventuality is located prior to Freddy’s state of being tired. His tiredness was the result of working hard⁴.

⁴James Essegbey (personal communication) pointed out that (149) provides evidence in favour of the claim that aktionsart influences the interpretation of *bi*; the stative verb *wéi* (=‘to be tired’)

A proposition in which an accomplishment verb is embedded by *bi* can express a simple past interpretation, as illustrated in (151) - (153).

- (151) Context: A young man wants to know how an elderly man seduced women in the old days.
 Báka dóo of fési dóo i bi yabí of yu pasá a
 back outside/door ? face door 2SG PST open ? 2SG pass LOC
 féense dóo.
 window door/outside
 ‘The back door or front door, you opened it or did you pass through the window?’
- (152) Dí wómi bi gó a mátu nóo hén wán píngo kó nyá
 DET man PST go LOC forest NARR NARR ART wild pig come eat
 én nóo hén a kíí én.
 3SG NARR NARR 3SG kill 3SG
 ‘The man went to the forest, a wild pig attacked him and he killed it’.
- (153) A bi subí gó a di wósu líba.
 3SG PST climb go LOC DET house top
 ‘He climbed at/to the roof of the house’ (de Groot, 1977, 53).

Moreover, these propositions can also be interpreted with a past-before-past reading, in the right context, as exemplified in (154) - (155).

- (154) Dí mi dóu éside ndéti a wósu nóo mi sísa bi
 when 1SG arrive yesterday night LOC house NARR 1SG sister PST
 skífi tú bíífi kabá kaa.
 write two letter finish already

conveys a simple past reading while the activity verb *woóko* (=‘to work’) conveys a past-before-past reading. However, I claim that this correlation between aktionsart and the interpretation of *bi* is context dependent in this particular sentence. In (150) two eventive verbs occur which are both modified by *bi*. Event e_1 , *kabá kaa u gó* (=‘to finish already to go’) is situated prior to event e_2 , *dóu neen písi* (=‘to arrive at his place’). The former event expresses past-before-past and the latter simple past.

- (150) Dí wómi bi kabá kaa u gó a dí tén de mi bi dóu
 DET man PST finish already FU go LOC DET time there 1SG PST arrive
 neen písi.
 LOC.3SG place
 ‘The man had prepared already to go at the time I arrived at his place’.

The sentences in (149) and (150) are similar in that they both contain two eventualities that are marked by *bi*, and which have a different anchor time. The difference is that the former contains a stative and an eventive verb and the latter two contain eventive verbs.

‘When I arrived home yesterday evening, my sister had written two letters already’.

- (155) A bi nyá pingo éside bifó a gó a mátu.
 3SG PST eat wild pig yesterday before 3SG go LOC forest
 ‘He had eaten wild pig yesterday, before he went to the forest’.

For (154) event e_1 , the arrival of the speaker, establishes an anchor time to which e_2 , the writing of the letters by the sister, is anchored. Event e_2 took place prior to event e_1 which occurred before the time of utterance t_1 , i.e., $e_2 < e_1 \bigcirc t_1 < TU$.

Bi also modifies achievement verbs. These propositions, in (156) - (157), express a simple past reading

- (156) Context: Someone is telling to me and my translator a couple of hunting stories.
 Ká yu bi súti déé pakía alá so ká?
 where 2SG PST shoot DET.PL wild.pig there so where
 ‘Where did you shoot those wild pigs?’
- (157) Nóo hén táa u bi dé ta ku dí man de kái
 NARR 3SG COMP 1PL PST BE ? with DET man 3PL call
 rasta Alimbo. Dí man sééi bi kumútu a fóto kó.
 rastafarian A DET man self PST come.out LOC P come
 ‘Then he said that we were with the man they call rasta Alimbo. The man himself came out of Paramaribo’.

A past-before-past reading when *bi* combines with achievement verbs is also available, as demonstrated in (158) - (159).

- (158) Mi pasá nángo a wán seei pási ká mi bi kúi déé
 1SG pass IMP.go LOC ART same path where 1SG PST kill DET
 díí pakía hén mi lúku a wán hánsi líba. Mi ta sí
 three wild.pig NARR 1SG look LOC ART ant top 1SG IMP see
 wañ pakía. Mi náki hén hén mi kúi hén.
 ART wild.pig 1SG hit 3SG NARR 1SG kill 3SG
 ‘I passed and went to a same path where I had killed the three wild pigs. Then I saw a anthill and I was seeing a wild pig which I killed’.
- (159) Context: Did you find your father at home yesterday?
 Nono, a bi kumútu a wósu kaa bifó u dóu.
 no 3SG PST come.out LOC house already before 1PL arrive
 ‘No, he had left already before we arrived’.

To sum up, the interpretation of the past time reference morpheme *bi* does not depend on aktionsart. With all four aspectual classes it can convey both a simple past and a past-before-past reading.

The past time reference marker *bi* not only indicates that the embedded eventuality is located before the utterance time, but its use also implies that an eventuality is no longer relevant at the time of utterance. In (160), *bi* modifies the event of losing the speaker's glasses, event e_1 . Its presence not only denotes that event e_1 is situated at some moment before the time of utterance, but also that the eventuality no longer holds at the time of utterance. As a result, event e_1 can be followed by a proposition which indicates that the glasses are no longer lost.

- (160) Mi bi lási i beéi u mi ma mi féni hén báka.
 1SG PST lost DET glasses FU 1SG but 1SG find 3SG back
 'I (had) lost my glasses, but I found them again'.

A similar description can be provided for (161). Here, the stative verb, *líbi* (=‘to live’), is embedded by *bi* and the proposition expresses that the speaker used to live in Paramaribo. The sentence can be continued with a clause indicating that this eventuality no longer holds at the time of utterance. Whether the speaker will live in Paramaribo at a future moment is left unspecified.

- (161) Mi bi líbi féifi yáa a fóto ma nóúnóu mé ta líbi alá
 1SG PST live five year LOC P but now 1SG.NEG IMP live there
 móo.
 more
 'I lived in Paramaribo for five years, but now I don't live there anymore'.

Furthermore, my consultants do not accept a proposition containing *bi* which is followed by a sentence which indicates that the eventuality modified by *bi* is not closed, as exemplified in (162). However, one of my consultants accepted examples like this one in a context in which the hunting was not the main topic of conversation but an explanation why the man has not returned although his wife had a terrible accident.

- (162) %Dí wómi bi gó a hóndi ma á kó éti.
 DET man PST go LOC hunt but 3SG.NEG come yet
 Intended interpretation: 'The man went hunting, but he has not returned yet'.

The ‘closedness’ at the time of utterance of an eventuality modified by *bi* is also illustrated by (163).

- (163) It is cold in the room. The window is closed. A enters the room and asks B:
- a. I (bi) yabí dí fénse hén i tooná tapá hén báka
 2SG PST open DET window NARR 2SG return close 3SG back
 o?
 Q
 A: 'Did you open the window and close it again'.
- b. Ay mi bi yabí én.
 yes 1SG PST open 3SG
 B: 'Yes I opened it'.

The presence of *bi* in these examples indicates that the eventuality is no longer relevant at the time of utterance and the speakers are aware of the fact that the eventuality no longer holds. This is in contrast with (164) where the presence of *bi* would result in an ill-formed sentence. Since the window is still open, the past time reference morpheme cannot modify the main verb *yabí* (= 'to open')⁵

- (164) The window is open, but A has not noticed this. S/he asks: Why is it so cold in the room? B answers:
 %Mi bi yabí dí fénse.
 1SG PST open DET window
 Intended interpretation: 'I opened the window'.

Another piece of evidence that *bi* embeds an eventuality which is no longer relevant at the time of utterance, is the uninterpretability of a combination of a stative verb with the adverb *kaa* (= 'already'), as in (165).

- (165) *Mi bi líbi díí yáa a fóto kaa.
 1SG PST live three year LOC P already
 Intended interpretation: 'I lived in Paramaribo for three years already'.

This example indicates a mismatch between the interpretation of the past time reference morpheme *bi* and the adverbial *kaa*. The presence of *bi* implies that the speaker no longer lives in Paramaribo, while the adverbial *kaa* indicates that the speaker still lives there. This is in contrast with (148), (154) and (159) where the adverbial *kaa* can co-occur with the past time reference morpheme *bi*. The difference between (165) on the one hand and (148), (154) and (159) on the other is that in (165) the main verb is stative and in the latter three examples the main

⁵One of my consultants accepted the presence of *bi* in a context where the window had been opened because it was too warm in the room. At the time of utterance, it is no longer warm in the room and thus the reason why the window was opened in the first place is no longer relevant. This context was confirmed by other consultants.

verb is eventive. The combination of a stative verb and adverbial *kaa* indicates a continuous reading, and when *kaa* combines with an eventive verb it indicates that the event has already occurred before some anchor time.

The readings just discussed are the most natural, however the presence/absence of *bi* does not entail these readings. The presence of *bi* in (160) - (164) indicates that something in the proposition is no longer relevant at the time of utterance, whether the eventuality is “closed” or whether the reason for doing something no longer holds. This relevance characteristic of *bi* is a pragmatic interpretation, it is not a grammatical feature.

The past time reference morpheme *bi* co-occurs with temporal adverbials denoting a past moment, as illustrated in (166) - (169). In (166)⁶, the temporal adverbial specifies the moment at which the eventuality took place.

- (166) Context: Referring to the speaker’s father who had lived in Paramaribo for some time in his life. He has passed away a couple of years ago.
 A dí tén de mi taatá bi nángo a bayá híní wán
 LOC DET time there 1SG father PST IMP.go LOC dance every ART
 sáta.
 saturday
 ‘In those days, my father used to go to dance parties on Saturdays’.

In (167), both the topic time and the time of situation can be modified by the temporal adverbial. Modification of the former results in a past-before-past reading and of the latter in a simple past reading.

- (167) Tidé a dí tú yúu sápaté dí muyémú bi kandá.
 today LOC DET two hour afternoon DET girl PST sing
 ‘At two o’clock in the afternoon today, the girl sang’.
 or ‘At two o’clock in the afternoon today, the girl had sung’.

In (168), the temporal adverbial *dyúnsu* (=‘just now’) modifies the eventuality. The proposition indicates that shortly before the time of utterance, the agent arrived at the speaker’s place. However, the use of *bi* in (168) denotes that the agent has already left again i.e. the coming event is no longer relevant. The proposition in (168) expresses a past-before-past reading.

- (168) Context: Someone is looking for a man. She asks you if you have seen him recently.

⁶When imperfective *ta* co-occurs with the verb *gó* (=‘go’), the two elements fuse together and come out as *nángo*.

- Dyúnsu dí wómi bi kó akí.
 just now DET man PST come here
 'The man had just come'.
- (169) A í éside wi bi dóu fuúku.
 LOC DET yesterday 1PL PST arrive early
 'Yesterday we arrived early'.

In an out-of-the-blue context, propositions containing *bi* and a temporal adverbial expressing a future moment are judged ungrammatical, as exemplified in (170). In this example, there is a mismatch between the time denoted by *bi* (which is prior to the time of utterance) and the time denoted by the temporal adverbial *amanyá* (=‘tomorrow’) (which is after the time of utterance).

- (170) *Amanyá a bi wáka a mátu.
 tomorrow 3SG PST walk LOC forest
 Intended interpretation: ‘Tomorrow s/he (had) walked in the forest’.

To sum up, (142) - (170) show that *bi* indicates an eventuality which is situated at a past time. It conveys a simple past interpretation and a past-before-past interpretation depending on the discourse context in which the proposition occurs. Furthermore, an eventuality embedded under *bi* is no longer relevant at the time of utterance. The eventuality referred to is “closed”. The past time reference marker *bi* can freely combine with temporal adverbials denoting a past moment. Combinations with a temporal adverbial denoting a future moment are judged ungrammatical. Contra to Bickerton’s (1984) Language Bioprogram Hypothesis, the interpretation of *bi* in Saamáka does not depend on aktionsart. Both with stative and nonstative verbs, it can convey a simple past and a past-before-past reading, as exemplified in (142) - (159). Are these two different interpretations due to *bi* being ambiguous, or is it possible to give a unified analysis? In Chapter 2, I argued in favour of Saamáka having a morphological null Perfect morpheme in its TMA paradigm. The past-before-past reading can be explained by postulating that this interpretation is due to the presence the morphological null Perfect in the underlying structure. The combination of the Perfect morpheme and the past time reference marker *bi* results in a past-before-past interpretation, as in (148). The morphological null Perfect morpheme is not present in the underlying structure when the occurrence of *bi* gives rise to a simple past interpretation, as in (146). Both examples are repeated here.

- (148) A bi nyá kaa bifó a kó a mi písi.
 3SG PST eat already before 3SG come LOC 1SG place
 ‘S/he had eaten already before s/he came to my place’.

- (146) Omdat u bi woóko a Guyana.
 because 1PL PST work LOC G
 ‘Because we worked in Guyana’.

This is summarized in Table 4.2.

Sentence	Underlying structure	Interpretation
(146)	<i>bi</i>	vP \Rightarrow simple past
(148)	<i>bi</i> null Perfect	vP \Rightarrow past-before-past

Table 4.2: Simple past vs. past-before-past reading

4.3.2 Past time reference morphemes in other Caribbean English Creoles

In recent studies on (past) tense in creole studies, Bickerton’s (1984) anterior tense analysis for past time reference morphemes has lost influence and has been replaced by the hypothesis that these morphemes are relative PAST Tense markers (see Jaganauth 1988 for Guyanese Creole, Winford 2000b for Sranan, Hackert 2004 for Bahamian Creole, Yakpo 2009 for Pichi). A relative past tense analysis aims to explain the two different readings which occur for these past time reference morphemes. Relative tense indicates that it is not the time of utterance that is taken as an anchor point, but some other contextually specified time. Relative past implies that the eventuality is located prior to this moment. Languages with an absolute tense system take the time of utterance as anchor point. This implies that an eventuality is located in time with regard to the time of utterance (Comrie 1985; Bhat 1999). Both Winford (2000b) and Hackert (2004), for Sranan and Bahamian Creole respectively, argue the morphemes *ben* and *did* to be relative past tense morphemes which implies that their anchor point is context dependent. It can be the time of utterance but also some other contextually relevant moment in time. The morphemes *ben* and *did* locate an eventuality prior to this anchor point. Such an analysis is in agreement with Bickerton who argues that in creole languages, the reference point is ‘*the time of the topic under discussion*’ (Bickerton, 1984, 182). *Ben* in Sranan can express a simple past and a past-before-past, depending on the position of the anchor time with regard to the time of utterance. Under this analysis, if the contextually determined anchor point equals the time of utterance, a simple past reading is the result; if the anchor point is some contextually relevant moment located prior to the time of utterance, a past-before-past reading surfaces. The use of *ben* is exemplified in (171) in which the anchor time (which is the death

of my brother) is located in the past. The eventuality modified by *ben* (which is the event of meeting the brother) is situated prior to this anchor time.

- (171) Q: Did you ever meet my brother, who is now dead?
 Iya, mi ben miti nanga en wan leisi.
 yes 1SG PST meet with 3SG.OBJ ART time
 'Yes, I met him once' (Winford, 2000b, 400).

At first sight the use of *ben* and *did* in a narrative might seem random. However, both Hackert and Winford argue that the understanding of the speaker's perception is important for the understanding of the use of the past time reference morpheme. *'It is the speaker's own perception of temporal relationships in some wider context that triggers the selection of ben'* (Winford, 2000b, 408-409). The past time reference morphemes are used in narratives to background an eventuality, as demonstrated for Bahamian Creole in (172). This use implies that in a narrative, two storylines can occur and in these cases the subordinate storyline will be marked by the past time reference morphemes.

- (172) They cut off the light and they was throwing ball, you see, it's a team was playing, and this other team didn't like how they lost, and they start throwing ball like – I was walking, coming up – on the hill, coming out. And he hit me – I had the place – some place I went with – I – had they clothes coming, and when they hit me, and I fall right back on my back.
 [But you weren't even involved in the game? You were just watching – standing by, right, walking by?]
 No, uh–huh. One pregnant woman **did get hit**, too before me.
 [And what happened to her?]
 She **did gotty gone** to hospital. That's why you see now they build gyms to go play in (Hackert, 2004, 95-96).

The past time reference morphemes *ben* and *did*, in Sranan and Bahamian Creole respectively, also indicate that the eventuality is no longer relevant at the time of utterance. Hackert explains the use of *did* as *'a discourse strategy employed to mark information that is not currently in focus'* (Hackert, 2004, 86).

To summarize, in order to explain the characteristics of the past time reference morphemes *ben* and *did* in Sranan and Bahamian Creole respectively, Winford and Hackert classify them as a relative past tense morpheme. These morphemes convey several different readings, simple past and past-before-past, which are context dependent. A relative past tense analysis explains why these morphemes can be translated in English with a simple past and a past perfect reading. Under this analysis, it is not the morpheme itself which has different interpretations, but the

anchor time which is contextually relevant.

In the rest of this section, I will explore what the most accurate way is to analyse the morpheme *bi*. First, I pose arguments against *bi* as a Tense head (Section 4.3.3). This is followed by an investigation of an analysis which asserts that *bi* is a relative PAST Tense morpheme. Also this analysis runs into a number of problems (Section 4.3.4). Therefore, I formulate an alternative which argues that *bi* is temporal pronominal which establishes the anchor time directly and makes it a contextually relevant past moment (Section 4.3.5).

4.3.3 Against *bi* as a Tense head

This section investigates whether it is possible to analyse *bi* as the counterpart of the covert PRESENT Tense in Saamáka. Under this hypothesis, *bi* would be a PAST Tense head. Since it is a universal feature of Tense to be always present in the underlying structure of the clause (in the sense of Stowell 1996; Demirdache and Uribe-Etxebarria 2000), it is expected that when *bi* does not appear that Tense expresses PRESENT. This implies that predicates which in an out-of-the-blue context convey a present or future time reference (for instance, stative verbs and verbs modified by imperfective *ta*, the necessity modal *musu*, possibility modal *sa* and future time reference morpheme *ó*) need embedding by *bi* in order to convey a past interpretation. The data presented in this section provides evidence against the claim that *bi* would be a Tense head expressing PAST. The morpheme is discourse sensitive and its presence in discourse is optional. These characteristics cannot be explicated under the assumption that *bi* is a Tense head.

Absolute tense implies that the time of utterance is taken as an anchor time. Past tense indicates that the topic time is located prior to the time of utterance (Comrie 1985; Bhat 1999). Most Germanic and Romance languages have an absolute tense system. This is demonstrated with examples from Dutch.

- (173) Michiel fietst op straat.
 M bike.3SG.PRES LOC street
 ‘Michiel is biking on the street’.
- (174) Michiel fietste op straat.
 M bike.3SG.PST LOC street
 ‘Michiel biked on the street’.

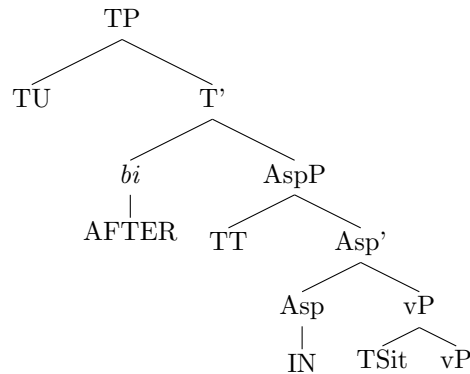
In (173) and (174), the time of utterance is taken as anchor time and the eventuality is located on the time axis with reference to the time of utterance. Example (173) has a present time reference, as the eventuality expressed is taking place at

the time of utterance, or formally, $e \bigcirc \text{TU}$. This results in the topic time being simultaneous with the time of utterance, or, TU WITHIN TT. Example (174) has a past time reference, because the eventuality expressed has taken place prior to the time of utterance, i.e., $e < \text{TU}$. This results in topic time preceding time of utterance: TU AFTER TT.

If *bi* in Saamáka were an absolute past tense morpheme, it would locate the eventuality before the time of utterance. Thus, the time of utterance is always taken as an anchor time prior to which the *bi*-modified eventuality is located. I assume the temporal ordering relation in Aspect to be telicity dependent (in the sense of Bohnemeyer and Swift 2004). As a result, atelic verbs denote imperfective aspect and telic verbs denote perfective aspect. The underlying structure of a sentence containing *bi* is demonstrated in (175). In this example, *bi* is a Tense head which expresses a precedence relation between the time of utterance and the topic time, TU AFTER TT expressing PAST. It is assumed that Aspect always expresses time of situation to enclose topic time: TT IN TSit expressing IMPERFECTIVE.

(175) a. SUBJECT *bi* vP

b.



4.3.3.1 Discussion

Under this hypothesis, *bi* would be a simple PAST Tense morpheme which takes the time of utterance as its anchor time. This implies that *bi* would always situate an eventuality before the time of utterance. The data presented in Section 4.3.1 demonstrated that a proposition containing *bi* conveys a simple past and a past-before-past reading. This latter reading is accounted for by assuming that the morphological null Perfect morpheme is present in the underlying structure. The combination of simple past and perfect results in a past-before-past (past perfect) interpretation. Since under this analysis *bi* is a Tense head, it is assumed that *bi*

would always be overtly present in the clause structure when the temporal ordering relation in Tense expresses PAST. However, a close examination of (narrative) data demonstrates that this is expectation is not borne out. The following extract is from the beginning of a conversation⁷.

- (176) a. Yoó dá u to? Únfa dí gaánwáta bigí u kó
 3SG.MOD give 1PL right how DET flood start FU come
 únfa i dú.
 how 2SG do
 F: 'You will give us something, right? When the flood started to come, what did you do?'
- b. Mé bi dé akí.
 1SG.NEG PST BE here
 S: 'I was not here.'
- c. Oh yá bi dé akí?
 oh 2SG.NEG PST BE here
 F: 'Oh, you were not here?'
- d. Mi dé a Semoisi.
 1SG BE LOC Semoisi
 S: 'I was in Semoisi.'
- e. Oh yá bi dé akí nó?
 oh 2SG.NEG PST BE here RQ
 M: 'Oh, you were not here?'
- f. Nóno mi dé a Semoisi. Di a kó a dóu té.
 no 1SG BE LOC Semoisi when 3SG come 3SG arrive until
 S: 'No, I was in Semoisi. When it came, it reached up to there.'

The topic of this extract is the flood of 2006⁸. This implies that after line (176-a) all eventualities are situated prior to the time of utterance. Recall that stative verbs convey a present time reference and they require modification by *bi* to convey a past time reference. It would be expected that under an absolute past tense hypothesis all stative verbs are embedded by *bi* if they refer to a past moment. However, that is not the case. In line (176-d), the copula *dé* occurs and it is unmarked. From the discourse context, we know that Sina is not talking about the

⁷The following abbreviations are relevant for this extract. F = Fonteni, my guide and interpreter; S = Sina, an elderly monolingual woman and main narrator; M = Marleen. Please note that the Saamáka of the author of the present study is that of a second language learner who has not acquired the language completely.

⁸In May 2006, the Suriname river was flooded due to the rain fall in Brazil. Several villages along the Suriname river were flooded by water. Houses and vegetable gardens were destroyed.

present moment (the recording was made in Pikinslee and not Semoisi⁹) but that she is referring to where she was at the moment of the flood. It appears that the presence of *bi* in Saamáka narratives is not obligatory and that it can be omitted once the anchor time of a narrative is established and clear to all speakers involved.

The optionality of *bi* is also demonstrated in (177) and (178). My consultants were asked to translate a small narrative. The number of occurrences of *bi* in this narrative was different for each individual consultant. Some would mark every sentence with *bi*, as in (177), while others would only mark the first verb in the narrative, as in (178), and some would mark the verbs randomly. My consultants judged the short narratives of other consultants as grammatical. Several short narratives are presented in Appendix B of this dissertation.

- (177) Senni *bi* ta wáka a mátu. A *bi* ta yéi déé fóu
 S PST IMP walk LOC forest 3SG PST IMP hear DET.PL bird
 ta singi báí. Nóo déé tódo seei *bi* ta báí. Nóo
 IMP sing shout NARR DET.PL frog even PST IMP shout NARR
 dí kíiki *bi* ta kulé sééi ta pasá. Senni *bi* gó sindó a
 DET creek PST IMP run even IMP pass Senni PST go sit LOC
 wán páu básu.
 ART tree under
 'Senni was walking in the forest. He was hearing the birds whistling, and
 the frogs croaking. The creek was running slowly. Senni sat down under
 a tree'.
- (178) Dí wíki pasá Senni *bi* wáka a mátu. Hén a yéi
 DET week pass Senni PST walk LOC forest NARR 3SG hear
 déé fóu ta báí. Déé tódo ta báí. Dí kíiki ta kulé
 DET.PL bird IMP sing DET.PL frog IMP sing DET creek IMP run
 sápi-sápi. Senni sindó a wán páu bandya.
 quiet Senni sit LOC ART tree next
 'Last week Senni walked in the forest. He heard the birds singing and
 the frogs croaking. The creek was running quietly. Senni sat down next
 to a tree'.

In (177), almost every verb is embedded by the past time reference *bi* while in (178) only the first verb is. How can this difference in modification by *bi* be accounted for? In both extracts, most of the eventualities are embedded under imperfective *ta*. Recall that in an out-of-the-blue context, these types of propositions convey

⁹Pikinslee is the village where I conducted my fieldwork and where this conversation was recorded. Sina lives there. Semoisi is another Saamáka village located along the Suriname river.

a present time reference interpretation. In (178), however, they are interpreted as occurring at a time prior to the time of utterance. Again, a predicate phrase, conveying a present interpretation in an out-of-the-blue context, is instead interpreted with a past time reference reading in this discourse context. It appears that once the anchor time is established and is situated at a past moment, the morpheme *bi* is no longer necessary in order to give rise to a past interpretation of a sentence and can thus be omitted. The question that needs to be answered here is: How can the omission of *bi* in these examples be explained under a Tense head analysis?

From (176) - (178), we might be able to conclude that in Saamáka narratives, the past time reference morpheme *bi* can have a whole narrative in its scope. It might be that in narratives different rules apply (Kamp and Reyle 1993). However, the optionality of *bi* in Saamáka is also illustrated for bi-clausal structures, as in (179) and (180). In both propositions, the eventualities are interpreted as occurring simultaneously and are located in the past.

- (179) Senni *bi* ta bebé té hén Lathoya ta nyá beée.
 S PST IMP drink tea NARR L IMP eat bread
 ‘Senni was drinking tea and Lathoya was eating bread’.
- (180) Dí muyée ta náí koósu nóo a *bi* ta kondá wán sondí
 DET woman IMP sew cloth NARR 3SG PST IMP tell ART thing
 a déé sembe.
 LOC DET.PL person
 ‘The woman was sewing cloth(s) while she was telling something to the others’.

The examples demonstrate that although only one eventuality is modified by *bi*, the whole bi-clausal clause is in the scope of the morpheme, consequently receiving a past interpretation. With regard to the temporal interpretation of the proposition, it is irrelevant which of the two eventualities is embedded by *bi*. As long as the morpheme is present in one of the clauses, the whole proposition is situated prior to the time of utterance. Another bi-clausal clause is presented in (181), which contains two eventive verbs.

- (181) Context: What did your brother do yesterday?
 Éside mi baáa *bi* gó a húku hén mi sísa bói
 yesterday 1SG brother PST go LOC hook NARR 1SG sister cook
 dí fisi.
 DET fish
 ‘Yesterday my brother went fishing and my sister cooked the fish’.

At first sight this sentence might be interpreted according to which *bi* conveys a past-before-past reading of event e_1 *gó a húku* (=‘to go fishing’) and the morphological null Perfect embeds event e_2 *bói dí físi* (=‘to cook the fish’). Interestingly, it is possible for *bi* to modify event e_2 and not event e_1 , as illustrated in (182-a), or both event e_1 and event e_2 , as exemplified in (182-b), or none, as in (182-c). According to my consultants, the absence or presence of *bi* does not influence the temporal interpretation of the proposition. Event e_1 and event e_2 are interpreted as occurring in the order in which they are uttered. The relation between these two eventualities is restricted by world knowledge in which one first has to catch a fish in order to cook it. So, the proposition in (182-a) does not give rise to a past-before-past interpretation of event e_2 . In all four examples, event e_1 and event e_2 are situated prior to the time of utterance and the former precedes the latter, i.e., $e_1 < e_2 < \text{TU}$. Please note that my consultants have a preference for the sentence in (181), but the other three options are judged equally grammatical.

- (182) a. Éside mi baáa gó a húku hén mi sísa bi bói
 yesterday 1SG brother go LOC hook NARR 1SG sister PST cook
 dí físi.
 DET fish
 ‘Yesterday my brother went fishing and my sister cooked the fish’.
- b. Éside mi baáa bi gó a húku hén mi sísa bi
 yesterday 1SG brother PST go LOC hook NARR 1SG sister PST
 bói dí físi.
 cook DET fish
 ‘Yesterday my brother went fishing and my sister cooked the fish’.
- c. Éside mi baáa gó a húku hén mi sísa bói dí
 yesterday 1SG brother go LOC hook NARR 1SG sister cook DET
 físi.
 fish
 ‘Yesterday my brother went fishing and my sister cooked the fish’.

Another piece of evidence of the optionality of *bi* is illustrated in (183) where the eventualities are overtly unmarked for TMA. As expected from unmarked eventive verbs, the propositions are interpreted with a past time reference.

- (183) Wán júu pasá dé Senni kó dóu. A kumútu a wosú
 ART hour pass there S come arrive 3SG come.out LOC house
 kaa bifó Lathoya dóu.
 already before L arrive
 ‘An hour has passed since Senni arrived. He left before Lathoya arrived’.

These eventualities have a clear ordering and they are listed in their chronological order¹⁰. Although the eventuality *Senni kó dóu* (=‘Senni arrived’) might be interpreted as expressing past-before-past, there is no obligation for *bi* to modify this eventuality. Again the presence of *bi* appears to be optional and can be omitted.

4.3.3.2 Summary

This section discussed the hypothesis that *bi* is a Tense head expressing PAST. Under this hypothesis it would be expected that *bi* is a Tense morpheme which is anchored to the time of utterance. It would be the opposite of the covert Tense morpheme which expresses PRESENT Tense. It is expected that a Tense morpheme is always present in the underlying structure of the clause. From this assumption it follows that when *bi* does not occur in a sentence, the default temporal ordering relation in Tense would convey PRESENT. The data presented in this section indicate that the occurrence of *bi* in a proposition with a past time reference can be omitted. This could be explained by the fact that unmarked verbs—verbs which are modified by the morphological null Perfect morpheme—also give rise to an interpretation in which an eventuality is located prior to the time of utterance. However, predicates expressing a present time reference in an out-of-the-blue context are interpreted as expressing past in certain contexts which is illustrated in (176), (179) and (180) above. In these propositions the temporal ordering relation under Tense would be expected to denote PRESENT Tense, but it does not. Under the hypothesis that *bi* is an (absolute) PAST Tense head, optionality and omission is unexpected and cannot be accounted for in a formal theory. The morpheme *bi* does not behave like a Tense head and this analysis cannot explain all of its characteristics. Therefore, it has to be abandoned. The discourse sensitivity of *bi* might be explained under a relative past tense hypothesis. This hypothesis essentially argues that it is not the time of utterance that is taken as the anchor time, but some other contextually salient time. The past time reference morpheme *bi* locates an eventuality prior to this anchor time. As a result, the topic time is located prior to the anchor time, i.e., TT < AT. This hypothesis is examined in the next section.

¹⁰A chronological ordering of the eventualities can also explain why they are not marked by the past time reference morpheme *bi*. Hinrichs argues for English that ‘*in succession of two or more sentences in the simple past, the temporal order of the events described cannot contradict the order of the sentences*’ (1986, 68).

4.3.4 Discourse sensitivity and the Relative PAST Tense hypothesis

The relative past tense hypothesis is adapted from studies on Sranan and Bahamian Creole by Winford (2000b) and Hackert (2004) respectively, which argue that the past time reference markers in these languages express relative past. They attempt to capture the discourse sensitivity of the past time reference morphemes in these languages to explain both the simple past reading and the past-before-past reading. The relative past tense hypothesis does give rise to the full spread of predicted readings of *bi*, because under this hypothesis, it is not the morpheme which is ambiguous, but the anchor time to which the morpheme is anchored that is contextually dependent.

Relative tense indicates that it is not the time of utterance that is taken as anchor time but some other contextually relevant time, or as Comrie explains it is '*a form whose meaning does not specify that the present moment must be its reference point*' (Comrie 1985, 58; see also Bhat 1999). For a relative tense system it is required that the reference point is identified by the context. In English, Latin and Imbabura Quechua, relative time reference can occur in subordinate clauses (Comrie 1985). In these languages, the time reference of the embedded clause takes the time reference in the main clause as anchor time, as illustrated in (184).

- (184) The passengers awaiting flight 26 proceeded to departure gate 5 (Comrie, 1985, 57).

The verb in the embedded clause is temporally anchored to the Tense set by the matrix clause. Although the verb has present progressive morphology (and thus it would be expected that the eventuality takes place at the time of utterance), the eventuality occurs simultaneously with the eventuality in the matrix clause (Comrie 1985). The proposition (185) exemplifies a similar pattern for Imbabura Quechua.

- (185) a. Marya Agatupi kawsajta_{present} krirkani_{past}.
 'I believed that Mary lived in Agato' (Comrie, 1985, 61).
 b. Marya Agatupi kawsashkata_{past} krirkani_{past}.
 'I believed that Mary had lived in Agato' (Comrie, 1985, 61).

The temporal interpretation of the embedded clause is anchored to the temporal interpretation of the matrix clause. Thus, the tense morphology in the embedded clause is relative to the matrix clause (Comrie 1985).

Kannada (Dravidian) has both an absolute and a relative tense system. In the relative tense system, three times can be distinguished. One time expresses the

eventuality to be located prior to the anchor time (prior), another expresses the eventuality to take place simultaneous with the anchor time (simultaneous) and the third expresses the eventuality to take place after the anchor time (posterior) (Sridhar 1990; Bhat 1999). These relative tenses are exemplified in (186).

- (186) a. ho:g-i
go-PRIOR
'after going'.
b. ho:gu-tta:
go-SIMUL
'while going'.
c. ho:g-alu
go-POST
'before going, in order to go' (Bhat, 1999, 27-28).

The occurrence of Relative Tense in Kannada in a discourse context is exemplified in (187) and (188). The former proposition conveys a past-in-the-future reading. The verb *h:ogirutta:ne* (= 'will have gone') is marked both for absolute FUTURE Tense and for relative PAST (or prior) Tense.

- (187) Mu:ru gaNTe-ge a:ta manege h:og-i-ru-tt-a:ne.
three hour-DAT he home go-PRIOR-be-FUT-3MASC:SG
'He will have gone home by three o'clock' (Bhat, 1999, 23).

In (188), the cutting eventuality is marked by relative FUTURE (or posterior) Tense and the cooking eventuality by absolute NON-PAST Tense. The former is temporally anchored to the latter which is anchored to the time of utterance. As a result, the cutting event is situated after the cooking event.

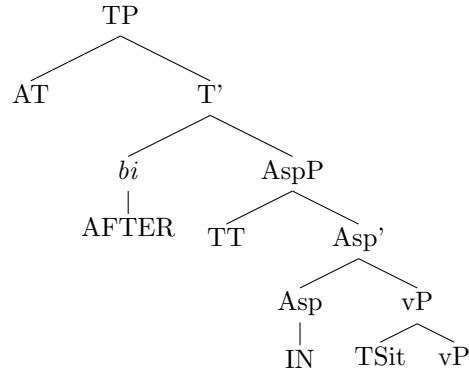
- (188) na:nu haNN-annu kattaris-alu be:visu-tt-e:ne.
I fruit-ACC cut-POST cook-NON.PST-1SG
'I will cook the fruit for cutting it later' (Bhat, 1999, 23).

Under the hypothesis discussed in this section, *bi* would express a relative past tense. This implies that an eventuality modified by *bi* would be located prior to a contextually given anchor time which can be situated anywhere on a time axis. The anchor time is located in TP. In (189), *bi* is a Tense head which expresses a precedence relation between the anchor time and the topic time, or, AT AFTER TT denoting PAST. As before, the ordering relation in Aspect expresses IMPER-

FECTIVE, or, TT IN TSit. The underlying structure of *bi* as a relative past tense morpheme is presented in (189)¹¹.

(189) a. SUBJECT *bi* vP

b.



4.3.4.1 Problems and discussion

Under the current hypothesis, it is assumed that *bi* is a Tense head which would express a temporal ordering relation between a contextually relevant anchor time and the topic time, as demonstrated in the phrase structure in (189). This anchor time should be able to be situated prior to, after or simultaneously to the time of utterance. As a relative PAST Tense morpheme, *bi* would locate the topic time prior to the anchor time, or, AT AFTER TT. Under this hypothesis, it is therefore expected that *bi* would be able to modify a past-in-the-future eventuality¹². This construction is exemplified in (187) for Kannada and in (190) for Kituba, a Kikongo-based creole language spoken in the Democratic Republic of Congo.

(190) N'águ ya María ata kwisa, múna béto méne di-áka.
 time COMP M POST come then we PF eat-ANT
 ‘When Maria comes, we will have already eaten (a long time/quite some time ago)’ (Mufwene, 1990, 99-100).

Kituba has a relative tense system. In an out-of-the-blue context, the morpheme *-áka* takes the time of utterance as anchor time, and in a discourse context it receives its reference from a contextually relevant anchor time. The morpheme

¹¹Others (Enç 1987; Giorgi and Pianesi 2001; Stowell 2007; Higginbotham 2009) locate the anchor time in FinP. Although their analysis is essentially correct, locating the anchor time in FinP would make things more complicated.

¹²I refer the interested reader to Bohnemeyer (2003) for an overview of the possible constructions expressed by relative tense morphemes.

denotes a precedence relation and expresses PAST (Mufwene 1990). In (190), the coming of Maria event, e_1 , is located in the future. The morpheme *-áka* modifies the eating event, e_2 , and anchors it to event e_1 . While both events follow the time of utterance, event e_2 , modified by *-áka*, is located prior to event e_1 , i.e., $-aka(e_2) < e_1 > TU$.

The prediction that *bi* in Saamaáka can give rise to a past-in-the-future eventuality is not borne out, as exemplified in (191).

- (191) Context: I am in a conversation with a pregnant woman and I tell her that in a year from now I will return to Pikinslee. She replies to me:
 *Té i tooná kó nóo mi bi palí.
 when 2SG return come NARR 1SG PST give birth
 Intended interpretation: ‘When you return, I will have given birth’.

When the past-in-the-future eventuality, *palí* (=‘to give birth’), is embedded by *bi*, the sentence is ungrammatical. The morpheme *bi* cannot refer to a eventuality which is situated in the past of an anchor time located in the future of the time of utterance, i.e., $*bi\ e_2 < e_1 \bigcirc AT > TU$. Propositions such as (191) with a past-in-the-future interpretation are consistently replaced with propositions such as (192) and (193). In the former clause none of the verbs are modified by the past time reference morpheme *bi*, and *palí* (=‘to give birth’) is embedded under the future time reference morpheme *ó*. In Chapter 6, I argue that the past-in-the-future reading of *ó* is due to the morphological null Perfect morpheme in the underlying structure. The presence of the latter gives rise to past interpretation of the eventuality.

- (192) Té i tooná kó nóo mi o palí.
 when 2SG return come NARR 1SG MOD give birth
 ‘When you return, I will have given birth’.

The proposition in (193) expresses a counterfactual clause. Here, the verb in both the antecedent and the consequent are obligatorily marked by *bi*.

- (193) Ée i bi tooná kó nóo mi bi o palí.
 if 2SG PST return come NARR 1SG PST MOD give birth
 ‘If you had returned, I would have given birth’.

The proposition in (194) also expresses a past-in-the-future interpretation. The presence of the morpheme *bi* is ungrammatical and this sentence is replaced by (195).

- (194) *Té fii kó dí óto yáa di ta kó alá mi bi
 when FU.2SG come DET other year DET IMP come there 1SG PST
 folóisi gó a fóto.
 move go LOC P
 Intended reading: 'When you come next year, I will have moved to Paramaribo'.
- (195) Té fii kó dí óto yáa dí ta kó alá mi folóisi
 when FU.2SG come DET other year DET IMP come there 1SG move
 go a foto.
 go LOC P
 'When you come next year, I will have moved to Paramaribo'.

Another argument against the hypothesis that *bi* is a relative past tense morpheme are sequence of tense examples. In (196), *bi* modifies the verb, *méni*, which is in the matrix clause, while the verb in the embedded clause, *kíi dí ganía*, is unmarked. The event of killing the chicken e_2 is located prior to the event of Senni's thinking, e_1 i.e., $e_2 < e_1$. Under the relative past tense hypothesis, *bi* locates an eventuality prior to a contextual given anchor time. In (196), the anchor time is set by the matrix clause, and event e_2 is anchored to this topic time. Event e_2 occurs before event e_1 . Under this hypothesis, it would be expected that *bi* modifies event e_2 and not event e_1 ¹³.

- (196) Senni a bi méni táa Freddy hén kí dí
 Senni 3SG PST think/remembers COMP Freddy 3SG kill DET
 ganía.
 chicken
 'Senni thought that Freddy killed the chicken'.

4.3.4.2 Summary

This section examined whether the characteristics of the morpheme *bi* could be explained by the hypothesis that it expresses relative PAST Tense. Under this hypothesis, *bi* would be situated in Tense in the functional sequence and would convey a temporal ordering relation between topic time and a contextually established anchor time, or, AT AFTER TT. This hypothesis aimed to capture the discourse sensitivity of *bi* and its simple past and past-before-past readings. In Section 4.3.3.1 a conceptual problem was pointed out against the *bi* being a Tense

¹³The presence of the past time reference morpheme *bi* is optional in the matrix clause of (196). Moreover, *bi* can modify event e_2 . Its presence in the embedded clause is also optional and its absence/presence does not influence the interpretation of (196). In both cases event e_1 is located after event e_2 i.e. $e_1 > e_2$.

head. Under the assumptions concerning the syntactic composition adapted in the present study, a Tense head analysis cannot elucidate the optionality and omission of a functional head. This section pointed out an empirical problem against a relative PAST Tense analysis. Under this hypothesis, it is predicted that *bi* would be able to embed a past-in-the-future eventuality. However, this prediction is not borne out. A past-in-the-future eventuality is achieved using the null perfect morpheme¹⁴. Based on the data presented in this section, the relative past tense hypothesis does not elucidate all of the characteristics of *bi* and therefore has to be discarded.

In the next section, I formulate an alternative hypothesis; the temporal pronominal hypothesis which argues that *bi* is a temporal pronominal (in the sense of Partee 1984; Kratzer 1998) which establishes the anchor time directly and shifts it to some contextually relevant past moment (in the sense of Enç 1987; 2004). I demonstrate that this analysis can explain the different characteristics of the past time reference morpheme *bi*.

4.3.5 A new proposal for *bi*

In section 4.3.3 and 4.3.4, two hypotheses were discussed that argued in favour of analysing *bi* as Tense head. If *bi* were a Tense head expressing PAST, it would always indicate a precede relation between the topic time and an anchor time, which, in the case of the absolute past tense hypothesis, would be the time of utterance; and in case of the relative past tense hypothesis, a contextually relevant time, i.e., $TT < TU/AT$. Since the interpretation of *bi* is discourse sensitive and its occurrence is optional and can be omitted, it is difficult to argue in favour of a hypothesis that assumes *bi* to be a PAST Tense head. The relative past tense hypothesis tried to account for the discourse sensitivity of *bi*, but it was shown that *bi* does not behave as expected for a relative past tense morpheme. It cannot modify a past-in-the-future eventuality. In Section 4.2, I argued that in the default case, the Tense node in Saamáka expresses a simultaneous temporal ordering relation between the topic time and the time of utterance implying PRESENT, i.e., $TU \text{ WITHIN } TT$. As a result, when *bi* is not overtly expressed, Tense in Saamáka does not express PAST Tense, but PRESENT Tense. Thus, not all of the semantic and syntactic characteristics of *bi* are explainable under an analysis which assumes *bi* to be a Tense head.

¹⁴For Japanese, it has been argued that it has a relative past tense morpheme, *-ta*. However, according to Ogihara, this analysis cannot explain why *-ta* cannot modify a past-in-the-future. Also in Japanese, this is expressed via the perfect morpheme (Ogihara 1989; 1996; 1999 and subsequent work).

In this section, I will formulate a different way to get the effects of past time reference, while capturing the discourse sensitivity facts. The ideas presented in this section are adapted from Partee (1984) and Enç (1987). Partee focuses on the similarities between temporal morphemes and anaphoric pronouns, and Enç (1987; 2004) assumes that it is possible to establish an anchor time directly, and make it not to be the utterance time, but some contextually salient time (see also Giorgi 2006; 2008).

Before I examine how the temporal pronominal analysis is able to explain the characteristics of Saamáka *bi*, the ideas of Enç and Partee are laid out first.

4.3.5.1 Theoretical assumptions

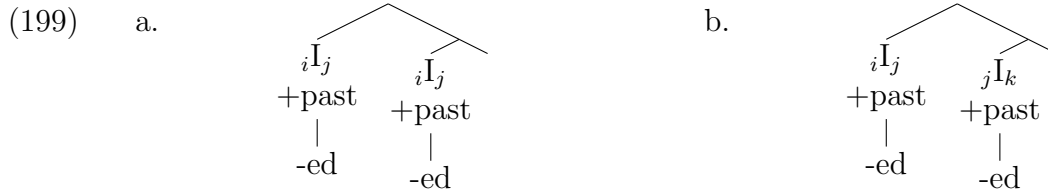
Partee (1984), like many others, observes similarities between anaphoric pronominals and temporal morphemes. She divides temporal morphemes into deictic and anaphoric temporal morphemes. Deictic tense locates an eventuality relative to the time of utterance, and anaphoric tense locates an eventuality to a reference time independently provided by the discourse. The former denotes an absolute tense system and the latter a relative tense system. Partee further argues in favour of a pronominal analysis of anaphoric temporal morphemes. She demonstrates similarities between these temporal morphemes and pronouns (see also Hinrichs 1986; Bonomi 1995; Kratzer 1998). Under a pronominal analysis, temporal morphemes are assumed to have certain characteristics in common with anaphoric pronouns. Both are anaphoric and thus refer to an understood particular time or individual which is made salient by the discourse context (Partee 1984; Hinrichs 1986; Bonomi 1995; Kratzer 1998). The advantage of a pronominal analysis of anaphoric temporal elements is that it explains the discourse sensitivity of these morphemes. Another similarity between pronominal and temporal anaphors is that they can only be bound by their antecedent locally. Controlled PRO and zero pronouns¹⁵ must locally bind their antecedent. When these elements and their antecedent are interrupted by an intervening clause, the former cannot refer to their antecedent (Kratzer 1998). A further advantage of temporal pronominal analysis as we will see, is that it is able to account for the optionality of *bi* in the discourse.

Enç (1987) investigates embedded clauses in English. Like many others, she observes that an embedded sentence containing a stative verb expresses both a simultaneous and a shifted reading, as exemplified in (197). These two temporal interpretations can be distinguished by adding a temporal modifier, as in (198).

¹⁵Kratzer (1998) uses the term zero pronoun for pronouns without agreement features. Thus, they are semantically empty. However, these pronouns are pronounced, they are not morphologically null.

- (197) Peter claimed that Alice was sick (Enç, 2004, 203).
 (198) a. Peter claimed that Alice was sick at that moment (Enç, 2004, 203).
 b. Peter claimed that Alice was sick the week before (Enç, 2004, 203).

The underlying syntactic structure of the simultaneous reading of (197) is presented in (199-a) and of the shifted reading in (199-b) (Enç, 2004, 208).



Under a sequence of tense analysis it is assumed that ‘*the defining characteristic of past tense is that it shifts to the past*’ (Enç, 2004, 205)¹⁶. According to Enç (1987; 2004), the traditional idea of treating tense as a sentential operator is unable to predict the grammaticality of the simultaneous reading of (197). To account for its grammaticality, Enç proposes to treat tenses as referential expressions denoting intervals. Tense indicates an interval which must be established with reference to some other interval. She assumes that Tense is located in the IP domain and it denotes PAST or PRESENT. Furthermore, Enç argues that the specifier of Tense is located in CP. Building on Rizzi (1997), I assume that within an extended CP domain, this position is Fin¹⁷. Enç (2004, 207) adopts a number of anchoring conditions, as demonstrated in (200).

- (200) a. All Is carry two temporal indices: an index, which yields the evaluation time of I (=TT); and a referential index, which yields the time at which the eventuality described by the sentence holds (=TSit). Given iI_j , i is the evaluation index and j is the referential index.
 b. All Is must be temporally anchored
 c. Only Is with the feature [+past] can bind other Is.
 d. An I is temporally anchored if and only if
 (i) it is bound by the local c-commanding I (through its referential index), or

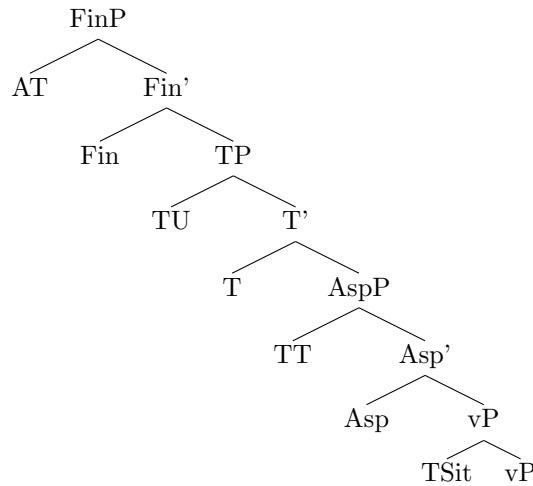
¹⁶To explain the simultaneous reading of (197), the sequence of tense analysis argues that the past tense in embedded clause is not a “real” past tense. It is deleted when it is embedded under a past tense in a matrix clause. Furthermore, the sequence of tense analysis argues that the tense in the embedded clause takes the tense in the matrix clause as anchor time and that the matrix tense is copied onto the tense of the embedded clause (see Ogihara 1989; Stowell 1996; Abusch 1997 for a sequence of tense analysis).

¹⁷Giorgi and Pianesi (2001) and Higginbotham (2009) also argue that tense anaphora should be located under a complementizer position C. The former demonstrate that there exists a strong correlation between an anaphoric temporal relation and the characteristics of C.

- (ii) its evaluation time is bound by the local c-commanding I, or
- (iii) its evaluation time is fixed as the speech time when there is no local I to bind it.

Intuitively, Enç suggests that *Fin* is the first argument of Tense and it provides an anchor time which expresses an interval. Tense states a relation between *FinP* (i.e. anchor time) and *AspP* (i.e. topic time). In English, tense in a matrix clause is deictically anchored, i.e., to time of utterance which is located in *TP*, while tense in an embedded clause is anaphorically anchored, i.e., to an anchor time which is located in *FinP*. As in previous chapters, time of situation is situated in *vP*, and Aspect denotes a temporal ordering relation between topic time and time of situation. This results in the phrase structure presented in (201).

(201)



4.3.5.2 *Bi* as a Temporal pronominal

An analysis of *bi* should be able to account for the following characteristics of the morpheme. It is not deictically anchored to the time of utterance. It expresses a past presupposition, and thus it anchors a proposition to some past time. Thirdly, *bi* is insensitive to aktionsart. The pattern of distribution is not determined by whether a verb is stative or nonstative. It is discourse sensitive, and the presence of *bi* is optional. *bi* can set the time for the whole narrative and have a whole narrative in its scope. To explain these characteristics of *bi*, I argue *bi* to be a discourse marker which has the role of a temporal pronoun, a referential expression that denotes an interval in time. I postulate *bi* to establish the anchor time directly. It sits in *Fin* and provides the anchoring interval for the temporal ordering relation in Tense. The presuppositional content of *bi* contributes the constraint that this interval be some contextual past moment.

In Saamáka narratives, the first verbs which establish the anchor time of the storyline are marked by *bi*. The following passage is taken from Totomboti, a Saamáka folk tale about the origin of the river¹⁸.

- (202)
- a. Só déé mui, mi o dá unu wán fési tén wóto
so DET.PL child, 1SG MOD give 2PL ART first time story
e.
NARR
 - b. Da Gaángádu bi mbéi lío e, té a kabá.
then big God PST make river NARR until 3SG finish
 - c. Nóo á bi dé kuma fá dí lío fúu de
NARR 3SG.NEG PAST BE just like way DET river full there
fá u dé akí e.
manner 1PL BE here NARR
 - d. Hii dí lío líba tuu fía bi dé sósó sitónu balalaaa
all DET river top all completely PST BE just stone flat
té gó pii.
after go
 - e. Nóo dí wáta bi ta kulé ta pasá a básu alá
NARR DET water PST IMP run IMP pass LOC under there
gililili.
IDEO
 - f. Só a bi dé.
so 3SG PST BE
 - g. Wáta séépi á bi dé u sembe ta feni ta bebé.
water self 3SG.NEG PST BE FU person IMP find IMP drink
 - h. Nóo hén Gaamá kái hii lanti – sembe, mbéti ku
NARR NARR chief call out all people – person, animal and
fóu – táa we dí wáta pená nóo de á
bird – COMP FOC DET water ?to be poor? NARR 3PL NEG
sa tyeen móo.
MOD ?carry.3SG? more
 - i. Bigá da de o boóko sitónu u de sa feni wáta.
because then 3PL MOD break stone FU 3PL MOD find water
 - j. Hén de ta boóko sitónu té de wéi.
NARR 3PL IMP break stone when 3PL tired

¹⁸This folktale was told by Tiini Amoida and recorded by Naomi Glock for the Summer Institute of Linguistics. It was published as an appendix in ‘Languages of the Guianas V: Saramaccan for Beginner’ in 1982.

- k. Dí sitónu á sa boóko e, u de dóu a wáta.
 DET stone NEG MOD break NARR FU 3PL arrive LOC water
 'So children, I will tell you a story from the old days. When the
 almighty god made the river. It was not like this river. It was blocked
 by a stone. The water was running/passing underneath it. So, it
 was. The water was not for people to take and drink it. Therefore
 Granman called all people – person, animal and bird – that the water
 was running low and they could not reach it anymore. They would
 break the stone so that they could find water. They were breaking
 the stone, until they became tired. The stone could not be broken
 so that they reached the water'.

The line (202-b) locates this folktale at a moment in time which is situated prior to the time of utterance. All the eventualities in this folktale are situated at a past moment. In the first 6 lines there is extensive marking of *bi*. A reason for this might be that *bi* mainly modifies stative predicates, such as the copula *dé* and verbs modified by the imperfective morpheme *ta*, which in an out-of-the-blue context convey a present interpretation and require *bi* to denote a past reading. However after line (202-g) and throughout the rest of this narrative (which contains 63 lines in total), there is only one more occurrence of *bi*, but several occurrences of stative verbs. I postulate that once the anchor time of a narrative is established by *bi* all the eventualities are anchored to this anchor time and they fall under the scope of *bi*. Its overt presence in the clause structure is no longer necessary and it can be omitted.

The anchoring of a narrative by *bi* only occurs when a storyline is not interrupted by a second storyline. When a new (past) discourse topic is introduced, often the first verbs are marked by *bi*. Kratzer (1998) demonstrated that zero-pronouns must locally bind their antecedents. This also holds for the morpheme *bi*. A sequence of eventualities cannot be interrupted by a different storyline. When a sequence continues after being interrupted, it cannot locally bind its antecedent and therefore, the anchor time of the first sequence has to be re-established. This is done by modifying the 'new' first eventuality by *bi*. This is illustrated in (203)¹⁹ with an extract from an interview. The first storyline discusses the flood in 2006, and the second storyline discusses the preparations for building a mobile phone mast in the forest at the time of the recording.

¹⁹The following abbreviations are relevant for this extract. L = Laurens, my guide and interpreter; Y = Yeye, an elderly monolingual woman who was interviewed and the main narrator. President Venitiaan was at that moment of the flood in 2006 the president of the Republic of Suriname, and still was when this conversation was recorded on March 24, 2008. Vinije is Yeye's grandson who lives in Wageningen, the Netherlands. After the flood in 2006, he visited his family in Pikinslee.

- (203) a. U woóko i féndi dí móni dí wáta de kaa ku
 1PL work 2SG find DET money DET water BE already with
 hén u tooná báí láí ku séti wósu butá kuma fa
 3SG 1PL return buy thing with set house put like manner
 a dé baka
 3SG BE back
 L: 'We worked and found money, the water went down. With the
 money, we bought things again and decorated our houses again'.
- b. Ú dí tén de táa de o tyá móni kó. De
 which DET time 3PL COMP 3PL MOD carry money come 3PL
 á tyá dí móni kó yéti
 NEG carry DET money come yet
 Y: In those days, they said that they would bring money. They have
 not brought the money yet'.
Line (a) and (b) refer to storyline A ⇒ Flood 2006
- c.
- d. Kuma fá dí u Botopasi de. Fá a dé a Botopasi
 like DET FU B there like 3SG BE LOC B
 de nóo u Seei akí musu ábi tú.
 there NARR ?FU? P here MOD have also
 L: Like the one in Botopasi. Like it is in Botopasi, we of Pikinslee
 must have one too'.
Line (c) and (d) refer to storyline B
- e. Dí Venitiaan bi kó akí a dí a bi dú dá u
 when Venitiaan PST come here LOC when 3SG PST do give 1PL
 a Seei akí a dí lío déndu.
 LOC Pikinslee here LOC DET river in(side)
 L: 'Venitiaan came here and he gave help to us in Pikinslee'.
- f. Á heépi ná wán wee sondí. Vinije kó a dí
 3SG.NEG help NEG ART ? thing Vinije come LOC DET
 kónde ta daamá ta butá sondí a di kónde ta
 village IMP walk around IMP place thing LOC DET village IMP
 lóntu.
 round
 Y: 'He helped us with nothing. Vinije came to the village en was
 walking around in the village'.
Line (e) and (f) refer to storyline A ⇒ Flood 2006

This extract demonstrates that when a storyline is discontinued and interrupted by another storyline, and then continues after this interruption, the anchor time of the first storyline needs to be reestablished. The eventualities falling under the

first storyline after the interruption cannot be bound and anchored to the original anchor time. In other words, the morpheme *bi* reestablishes the anchor time by modifying the first eventuality after the interruption when the discourse participants return to original storyline.

To summarize, the examples discussed in this section indicate that the morpheme *bi* is able to establish the anchor time for a whole narrative. Once this anchor time is established, the overt presence of *bi* is no longer obligatory. The constraint is that the antecedent of this anchor time must be locally bound. When a storyline, sl_1 , is interrupted by another storyline, sl_2 , the anchor time of storyline sl_1 must be reestablished when the participants return to storyline sl_1 . In order to reestablish an anchor time, the morpheme *bi* embeds the first eventualities that are part of the storyline sl_1 after the interruption.

4.3.5.3 Syntactic composition of temporal pronoun *bi*

In order to determine the position of *bi* in the hierarchy of functional projections, it is important to study its interaction with other TMA morphemes. Interestingly, *bi* is always the first TMA morpheme and it thus precedes the other morphemes, as illustrated in (204) - (207). Deviation from this order is ungrammatical²⁰. In (204), *bi* modifies the necessity modal *musu* and conveys a past obligation reading. This sentence can be either interpreted such that the agent has undertaken the eventuality or that she did not do it. The epistemic reading of *musu* under *bi* is infelicitous.

- (204) A *bi* *musu* *yasá* *kasába* *tidé*.
 3SG PST MOD bake cassava today
 ‘She should have baked cassava bread today’.
 or ‘She had to bake cassava bread today.’
 or *‘She must have baked cake today’.

The sentence in (205) illustrates that the possibility modal *sa* follows *bi* in the overt structure of the clause which expresses a past ability. As will be illustrated in Chapter 5 and Chapter 7, the permissive reading of *sa* can also co-occur with *bi*, but not its epistemic reading.

- (205) Mé *bi* *méni* *táa* *yu* *bi* *sa* *táki* *so* *u* *mi*.
 1SG.NEG PST thing COMP 2SG PST MOD talk so FU 1SG
 ‘I didn’t think that you could say something like that about me’.

²⁰Data presented in Chapter 7 demonstrate that the necessity modal *musu* can precede *bi*. I refer the reader to that chapter for discussion.

In (206), imperfective *ta* combines with *bi*, resulting in a past progressive reading. The data presented in Chapter 3 and in Chapter 7 illustrated that *ta* can also be interpreted as habitual in combination with *bi*.

- (206) Dí wómi bi ta kó akí hén déé sikóútu kisi én.
 DET man PST IMP come here NARR DET.PL police catch 3SG
 ‘The man was coming here and then the police caught him’.

The combination of *bi* with the future time reference morpheme *ó*, as in (207), gives rise to a counterfactual interpretation.

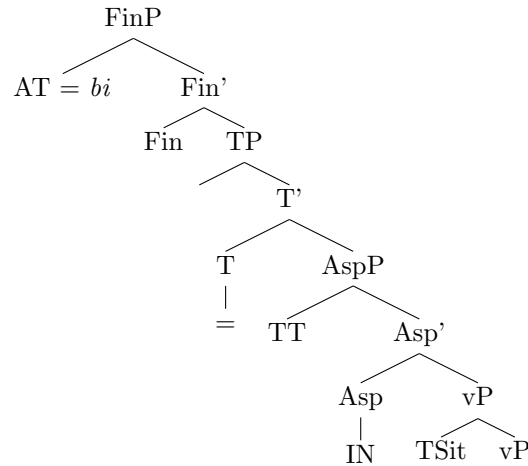
- (207) Ée á bi suáki nóo a bi ó féifi dí wósu éside.
 if 3SG PST sick NARR 3SG PST MOD paint DET house yesterday
 ‘If he had not been sick, then he would have painted the house yesterday’.

The morpheme *bi* occurs before all other core TMA morphemes, as these sentences demonstrate. The syntactic distribution of *bi* is consistent with a position in Tense and in Fin. Since I provided both empirical and conceptual evidence against a Tense head analysis of *bi* and anaphoric temporal pronouns have been situated in Fin (Enç 1987; Giorgi and Pianesi 2001; Stowell 2007; Higginbotham 2009), I postulate that *bi* is positioned in Fin in the functional hierarchy of heads.

The underlying structure of a proposition containing *bi* is demonstrated in (146-b) for the proposition in (146) which is repeated below. Under the current analysis, *bi* denotes a temporal pronominal which establishes an anchor time which is situated prior to the time of utterance. It is the first argument of Tense and is located in FinP. This anchor time holds at an interval and not at a moment. Therefore, *bi* does not have the same stipulations regarding stativity as PRESENT Tense. Since the morpheme expresses an interval it does not place a stativity requirement on its complements and is free to combine with all four aspectual classes. The morpheme expresses an identical ordering relation with topic time which also expresses an interval, or, $AT = TT$. The presuppositional content of *bi* indicates that this anchor time is located prior to the time of utterance. This entails that the embedded eventuality is located before the time of utterance, or, $e < TU$. The temporal ordering relation established via Aspect between topic time and time of situation is based on the telicity of the verb. Atelic verbs are interpreted as imperfective and denote that topic time will be fully included by the time of situation, or, $TT \text{ IN } TSit$. Telic verbs are interpreted as perfective and indicate a topic time including time of situation relation, or, $TT \text{ ON } TSit$. Recall that Saamáka has a covert Aspect morpheme which expresses IMPERFECTIVE Aspect and which is the only value in Aspect.

- (146) a. Omdat u bi woóko a Guyana.
 because 1PL PST work LOC G
 ‘Because we worked in Guyana.’

b.



Analysing *bi* as a temporal pronoun explains *bi*'s dependency on the discourse context and its possibility to be omitted once the anchor time is established. Pronouns also receive their interpretation from the context in which they are uttered. This hypothesis also explains why *bi* is not distributionally sensitive to aktionsart, or to be more precise, sensitive to stativity; *Fin* is not adjacent to Aspect. The temporal pronoun analysis thus proves itself to be a compelling analysis for Saamáka, and possibly also other languages with the same profile, where a relative tense analysis has been proposed. If this reanalysis is on the right track and *bi* is not a Tense head, then this has far reaching implications for what we should infer about the functional sequence of the clause from the ordering of so-called 'tense' morphemes in Saamáka and other similar (creole) languages.

4.4 Summary

This chapter discussed the category of Tense in Saamáka. In Section 4.2, it was established that Saamáka has a Tense morpheme which is covert and expresses that the time of utterance equals the topic time, formally, $TU = TT$ expressing PRESENT. This temporal ordering relation in Tense is always present in the underlying structure of the clause. In this respect it differs from the morphological null Perfect morpheme which does not always occur in the syntactic structure. The focus of Section 4.3 was the semantic interpretation and syntactic distribution of the morpheme *bi*. I demonstrated that it is not a Tense head which expresses PAST, but a temporal pronominal which establishes the anchor time directly. The

presuppositional content of *bi* is such that it constrains this anchor time to be situated prior to the time of utterance. Based on the analysis presented in Section 4.3.5, one might think that there is a mismatch between my assumptions regarding the temporal ordering relation in Tense and the pronominal analysis of *bi*. The latter assumes *bi* to be a temporal pronoun which shifts the anchor time directly to some contextual salient past moment. Although the anchor time still equals the topic time, it no longer includes the time of utterance in its interval. As a result, the topic time is no longer simultaneous with the time of utterance. This contradicts the assumption that Tense always expresses an equal relation between time of utterance and topic time, or, $TU = TT$. A closer look reveals that only a slight adjustment is necessary to explain this discrepancy. If one assumes that the temporal ordering relation in Tense is not established between time of utterance and topic time, but between topic time and anchor time and that in the default state (when *bi* has not established an anchor time) this anchor time equals time of utterance, then the discrepancy disappears. In other words, only when the morpheme *bi* establishes an anchor time, is the anchor time shifted from the time of utterance to some contextual salient past time, or formally, $TU > AT_{bi} = TT$.

As the analyses of lesser studied languages like St'át'imcets and Gitksan have already suggested, the Tense category in languages may differ on a superficial level, but not after a more in-depth study. Something that looks like a Tense category does not necessarily have to establish a temporal ordering relation between topic time and anchor time or time of utterance as is expected of a Tense category.

This dissertation continues with the study of the functional category of modality. Chapter 5 investigates the semantic interpretation and syntactic distribution of the necessity modal *musu* and the possibility modal *sa* and it aims to establish in which position these modal morphemes are situated in the hierarchy of functional projections.

Chapter 5

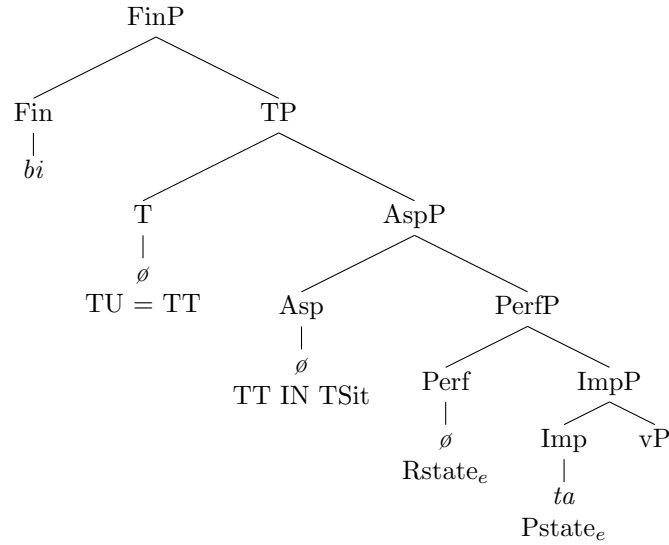
Modality

5.1 Introduction

The aim of this dissertation is to examine the cartography of the Saamáka clause, especially the IP domain and furthermore to establish the exact nature of the hierarchy of functional projections. The previous chapters discussed the semantic interpretation and syntactical distribution of the aspect and tense morphemes in Saamáka. It was shown that the language has a morphological null Perfect morpheme, an imperfective morpheme, *ta*, a covert Aspect head, expressing IMPERFECTIVE, a covert Tense head, expressing PRESENT, and temporal pronominal, *bi*, which establishes an anchor time. Thus far we know the meanings of these morphemes and where they are situated in the functional hierarchy of the clause, as exemplified in (208)¹.

¹Where Rstate_e stands for Result State of the embedded eventuality, Pstate_e for in Progress State of the eventuality.

(208)



Since the overall goal of this dissertation is to provide an overview of the functional sequence in the IP domain in Saamáka, this study is not complete without discussing modality. The focus of this chapter are the core modal morphemes: the necessity modal *musu* and the possibility modal *sa*. In order to figure out the position of these modals in the functional hierarchy, it is necessary to study their semantic and syntactic characteristics. This chapter aims to describe and analyse the semantic interpretation and the syntactic distribution of these two modals. Depending on the context in which they occur, both modals convey several readings. Necessity modal *musu* expresses an obligation reading and an epistemic reading, as demonstrated in (209).

- (209) a. Dí bási táa mi musu gó woóko a dí kuku.
 DET boss COMP 1SG MOD go work LOC DET kitchen
 ‘The boss said that I am obliged to work in the kitchen’.
- b. Déé mǐi de musu nyá dí góma.
 DET.PL child there MOD eat DET cake
 ‘Those children must have eaten the cake’.

Possibility modal *sa* conveys an ability reading, a permissive reading and an epistemic reading, as exemplified in (210).

- (210) a. Mi bi sipáli dí móni u mi henmbei mi sa báí
 1SG PST save DET money FU 1SG therefore 1SG MOD buy
 sondí nóúnóu.
 something now
 ‘I saved my money, therefore I can buy something now’.

- b. Dí Gaamá táa wi sa gó.
DET G COMP 1PL MOD go
'The Granman said that we are allowed to leave'.
- c. Lathoya sa gó a húku.
L MOD go LOC hook
'Lathoya might have gone fishing'.

Before the Saamáka data is studied more closely, an overview of the classification and definitions of modality in the literature are presented (Section 5.1.1). This is followed by an overview of my theoretical assumptions regarding the composition of Modality (Section 5.1.2). For the semantic composition, a Kratzer (1977, 1991, 2002, to appear)-style analysis is adapted and for the syntactic analysis Hacquard's (2006; 2010) ideas.

5.1.1 The notional category of modality

Modality expresses the speaker's general intent and her degree of commitment towards a proposition. It indicates a relation between the actual world in which a situation occurs, and the worlds in which the expressed situation is evaluated (see Bybee et al. 1994; Palmer 2001; von Fintel 2006; Hacquard to appear). Cross-linguistically, the notional category of modality is conveyed via several lexical expressions like modal auxiliaries, semi-modals verbs, nouns, adjectives, adverbs and conditionals, as exemplified in (211), and taken from von Fintel (2006, 1).

- (211)
- a. Sandy must/should/might/may/could be home.
 - b. Sandy has to/ ought to/ needs to be home.
 - c. There is a slight possibility that Sandy is home.
 - d. Perhaps, Sandy is home.
 - e. If the light is on, Sandy is home.

In the literature, there are several ways of defining and classifying the notional category of modality (see Kratzer 1977; Bybee et al. 1994; Palmer 2001; von Fintel 2006; Hacquard to appear). Palmer (2001) defines modality as a grammaticalisation of the subjective opinions and attitudes of a speaker towards the proposition. In the formal literature, modality is analysed as a complex expression which quantifies over possible worlds: '*A modalized sentence locates an underlying or preadjacent proposition in the space of possibilities*' (von Fintel, 2006, 1). Modality indicates the possibility or necessity (or grades of these) of the proposition concerning an individual, a situation, and so on. There are several modal categories, and the basic distinctions are listed below (in the sense of Bybee et al. 1994; Palmer 2001; von Fintel 2006; Hacquard to appear).

Deontic modality refers to laws or moral principles imposed on the speaker. It is subdivided into obligation (in which the laws or moral principles are a necessity in a world) and permission (in which the laws or moral principles are a possibility), as demonstrated in (212) and (213) respectively.

(212) (In view of what the law provides) Jockl must go to jail (Kratzer, 1991, 640).

(213) You may go now (Palmer, 2001, 71).

Dynamic modality involves what is possible or necessary given the circumstances in a world. It is also referred to as circumstantial modality. Ability and volitional modality fall under this category, as demonstrated in (214) and (215) respectively. Ability modality refers to physical and mental ability, features which are internal to the agent. It also indicates more general circumstances which make a situation possible. Volitive modality denotes the commitment of the agent to make the proposition become true at a future moment (Palmer 2001).

(214) John can speak French (Palmer, 2001, 10).

(215) John will do it for you (Palmer, 2001, 10).

Bouletic modality indicates the desires and wishes of the agent.

(216) (In view of his desire to retire at age 50) John should work hard now (Hacquard, to appear, 4)

Teleological modality is concerned with the goals of the agent.

(217) (Given the choices of modes of transportation and their speeds) To get home in time, you have to take a taxi (von Fintel and Gillies, 2007, 34).

Epistemic modality refers to the knowledge of a speaker given the available evidence. It indicates the speaker's judgement(s) of a proposition and expresses different degrees of commitment by the speaker to the certainty of the proposition. The proposition in (218) expresses a deductive epistemic modality reading and in (219) a speculative epistemic modality reading (Bybee et al. 1994; Palmer 2001; von Fintel 2006; von Fintel and Gillies 2007; Hacquard to appear).

(218) (In view of what we know) Jockl must have been the murderer (Kratzer, 1991, 641).

(219) There might be hydrangeas growing here (Kratzer, 1991, 646).

Deontic, dynamic, bouletic and teleological modality are often grouped together and referred to as circumstantial (or root) modality. Circumstantial modality

differs from epistemic modality in that the former is based on the circumstances surrounding a situation and an individual, while the latter is based on the speaker's knowledge. Circumstantial modality is argued to be subject-oriented and epistemic modality to be speaker-oriented. Furthermore, the former refers to the embedded event and thus has a narrow scope, while the latter can modify a whole proposition and thus has a wide scope, meaning that an epistemic modal morpheme scopes over a whole proposition while a circumstantial modal morpheme only modifies the eventuality. Detailed empirical studies, however, indicate that this distinction between circumstantial and epistemic modality is not so clear cut (Bybee et al. 1994; Palmer 2001; Barbiers 1995, 2005; Eide 2005; Hacquard 2006).

In the next section, my assumptions regarding the composition of modality are discussed. The semantic analysis suggested in this paper is based in possible world semantics (in the sense of Kratzer 1977, 1991, 2002, to appear) and the ideas regarding the syntactic structure follows Hacquard (2006, 2010).

5.1.2 Assumptions concerning the composition of Modality

This section discusses the assumptions concerning the composition of modality adapted in the present study. For the semantic description of modality, Kratzer's (1977; 1991; 2002; to appear) work on modality in possible world semantics is taken as a guideline. Within this approach, it is argued that modality expresses quantification over possible worlds. Possible worlds can be defined as State of Affairs, as possible ways the world could be. The truth value of a proposition is evaluated relative to a possible world. Kratzer assumes that although certain modals can have several readings, this does not imply that a language has two (or three) different modal morphemes which are homophones stored in the lexicon. The context in which a proposition appears triggers the right modal reading. Kratzer's ideas are summarized in Section 5.1.2.1.

For the assumptions concerning the syntactic composition of modality Hacquard's (2006; 2010) ideas are taken as a guideline who combines the cartographic approach by Rizzi (1997) and Cinque (1999, 2001) with Kratzer's possible world semantics and argues that although multi-interpretable modals can have several positions in the functional hierarchy, a difference in height does not imply that they are different morphemes. Hacquard argues in favour of a single lexical entry for each modal. The particular interpretation of a modal in a certain context depends on the complement that the modal combines with. Hacquard claims that modals are relative to times and individuals; and thus relative to events. She demonstrates that the time/individual pair of an epistemic modal differs from the

time/individual pair of a circumstantial modal. Consequently, epistemic modals are relative to a different event type than circumstantial modals: epistemic modals are relative to speech events, whereas circumstantial modals are relative to vP events. This difference in modal complement explains the difference in position in the underlying structure. An overview of Hacquard's ideas is presented in Section 5.1.2.2.

5.1.2.1 Semantic composition of Modality

Kratzer (1977, 1991, 2002, to appear) argues that modal morphemes which convey several different readings are not ambiguous, but they are vague; they are not morphemes which are homophones, but rather, one morpheme which can have several interpretations. The context in which a proposition is uttered will trigger the correct interpretation for a multi-interpretable modal and this context is provided by modal force and conversational background. The former differentiates between possibility and necessity modality. The modal operator \Box , which denotes necessity, and \Diamond , which denotes possibility, are introduced; the former can be interpreted as the universal quantifier \forall , while the latter can be interpreted as the existential quantifier \exists and both quantify over possible worlds. A difference between quantifiers and modal operators is that quantifiers relate individual variables and they quantify over individuals. Quantifiers scope over possible worlds, whereas modal operators deal with the quantificational force of a statement, whether the proposition expresses possibility or necessity, or grades of these. A conversational background provides the context in which a proposition, including a modal element, should be interpreted and 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 a circumstantial or an epistemic interpretation. The former refers to what can/must happen in a world regarding the circumstances under consideration, whereas 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) and it can be deontic, stereotypical, bouletic, theological, dynamic, empty, and so on. 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 events'* (Kratzer 1991, 644). The semantic representation of necessity and possibility is demonstrated in (220). These notions are defined with respect to the notions of modal base f and ordering source g .

- (220) a. 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 $z \leq_{g(w)} v$, the $z \in p$ ’ (Kratzer, 1991, 644).
 b. Possibility is interpreted as ‘ p is not a necessity in w with respect to f and g ’ (Kratzer, 1991, 644).

A function f takes a world $w \in W$ as its argument and returns a set of propositions which create a modal base $f(w)$. To create an ordering source, a similar process occurs where a function g takes a world $w \in W$ as its argument and returns a set of propositions which create an ordering source $g(w)$. An ordering source $g(w)$ induces an ordering on the set of worlds $\cap f(w)$. World u indicates the ideal world as presented by the ordering source $g(w)$ as world v iff all propositions of ordering source $g(w)$ which are true in world v are true in world u as well as $u \leq_{g(w)} v$; thus making world u a subset of world v .

Kratzer’s possible worlds analysis is demonstrated with some examples from German (adapted from her book, to appear) and Dutch. The proposition in (221) contains the German modal auxiliary *darf*. According to Kratzer, it ‘requires an ideal according to which possibilities are assessed’ (to appear, 34).

- (221) Context: The coronation of the King is tomorrow. Therefore someone says:
 Morgen darf es nicht regnen.
 tomorrow may it not rain

This proposition has an existential modal force and a circumstantial modal base which expresses that ‘the view of the speaker’s desires regarding the weather circumstances’. The ordering source is bouletic, expressing ‘the ideal world in which the speaker’s desires come true’. Another German example is provided in (222) in which the necessity modal *muss* occurs.

- (222) Context: According to what God wants, it is necessary that you work six days a week. In some societies, what God wants is commanded.
 Ich muss sechs Tage arbeiten und alle meine Werke tun.
 I must six days work and all my work do

This sentence has a universal modal force and it is uttered in a world where God’s wishes are the law. The modal base is circumstantial and the ordering source is deontic, expressing ‘the ideal world in which God’s laws are obeyed’. A summary of these two examples is given in Table 5.1.

	<i>Morgen darf es nicht rechnen</i>	<i>Ich muss sech Tage arbeiten</i>
Modal Force	existential/possibility	universal/necessity
Modal Base	circumstantial	circumstantial
Ordering Source	bouletic	deontic

Table 5.1: Example (221) and (222) in possible world semantics

Unfortunately, the modal base and ordering source are not always as straightforward as one would maybe assume after discussing (221) and in (222). Certain propositions (or to be more precise, modal morphemes) allow several modal bases and/or ordering sources making the exact interpretation of a modal morpheme depend on the discourse context in which a proposition is uttered. The example in (223) can be uttered in several discourse contexts of which two are listed below. For each context, the modal base is circumstantial, while the ordering sources differ, as indicated by (223-a) and (223-b).

- (223) Ik kan niet naar huis gaan.
 1SG MOD NEG DIR home go
 ‘I cannot go home’.
- a. because the Eyjafjallajökull volcano erupted and air travel in Europe has been brought to a halt.
 - b. because I am admitted to the hospital and too weak to travel home.

The Dutch possibility modal *kunnen* can also denote different modal bases. For (223), the modal base is circumstantial and for (224), it is epistemic. The latter indicates the uncertainty of the speaker towards the truth value of the proposition. The eventuality embedded under the modal has occurred in the real world prior to the time of utterance: $e < TU$. At the time of utterance, the speaker does not know the nature of the outcome of this eventuality.

- (224) Cancellara kan de Ronde van Vlaanderen gewonnen hebben.
 C MOD DET tour of Flanders win have
 ‘Cancellara might have won the Tour of Flanders’.
- a. I did not stay to watch the finish of the Tour of Flanders, but based on my knowledge that Cancellara was in leading position when I left, I can say this.

Cross-linguistically, it is not uncommon for modal auxiliaries to receive several interpretations depending on the discourse context in which they are uttered, as exemplified by the Dutch possibility modal *kunnen*. In the Germanic and Romance languages, it is the modal force that these different interpretations have in common.

Dutch *kunnen* has an existential modal force and no restrictions regarding the modal base and the ordering source, whereas English *have to* has a universal modal force, and allows a wide range of modal bases and ordering sources, as exemplified in (225) which are taken from von Stechow (2006, 2).

- (225) a. It has to be raining (after observing people coming inside with wet umbrellas).
 b. Visitors have to leave by six p.m.
 c. I have to sneeze (given the current state of one's nose).
 d. To get home in time, you have to take a taxi.

In St'át'imcets (Salish) and Gitksan (Tsimshianic) modals express different degrees of possibility and necessity (see Rullmann et al. 2008 and Petersen 2010 respectively). In these language, it is the modal base which is the element that these different readings have in common, while a modal morpheme can express different degrees of modal force. This is illustrated with an example from St'át'imcets. In (226), the modal *ka* expresses deontic modality and has either a universal quantificational force or an existential quantificational force.

- (226) Lán-lhkacw ka áts'x-en ti kwtámts-sw-a.
 already-2SG.SUBJ MOD see-DIR DET husband-2SG.POSS-DET
 'You must/can/may see your husband now' (Rullmann et al., 2008, 328).

I refer the interested reader to Rullmann et al. (2008) and Petersen (2010) for a study of modality in St'át'imcets and Gitksan respectively.

This section continues with an overview of the literature regarding the syntactic structure of modal morphemes. Emphasis is on recent work by Valentine Hacquard (2006, 2009, 2010, to appear) who combines Cinque's functional sequence approach with Kratzer's possible world semantics. Hacquard assumes, unlike Kratzer, that the interpretation of the modal base comes from the modal complement, whereas the ordering source is pragmatically derived, as in Kratzer's work. In the present study, I will adopt Hacquard's ideas regarding the interpretation of the modal base.

5.1.2.2 Syntactic distribution of Modality

Syntactic studies on modality often focus on the syntactic difference between epistemic and circumstantial modal morphemes and the consequences of this difference for the height of the modals in the functional sequence. Epistemic modal morphemes are argued to be situated above Tense while circumstantial modal

morphemes are scattered and occupy several positions below Tense (Cinque 1999, 2001). It has been long assumed that epistemic modals have a different argument structure than circumstantial modals. The former are considered to be monadic and the latter dyadic (Ross 1969). Epistemic modals are one-place predicates and they take a whole sentence as their complement, while circumstantial modals are two-place predicates and they indicate a relation between the subject and the rest of a sentence, as demonstrated in (227).

- (227) John must be at home at six o'clock (Barbiers, 2005, 2)
- a. Epistemic: must (John be home at six o'clock)
 - b. Circumstantial: must (John, be home at six o'clock)

To represent this in the syntactic structure, epistemic modals are claimed to be raising verbs and circumstantial modals are claimed to be control verbs (Ross 1969; Perlmutter 1970; Roberts 1985; Thráinsson and Vikner 1995). This criterion states a bi-unique relation between a theta-role and its DP argument; a DP argument can only receive one theta-role and vice-versa. Under the raising/control assumption, control verbs assign a theta-role to the subject, while raising verbs do not assign a theta-role to the subject, as in (228). If they did, the subject would receive a theta-role from both the embedded predicate and the modal which would result in a violation of the theta criterion.

- (228) Taken from Barbiers (2005, 2):
- a. Raising & Epistemic
[[_{DP} John] must [_{DP} <John>] work from nine to five]].
 - b. Control & Circumstantial
[[_{DP} John]_i must [PRO_i] work from nine to five]].

The modal auxiliary in (228-b) assigns a semantic role to its subject, and it expresses relation between the subject, *John*, and the modal complement, *work from nine to five*. Several studies have demonstrated that the assumption that circumstantial modals are control verbs is problematic. The obligation or permission is not always placed on the subject of the modal clause, as illustrated in (229), in which the modal takes the whole proposition as its argument and is thus a monadic predicate. However, it conveys a deontic obligation reading.

- (229) This letter must be in London before five o'clock.
→ It is necessary/obligatory that this letter be in London before five o'clock (Barbiers, 2005, 6).

The question has been raised whether circumstantial modals actually assign a theta-role to the subject, and whether a 'raising verb' analysis for circumstantial

modals is not better to capture their characteristics (Barbiers 1995; Wurmbrand 1999; Wurmbrand and Bobaljik 1999). As a result, the raising/control analysis of modal morphemes has been abandoned. To explain that epistemic modal morphemes are located higher in the functional sequence than circumstantial modals (Thráinsson and Vikner 1995; Cinque 1999, 2001; Eide 2005; Hacquard 2006, 2010; Nauze 2008), it is currently assumed that epistemic modals take different modal complements than circumstantial modals (Barbiers 1995, 2002; Hacquard 2006, 2010). The remainder of this section will discuss Hacquard's (2006; 2010) ideas regarding the difference between epistemic and circumstantial modal morphemes.

Hacquard (2006, 2010) focuses on the modal complement to explain the difference between circumstantial and epistemic modal interpretations. She aims to provide an analysis which assumes a single lexical entry for modal morphemes which have the same phonological form but different modal interpretations, and which explains the difference in height between circumstantial and epistemic modals which is attested cross-linguistically (Cinque 1999, 2001). Epistemic modals are argued to be located above Tense, while circumstantial modals are located below Tense and Hacquard refers to this as Cinque's puzzle. She assumes with Kratzer (1977, 1991, 2002, to appear) that modal morphemes are not specified for 'modal flavour'. In Hacquard's account it is not the context which triggers the right modal interpretation (as in Kratzer), but the structural position of the modal which restricts its interpretation. The position of a modal in the functional sequence of the clause depends on the type of complement a modal merges with, and therefore the modal interpretation depends on the type of modal complement. Furthermore, modality is not only relative to worlds (as in Kratzer), but also to times and individuals. Hacquard demonstrates that a particular time/individual pair correlates with a particular modal interpretation. Epistemic modality is speaker-oriented, and it refers to '*possibilities given the evidence available to the speaker*' (Hacquard, 2010, 92). The modal anchor time of epistemic modals is the time of utterance. It can never be backward or forward shifted.

- (230) Mary had to be home (at the time of the crime) (Hacquard, 2010, 87).
- a. Modal anchor time: TU
→ It is necessary, given what is known now, that Mary was home.
 - b. Individual: Speaker

Epistemic modals can also occur in an embedded context, as demonstrated in (231). In these examples, it is not the knowledge of the speaker to which the proposition refers to but to the attitude holder (which is *Bill* in (231)), and therefore, it is better to say that individual epistemic modals are relative to the 'local knowledge bearer' (Hacquard, 2010, 92). In an embedded context, the modal an-

chor time for epistemic modals is not anchored to time of utterance, but to the time denoted by the matrix clause, or ‘local now’.

- (231) Bill thinks that John must have won (Hacquard, 2010, 92).
 a. Modal anchor time: Attitude time \rightarrow TU
 b. Individual: Attitude holder \rightarrow *Bill*

Circumstantial modality is agent-oriented and indicates ‘*the possibilities given the subject’s circumstances*’ (Hacquard, 2010, 92) and it refers to discourse participants at an event time and an event location which surrounds the eventuality. The term “agent-oriented” has a loose definition here and it is probably more accurate to refer to the participants related to the eventuality. The modal anchor time of circumstantial modals is set by Tense. As a result, it can coincide with the time of utterance, but it can also be backward or forward shifted, thus expressing Past Tense or Future Tense.

- (232) Mary had to take the train (Hacquard, 2010, 93).
 a. Modal anchor time: Provided by T \rightarrow PAST
 \rightarrow Given Mary’s circumstances then, she had to take the train then.
 b. Individual: Agent \rightarrow *Mary*

The correlation between time/individual pairs and the modal base is summarized in Table 5.2.

Modal Base	Individual	Modal Anchor Time
Epistemic ₁	speaker	TU
Epistemic ₂	attitude holder	attitude time
Circumstantial	participant	provided by Tense

Table 5.2: Correlation Modal Base and Time/Individual pair

Other time/individual pair - modal interpretation combinations (for example: times provided by Tense/speaker) than the ones sketched above are not attested. The question is thus raised as to how the unattested pairs can be explained, and if they can give an indication of the difference in syntactic position between circumstantial and epistemic modal morphemes. First, events consist of time/individual pairs and different events correlate with different time/individual pairs. Consequently, modality is relative to an event of evaluation. Modality takes an event as its argument and the nature of this event is variable. The event type determines which time/individual pair a modal morpheme is anchored to and from this, the modal interpretation follows. There are three types of events: speech events,

attitude events and vP events. Speech events correlate with the TU/speaker pair, meaning epistemic in matrix clauses; attitude events correlate with attitude time/attitude holders, meaning epistemic in embedded clauses; and vP events correlate with the time provided by Tense/agent, meaning circumstantial. Due to general locality constraints, each event type is obligatorily bound by a local event binder; one event binder is located above Tense in the underlying structure, and one above vP. These positions correlate with the positions of the different modal readings attested cross-linguistically (Hacquard 2006, 2010). Epistemic modals appear above Tense and circumstantial modals below Tense and Hacquard (2006) further presents evidence that circumstantial modal morphemes are situated below Aspect. In French, Perfective aspect scopes over circumstantial modality, as exemplified in (233).

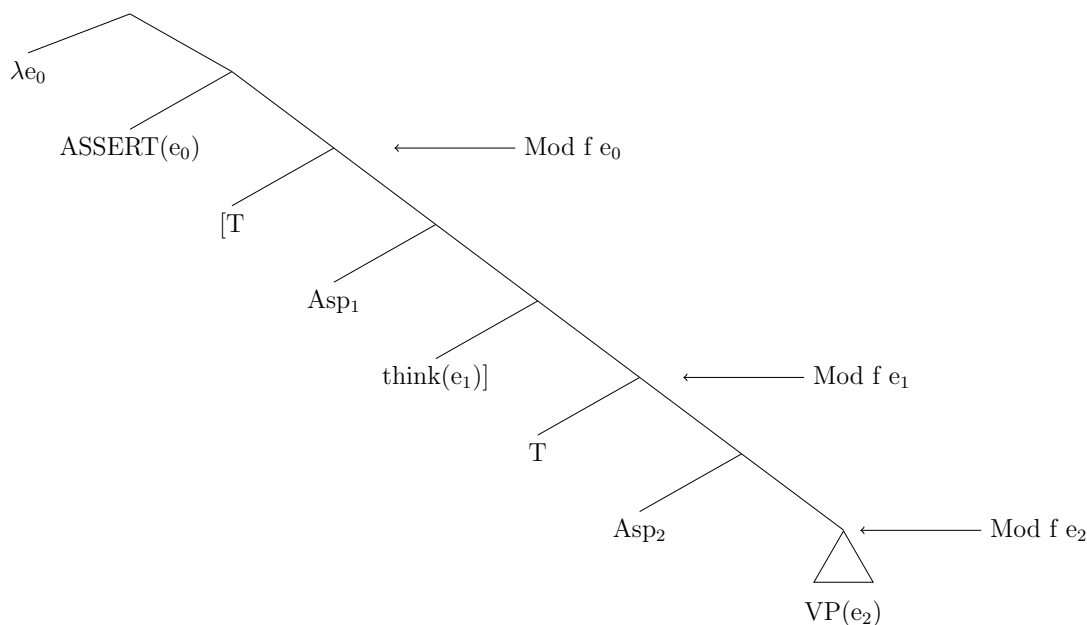
- (233) Il put (enfin) pleuvoir.
 It could-pfv (finally) rain
 ‘It (finally) managed to rain’ (Hacquard, 2010, 98).

Hacquard takes this as evidence that circumstantial modal morphemes are located very low in the syntactic structure, right above vP. The interpretation of (233) entails that the eventuality referred to actually took place. This phenomenon is referred to as Actual entailment². It only appears when Perfective aspect scopes over a circumstantial modal morpheme. In combination with Imperfective aspect, the proposition does not necessarily entail that the eventuality took place at a previous moment.

The local event binder above TP binds the speech event when the modal occurs in a matrix clause, and the attitude event when a modal occurs in an embedded clause. This event binder is the default speech event binder λ_{e_0} . The local event binder above vP is Aspect and it binds the vP event. Hacquard further argues that epistemic modality is associated with propositional content and that this is crucial for licensing the epistemic modal base. When an embedded modal complement is not propositionally contentfull, an epistemic modal base cannot be licensed. A vP complement is propositionally contentless, and therefore it cannot license an epistemic modal base. Consequently, epistemic modality cannot be bound by the event binder at the Aspect level, but only by the default event binder λ_{e_0} which is located above TP. The position of the event binders is presented in (234) which is based on Hacquard (2010, 100).

²I refer the interested reader to Bhatt (2000) and Hacquard (2006) for discussion on actual entailment.

(234)



Hacquard's (2006; 2010) aim is twofold; first, to propose an unified analysis of modal morphemes which have several modal interpretations; and second, to explain the structural syntactic positions which are associated with different modal interpretations. She argues that modality is relative to worlds and to events. Making modality relevant to events, she creates the opportunity to explain why a certain modal interpretation correlates with a certain time/individual pair and why certain time/individual combinations are not attested (see Table 5.2 for an overview). There are three types of events to which a modal morpheme can be bound: speech events, attitude events and vP events. The former two are anchored to the default event binder λe_0 , and the latter to the event binder situated in Aspect. A speech event and an attitude event are propositional contentfull sentences and therefore can bind an epistemic modal base, while a vP event is propositionally contentless and therefore cannot bind an epistemic modal base. This restriction explains why epistemic modal morphemes are located high in the functional sequence as opposed to circumstantial modal morphemes, which do not carry this requirement and are therefore located lower. This is summarized in Table 5.3.

Modal Base	Type of Event	Event Binder	Individual	Modal Anchor Time
Epistemic ₁	speech event	above TP	speaker	TU
Epistemic ₂	attitude event	above TP	attitude holder	attitude time
Circumstantial	vP event	Aspect	participant	provided by Tense

Table 5.3: Event relativity of Modal morphemes

In Section 5.3, I investigate whether Hacquard’s ideas are able to explain the Saamáka data and it is shown that an analysis built on the syntax-semantic interface (like Hacquard’s analysis) is better to account for all of the characteristics of the modal morphemes in Saamáka than is a purely semantic-oriented approach (such as Kratzer’s). In the continuation of this chapter, the interpretation and meaning of the necessity modal *musu* and the possibility modal *sa* in Saamáka is studied (Section 5.2) as well as the syntactic distribution of the modal morphemes (Section 5.3). In Section 5.4, I present the syntactic composition of modality. This chapter ends with a summary.

5.2 The meaning and interpretation of Necessity and Possibility Modality in Saamáka

This chapter continues with the study of the necessity modal *musu* and the possibility modal *sa*. The necessity modal *musu* conveys a deontic obligation reading and a deductive epistemic reading, and the possibility modal *sa* conveys a dynamic ability reading, a deontic permissive reading and a speculative epistemic reading. The meaning and semantic features of these modals are described and analysed in this section, while the discussion of their syntactic distribution is postponed until Section 5.3. This section is organised as follows. First, an overview of the literature on modality in Jamaican Creole and Sranan is presented in Section 5.2.1. Section 5.2.2 discusses the description of the modal system in Saamáka as in Narrog (2005). This is followed by a semantic description of the necessity modal *musu* (Section 5.2.3) and the possibility modal *sa* (Section 5.2.4). This section ends with a summary.

5.2.1 Modality in CECs

The discussion of TMA morphemes in creole languages has been an important topic in Creole Studies. It has been claimed that with regard to their TMA system, creole languages are rather similar (see Bickerton 1984). For some insight in the modal system of Saamáka, I give an overview of the literature on Modality in

two other Caribbean English-based Creole languages; Jamaican Creole (based on Bailey 1966; Winford 1993; Durrelman 2000) and Sranan (based on Winford 2000a, to appear; Migge and Winford 2009). Jamaican Creole and Sranan both have a number of modal morphemes which have a specific interpretation. The modal morphemes in Jamaican Creole are divided into two groups: primary and secondary modals. In general, the former group expresses root/circumstantial modality, and they follow the Tense morphemes. Secondary modals denote epistemic modality, and they precede the Tense morphemes. Most of the modals in this group end with *-a*. It has been argued that this is derived from English ‘have’ (Bailey 1966; Winford 1993; Durrelman 2000). The modal morphemes in Jamaican Creole are listed in Table 5.4.

Primary modals		Secondary modals	
<i>mos</i>	necessity	<i>mosi/a</i>	deductive epistemic
<i>fi</i>	weak obligation	<i>shuda</i>	deductive epistemic/deontic
<i>kyan</i>	permissive/ability	<i>kuda</i>	speculative epistemic
<i>kyaan</i>	negative permissive/ability	<i>wuda</i>	contra-factive
<i>mie</i>	speculative epistemic	<i>maita</i>	probability

Table 5.4: Modal morphemes in Jamaican Creole

The modal system of Sranan includes three possibility modals and two necessity modals. Like Jamaican Creole, the language has a special modal morpheme which indicates negative possibility, *man*. However, for certain speakers it can also be used in a positive context. Furthermore, the epistemic reading of the modals *kan* and *musu* is argued to be a recent development and it only surfaces when the predicate is stative, either as a stative verb or a derived state as the imperfective (Winford 2000a, to appear). The Sranan modal morphemes are presented in Table 5.5.

Possibility		Necessity	
<i>kan</i>	permissive/ability/epistemic	<i>musu</i>	obligation/epistemic
<i>man</i>	negative permissive/ability	<i>sa</i>	expectation/probability
<i>mag</i>	permissive		

Table 5.5: Modal morphemes in Sranan

Both Saamáka and Sranan have a modal *sa*. Their interpretation, however, is rather different. The former denotes different possibility modality readings (see

Section 5.2.4 of this Chapter), while the latter conveys a strong expectation or probability reading (Winford to appear). In Sranan, it has previously been argued that Sranan *sa* denotes uncertain future time reference (Voorhoeve 1957; Seuren 1981). A proposition containing *sa* indicates that the speaker is committed to act in a certain way. Winford's consultants differ with regard to the interpretation the modal *sa* contributes to a proposition. For some, it can indicate a degree of uncertainty of the speaker towards the truth value of the proposition. For others it denotes a strong expectation of the speaker regarding the truth value of the proposition. I leave the interpretational difference between Saamáka *sa* and Sranan *sa* for further research. I refer the interested reader to Migge and Winford (2009) for an interesting start to this discussion.

To sum up, this section gave a brief overview of the study of modality in Jamaican Creole and Sranan. The goal of this section was to discover parallels between the modal system of these two languages and to get insight into the modality system of Saamáka. However, there are some empirical differences between the modal systems of these three languages. The languages discussed in this section have a number of modal morphemes of which some have a rather specific modal interpretation. Jamaican Creole has a number of morphemes which only convey an epistemic reading, and others which only convey a circumstantial reading. Sranan has a more limited set of modal morphemes of which some have a specific modal interpretation while others convey several modal readings. The modal system of Saamáka appears to be closer to the modal system of Sranan than of Jamaican Creole, but the functional category of modality in these three languages is quite different. I conclude that we cannot benefit from a cross-creole comparison here until the Saamáka system has been analysed more carefully in its own terms.

5.2.2 Previous literature on Modality in Saamáka

The modal system of Saamáka has previously been discussed in Narrog (2005). In addition to the core modals *musu* and *sa*, Narrog describes secondary modal expressions as the complex predicates *sá u* ('mental ability') and *ábi u* ('obligation'), the adverb *kandé* ('maybe'), the verb *sí kuma* ('assume/appear'), and the expressions *a dé fu* ('necessity') and *a kandé* ('dubitative'). Regarding the core modals necessity *musu* and possibility *sa*, Narrog argues that they convey a circumstantial modal meaning: obligation and ability/permissive respectively. In his data set, *musu* can also express epistemic modality but only in combination with stative verbs and not with eventive verbs, whereas the possibility morpheme *sa* is not interpreted as an epistemic modal in his data set. As the data in Section 5.2.3 and 5.2.4 of the present study illustrate, both modal morphemes are able to convey an epistemic reading regardless of the verb type of the embedded complement.

Furthermore, Narrog assumes that the possibility modal *sa* is (synchronically) derived from the verb *sábi* (=‘to know’). The modal *sa* would be a different form of the complex predicate *sá u* which expresses learned ability³. I disagree with his analysis. Saamáka is a tonal language which distinguishes between high and low tones (Smith 1987; Good 2004). The verb *sábi* has a high tone on the first vowel, whereas the modal *sa* has a low tone. In combination with prepositional complementizer *fu*, the verb *sábi* forms a complex predicate which expresses mental ability, as illustrated in (235). The complex predicate *sá u* cannot express other ability interpretations nor permissive or epistemic readings (whereas the modal *sa* does as exemplified in Section 5.2.4).

- (235) Dí muyéemíi sá u lési.
 DET girl know FU read
 ‘The girl knows how to read’.

The modal *sa* can co-occur with the construction *sá u*, as in (236). A sentence containing two *sa*’s with different interpretations is judged ungrammatical. Since the modal *sa* can co-occur with the complex predicate *sá u*, I assume that these morphemes cannot be the spell-out of a single morpheme.

- (236) Dí wómimíi sa sá u sún ée a léi hén.
 DET boy MOD know FU swim if 3SG learn 3SG
 ‘The boy is able to know how to swim if he learns it’.

Moreover, Saamáka wordlists by de Groot (1977; 1981), Rountree et al. (2000) and Vinije Haabo (available via saamaka.com) differentiate between *sa* meaning ‘can/may’, and *sá* which is the short form of the verb *sábi* (=‘to know’). As a result, I do not think that Narrog’s analysis regarding the synchronic origin of possibility modal *sa* is correct.

Another problem with Narrog’s analysis is that certain bi-clausal sentences are analysed as being mono-clausal. These sentences provide, according to him, evidence for certain scope relations in Saamáka. An example is presented in (237).

- (237) A kandé a o kó amánjan, ma mé sábi túu.
 3SG be.possible 3SG FUT come tomorrow but 1SG.NEG know all
 ‘He might come tomorrow, but I don’t know’ (Narrog, 2005, 49).

³This construction combines the main verb *sábi* (= ‘to know’) and the prepositional complementizer *fu*. This complementizer also combines with other main/auxiliary verbs. Often these complex constructions convey an aspectual or modal interpretation. For a short overview of these constructions in Saamáka, I refer the interested reader to van de Vate (2008).

Narrog argues that the modal verb *kandé*⁴ scopes over the future time reference morpheme *ó*. This claim is invalid, because (237) consists of two clauses: *A kandé* (=‘it might be’) and *a o kó amánjan* (=‘he will come tomorrow’) with each having their own (distinct) subject and main verb, and therefore these two functional expressions occur in two different functional sequences. Consequently, a proposition like (237) cannot indicate what the scope interaction between *kandé* and *ó* is. Although Narrog provides an interesting introduction to the modal system of Saamáka, his analyses need to be treated with caution.

In the remainder of this section, the meaning and interpretation of the modal *musu* (Section 5.2.3) and of the modal *sa* (Section 5.2.4) is studied.

5.2.3 Necessity Modality: *musu*

The focus of this section is the modal *musu*. It denotes deontic obligation and deductive epistemic modality. First, propositions in which *musu* conveys a deontic obligation interpretation are discussed (Section 5.2.3.1) which is followed by the interpretation of *musu* as an epistemic modality morpheme (Section 5.2.3.2).

5.2.3.1 Deontic Obligation

Deontic modality involves a certain body of laws and obligations. Obligation implies that external individuals/factors impose rules or laws on the agent. Someone with authority can place an obligation on someone (Bybee et al. 1994; Palmer 2001). In this section, I present examples of *musu* embedding all four aspectual verb classes (in the sense of Vendler 1957) which are well attested in my corpus. The interpretation of *musu* is not effected by aktionsart, as the examples demonstrate.

The proposition in (238) explains a law in the Saamáka society. It contains the copula, *dé*, which is embedded under the modal *musu*. In possible worlds semantics, this sentence has a circumstantial modal base, which expresses attitudes ‘in view of the laws in the Saamáka society’, and a deontic ordering source expressing attitudes ‘in an ideal world where these laws are obeyed’.

- (238) Context: In the Saamáka society, people who have had an operation need time to recover from it. Therefore, they are not allowed to work for three

⁴I wonder whether it is correct to analyse *kandé* as a modal verb expressing possibility. I assume this word to consist of two separate lexical items; the modal auxiliary *kan* and the copula *dé*. Together they can be translated into English as ‘might be’. Further research to the nature of the lexical item *kandé* is necessary.

months after their operation. This implies for women, for example, that they cannot work on their vegetable garden nor pound rice, they are only allowed to do certain small tasks.

Báka té dí opalási nóo i musu dé díí líba
back when DET operation NARR 2SG MOD BE three months
sóndo woóko.
without work
'After an operation, you must be three months without work'.

Another example with a stative verb is presented in (239). The proposition has a circumstantial modal base expressing attitudes 'in view of the desires in the Saamáka society', and a bouletic ordering source expressing attitudes 'in an ideal world where these desires are realized'.

- (239) Context: Freddy is a man in his mid-thirties who is still single. In the Saamáka society, this is unusual and it is desirable for Freddy to find a wife.
Freddy musu ábi muyée bifó a gaándi pói.
F MOD have woman before 3SG old very
'Freddy should have a wife before he gets too old'.

The proposition in (240) contains the activity predicate, *woóko taánga* (= 'to work hard') which is embedded under the modal *musu*. The proposition has a circumstantial modal base and a deontic ordering source.

- (240) Ée a ta kisi búnu móni nóo a musu woóko taánga.
if 3SG IMP catch good money NARR 3SG MOD work strong
'If s/he receives good money, s/he is obliged to work hard'.

In (241), the modal *musu* embeds the predicate *gó a hondi* (= 'to go hunting') which in Saamáka expresses an activity⁵. The proposition has a circumstantial modal base and the ordering source is a combination of bouletic and deontic.

- (241) Dísi sembe á bi nyá nyá móo a musu gó hondi fu a
this person 3SG.NEG PST eat eat more 3SG MOD go hunt FU 3SG
sa nyá.
MOD eat
'This person did not eat anything, he must go hunting in order for him to be able to eat'.

⁵Saamáka differentiates between the predicates *gó a hondi* (= 'to go hunting') and *hondi* (= 'to hunt'). The former indicates an activity of hunting. It does not imply that the subject who is engaged in this activity has shot an animal. The predicate *hondi*, however, does indicate that an animal has been shot. The latter denotes a goal and is an accomplishment verb.

The final example with an activity verb is presented in (242). Here, the modal *musu* embeds the verb *léi* (=‘to learn’). This proposition has a circumstantial modal base, while the ordering source combines the desires and goals of the subject and favours those worlds in which they are obeyed, thus, bouletic and teleological moods.

- (242) Context: We are talking about a pupil who has not been studying enough. If she wants to be promoted to the next class, she must start studying more seriously.
 Nóúnóu a musu léi móo taánga ée a ké gó a dí
 now 3SG MOD learn more strong if 3SG want go LOC DET
 óto klas.
 other class
 ‘Now, she must learn harder if she wants to be promoted to the next class’.

In (243), the modal *musu* embeds the accomplishment predicate *wási yu máu* (=‘to wash your hands’) and it expresses a general obligation. The speaker has a certain authority over the addressee. The modal base of (243) is circumstantial, whereas the ordering source combines certain rules in a particular household with a desire of the speaker, expressing deontic and bouletic moods.

- (243) I musu wási yu máu bifó i gó nyá.
 2SG MOD wash 2SG hand before 2SG go eat
 Mother to child: ‘You must wash your hands before you eat’.

In the proposition in (244), the modal embeds the accomplishment predicate *mbéi wán sutúu* (=‘to make a chair’). The sentence has a circumstantial modal base, expressing attitudes ‘in view of the desires of the agent’, and a bouletic ordering source expressing attitudes ‘in an ideal world where these desires are realized’⁶.

- (244) Context: This proposition is an extract from a Saamáka folk-tale about three trees. These trees talk about what they would like to happen to them after they are felled. This sentence indicates the desire of the speaker to be turned into a wooden chair.
 Ée de kó kóti mi akí tyá gó a gandá, náo mi ké
 if 3PL come cut 1SG here carry go LOC village NARR 1SG want
 de musu mbéi wán sutúu ku mi té a hánso, náo de
 3PL MOD make ART chair with 1SG until 3SG beautiful NARR 3PL
 dá dí kónu be a ta sindá a mi.
 give DET king ? 3SG IMP sit LOC 1SG

⁶The glosses and English translation of the proposition in (244) are mine.

‘If they come and cut me, I want them to be obliged to make a chair out of me, a beautiful one, they give it to the king so he sits on me’ (Medzen, 1979, 4).

In (245), the modal *musu* embeds the achievement predicate *féni wán muyée téi* (= ‘to find a wife’). The context of this proposition is similar to the context of the proposition in (239). It has a circumstantial modal base and bouletic ordering source.

- (245) Context: Freddy is a man in his mid thirties who is still single. In the Saamáka society, this is unusual and it is desirable for Freddy to find a wife.

A musu féni wán muyée téi bifó a gaándi.

3SG MOD find ART woman take before 3SG old

‘He should find a wife before he gets too old’.

The proposition in (246) contains the achievement predicate *dóu bifó féifi yúu a fóto* (= ‘to arrive before 5 o’clock in Paramaribo’). It is uttered ‘in view of the desires of the subject to be on time for an appointment’. Consequently, it has a circumstantial modal base and a bouletic ordering source.

- (246) Context: In order to be on time for an appointment

Mi musu dóu bifó féifi yúu a fóto.

1SG MOD arrive before five hour LOC Paramaribo

‘I must arrive before 5 o’clock in Paramaribo’.

To summarize, the propositions in (238) - (246) have shown that *musu* conveys a deontic obligation reading. This reading appears regardless of the type of eventuality embedded under the modal. Consequently, this interpretation is not aktionsart dependent. As a deontic obligation modality morpheme, *musu* has a circumstantial modal base and it allows a range of ordering sources such as deontic, bouletic and teleological.

5.2.3.2 Deductive Epistemic Modality

The modal *musu* also conveys a deductive epistemic reading. Epistemic modality involves the evaluation of a proposition by a speaker regarding its truth value. Deductive epistemic modality indicates that a speaker is rather certain concerning the truth value of the expressed situation (Bybee et al. 1994; Bhat 1999; Palmer 2001). The data from my corpus demonstrates that as deductive epistemic morpheme, *musu* is able to merge with all four primitive semantic categories of states, activities, accomplishments and achievements and the type of eventuality does not influence the interpretation of the modal. Interestingly, the temporal interpreta-

tion of an epistemic modal sentence is affected by aktionsart. The close relation between tense and modality, and aspect and modality has been discussed in recent studies (Condoravdi 2002; Stowell 2004; Arregui 2007; Borgonovo and Cummins 2007; Laca 2008) where it has been pointed out that the notions of tense and modality are not independent. A proposition containing a modal morpheme has two time intervals: a temporal perspective and a temporal orientation (in the sense of Condoravdi 2002; Laca 2008). The former refers to *'time from which the modal background is accessed'*, i.e., the modal anchor time. Temporal orientation refers to *'the time at which the temporal property is instantiated'*, i.e., modal evaluation time (Laca 2008, 4). In Saamáka, the temporal orientation of the embedded eventuality correlates with aktionsart and the modal base; the examples discussed in this section have a past temporal interpretation of the modal evaluation time when the verb is eventive and a present temporal interpretation when the verb is stative. This is unlike propositions with a circumstantial interpretation which indicate a future time reference interpretation of the embedded eventuality when the verb is eventive, and present/future when the verb is stative.

In (247), the copula, *dé*, is modified by the necessity modal.

- (247) Context: The speaker is expecting Freddy to come, someone knocks on the door. The speaker says:

Wán sembe ta náki mi dóo. A musu dé Freddy.

ART person IMP hit 1SG door 3SG MOD BE Freddy

'Someone is knocking on my door. It must be Freddy'.

In a Kratzer style analysis, (247) has an epistemic modal base: expressing an attitude 'in view of what the speaker knows from the available evidence'. The ordering source prefers those worlds in which the appointment of the speaker with Freddy is taken into account. Both the modal anchor time and the modal evaluation time have a present temporal interpretation. A similar description can be given for the proposition in (248) which contains the stative verb *kándi* (= 'to lie').

- (248) Context: The speaker knows that Freddy is at home and based on the evidence that the lights in his house are switched off, she utters:

Freddy musu kándi kaa í wósu feen dé dúngudúngu.

F MOD lie already DET house FU.3SG BE dark

'Freddy must be lying down (in bed) already because his house is dark'.

The modal base of (248) is epistemic and the ordering source is based on the information given via sensory evidence as an informational ordering source. As for the previous example, both the temporal perspective and the temporal orientation

have a present time reference. In (249)⁷, the modal *musu* modifies an activity verb, *yasá beée* (=‘to bake bread’).

- (249) Context: Jacky is one of the women in the village who regularly bakes bread with the intention of selling it. At an earlier time today, the speaker passed Jacky’s house. When she passed it, she smelled freshly baked bread. The addressee asks her if she knows if Jacky has bread today. Based on the speaker’s current knowledge, she utters:
 Jacky *musu yasá beée tidé bigá mi sumée feisi beée dí*
 J MOD bake bread today because 1SG smell fresh bread when
mi pasá neen písi.
 1SG pass LOC.3SG place
 ‘Jacky must have baked bread today, because when I passed her place I smelled fresh bread’.

The modal base is epistemic and the ordering source is informational. This example differs from (247) and (248), in that the modal evaluation time has a past temporal orientation, whereas the modal anchor time indicates a present perspective. The proposition in (250) contains the accomplishment verb *hóndi* (=‘to hunt’) which is embedded under *musu*.

- (250) Context: The speaker has passed the man’s house and saw a dead animal lying in front of his house. Since the man hunts regularly, the speaker derives from the available evidence:
Dí wómi musu hóndi bigá mi sí wán gwamba neen
 DET man MOD hunt because 1SG see ART meat LOC.3SG
dóóbúká.
 doorstep
 ‘The man must have hunted because I saw meat in front of his doorstep’.

The sentence in (250) has an epistemic modal base expressing an attitude ‘in view of what the speaker knows based on visual evidence and my knowledge about the person’, and the ordering source is a combination of an informational ordering source and a stereotypical ordering source. The modal perspective conveys a present perspective and the modal orientation a past orientation. A similar description can be provided for the proposition in (251) in which the accomplishment predicate *kísi físi* (=‘to catch fish’) is modified by the modal *musu*.

⁷Peter Svenonius (personal communication) suggested, based on English, that this sentence might convey an epistemic habitual reading. In order to convey such a reading in Saamáka it is obligatory that imperfective *ta* is present in the sentence. I refer the interested reader to Chapter 7 in which the interactions of the core TMA morphemes in Saamáka are studied for discussion.

- (251) Context: The speaker knows that the subject went fishing today. Based on the speaker's experience of the amount of fish in the river. She utters:
 Dí wómi musu kisi fisi bigá a bi gó a húku.
 DET man MOD catch fish because 3SG PST go LOC hook
 'The man must have caught fish, because he went fishing'.

This proposition in (251) has an epistemic modal base and a stereotypical ordering source, which expresses an attitude 'in view of what the speaker knows and based on the normal course of fishing events'. The use of the past time reference morpheme *bi* in the second part of the clause indicates that the fishing event no longer takes place at the time of utterance, and that the man has, for example, returned from his fishing trip. The modal evaluation time indicates a past orientation and the modal anchor time a present perspective. In the proposition in (252), the modal *musu* modifies an achievement predicate *dóu a wósu kaa a dí yúu akí* (= 'to arrive at home at this time').

- (252) Context: Freddy is traveling home. The speaker more or less knows how long it will take Freddy to arrive there.
 Freddy musu dóu a wósu kaa a dí yúu akí.
 F MOD arrive LOC house already LOC DET hour here
 'At this hour, Freddy must have arrived at home already'.

This proposition has an epistemic modal base and a stereotypical ordering source, and it has a present temporal perspective and a past temporal orientation. Another example of an achievement verb is presented in (253). The ordering source here is informational and the modal base indicates an epistemic reading. The modal evaluation time indicates a past orientation while the modal anchor time has a present perspective.

- (253) Context: Based on the evidence provided by the happiness of the people in the village, the speaker asserts that it must be the case that Senni is the one who won the boxing game.
 Senni músu wíni dí fėti.
 S MOD win DET fight
 'Senni must have won the fight'.

To sum up, the propositions in (247) - (253) convey a deductive epistemic reading. There are no restrictions regarding the eventuality embedded under the modal *musu* in order for this reading to come about. In its epistemic reading, *musu* has an epistemic modal base. Its ordering sources range from empty to stereotypical to informational. For all propositions the modal anchor time has a present perspective. The modal evaluation time, however, correlates with aktionsart or to be

more precise dynamicity. A proposition containing a stative verb gives rise to a present temporal orientation and containing an eventive verb to a past temporal orientation.

In Saamáka, bi-clausal structures are also used to convey an epistemic reading, as in (254). The expression *a musu dé táa* (=‘it must be that’) evaluates the truth conditions of the embedded proposition. This sentence is uttered in a similar context as the proposition in (250) above.

- (254) A musu dé táa dí wómi akí gó hondi bigá wan dyanga
 3SG MOD BE COMP DET man here go hunt because ART deer
 dé neen dóóbúká.
 BE LOC.3SG doorstep
 ‘It must be that this man has gone hunting, because a deer is lying in
 front of his doorstep’.

5.2.3.3 Summary

The morpheme *musu* has a necessity modality interpretation and conveys a deontic obligation and a deductive epistemic reading. In possible world semantics, the morpheme has a universal quantificational modal force. In other words, it is a necessity in a world with regard to the modal base f and an ordering source g . Depending on the context, the modal base f can refer to the knowledge a speaker has in a world w (epistemic modality) or to the circumstances given in a world w (circumstantial modality). As the propositions in (238) - (253) demonstrated, *musu* tolerates a wide range of ordering sources. This is summarized in Table 5.6.

	modal force	modal base	ordering source
<i>musu</i>	necessity/universal	no restrictions	no restrictions

Table 5.6: *Musu* in possible world semantics

As concerns the temporal contribution of *musu* to a proposition, a sentence containing a modal expresses two time intervals: a modal anchor time and a modal evaluation time. In Saamáka, the modal evaluation time correlates with modal base and aktionsart, as demonstrated in (255) and (257). Both propositions are ambiguous between a deontic obligation reading and a deductive epistemic reading. The former contains the copula *dé*. For both the deontic and the epistemic interpretation, the modal anchor time has a present perspective and the modal evaluation time has a present orientation.

- (255) A musu dé a wósu.
 3SG MOD BE LOC home
 a. ‘S/he is obliged to be at home’.
 b. or ‘It must be that s/he is at home’.
- (256) a. Circumstantial: ModT = present; EvT = present
 b. Epistemic: ModT = present; EvT = present

In the proposition in (257), *musu* embeds the eventive verb *kísi físi* (=‘to catch fish’). In the obligation reading, the modal anchor time has a present perspective and the modal evaluation time has a future orientation, while in the epistemic reading, the modal anchor time also conveys a present interpretation, but the modal evaluation time conveys a past interpretation, as in (258).

- (257) Senni musu kísi físi.
 S MOD catch fish
 a. ‘Senni is obliged to catch fish’.
 b. or ‘It must be that Senni has caught fish’.
- (258) a. Circumstantial: ModT = present; EvT = future
 b. Epistemic: ModT = present; EvT = past

It is important to find a means of accounting for this distinction. Recall that for circumstantial modals, Tense provides the modal anchor time (following Hacquard 2006, 2010). Consequently, it can follow, precede or coincide with the time of utterance. The forward-shifted effect of the modal evaluation time is due to the modal itself, because ‘*modals expand the local time of evaluation into the future*’ (Condoravdi 2002, 71, see also Zagana 1990; Barbiers 1995; Stowell 2004; Laca 2008). Recall also that Hacquard (2006, 2010) argues that epistemic modal morphemes are obligatorily anchored to the time of utterance, or put differently, their modal anchor time always has a present perspective (see also Iatridou 1990; Condoravdi 2002; Stowell 2004). I follow Hacquard (2006, 2010) who argues that this difference between circumstantial and epistemic modality in temporal orientation can be explained by the size of the modal complement. Whether Tense is part of the modal complement or not is highly relevant in this respect. It is part of the modal complement in the case of the epistemic reading of *musu*, but not in the case of the circumstantial reading of *musu*. Recall that Saamáka has a morphological null Tense morpheme which expresses PRESENT Tense (see Chapter 4) and I postulated that PRESENT Tense in Saamáka indicates a moment in time (like PRESENT Tense in English) and not an interval (like PRESENT Tense in Dutch). An event expresses duration and therefore it requires a non-trivial interval to evolve, which makes it impossible for events to combine with a moment. States, however, are durationless and thus, they are true at a moment (in the

sense of Taylor 1977; Bach 1986a; Dowty 1986; Hallman 2009). Eventive verbs in Saamáka cannot be merged directly with PRESENT Tense. In order for them to do so, they have to be coerced into a state. This stativity requirement placed on the complement requires the occurrence of the morphologically null Perfect in the underlying structure; if the complement does not satisfy the stativity requirement of PRESENT Tense, the reading is not possible. Following the composition of Perfect assumed in the present study, Perfect creates a Result state of the embedded eventuality and it expresses that the eventuality occurred prior to the time of utterance while indicating current relevance. For Present Perfect, the temporal ordering relation between Result state_e and topic time is IMPERFECTIVE Aspect and between topic time and time of utterance PRESENT Tense. The composition of Perfect is presented in (259).

- (259) Perfect:
 Rstate_e partly included in TSit
 Rstate_e IN TT; TU WITHIN TT
 this entails that $e < TU$

Result state_e expresses a (derived) state which is able to be embedded under PRESENT Tense. To explain the past temporal orientation of the eventuality when it is embedded by the epistemic reading of *musu*, I argue that the morphologically null Perfect morpheme is present in the underlying structure and its presence is elucidated as follows; Keep in mind that epistemic modality is anchored to the time of utterance which implies that it embeds Tense, and that in Saamáka, Tense always expresses PRESENT which requires a stative complement. Eventive verbs have to be embedded under a state deriving functional heads such as Perfect before they can combine with PRESENT Tense. Stative verbs satisfy this stativity requirement of PRESENT Tense and therefore it is not expected for the morphological null Perfect morpheme to be present in the underlying structure of those propositions (albeit, this is not ruled out either). From the absence or presence of the morphological null Perfect morpheme in the underlying structure of the clause we can derive the temporal interpretation of a proposition: the modal evaluation time has a present orientation when the verb is stative (see (247) and (248)) and a past orientation when the verb is eventive (see (249) -(253)). In case of the latter, the presence of the morphological null Perfect morpheme gives rise to the past interpretation of the eventuality. In other words, in order for the epistemic reading of *musu* to surface the modal must take Perfect as its complement, because the modal embeds PRESENT Tense. In this respect, Saamáka is similar to Germanic and Romance languages which also embed Perfect under Epistemic modality to convey a past time reference interpretation of the embedded eventuality (Condo-ravdi 2002; Borgonovo and Cummins 2007; Laca 2008; Eide to appear). When

the modal has a circumstantial modal base, the temporal perspective is provided by Tense. It follows that perfect is situated below Tense (in the sense of Cinque 1999, 2001; Hacquard 2006, 2010). The stativity requirement of PRESENT Tense is satisfied by the modal itself because modal morphemes create a derived state of their complement (in the sense of Werner 2003).

To sum up, the difference in temporal interpretation between epistemic and circumstantial modality reading of *musu* is explained by assuming a different element which provides the modal anchor time and a different type of modal complement. To conclude, the data presented in this section provides striking confirmation of the presence of the morphological null Perfect morpheme in the TMA paradigm of Saamáka.

The next section discusses the modal and temporal interpretation of sentences containing the possibility modal *sa*.

5.2.4 Possibility Modality: *sa*

The focus of this section is the modal possibility modal *sa*. Depending on the context it conveys a deontic permissive reading, a dynamic ability reading or a speculative epistemic reading.

5.2.4.1 Deontic Permissive

Permissive falls under the category of deontic modality and it implies that we are talking about ‘laws’ or ‘moral values’ which are optional and not obligatory (Bybee et al. 1994; Palmer 2001). The data in my corpus indicate that aktionsart does not influence the interpretation of *sa*. In its permissive reading it can combine with all four aspectual verb classes.

In (260), the modal merges with a stative verb, *fiká* (=‘to remain’). This proposition indicates the authority of the speaker with regard to the subject. The sentence has a circumstantial modal base and a deontic ordering source.

- (260) Senni áá fu gó a sa fiká.
 S NEG.have FU go 3SG MOD remain
 ‘Senni does not have to go, he is allowed to stay here’.

In combination with activity verbs, *sa* can also convey a permissive reading, as exemplified in (261) and (262). The proposition in (261) has a circumstantial modal base, expressing an attitude ‘in view of the authority of the addressee’, and a deontic ordering source expressing ‘the ideal world in which this authority is obeyed’.

- (261) Mi sa peé ku i, e?
 1SG MOD play with 2SG NARR
 ‘May I play with you?’

The modal base of the proposition in (262) is circumstantial, i.e., ‘in view of the traditions in the Saamáka society’, while the ordering source favours those worlds in which these traditions are satisfied, meaning that this is deontic.

- (262) Context: According to the Saamáka traditions, people who have had an operation need time to recover from this and therefore they are not allowed to work for three months (see example (238)).
 Té dí opalási báka díí líba bifó i sa woóko.
 when DET operation back three month before 1SG MOD work
 ‘When it is three months after an operation, you are allowed to work’.

In (263), *sa* modifies an accomplishment verb, *lési dí búku akí* (=‘to read this book’). As in the previous examples, it has a circumstantial modal base and the ordering source is deontic.

- (263) Dí muyeemii sa lési dí búku akí.
 DET girl MOD read DET book here
 ‘The girl may read this book’.

The proposition in (264) contains the achievement predicate *súku óto páu* (=‘to search for other trees’) which has a circumstantial modal base and a deontic ordering source⁸.

- (264) Context: This is an extract from a Saamáka folk-tale about three trees (see example (244)). In this example, the speaker (a tree) gives permission to those who are going to fell him to search for other trees in case he alone is not big enough to make a boat.
 Ma té má sa dóu wán gaán sípi mi wanwan nóo
 but when 1SG.NEG MOD arrive ART big ship 1SG alone NARR
 de sa súku óto páu tyá kó mókísi ku mi ma mi
 3PL MOD search other tree carry come mix with 1SG but 1SG
 musu dé gaán se fu déé óto páu.
 MOD BE big side FU DET.PL other tree
 ‘But as I cannot be made into a big ship by myself, they are allowed to search for other trees and mix them with me, but I must be the most important one of all trees’ (Medzen, 1979, 3).

⁸The glosses and English translation of the proposition in (264) are mine.

To sum up, (260) - (264) show that in its permissive reading *sa* can merge with all all four primitive semantic categories of states, activities, accomplishments and achievements. The modal force of all these examples is existential and the modal base is circumstantial. The most common ordering source for the permissive reading in Saamáka is deontic. However, other ordering sources are allowed.

5.2.4.2 Dynamic Ability

The modal *sa* can, in the right discourse context, trigger an ability reading. Ability refers to the capacity of an agent to do what is expressed by the predicate. It includes the physical and mental ability of the agent, but it can also refer to the circumstances that make a proposition possible (see Bybee et al. 1994; Palmer 2001). As for the permissive reading of *sa*, aktionsart does not influence the ability interpretation. In combination with all four aspectual classes, *sa* conveys a dynamic ability reading.

In (265), the stative verb *sábi* (=‘to know’) is modified by the modal *sa*. The modal base is circumstantial, and the ordering source is a combination of dynamic and informational.

- (265) A dí éside mi skífi wán bíífi mánda dá mi baáa
 LOC DET yesterday 1SG write ART letter send give 1SG brother
 faa sa sábi táa mi ó kó neen a dí
 FU.3SG MOD know COMP 1SG MOD come LOC.3SG LOC DET
 óto wíki.
 other week
 ‘Yesterday I wrote and sent a letter to my brother in order for him to be
 able to know that I will come to his place next week’.

In (266), the modal *sa* embeds an activity verb *sún* (=‘to swim’). The proposition refers to the circumstances which make the eventuality possible. This proposition has a circumstantial modal base and a dynamic ordering source.

- (266) I sa sún ma í wáta kóto.
 2SG MOD swim but DET water cold
 ‘You can swim but the water is cold’.

Another example of an activity verb embedded under *sa* is illustrated in (267) in which the modal refers to the physical ability of the agent. The modal base refers to the circumstances in a world and the ordering source favours those worlds in which the agent is able to run expressing a dynamic modal base⁹.

⁹The glosses and English translation of the proposition in (267) are mine.

- (267) Ée i ta wáka ta lóntu té nóo hén i sí wasiwási
 if 2SG IMP walk IMP round when NARR NARR 2SG see wasps
 i musu kulé séépi kumafa i sa kulé bigá wógi hén i
 2SG MOD run self like 2SG MOD run because evil 3SG 2SG
 sí de.
 see there
 ‘If you are walking and you see wasps you have to run as fast as you can
 run, because it is dangerous to look at them’ (Medzen, 1984, 68).

The proposition in (268) refers to a learned/mental ability of the agent where the modal embeds the activity verb *lési móo búnu* (=‘to read better’). The sentence has a circumstantial modal base and a dynamic ordering source.

- (268) Sínsi dí mǐ fíni wán beéi nóo a sa lési móo búnu.
 since DET child find ART glasses NARR 3SG MOD read more good
 ‘Since the child has glasses, she can read better’.

The accomplishment predicate *kóti dí alísi u mi* (=‘to harvest my rice’) is embedded under *sa* in (269). This proposition has a circumstantial modal base expressing an attitude ‘in view of the speaker’s desire to harvest her rice’, whereas the ordering source is a combination of a dynamic and a teleological one.

- (269) Context: Harvesting rice in the rain is not a pleasant experience and it is also not always possible to be working during a tropical rainfall. Moreover, rain has a negative influence on the conditions of the harvest rice. Thus, the speaker hopes that the weather conditions will be good when she is harvesting her rice.
 Tyúba á musu kaí nóo mi sa kóti dí alísi u mi
 rain NEG MOD fall NARR 1SG MOD cut DET rice FU 1SG
 búnubúnu.
 good
 ‘It must not rain, so I can harvest my rice well’.

In (270), *sa* refers to the physical and mental abilities of the agent, *dí wómimíi* (=‘the boy’) where the modal modifies the accomplishment predicate *mbéi wán palibóto* (=‘to make a canoe’). The modal base of this proposition is circumstantial, expressing an attitude ‘in view of the set of mental and physical human facts’ and the ordering source favours those worlds in which these abilities are realized i.e. dynamic.

- (270) Dí wómimíi musu sá u témbé faa sa mbéi wán
 DET boy MOD know FU carve wood FU.3SG MOD make ART
 palibóto.
 canoe
 ‘The boy must know how to carve wood in order to be able to make a canoe’.

In (271), the achievement predicate *kabá dí woóko dí mi ta dú akí* (=‘to finish the work I do here’) is embedded under the modal *sa* which expresses that the speaker/agent is creating circumstances which make her able to finish her work quickly. The modal base is circumstantial and the ordering source refers to the speakers desires and goals, a combination of a bouletic and teleological ordering source. Imperfective *ta*, within this extended predicate, indicates a habitual situation, whereas when it embeds the verb *biingá* (=‘to hurry’) in the first part of the clause, imperfective *ta* conveys a progressive reading.

- (271) Mi ta biingá fu mi sa kabá dí woóko dí mi ta dú
 1SG IMP hurry FU 1SG MOD finish DET work DET 1SG IMP do
 akí.
 here
 ‘I am hurrying in order for me to be able to finish the work that I do here’.

The proposition in (272) refers to the possibilities that can happen when you eat a *lopeewiwi*, a poisonous plant. Here, the achievement verb *déde* (=‘to die’) is modified by the modal. The proposition has a circumstantial modal base and a stereotypical ordering source.

- (272) Í lopeewiwi de de á ta nyá én ée i nyá én
 DET type of plant there 3PL NEG IMP eat 3SG if 2SG eat 3SG
 i sa déde.
 2SG MOD die
 ‘That lopeewiwi, they do not eat it. If you eat it you can die’.

To sum up, as an ability morpheme, *sa* refers to the mental and physical abilities of an agent. It can also indicate more general circumstances which make a proposition possible in a world *w*. The type of eventuality does not influence the interpretation of ability *sa*. The modal has a circumstantial modal base and the ordering sources range from dynamic to teleological, and from bouletic to stereotypical.

5.2.4.3 Speculative Epistemic

The last interpretation of the modal *sa* discussed in this section is its speculative epistemic modality reading. Epistemic modality expresses the degree of commitment of the speaker towards the truth value of the proposition and as epistemic marker, *sa* indicates the uncertainty of the speaker towards the truth value of a proposition. The speaker draws a possible conclusion based on the available evidence (Bybee et al. 1994; Palmer 2001). The data in my corpus indicates that aktionsart does not influence the possibility of *sa* to express a speculative epistemic reading. However, aktionsart does influence the temporal interpretation of the embedded eventuality. It appears that a similar pattern regarding the temporal interpretation occurs for the epistemic reading of *sa* as for the epistemic reading of *musu* (Section 5.2.3.2). When a proposition has an epistemic modal base, stative verbs convey a present/future modal evaluation time and eventive verbs convey a past modal evaluation time, whereas when a proposition has a circumstantial modal base, stative verbs convey a present/future modal evaluation time and eventive verbs convey a future modal evaluation time. For *musu*, I demonstrated that this difference was easily explained by the assumptions made by Hacquard (2006, 2010) regarding the modal anchor time and the size of the modal complement. The element which provides the modal anchor time differs; it is Tense for the circumstantial reading while it is the time of utterance for the epistemic reading. This results in a difference in the size of the modal complement; epistemic modality embeds Tense, whereas circumstantial modality is embedded by Tense. The stativity requirement of PRESENT Tense requires the presence of the morphological null Perfect morpheme. Its presence explains the past time reference interpretation of the embedded eventuality of epistemic modal morphemes. In case of circumstantial modality, this stativity requirement is satisfied by the modal itself. The modal gives rise to the future orientation of the embedded eventuality. With regard to temporal perspective and temporal orientation of modal sentences, *musu* and *sa* behave similarly.

In (273), the possibility modal *sa* in its epistemic reading embeds the copula *dé*. This proposition has an epistemic modal base, expressing an attitude ‘in view of the available evidence’, and an informational ordering source¹⁰. For this proposition, the modal anchor time and the modal evaluation time have a present interpretation.

- (273) Context: From the available evidence (that the woman has been at home the whole week, while usually she goes to her vegetable garden every day),

¹⁰In (273), the morphological null Perfect morpheme embeds the predicate *dé a wosu*. In combination with the temporal adverbial *kaa*, it triggers a universal perfect reading.

the speaker draws the conclusion that there exists a possibility that the woman is ill. Since the speaker has not spoken to the woman or any of her relatives, she is not certain if she has drawn the right conclusions.

Dí muyée sa dé ku síki bigá wán hí wíki kaa a
DET woman MOD BE with ill because ART all week already 3SG
dé a wósu.
BE LOC house

‘The woman might be ill because the whole week already she has been at home’.

The activity verb *gó a hondi* (=‘to go hunting’) is modified by *sa* in (274). The proposition indicates the uncertainty of the speaker towards the truth value of the proposition. It has an epistemic modal base expressing an attitude ‘in view of the speaker’s state of knowledge’, and an empty ordering source. The modal anchor time has a present perspective and the modal evaluation time has a past orientation.

- (274) Context: Someone is looking for the speaker’s neighbour, Kenneth. At the time of utterance, Kenneth is not at home. The speaker didn’t see him leave, but does know that he loves to go hunting in the afternoon.
Kenneth sa gó a hondi bigá á dé neen písi.
3SG MOD go LOC hunt because 3SG.NEG BE LOC.3SG place
‘Kenneth might have gone hunting because he is not at home’.

In (275), the modal *sa* embeds the accomplishment predicate *nyá dí goma* (=‘to eat the cake’). It has an epistemic modal base and an empty ordering source. This proposition has a present temporal perspective and a past temporal orientation.

- (275) Context: Earlier today the speaker has baked a cake. After it was done the speaker left it in the kitchen and went to work outside. When the speaker returns, the cake has been eaten. The speaker does not know who has eaten it, but does know that the children have come home from school and that they like your cake very much. There is a possibility that they have eaten it.
Déé mí náo sa nyá dí góma.
DET.PL child NARR MOD eat DET cake
‘The children may have eaten the cake’.

In the bi-clausal construction of the proposition in (276), the achievement verb *lási* (=‘to lose’) and the copula *dé* are modified by *sa*. Both verbs refer to the same situation. As a result, this proposition indicates that *sa* conveys a true possibility epistemic reading. It has an epistemic modal base and an empty ordering source.

- (276) 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.

Dí fáka u dí wómi sa lási a mátu ma a sa dé
 DET knife FU DET man MOD lost LOC forest but 3SG MOD BE
 a wósu tu.
 LOC house too

‘The man’s knife might have been lost in the forest, but it might be at home too’.

In (277) the modal *sa* embeds the achievement predicate *dóu a fóto* (=‘to arrive in Paramaribo’). The proposition has an epistemic modal base and a stereotypical ordering source. The modal anchor time of this proposition refers to the time of utterance, while the modal evaluation time indicates that the eventuality took place prior to the time of utterance, giving it a past orientation.

- (277) Context: This morning Senni left the village and travelled via boat and mini-van to Paramaribo. At this moment, it is late in the afternoon. There is a possibility that he arrived already, but since the speaker does not really know what the condition of the road is, there is also a possibility that he is still on his way. He usually calls the speaker when he arrives in Paramaribo. The speaker’s neighbour wants to know if Senni is in the city already. The speaker answers:

Senni sa dóu a fóto kaa ma á béli etí.
 S MOD arrive LOC P already but 3SG.NEG call yet

‘Senni might have arrived in Paramaribo already, but he has not called yet’.

To sum up, (273) - (277) are examples of *sa* as an epistemic morpheme in which it indicates the uncertainty of the speaker towards the truth value of a proposition. It merges with all four primitive semantic categories. The modal base is epistemic and the ordering source can be informational, stereotypical and/or empty. In these epistemic propositions, the modal is anchored to the time of utterance which gives rise to a present temporal perspective. The temporal orientation of the embedded eventuality depends on the dynamicity of the verb; stative verbs indicate a present/future modal evaluation time, whereas nonstative verbs indicate a past modal evaluation time.

5.2.4.4 Other ways to express possibility modality

My data set contains other ways of expressing a possibility modality interpretation. First, one consultant prefers the modal *mag* in a permissive context, as in (278). Especially when the situation is negated, as exemplified in (279).

- (278) I mag butá dí pusipúsi a dóo.
 2SG MOD put DET cat LOC outside
 ‘You are allowed to take the cat outside’.

- (279) Senni á mag subí páu a líba.
 S NEG MOD climb tree LOC top
 ‘Senni is not allowed to climb trees’.

This consultant lived many years in Paramaribo, where she went to school, before she took up a teaching position in Pikinslee. According to other consultants, the modal *mag* is not part of the Saamáka TMA system, but it is part of the Dutch and Sranan TMA paradigm. I assume that this consultant borrowed *mag* from either Dutch or Sranan to distinguish between the ability reading of *sa* and its permissive reading.

Secondly, it is possible to use a bi-clausal structure to express epistemic modality. In these constructions, the modal *sa* is used, as exemplified in (280), or the modal *kan*, as in (281). The matrix clause containing the modals *sa* or *kan* conveys the speculative epistemic reading and it scopes over the embedded clause which contains the eventuality. It is even possible to combine the two morphemes, *sa* and *kan*, as illustrated in (282).

- (280) A sa dé táa Seei á wíni dí bááli bigá déé
 3SG MOD BE COMP P NEG win DET football because DET.PL
 sembe u Botopasi dé wáiwái.
 person FU B BE happy
 ‘It might be that Pikinslee did not win the football game because the people from Botopasi are happy’.

- (281) A kan táa a sí dí kapitein.
 3SG MOD COMP 3SG see DET chief
 ‘It might be that he has seen the chief’.

- (282) A sa kan táa Freddy fufúu í móni tu.
 3SG MOD MOD COMP Freddy steal DET money too
 ‘It might be that Freddy stole the money’.

The use of *kan* is probably a borrowing from Dutch or Sranan. It is used by many speakers (including monolingual speakers who have hardly been in contact with Dutch or Sranan), and therefore I do not assume that *kan* is part of the idelect

of a single speaker. Interesting is that this morpheme cannot be used in a monoclausal proposition expressing possibility modality, as exemplified in (283). In this sentence, the modal *sa* would be accepted.

- (283) *Senni kan hópo wán hondo kiló.
 S MOD lift ART hundred kilo
 Intended interpretation: ‘Senni can lift a hundred kilos’.

5.2.4.5 Summary

The modal *sa* expresses possibility modality and it conveys a deontic permissive reading, a dynamic ability reading and a speculative epistemic reading. It has an existential modal force, and as such denotes a possibility in a world with regard to the modal base *f* and an ordering source *g*. The conversational background is context dependent and triggers the correct interpretation of *sa*. The modal base is either epistemic, and expresses an attitude ‘in view of the speaker’s knowledge’, or circumstantial, expressing an attitude ‘in view of the circumstances under consideration’. The modal tolerates a wide range of ordering sources. This is summarized in Table 5.7.

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

Table 5.7: *Sa* in possible world semantics

A second point of investigation was the temporal contribution of the modal *sa* to a proposition. As for the modal *musu*, the temporal contribution of *sa* depends on the modal base and aktionsart which is demonstrated with two examples. In (284), the modal *sa* modifies the copula *dé* which is ambiguous between a permissive and an epistemic reading. For both readings, the modal anchor time is present and the modal evaluation time is also present.

- (284) A sa dé a sikóo.
 3SG MOD BE LOC school
 a. ‘S/he is allowed to be at school’.
 b. or ‘It might be that s/he is at school’.
- (285) a. Circumstantial: ModT = present; EvT = present
 b. Epistemic: ModT = present; EvT = present

There is no difference regarding the modal evaluation time between the circumstantial reading of *sa* and its epistemic reading when a stative verb is merged with

sa. However, a change occurs when *sa* modifies an eventive verb. In (286), the verb *gó* (=‘to go’) falls under the scope of the modal. In its permissive reading, the modal anchor time has a present perspective and the modal evaluation time has a future orientation, while in its epistemic reading, the modal anchor time also has a present perspective and the modal evaluation time has a past orientation, as exemplified in (287).

- (286) 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’.
- (287) a. Circumstantial: ModT = present; EvT = future
 b. Epistemic: ModT = present; EvT = past

To account for this difference in modal evaluation time, I argued in Section 5.2.3.3 that in its epistemic reading *musu* embeds the time of utterance (in the sense of Hacquard 2006, 2010). Since time of utterance expresses a moment in time, it can only combine with stative predicates. In order for eventive verbs to combine with PRESENT Tense they have merge with a state deriving functional head. When this requirement is not satisfied by the presence of an overt TMA morpheme (like imperfective *ta* or the modal morphemes), the morphological null Perfect morpheme is required to be present in the underlying structure, and its presence indicates that the proposition can be interpreted with an epistemic reading and without the morphological null Perfect morpheme in the underlying structure, the modal cannot convey its epistemic reading. Recall that the null Perfect morpheme creates a Result state of the embedded eventuality which holds at the time of utterance and consequently satisfies the stativity requirement of time of utterance. Furthermore, Perfect explains the past time reference interpretation of eventualities embedded under the epistemic reading of *sa*. The future orientation of the modal evaluation time for the circumstantial readings of *sa* is explained by assuming that the modal is embedded under Tense which indicates PRESENT. Here, the stativity requirement is met by the presence of the modal. Modals create a stative predicate of the eventuality they embed (in the sense of Copley 2002; Werner 2003) and they shift the modal evaluation time forward in time (in the sense of Condoravdi 2002; Stowell 2004), which explains the future temporal orientation.

5.2.5 Summary

This section discussed the semantic contribution of the modals *musu* and *sa* to a sentence and the focus was on their modal and temporal interpretations. Regarding the modal reading, *musu* expresses a universal quantification over possible

worlds, and *sa* expresses an existential quantification over possible worlds. Both modals refer to a circumstantial modal base and an epistemic modal base, and they tolerate a wide range of ordering sources. The second focus was on the temporal contribution of modal morphemes to a sentence. A proposition containing a modal hosts two time intervals: a modal anchor time and a modal evaluation time. These two times can but do not have to overlap. The modal anchor time for epistemic modals is provided by the time of utterance, and for circumstantial modals it is set by Tense. As a result, epistemic modals are always anchored to the time of utterance, and thus, have a present perspective; while circumstantial modals are anchored to Tense and can, thus, combine with past, present and future tenses. The data discussed in this section indicated that the modal evaluation time correlates with modal base and aktionsart¹¹. Stative verbs give rise to a present/future temporal orientation regardless of the modal base, while eventive verbs give rise to a future temporal orientation when the modal base is circumstantial, and a past temporal orientation when the modal base is epistemic¹². I postulated that this difference in temporal orientation correlates with the exact nature of the modal anchor time. Epistemic modal morphemes are anchored to the time of utterance

¹¹Under a Condoravdi (2002) style analysis, this correlation between aktionsart and modal evaluation time is not unexpected. She argues that stative verbs convey a present or future modal evaluation time, and nonstatives only convey a future modal evaluation time (see also Zagana 1990; Stowell 2004).

¹²Some people might argue that a proposition in which *sa* conveys a dynamic ability reading and which has a present perspective also has a present temporal orientation. However, I claim that although the modal anchor time has a present perspective, the modal evaluation time has a future orientation, as illustrated in (288) below.

- (288) Dí muyée sa lési wán búku bigá a gó a sikóo.
 DET woman MOD read ART book because 3SG go LOC school
 ‘The woman is able to read a book because she attended to school’.
 a. ModT = Present; EvT = Future

If one would argue that the modal evaluation time of (288) would have a present temporal orientation it would imply that the eventuality would be in progress at the time of utterance. In this example, the agent is not in the process of reading a book and as a result, the modal evaluation time cannot have a present orientation. In order to convey a reading in which the ability is in-progress at the time of utterance, imperfective *ta* must modify the eventuality, as exemplified in (289)

- (289) Híi dí dáka dí muyée sa ta woóko a dí goón feen sóndo
 all DET day DET woman MOD IMP work LOC DET ground FU.3SG without
 fu a wéi.
 FU 3SG tired
 ‘All day, the woman is able to be working in her vegetable garden without becoming tired’.
 a. ModT = Present; EvT = Present

which results is a present perspective of the modal anchor time. Recall that time of utterance and PRESENT Tense in Saamáka expresses a relatum of identity (Chapter 4). This makes it impossible for PRESENT Tense to combine with eventive verbs. In order for PRESENT Tense to merge with an eventive verb, the verb has to be coerced into a state. In order to satisfy this requirement, the morphological null Perfect is obligatorily present in the underlying structure when no overt TMA morphology is present to satisfy it. If it is not present, the reading cannot surface because it is ungrammatical in the given syntactic structure. Perfect creates a Result state of the embedded eventuality which is able to be taken as a complement of PRESENT Tense. Perfect gives rise to the past time reference interpretation of the embedded eventuality in case of an epistemic modal base. Tense provides an anchor for the temporal perspectives of circumstantial modals which implies that they are located below Tense in the functional hierarchy. The future orientation of the modal evaluation time of the circumstantial reading of the two modal morphemes is due to the modal itself. Modal morphemes move the modal evaluation time into the future. The correlation between modal base, modal evaluation time and dynamicity is presented in Table 5.8.

Dynamicity	Modal Base	ModT	Dependent	EvT
stative	circumstantial	present	Tense	present/future
	epistemic	present	TU	present
nonstative	circumstantial	present	Tense	future
	epistemic	present	TU	past

Table 5.8: Aktionsart, Modal Base and Modal Evaluation Time

Cross-linguistically, it is quite common for epistemic modals to combine with a perfect to convey a past orientation of an embedded eventuality (see Condoravdi 2002 for English, Borgonovo and Cummins 2007; Laca 2008 for French and Spanish). 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). Because time of utterance influences the modal anchor time and thus a judgment of the speaker towards the truth value of the proposition is both made at the time of utterance, and refers to the time of utterance, epistemic modality and a PAST Tense operator cannot co-

When it comes to the diagnostic of temporal interpretation of a proposition containing a modal morpheme, there is only one distinction in Saamáka and that is the distinction between epistemic modality and circumstantial modality. Like the literature on ability modality suggests, ability is special in that it involves genericity (see Heim 1982; Brennan 1993; Chierchia 1995; Kratzer 1995; Copley 2002; Portner 2009). The exact nature of this is left for further research.

occur. However, Boogart (2007); von Stechow (2006); Eide (to appear) and Martin (to appear) argue that epistemic modals can be in the scope of Tense and Aspect. I refer the interested reader to these studies for discussion.

Table 5.8 indicates that in Saamáka not only does the conversational background trigger the correct modal base, but this choice also depends on dynamicity, i.e., whether or not the verb is stative or eventive; and the temporal orientation of the embedded situation, i.e., whether it expresses past, present or future. The data presented in Section 5.2.3.2 and Section 5.2.4.3 provide profound evidence in favour of my claim in Chapter 2 that Saamáka has a morphological null Perfect morpheme in its TMA paradigm. The morphological null Perfect morpheme again provides an interesting explanation for the stative/eventive distinction with regard to temporal interpretation. In addition, the Saamáka data indicate that a Kratzer-style modality approach which argues that the interpretation of the modal base depends solely on the discourse context is too limited to explain all of the facts, and therefore it is necessary to take into account the syntactic characteristics of a modal morpheme for a complete study of the behaviour of modal morphemes. The next section discusses the syntactic distribution of the modals *musu* and *sa* which aims to provide evidence in favour of the claim that the two modals occupy different slots in the syntactic structure, and that each of their different readings has its own functional node.

5.3 Ordering and Interpretation

The data discussed in the previous section suggested that the size of modal complement correlates with the modal base. The aim of this section is to provide syntactic evidence in favour of this claim.

Under a cartographic approach to language structure, it is assumed that each functional element is situated in its own functional node in the functional sequence of the clause and different semantic and syntactic characteristics are associated with each functional node (Rizzi 1997; Cinque 1999, 2001). I will investigate whether the necessity modal *musu* and the possibility modal *sa* are located in the same position or whether each modal has its own functional node in the underlying structure. Furthermore, I aim to answer the question whether, in Saamáka, epistemic modals have a different syntactic position than circumstantial modals and whether the group of circumstantial modals should be divided into a separate nodes for deontic modals and dynamic modals (as suggested by cross-linguistic studies on modal morphemes) or not (see studies by Barbiers 1995; Thráinsson and Vikner 1995 on several Germanic languages). The two most commonly used diagnostics

to test the hypothesis that epistemic modality and circumstantial modality occupy different heads in the functional hierarchy are double modal constructions and the interaction between Tense and Modality. The investigation of these diagnostics is problematic and as a result, the two questions in this section do not have a straightforward answer. The problem is two-fold; first, Saamáka has a rigid order of the phonological forms of its TMA morphemes; and second, the language does not have an overt Tense morpheme. At first sight, rigid ordering might be an indication that a particular modal reading does not influence the position of the modals in the surface structure. However, a closer look reveals that not all modal readings are available when TMA morphemes are combined. This raises the question of what the infelicity of certain (modal) readings tells us about the underlying clause structure. Secondly, in the literature, it is often argued that epistemic modal morphemes are located above Tense and circumstantial modal morphemes are located below Tense (Iatridou 1990; Cinque 1999; Stowell 2004; Hacquard 2006, 2010). Since Tense in Saamáka is not overtly expressed, it is important to find out whether this diagnostic can be used to demonstrate a difference in height between these two different modal readings. A third diagnostic to determine whether multi-interpretable modals occupy a different position depending on their interpretation comes from recent studies which indicate that epistemic modals take a different type of modal complement than circumstantial modals (Barbiers 1995, 2002; Hacquard 2010; Kratzer to appear). I will investigate whether this is a relevant diagnostic to establish a difference between epistemic and circumstantial modals with regard to their syntactic position in Saamáka.

5.3.1 Syntactic distribution of modal morphemes in Saamáka

This section studies the syntactic distribution of the necessity modal *musu* and the possibility modal *sa*. Under a cartographic approach to language structure it is expected that each modal interpretation occupies its own functional head in the sequence of functional projections. This implies that epistemic modality occupies a different functional head than circumstantial modality and that the different circumstantial modality readings occupy several functional nodes.

This is confirmed by a cross-linguistic study of the modal system of six typological unrelated languages by Nauze (2008) who focusses on modal auxiliaries, modal verbs, modal adverbs, modal adjectives and lexical constructions expressing a modal reading. The languages in his sample are Dutch, Gungbe (Niger-Congo; Kwa subgroup), Korean, St'át'imcets (Salish), Turkish and Tuvaluan (Polynesian; Samioc-Outlier subgroup). the main focus of Nauze (2008) is to determine the order in which modal elements appear when they co-occur. He establishes that modal elements in the languages in his sample appear in a fixed order and he postulates

that this order is universal: epistemic modality scopes over deontic modality which scopes over dynamic modality when they co-occur in a sentence.

These orderings are illustrated with examples of the different languages in Nauze's sample. Revers orders of these modal elements than as provided in the examples below are judged ungrammatical (Nauze 2008).

First, the epistemic-dynamic ordering is demonstrated for Gungbe with (290) in which the former modal category embeds the latter, and consequently this proposition conveys an deductive epistemic reading of the modal verb *dó-ná*, while the verb *nyón* (=‘to know’) indicates learned ability.

- (290) É dó-ná nyón tó lé.
 3SG have.to know.PERF river clean
 ‘He must be able to swim’ (Nauze, 2008, 50).

The Korean example in (291) illustrates the epistemic-deontic ordering. When these two modal interpretations co-occur, epistemic modality scopes over deontic modality. The modal adverb *öccömyön* expresses that the speaker is not completely sure regarding the truth value of the proposition and the modal canonical construction *toeta* expresses that the agent has an obligation.

- (291) Kũ-nũn öccömyön isaka-ya toep-nita.
 that-TOP maybe move-ya become-VSFX
 ‘He may have to move’ (Nauze, 2008, 70).

The deontic-dynamic ordering is exemplified in (292) for Tuvaluan. In a sentence containing both deontic modality embeds dynamic modality, the former scopes over the latter. In this example, the modal verb *ttau* expresses an obligation of the agent, while the modal verb *maua* expresses an ability of the agent.

- (292) Koo ttau koe o maua o faipati faka-Eelise.
 INC must 2SG COMP can COMP seak Ellicean.
 ‘You must be able to speak Ellicean’ (Nauze, 2008, 119).

Although rare and not demonstrated with examples from every language in Nauze's sample, it is possible to construct a sentence with contains a modal element expressing epistemic modality, deontic modality and dynamic modality, as illustrated in (293). When these three modal categories co-occur, an epistemic > deontic > dynamic order is the result.

- (293) You may have to be able to drive (Nauze, 2008, 176).

Based on his language sample, Nauze makes the following claims¹³ with regard to the ordering of modal elements (Nauze, 2008, 204).

- (295) a. Epistemic modals can scope over deontic ones.
 b. Epistemic modals cannot be interpreted under deontic ones.
 c. Deontic modal operators cannot be stacked.

The languages in his sample indicate a robust ordering of modal elements when they co-occur which is assumed to be universal. This order is demonstrated in (430). The terminology is adjusted to the one adopted in the present study¹⁴.

- (297) epistemic > deontic > dynamic

To establish whether Saamáka provides evidence in favour of these claims, I investigate double modal constructions (Section 5.3.1.1), the interaction of Modality

¹³In Dutch it is possible to combine two deontic modal morphemes in a sentence, as demonstrated in (294). This sentence contains the necessity modal *moeten* which expresses obligation here, and the possibility modal *mogen* which expresses permission here. The former is placed on the agent *je* (=‘you’) and the latter on the object, *de jongen* (=‘the boy’). This construction is also possible in Norwegian (Kristine Bentzen personal communication) and German (Alexander Pfaff personal communication), but not in Japanese (Naoyuki Yamato personal communication).

- (294) Je moet de jongen naar het feest mogen laten gaan.
 2SG MOD DET boy to DET party MOD let go
 In order for the boy to come to my party, I demand that: ‘You are obliged to allowed to boy to come to the party’.

Obligation and permission both fall under deontic modality. The former expresses necessity and the latter possibility. Therefore, it might be that Nauze assumed that they both expresses an opposed end of the same scale, as the different epistemic modality readings do. In Cinque’s (1999; 2001) functional hierarchy of heads, obligation and permission denote their own functional projection. It might be that (294) is grammatical because the obligation and the permission are not placed on the same agent. I leave the interactions of the Dutch modals to further research.

¹⁴Nauze follows the classification of the modal system as proposed in van der Auwera and Plungian (1998) which is inspired by the classification presented in Bybee et al. (1994). The van der Auwera and Plungian classification differs from Palmer’s modal classification which is adopted in the present study. The ordering of modal elements in Nauze’s terminology is exemplified in (296).

- (296) epistemic > participant external > participant external

Participant external modality refers to deontic and goal oriented modality and participant internal modality refers to dynamic and bouletic modality. For discussion, I refer the interested reader to van der Auwera and Plungian (1998) and Nauze (2008).

and Tense (Section 5.3.1.2), and the size of the modal complement (Section 5.3.1.3) in Saamáka.

5.3.1.1 Double modal constructions

This section aims to provide evidence in favour of the claim that epistemic modality is situated in a higher position in the functional sequence than circumstantial modality by investigating sentences in which double modal constructions occur. Based on cross-linguistic studies (Cinque 1999, 2001; Nauze 2008), it is expected that in a sentence with an epistemic modal and a circumstantial modal, the former scopes over the latter. The following examples show this pattern for Dutch and Icelandic respectively. In (298) and (300), the necessity modal conveys a deductive epistemic reading and the possibility modal conveys a dynamic ability reading. In (299) and (301), the possibility modal conveys a speculative epistemic reading and the necessity modal a deontic obligative reading.

- (298) De man moet naar zijn werk kunnen lopen
 DET man MOD.3SG.PRES DIR 3SG.POSS work MOD walk
 want hij woont vlakbij.
 because 3SG live.3SG.PRES nearby
 ‘It must be that the man is able to walk to work, because he lives close’.
- (299) Lennard heeft naar school kunnen moeten gaan om
 L have.PRES.3SG to school MOD MOD go to
 zijn opdracht af te maken.
 3SG.POSS assignment finish
 ‘It might be that Lennard is obligated to go to school to finish his assignment’.
- (300) Hann verDur aD kunna aD synda.
 he must to can to swim
 ‘He has to be able to swim’ (Thráinsson and Vikner, 1995, 72).
- (301) Hann kann aD vaDa aD selja húsiD.
 he can to must to sell house.the
 ‘It is possible that he will have to sell the house’ (Thráinsson and Vikner, 1995, 78).

Under the assumption that there is a fixed hierarchy universally (as proposed by Rizzi 1997; Cinque 1999, 2001), it is expected that in Saamáka a similar pattern occurs. For the necessity modal *musu*, this prediction is borne out, as exemplified in (302).

- (302) Context: In the Saamáka society it is acceptable for a man to have more than one wife if he is able to (financially) support all of them. The speaker is talking about one of his friends who has only one wife.
 A musu sa wáka ku móo muyée ma á ké.
 3SG MOD MOD walk with more woman but 3SG.NEG want
 ‘It must be that he is able to be in a relationship with more women, but he does not want to’.

In this proposition, the necessity modal *musu* expresses a deductive epistemic reading and the possibility modal *sa* a dynamic ability reading. The modal *musu* refers to the knowledge state of the speaker at the time of utterance and it takes the predicate *wáka ku móo muyée* (=‘to be in a relationship with more women’) which is merged with the modal *sa* as its complement. Thus, in (302), the surface ordering *musu sa* correlates with their scopal ordering and deductive epistemic modality scopes over dynamic ability modality.

More problematic is the combination of the epistemic reading of *sa* with the obligative reading of *musu*. Under the assumption that epistemic modality scopes over circumstantial modality, it is predicted that *sa* precedes *musu* (as illustrated for Dutch and Icelandic in (299) and (301) above). However, such an order is ungrammatical, as exemplified in (303).

- (303) Context: Someone from outside the European Union wants to travel within the European Union. She asks the speaker if one has to show your passport at the border. In general, people do not have to show their passports. However, sometimes customs checks everyone. In those cases one is required to show them your passport.
 *I sa musu léi de yu pasiport.
 2SG MOD MOD show 3PL 2SG passport
 Intended interpretation: ‘It might be that you are obliged to show them your passport’.

Additionally, an obligative-epistemic interpretation of a *musu sa* order is judged infelicitous, as in (304) (see Thráinsson and Vikner 1995 and Nauze 2008 for a similar conclusion in other languages regarding the latter fact).

- (304) Dí muyée musu sa fón alísi.
 DET woman MOD MOD hit rice
 ‘The woman is obliged to be able to pound rice (because otherwise she cannot eat)’.
 or ‘It must be that the woman is allowed to pound rice (allowed by the doctor, because she has been ill and was not allowed to work)’.

or *‘It might be that the woman is obliged to pound rice’.

or *‘The woman is obliged to be allowed to pound rice’.

Only a circumstantial interpretation of *sa* is felicitous when embedded under *musu* regardless of the interpretation of *musu*¹⁵. This proposition further demonstrates that when both modals are interpreted in their deontic reading, the interpretation is infelicitous which is expected based on the findings in Nauze (2008).

A close study of the data in my corpus reveals that the epistemic *sa* does not co-occur with *musu* (regardless of its interpretation). In order for a speaker to express her uncertainty, based on her current knowledge state, toward the truth-value of a proposition containing *musu* in its obligation reading, a bi-clausal sentence is constructed or adverbials such as *kandé* (=‘maybe’) are used, as exemplified in (307) and (308) respectively.

- (307) A sa dé táa i musu léi de yu pasiport.
 3SG MOD BE COMP 2SG MOD show 3PL 2SG passport
 ‘It might be that you are obliged to show them your passport’.

- (308) Kandé i musu léi de yu pasiport.
 maybe 2SG MOD show 3PL 2SG passport
 ‘Maybe you are obliged to show them your passport’.

The order of TMA elements in Saamáka is very rigid, *musu* always precedes *sa*. Any deviations of this *musu sa* order are judged ungrammatical, as exemplified in

¹⁵In my corpus, there are also a number of propositions in which *musu* and *sa* both occur but in which the latter does not seem to have an obvious contribution to the interpretation of the sentence. The necessity modal can convey an deontic obligation reading, as in (305) or an deductive epistemic modality reading, as in (306).

- (305) Sioma yu musu sa gó a skóo tidé!
 Sioma 2SG MOD MOD go LOC school today
 Mother to her daughter: ‘Sioma, you must go to school today’.

- (306) Situation: Someone wants to know where the speaker’s neighbour is. Yesterday evening the neighbour mentioned to the speaker that she was planning to go to her vegetable garden tomorrow. The speaker knows that she has finished harvesting her rice and that it is the time to harvest peanuts.
 Dí muyée musu ta díki pindá bigá dí tén de a bi paandí
 DET woman MOD IMP dig peanut because DET time there 3SG PST plant
 pindá dí pindá musa sa lépi nóúnóu.
 peanut DET peanut MOD MOD ripe now
 ‘The woman must be harvesting peanuts, because at that time she planted peanuts and the peanuts must be ripe now’.

I leave these types of propositions and the contribution of *sa* to the interpretation for further research.

(303) above. Under a cartographic approach, it is unexpected that the *sa musu* ordering is ungrammatical when *sa* is interpreted in its epistemic reading. I postulate that this ungrammaticality is due to an extra semantic constraint. This constraint restricts existential modal quantification to precede universal modal quantification, or, $*\exists < \forall$ (in the sense of Beghelli and Stowell 1997; Cormack and Smith 2002; Nilsen 2003). I return to this in Section 5.4.1.

To sum up, the infelicity of the assumptive epistemic modality reading of *sa* when it is merged with the obligation reading of *musu* is indirect evidence that circumstantial modality differs from epistemic modality and that these two modal readings might be in different positions in the functional sequence of the clause in Saamáka.

5.3.1.2 Modality and the interaction with the temporal pronominal *bi*

Like the previous section, this section aims to provide evidence in favour of the claim that epistemic modal morphemes are located higher in the functional structure than circumstantial modal morphemes and it focuses on the interaction between Modality and Tense. Cross-linguistic data indicates that epistemic modality is situated above Tense and circumstantial modality below Tense (Cinque 1999, 2001; Eide 2005; Hacquard 2006, 2010). This section studies how the Saamáka data behaves with regard to this claim.

A problem for investigating this claim is that the temporal ordering relation under Tense in Saamáka is expressed via a morphological null morpheme which expresses a topic time equals anchor time temporal ordering relation. In default, this anchor time is the time of utterance, or, $TT = AT = TU$; i.e. PRESENT Tense. Recall that a likely candidate for the functional head of Past Tense, the morpheme *bi*, was argued not to be a Tense morpheme. The morpheme indicates that the embedded eventuality has a past time reference interpretation, but it was shown that its presence is optional. In Chapter 4, I argued in favour of a temporal pronominal analysis of this morpheme which establishes an anchor time directly and makes it not be the time of utterance, but some contextually relevant past moment. The morpheme is situated in FinP in the syntactic structure. In other words, Tense in Saamáka is not overtly expressed. This raises the question as to whether the interaction between Modality and Tense is a good diagnostic to investigate whether epistemic modality occupies a different position in the underlying structure than circumstantial modality. I demonstrate that the temporal perspective of a modal is informative in this respect. Keep in mind that epistemic modality can only take the time of utterance as temporal perspective (or the local evaluation time denoted by the matrix clause, in case of embedded clauses), because it refers to the current

knowledge state of the speaker. Based on information that is available to her at the current evaluation time, the speaker indicates her opinion regarding the truth value of a proposition (see Palmer 2001; Condoravdi 2002; Stowell 2004; von Stechow 2006; Hacquard 2006, 2010). This restriction does not apply to circumstantial modality which refers to the necessity or the possibility of an eventuality given the circumstances at a certain moment in time. The modalities which fall under this category can be located before, after or simultaneous to the time of utterance (see Palmer 2001; von Stechow 2006; Hacquard 2010).

In the remainder of this section, I investigate how informative the interaction between the modals and the temporal pronominal *bi* is, regarding the position of the different modal readings in the syntactic structure.

Since modal morphemes are usually situated in the IP domain of the clause and *bi* is located in Fin, I expect that these two elements can occur and if they do, *bi* precedes the modal. This prediction turns out to be true, as exemplified for *musu* and *sa* in (309) and (310) respectively.

- (309) Dí wómi bi musu súti dí píngo kíi.
 DET man PST MOD shoot DET kind of pig kill
 ‘The man had to kill the wild pig (because it would have killed him otherwise)’.
 or *‘The man must have shot the wild pig’.
- (310) Dí muyée bi sa mbéi maripase fátu.
 DET woman PST MOD make maripa butter
 ‘The woman was able to make maripa butter’.
 or ‘The woman was allowed to make maripa butter’.
 or *‘The woman might have made maripa butter’.

Interestingly, the epistemic reading of *musu* and *sa* in combination with *bi* is infelicitous, only their circumstantial readings surface: deontic obligative for *musu*, and deontic permissive and dynamic ability for *sa*. The morpheme *bi* establishes a contextually relevant anchor time which precedes the time of utterance. It follows that the whole proposition receives a past time reference interpretation. The temporal perspective of circumstantial modality can be located at a time prior to the time of utterance. The propositional content, including the circumstantial modal interpretation, can hold at a past moment, whereas epistemic modality refers to the current knowledge state of the speaker which is based on information/evidence available to the speaker at the time of utterance and not some other time. Epistemic modals are obliged to take the time of utterance as their modal anchor time (in the sense of Stowell 2004; Hacquard 2006, 2010). Since *bi* establishes an anchor time (including the modal anchor time) which is situated at some contextually rel-

evant past moment, epistemic modal readings in Saamáka are incompatible with the temporal pronominal. In other words, the semantic and pragmatic function of *bi* restricts the interpretation of the modal morphemes to convey a circumstantial modality reading only. It might be possible that the epistemic reading of the modal morphemes is infelicitous because of a locality constraint which states that there is a strong relation between Tense and Fin and that no other functional element can intervene between these two functional heads, but I leave this for further research¹⁶.

To conclude, although combinations with the temporal pronominal *bi* might not be a ‘clear’ diagnostic to indicate whether in Saamáka epistemic modality is in a different position than circumstantial modality, it demonstrates, however, that certain restrictions apply with regard to the combination of epistemic modality and the temporal pronominal. The temporal perspective of an epistemic modal cannot be forward or backward shifted, and it always takes the time of utterance (or local ‘now’) as modal anchor time. The interaction with the morpheme *bi* is another piece of indirect evidence that epistemic and circumstantial modality are situated in different positions.

5.3.1.3 Modal complement

This section focuses on the size and the content of a complement with which a modal morpheme merges. I aim to demonstrate that circumstantial modal morphemes merge with a smaller modal complement than epistemic modal morphemes. Hacquard (2006, 2010) postulates that the size of the modal complement indicates the position of a modal morpheme in the syntactic structure. The modal complement of circumstantial modal morphemes does not include Tense, while the modal complement of epistemic modal morphemes does include Tense. Thus, it follows that the former is situated below Tense in the functional sequence of heads, while the latter is situated above Tense.

Following Hacquard (2006, 2010), circumstantial and epistemic modality refer to different types of events. As said in Section 5.1.2.2, these different types of events correlate with a specific time/individual pair; circumstantial modality correlates with a Tense/agent pair and epistemic modality with a TU/speaker pair (in the sense of Bybee et al. 1994; Barbiers 1995; von Stechow 2006; Hacquard 2006). In addition, I follow Hacquard (2006, 2010) in assuming that for epistemic modality the modal anchor time refers obligatorily to the time of utterance and for circumstantial modality it is provided by Tense (see also Stowell 2004). Epistemic modality does not interact with Tense, it embeds Tense which implies that the

¹⁶Thanks to Peter Svenonius (personal communication) for pointing this out to me.

epistemic modal complement must contain Tense (and the functional heads below Tense), whereas circumstantial modality on the other hand is influenced by Tense (meaning its modal anchor time is set by Tense) which indicates that it does not embed Tense but it must be embedded by Tense. Epistemic modality is, thus, situated above Tense in the functional sequence, whereas circumstantial modality is situated below Tense. The anchor time to which the modal is anchored provides indirect evidence in favour of the claim that different modal readings merge with different modal complements.

The temporal orientation of the modal evaluation time gives additional evidence in favour of the claim that epistemic modals embed a different type of complement than circumstantial modals. Recall that eventive verbs give rise to a future temporal orientation when the modal base is circumstantial and a past temporal orientation when the modal base is epistemic (see Section 5.2). It then logically follows from the type of complement which the different modal readings merge with. In Section 5.2.3.3 and Section 5.2.4.5, I elucidated this difference in temporal orientation by arguing that the morphological null Perfect is obligatorily present in the underlying structure of a sentence which conveys an epistemic interpretation and it is absent in a sentence which conveys a circumstantial interpretation. Null Perfect gives rise to a past orientation of the embedded eventuality in the case of the former, while the modal itself shifts the evaluation time forward in time in the case of the latter (in the sense of Palmer 2001; Condoravdi 2002; Werner 2003; Stowell 2004). This implies that in their epistemic interpretation, the modal morphemes embed Perfect whereas in their circumstantial interpretation they do not. Keep in mind that time of utterance and PRESENT Tense in Saamáka denote a moment in time and are, thus, obliged to embed a stative complement. Epistemic modality is anchored to the time of utterance and therefore it embeds Tense. The complement that is merged with Tense must be stative, because of the stativity requirement of Tense. In order for the epistemic reading of the modals to surface, the morphological null Perfect morpheme must be present in the underlying structure (in case of eventive verbs which are required to merge with a state deriving functional head). When this morpheme is not present, the stativity requirement of Tense is not satisfied and thus the epistemic reading cannot surface. In their circumstantial reading, the modals convey a future orientation of the modal evaluation time which implies that the morphological null Perfect is not present in their underlying clause structure. Its absence indicates that another functional element satisfies the stativity requirement placed by PRESENT Tense on its complement. Since modal morphemes are state deriving functional heads (in the sense of Werner 2003) they can satisfy this stativity requirement and as a result they have to be situated below Tense. In other words, the temporal orientation of a modal sentence is a good indication of the size of the modal complement

in Saamáka.

To sum up, the anchor to which the modal anchor time is anchored and the temporal orientation of the modal evaluation time provide evidence in favour of the claim that in their epistemic reading, the modals embed a different type of complement than in their circumstantial reading. Moreover, the temporal orientation of a modal clause in Saamáka correlates with modal base and dynamicity; in combination with stative verbs, the modal evaluation time indicates a present/future temporal orientation regardless of the modal base, whereas when eventive verbs are embedded under the circumstantial reading of the modals, a future reference surfaces, while in the epistemic reading a past reference surfaces. Consequently, epistemic modality places different requirements on the complement it embeds than does circumstantial modality. Additionally, the modal complement of the former has a larger syntactic structure than that of the latter. The size of the modal complement correlates with a certain height in the syntactic structure; the bigger the complement the higher a functional element is situated in the functional sequence. In their epistemic reading, the modals embed Tense and Perfect whereas in their circumstantial reading they are embedded by Tense.

The size of the modal complement is another piece of evidence in favour of the claim that epistemic modality is located higher in the functional sequence than circumstantial modality.

5.3.2 Summary

The aim of this section was to provide evidence in favour of the claim that epistemic modality is located higher in the functional sequence than circumstantial modality. I investigated three diagnostics which are commonly used cross-linguistically; double modal constructions, the interaction of Tense and Modality and the type of modal complement. The first two diagnostics provided indirect evidence that in Saamáka epistemic modality is situated higher than circumstantial modality, while the size of the modal complement gave a clearer result. The modal complement correlates with the temporal interpretation of a modal clause. In their epistemic readings, the sentence in which the modals occur conveys a past interpretation whereas in their circumstantial reading a future interpretation is conveyed. I illustrated this point by arguing that in the underlying structure of the former, the morphological null Perfect morpheme is obligatorily present (otherwise the epistemic interpretation cannot surface) and its presence is obligatory because the stativity requirement of PRESENT Tense must be satisfied. In order to satisfy this, an eventive verb needs to be merged with a state deriving functional head. That the modals in their epistemic reading do not satisfy this requirement indicates that epistemic modals are situated above Tense. A sentence containing a

circumstantial reading of the modals conveys a future interpretation which is contributed by the modal itself; modals shift the modal evaluation time forward in time (in the sense of Palmer 2001; Condoravdi 2002; Werner 2003; Stowell 2004) and consequently, the modal satisfies the stativity requirement of PRESENT Tense which implies that in their circumstantial reading the modals are located below Tense in the hierarchy of functional projections. From the data presented in this section, we can conclude that Saamáka has the same interpretational effects as languages where the morphology is more clear.

The next section discusses the syntactic analysis of the necessity modal and the possibility modal. I demonstrated in this section that epistemic modal morphemes require a different modal complement than circumstantial modal morphemes. This is crucial for our understanding regarding their position in the underlying structure. If one modal reading requires a different modal complement than another modal reading, it implies that different characteristics are associated with them. In the functional sequence, certain semantic and syntactic characteristics are associated with a particular functional head. Thus, it follows that it will be difficult to argue that epistemic and circumstantial modal morphemes occupy the same slot in the functional sequence of heads.

5.4 Syntactic decomposition of modality

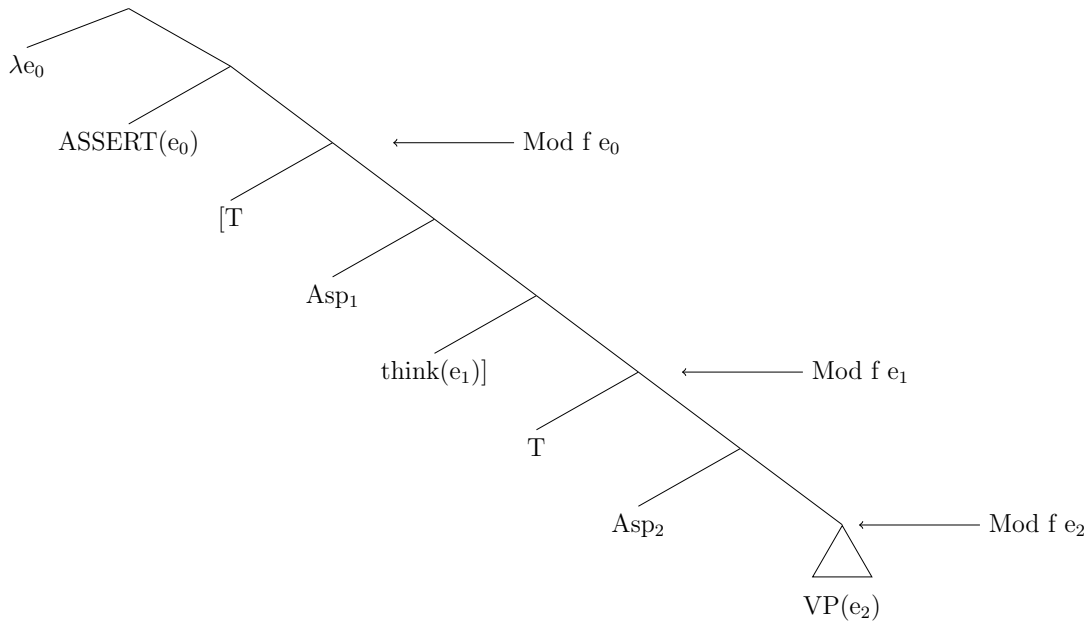
The aim of this section is to establish the position of the modal morpheme in the functional hierarchy of heads in Saamáka. In this respect it is important to determine whether the modal morphemes occupy a single head or several heads. As demonstrated in Section 5.3, the modal morphemes in their epistemic readings are situated in a different position than in their circumstantial readings because the former embeds a larger syntactic structure (including Tense and Perfect) than the latter (excluding Tense). The aim of this section is to explain the correlation between the modal complement and the position of a modal in the functional hierarchy of the clause.

5.4.1 Modals and their position in the Functional Hierarchy

In this section, I discuss my ideas regarding the position of the modals *musu* and *sa* in the hierarchy of functional projections. These ideas are mainly based on Hacquard (2006, 2010) who follows Cinque (1999, 2001) who postulates that epistemic Modality is above Tense and circumstantial Modality is below Tense in the functional sequence of the clause, and Aspect is located below Tense and

above circumstantial Modality. Epistemic modal morphemes denote a different event than circumstantial modal morphemes in that the former are bound by a speech event whereas the latter are bound by a vP event; making the event binder of epistemic modals λe_0 and the event binder of circumstantial modals Aspect. The syntactic structure as proposed by Hacquard is presented in (234) which is repeated below.

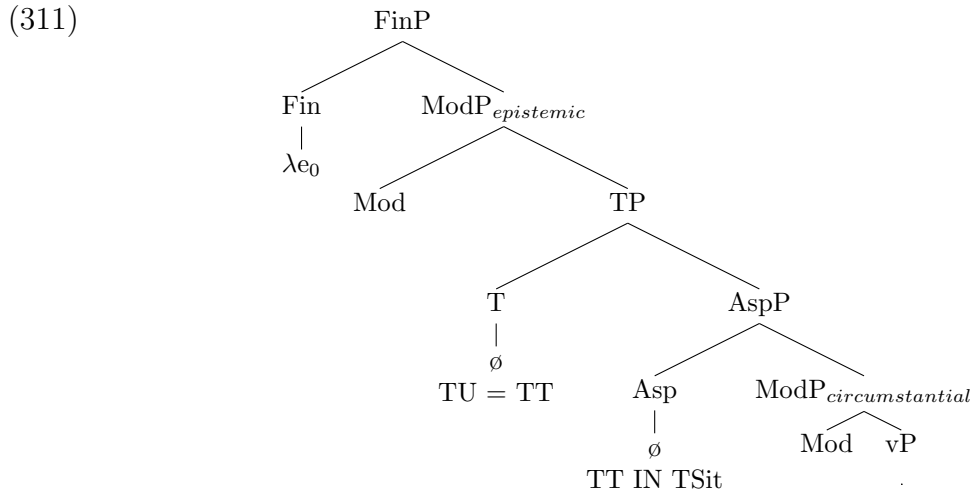
(234)



The structure as proposed by Hacquard is adapted to the terminology used in the present study. I assume that Aspect denotes a temporal ordering relation between the topic time and the time of situation and expresses Imperfective Aspect or Perfective Aspect (in the sense of Zagana 1995; Demirdache and Uribe-Etxebarria 2000, 2007; Stowell 2007). This temporal ordering relation is telicity dependent; telic verbs correlate with Perfective Aspect and atelic verbs with Imperfective Aspect (in the sense of Bohnemeyer and Swift 2004). Recall that Aspect merges with a stative complement due to the stativity requirement of PRESENT Tense/time of utterance in Saamáka and therefore default Aspect indicates Imperfective Aspect, or, TT IN TSit.

Tense expresses a temporal ordering relation between two time denoting arguments: anchor time/time of utterance and topic time (in the sense of Zagana 1995; Demirdache and Uribe-Etxebarria 2000, 2007; Stowell 2007) and it expresses that topic time equals anchor time. In the default, this anchor time is the time

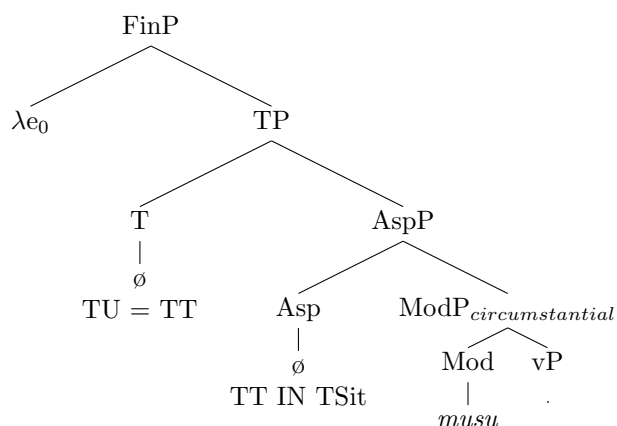
of utterance and therefore Tense expresses PRESENT Tense: $AT = TU = TT$. I postulate that the default event binder λe_0 is located in Fin (in the sense of Rizzi 1997; Ramchand 2008; Ritter and Wiltschko 2009). The present study only discusses modality in matrix clauses and not in embedded clauses, this is also adapted in the syntactic structure. The adapted syntactic structure is presented in (311).



The syntactic structure of modality is exemplified with two examples, (245) in which *musu* is interpreted with a deontic obligation reading and (253) in which *musu* conveys a deductive epistemic modality reading. Both propositions are repeated below. The syntactic structure of (245) is presented in (245-b) in which *musu* conveys deontic obligation reading and is located in $\text{Mod}_{\text{circumstantial}}$, which is situated below $\text{Mod}_{\text{epistemic}}$, Tense, and Aspect in the functional sequence. $\text{Mod}_{\text{circumstantial}}$ creates a derived state of the embedded eventuality. Aspect expresses a temporal ordering relation between topic time and time of situation. Recall that this relation always expresses that the topic time is included in the time of situation expressing IMPERFECTIVE. Tense indicates a simultaneous temporal ordering relation between the topic time and time of utterance, i.e. $TU = TT$ expressing PRESENT Tense.

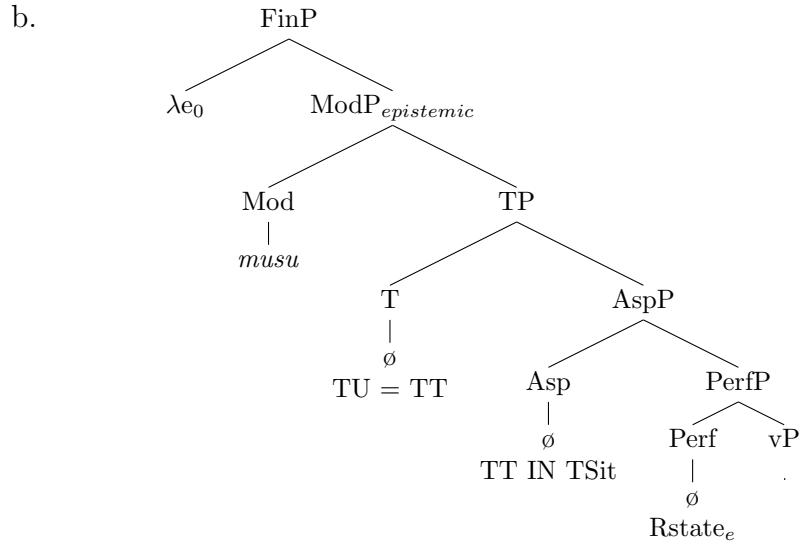
- (245) a. A musu féni wán muyée téi bifó a gaándi.
 3SG MOD find ART woman take before 3SG old
 ‘He should find a wife before he gets too old’.

b.



The proposition in (253) conveys a deductive epistemic reading and its phrase structure is illustrated in (253-b). The temporal ordering relation in Tense and in Aspect are the same as in the phrase structure of (245) above. Epistemic modal morphemes are situated above Tense in the syntactic structure. Recall that PRESENT Tense in Saamáka indicates a moment in time and thus it can only merge with stative predicates and therefore eventive verbs need to be coerced into a state in order to be able to merge with PRESENT Tense. To satisfy this stativity requirement, the morphological null Perfect morpheme is required in the underlying structure; the modal must take Perfect as its complement in order for the epistemic reading to surface. The null Perfect morpheme creates a Result State (Rstate_e) of the embedded eventuality which is able to merge with PRESENT Tense.

- (253) a. Senni músu wíni dí féti.
 S MOD win DET fight
 ‘Senni must have won the fight’.

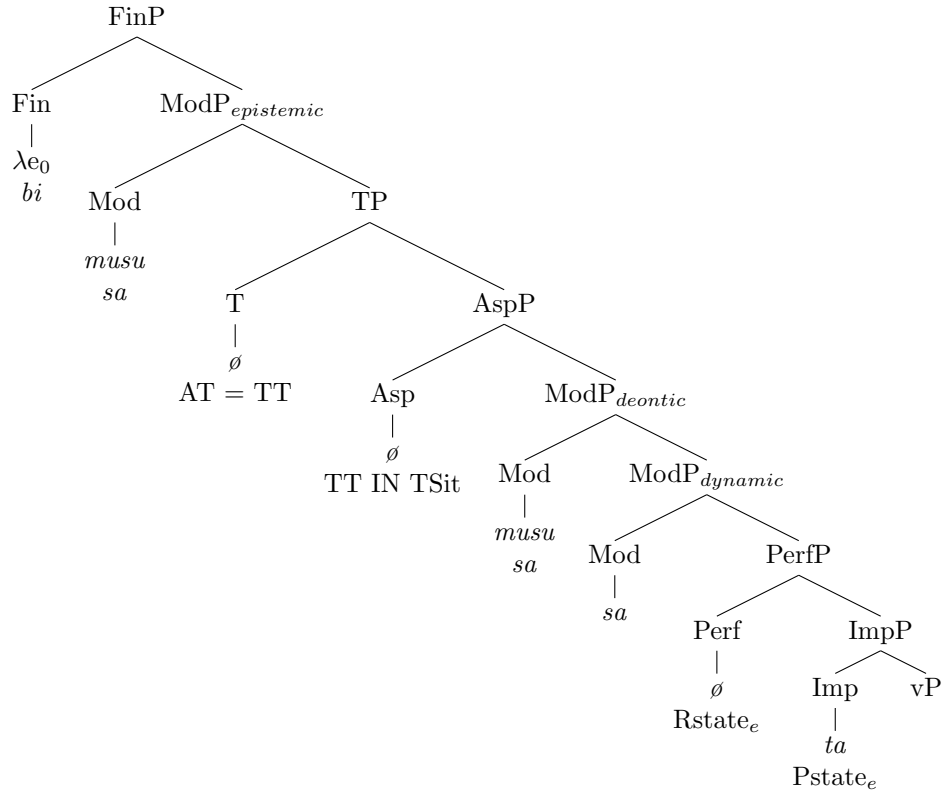


It is also important to establish whether the circumstantial modals are all located in a single position or in several positions in the hierarchy of functional projections. Double modal constructions were briefly discussed in Section 5.3.1.1, the data in that section demonstrated that *musu* and *sa* can co-occur when the former is interpreted in its deontic obligation reading, and the latter is interpreted in its dynamic ability reading, whereas the deontic permissive reading of the latter is infelicitous, as illustrated in (304), repeated below.

- (304) DÍ muyée musu sa fón alísi.
 DET woman MOD MOD hit rice
 ‘The woman is obliged to be able to pound rice (because otherwise she cannot eat)’.
 or *‘The woman is obliged to be allowed to pound rice’.

Based on the infelicity of a *musu*_{deontic} and *sa*_{deontic} and since their interpretations express several ends of the same deontic modality scale, I postulate that they are in a complementary position and that both deontic obligation and deontic permission are situated in Mod_{deontic}. In its dynamic ability reading, *sa* is not located in Mod_{deontic} because it can be interpreted under *musu*_{deontic} and therefore I postulate that it is situated in Mod_{dynamic} which is located below Mod_{deontic} and above Perfect, Imperfective and vP. Thus-far, we have established that the functional hierarchy of heads in Saamáka is as presented in (312).

(312)



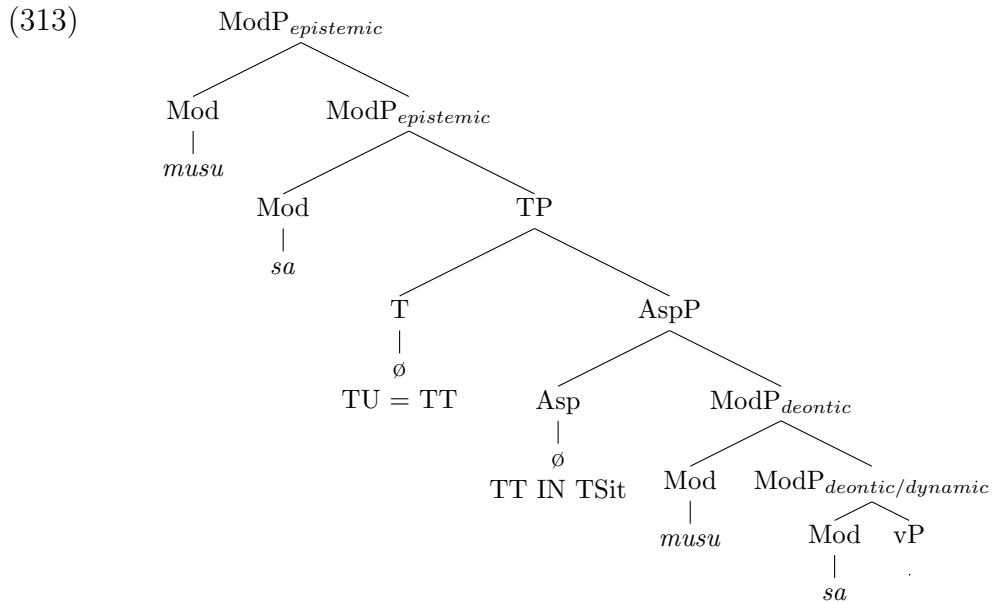
Problematic for the current syntactic composition is that it does not explain why a *sa musu* ordering, in which the former expresses a speculative epistemic reading and the latter expresses a deontic obligation reading is ungrammatical, as pointed out in Section 5.3.1.1¹⁷. The current syntactic structure predicts this double modal construction to be felicitous. To make the study of the sequence of functional heads in Saamáka complete, there must be an explanation for the rigid ordering of the phonological forms of the TMA morphemes in Saamáka and the impossibility for *sa* in its speculative epistemic reading to co-occur with the deontic obligation *musu*. A number of options are presented in the next section and I argue that this problem can only be explained by postulating an extra semantic constraint on top of this hierarchy of functional projections.

¹⁷A dynamic ability deontic obligation interpretation of *sa musu* is ruled out by independent rules which claim that deontic modality precedes dynamic modality (in the sense of Cinque 1999, 2001; Nauze 2008).

5.4.2 Towards an explanation of the ungrammaticality of a *sa musu* order

The ungrammaticality of this *sa musu* order could be seen as an argument against a universal hierarchy of functional projects and in favour of a hierarchy of lexical items. Under the latter possibility, however, it would be difficult to explain the infelicity of a *musu sa* order in which the former denotes a deontic obligation and the latter denotes a speculative epistemic reading as well as a reading in which *musu* expresses deductive epistemic modality and *sa* speculative epistemic modality. In other words, a hypothesis explaining the morpheme ordering based on their phonological form does not account for this reading asymmetry.

Under a cartographic approach, the ungrammaticality of this *sa musu* order is unexpected—it would be predicted that a $sa_{epistemic} musu_{deontic}$ would be grammatical. A more fine-grained hierarchy of functional projections which splits between modals with a universal modal force and modals with an existential modal force is not helpful in this respect. Under such an analysis, there would be two positions for modals with a universal modal quantification: $Mod_{epistemic\forall}$ and $Mod_{deontic\forall}$; and two for modals with an existential quantification: $Mod_{epistemic\exists}$ and $Mod_{deontic\exists}$. Consequently the functional sequence would be as presented in (313).



Unfortunately, this sequence of functional projections still predicts the grammaticality of a $sa_{epistemic} musu_{deontic}$ order and also the grammaticality of a $musu_{epistemic} sa_{epistemic}$ order. In other words, this functional sequence would still result in a

paradox because epistemic modality would still be situated higher than circumstantial modality (see the data presented in Section 5.3 in favour of this height difference).

Moreover in this respect, to stipulate that *musu_{deontic}* is situated higher than *sa_{epistemic}* in the underlying structure might be a possibility. Problematic here however, is that the data discussed in Section 5.3 strongly indicates that epistemic modality is situated above Tense and circumstantial modality below Tense. Furthermore, *sa* never conveys an epistemic interpretation when it is merged with *musu*. As a result, such a stipulation would contradict and be unable to explain all of the Saamáka data.

Thirdly, it is possible to argue in favour for a more fine-grained syntactic structure in which *musu* is situated in Fin¹⁸. Unfortunately, this would also not be able to explain our problem because functional items which convey a modal reading and are situated in Fin often express readings of Evidentiality. The semantic characteristics of *musu* (presented in Section 5.2.3) make it difficult to argue in favour of an Evidentiality analysis of this morpheme. Furthermore, the differences between the epistemic and the circumstantial reading of *musu* are so strong that it would be difficult to argue that the morpheme is situated under the same functional head in both readings. Since this difference correlates with the size of the modal complement it again would be difficult to argue that *musu_{deontic}* is situated above *sa_{epistemic}* and even if the former would be located above the latter, it does not explain why a deontic obligation assumptive epistemic modality reading is infelicitous for a *musu sa* order.

Consequently, these three possible solutions show that a more fine-grained structure is unable to account for our problem. Placing *musu_{deontic}* above *sa_{epistemic}* does not explain the infelicity of their co-occurrence, nor does postulating a separate functional head for each modal reading.

To account for the ungrammaticality of *sa musu* order, I argue that an extra stipulation which does not follow from the hierarchy of functional projections, as presented in (312), is necessary. This is a complete independent semantic constraint which is based on a cross-linguistic tendency for universal quantificational elements to have scope over existential quantificational elements (see Beghelli and Stowell 1997; Cormack and Smith 2002; Nilsen 2003). These studies demonstrate that when certain elements combine elements which have a universal quantification scope over elements with existential quantification. In English for example, modal morphemes with an existential quantificational force are interpreted as scoping

¹⁸Thanks to Peter Svenonius (personal communication) for pointing this possible solution out to me.

below negation¹⁹ while modal morphemes with a universal quantificational force scope above negation (Cormack and Smith 2002). At this point, it is only a stipulation which needs further research, but this tendency is so robustly attested in language, I suspect that it might have a deeper semantic explanation. Unfortunately, I have to leave this for future research.

I postulate that this constraint denotes that in Saamáka, existential modal quantification cannot precede universal modal quantification²⁰, thus my constraint: $*\exists < \forall$.

5.4.3 Summary

The focus of this section was the syntactic position of the modal morphemes *musu* and *sa*. In the previous section, I demonstrated that the epistemic reading of the modal morphemes takes a different modal complement than their circumstantial reading. The former embeds Tense while the latter is embedded under Tense. This difference in size of modal complements results in a different position in the functional hierarchy. Epistemic modal morphemes are situated above Tense and circumstantial modal morphemes below Tense and Aspect.

5.5 Summary

This chapter studied the semantic interpretation and syntactic distribution of the modal morphemes *musu* and *sa*. The former has a universal quantificational force and it gives rise to a deontic obligation and a deductive epistemic modality reading of a proposition, while the latter has an existential quantificational force and it conveys a deontic permissive, dynamic ability and speculative epistemic modality reading. Furthermore, it was shown that the choice of the modal base is not purely pragmatic (as in Kratzer's (1977; 1991; 2002; to appear work), but is strongly constrained by the modal complement, the modal anchor time (TU vs. Tense), the dynamicity of the modified verb (stative vs. eventive) and the temporal interpretation of the modal evaluation time (past vs. future). When the modals *musu* and *sa* are interpreted in their circumstantial reading, their anchor time is set by Tense. When they modify a stative verb the modal evaluation time has a present or a future orientation while an eventive verb has a future orientation. When the

¹⁹An exception here is existential modal quantification expressing epistemic modality which scopes above negation (Cormack and Smith 2002).

²⁰The formulation of this semantic constraint is a first attempt. I will return to this in Chapter 6 which discusses the future reference morpheme *ó* which I argue to be a modal morpheme. I will demonstrate that this constraint cannot explain all the empirical facts and therefore it needs to be adjusted.

modals are interpreted in their epistemic reading, their anchor time is anchored to the time of utterance. Stative verbs have a present orientation and eventive verbs have a past orientation. The temporal interpretation in the latter case is due to the presence of the morphological null Perfect morpheme in the underlying structure. This difference in modal complement results in a different position in the functional hierarchy of the clause. Circumstantial modals are situated in $\text{Mod}_{deontic}$ and $\text{Mod}_{dynamic}$ which are below Tense and Aspect, and epistemic modals are situated in $\text{Mod}_{epistemic}$, which is above Tense.

The focus of the next chapter is the future time reference morpheme *ó*. This morpheme is ambiguous between a simple future reading, a future-in-the-past reading, a past-in-the-future reading and an assumptive epistemic reading. Since both of its semantic and syntactic characteristics are similar to the necessity modal *musu* and the possibility modal *sa*, I argue in favour of a modal analysis of this morpheme.

Chapter 6

Future time reference: Tense or Modal?

6.1 Introduction

The description of the core TMA morphemes in Saamáka is almost complete and this is the final chapter before presenting the synthesis of this dissertation in Chapter 7. The previous chapters focused on morphemes expressing aspect, tense and modality. The current chapter discusses the morpheme *ó* which conveys a future time reference reading, as exemplified in (314).

- (314) Context: Senni left Atjoni around 6PM. It gets dark around 7PM. It is a two hour boat ride from Ajoni to Pikinslee. Therefore...
A *ó* dúngu bifó Senni dóu a wósu.
3SG MOD dark before S arrive LOC house
'It will be dark before Senni has arrived home'.

In combination with the temporal pronominal *bi*, *ó* expresses counterfactuality, as illustrated in (315).

- (315) Dí mǐ ta hógihógi, nóo ée mi bi dé taatá nóo mi
DET child IMP naughty NARR if 1SG PST BE father NARR 1SG
bi *ó* fón én.
PST MOD hit 3SG
'The child is very naughty, if I was his father I would beat her/him'.

As in the previous chapters, I aim to establish the position of the morpheme *ó* in the functional hierarchy of heads. In this respect, it is important to determine whether this morpheme falls under the category of Tense or under Modality. To answer this question it is important to investigate how the morpheme behaves lan-

guage internally, and therefore the meanings and interpretations of this morpheme are studied as well as its syntactic distribution.

The introduction continues with an overview of the discussion whether future time reference is a Tense or a Modal category in the literature (Section 6.1.1) and an overview of my theoretical assumptions concerning the composition of Tense and Modality (Section 6.1.2).

6.1.1 Future time reference: Tense or Modality?

In the literature, the debate on whether future time reference is a Tense category or Modal category has a long tradition, and the outcome has not yet been settled. The difficulty of answering this question is nicely formulated by Dahl (1985, 103) *‘a sentence which refers to the future will almost always differ also modally from a sentence with non-future time reference. This is the reason why the distinction between tense and mood becomes blurred when it comes to the future’*. An aim of this chapter is to investigate how a study of the future time reference morpheme in Saamáka can contribute to this discussion.

Before we start this discussion, I give my requirements for what it means to treat future reference as FUTURE Tense, or as a Modality morpheme. Under a Tense analysis, future reference would locate an eventuality in time. The functional category of Tense expresses a temporal ordering relation between topic time and time of utterance (or a contextually established anchor time in the case of relative tense) and it would situate topic time after time of utterance, or formally, TU BEFORE TT (in the sense of Zagana 1995; Demirdache and Uribe-Etxebarria 2000, 2007; Stowell 2007). Furthermore, a ‘pure future’ Tense has no dual time conceptualization, thus a proposition containing a future time reference morpheme denotes only one time interval, expressing the temporal ordering relation between topic time and time of utterance. Dual time conceptualization indicates a combination of two different time interpretations (in the sense of Declerck 2006). Moreover, FUTURE Tense cannot co-occur with temporal adverbials which modify the time of utterance (Hornstein 1990). Since Tense expresses a temporal ordering relation between topic time and time of utterance and the reference to time of situation is left unspecified, a positional temporal adverbial as *tomorrow*, *next autumn* or *after school* can only refer to topic time and not to time of situation. To sum up, a FUTURE Tense morpheme would only manipulate time variables, and consequently the only contribution of future reference under a Tense analysis would be to situate an eventuality in time. This would imply that the outcome of an eventuality is determined at the time of utterance.

Under a Modal analysis, a future time reference morpheme would express a quantification over possible worlds and it would have a universal modal force. Modal readings of prediction and intention would have a circumstantial modal base and they would denote a range of ordering sources (in the sense of Copley 2002; Matthewson 2006; Tonhauser to appear). A possible world analysis assumes a structure of branching worlds. Since past eventualities are settled, these worlds are similar up to the time of utterance. Facts regarding a past eventuality hold in the actual world w_0 or not meaning their outcome is determined at the time of utterance. After the time of utterance, the outcome of an eventuality is not fixed and is possible to be changed. Although the actual world w_0 does exist among these branching worlds, at the time of utterance it is unknown which world will turn out to be the actual world w_0 . As a Modal morpheme, a future reference morpheme would make reference to two time intervals: the modal anchor time and the modal evaluation time. The modal anchor time indicates the temporal perspective of the modal morpheme, whereas the modal evaluation time denotes the temporal orientation of the embedded eventuality. Positional temporal adverbials would be able to modify both the modal anchor time and the modal evaluation time. To summarize, as modal morpheme \acute{o} would make reference to world variables, and at the time of utterance it would not yet be settled what the truth value of the eventuality will turn out to be.

Now that the definitions of the two possible analyses are clear, I turn to the diagnostics of establishing which functional category future reference belongs to. Important for answering the question whether future reference is a Tense or Modal category, is investigating how these morphemes behave language-internally. It is necessary to establish these patterns to discover whether or not only time variables (implying the Tense category) are relevant for future reference or time and world variables (implying the Modality category). In order to answer this question it is important to establish what the diagnostics are to investigate the difference between a Tense analysis of future reference and a Modal analysis.

In Dahl's (1985) sample of 64 languages, the semantics of future time reference morphemes involve interpretations of intention, prediction and future time reference. The former two interpretations have been argued to be modal readings (Dahl 1985; Palmer 2001; Copley 2002; Werner 2003). Intention expresses an agent's specific purpose to undertake an action or whether or not the agent aims to (and is committed to) make the uttered proposition become true at a future time. The modal reading of prediction indicates that according to the speaker, a proposition will be true at a future time, which implies that she commits herself to the truth value of the proposition. Prediction is closely related to expectations, the latter is less strong than the former. It indicates that the speaker believes that

a proposition will be true at a future time (Palmer 2001; Copley 2002; Tonhauser to appear).

In the literature, there has been a long debate on whether English auxiliary *will* falls under the functional category of Tense or Modality. The interpretation of *will* does not appear to be any different from other languages. Under a Tense analysis, a future eventuality is settled which follows from an interaction between discourse pragmatics and a proposition. The interlocutor infers the speaker's confidence regarding the settledness of the eventuality. It is assumed that the speaker has total control about the conditional factors which will make the future eventuality true at a future moment. In other words, the settledness of the eventuality is asserted. Studies claiming that this auxiliary expresses FUTURE Tense have a hard time accounting for the so-called modal readings of the auxiliary. Some linguists try to argue against a unified analysis and postulate that there are two different functional items *will*, one expressing Tense and one expressing Modality (Comrie 1985; Hornstein 1990; Declerck 2006). Others claim that the modal component of propositions containing *will* are due to a morphological null modal morpheme (Kissine 2008). Problematic for all these studies is that under their analysis the settledness of a future eventuality is expected. Tense expresses only a temporal ordering relation between two times (intervals), topic time and time of utterance. These studies cannot explain that a future eventuality is undetermined, or rather, that its outcome is not yet settled at the time of utterance.

Many studies which argue in favour of a modal analysis of English *will*, focus on the different behaviour between PAST Tense morphology and the auxiliary *will* (Huddleston 1995; Enç 1996; Sarkar 1998; Werner 2003). Since these two functional items behave differently with regard to: sequence of Tense phenomena, embedding of PRESENT Tense, and in combination with aspectual categories such as Perfect and Progressive, these studies assume that they have shown that *will* cannot be a FUTURE Tense morpheme. This raises a question as to whether these differences are good arguments in favour of the initial point that they set out to make. In a cross-linguistic study, de Haan (1997) demonstrates that necessity modal morphemes in certain languages behave differently from possibility modal morphemes with regards to their interaction with negation (see also Cormack and Smith 2002 for English). Do these differences mean that necessity and possibility modals do not both belong to the category of Modality? Thus, is identifying differences between PAST Tense morphology and *will* a clear diagnostic with which to make stipulations regarding the functional category of *will*?

In my opinion, it is better to focus on different differences. The question one should answer is whether future reference makes reference to possible worlds, or whether it only expresses a temporal existential relation. Does one want to argue in favour of an analysis which assumes that the actual world exists in the future,

but which keeps the world variable constant and the time variable variable, and argue thus, in favour of a Tense analysis? In this model, the outcome of the future eventuality would be settled; the proposition indicates that the eventuality would occur at a future time and nothing/no one would be able to change the outcome. Future reference would be able to manipulate time variables and there would be no indication of world variables being relevant for its interpretation. Problematic for this analysis is the fact that a future eventuality is not determined at the time of utterance, or put differently, the outcome of the eventuality is not settled yet. To account for this uncertainty regarding the outcome of a future eventuality, world variables are necessary. Future eventualities do not give reference to a single world, rather, they capture different possibilities in different worlds. In other words, it makes no sense how future time reference could be explained without assuming that world variables are in the equation.

Turning to the future time reference morpheme *ó*, it seems that its categorization could also be relevant to the debate on future reference. By being explicit about what I assume future reference to be, it will be difficult to argue for a unified Tense analysis of Saamáka *ó*. Thus, it should be of no surprise to the reader that I will argue in favour of a modal analysis of *ó*. This claim is supported by the observation that *ó* behaves similarly to the necessity modal *musu* with regards to its semantic interpretation and its syntactic distribution.

6.1.2 Assumptions concerning the composition of Tense and Modality

The theoretical assumptions in the current study are adapted from Klein (1992, 1994), Demirdache and Uribe-Etxebarria (2000, 2007) and Stowell (2007) regarding Tense, and Kratzer (1977, 1991, 2002, to appear) and Hacquard (2006, 2010) regarding Modality. These ideas have been presented in previous chapters, and their main points are repeated here. First, I discuss my ideas regarding the composition of Tense, and lay out the expectations for a Tense analysis of *ó* (Section 6.1.2.1). This is followed by an overview of my ideas concerning the composition of Modality, and then I outline the expectations of a Modal analysis for *ó* (Section 6.1.2.2).

6.1.2.1 Composition of Tense

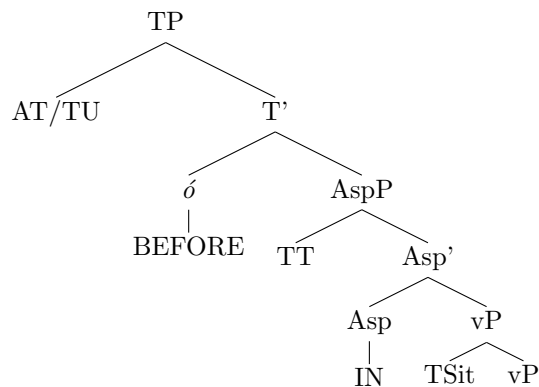
I assume that Tense is concerned with the temporal characteristics of a proposition and it locates an eventuality in time with regard to an anchor time. When this anchor time is the time of utterance, we are talking about absolute tense, and when it is some other contextually specified time, we are talking about relative tense

(Comrie 1985; Bhat 1999). More formally, Tense expresses a temporal ordering relation between two time denoting arguments: time of utterance or anchor time, and topic time (in the sense of Klein 1992, 1994). This ordering relation can be one expressing simultaneity or precedence. Present Tense implies that the time of utterance is simultaneous with the topic time: TU WITHIN TT. Past Tense indicates that the topic time precedes the time of utterance: TU AFTER TT. Future Tense locates the time of utterance before the topic time: TU BEFORE TT (in the sense of Zagana 1995; Demirdache and Uribe-Etxebarria 2000, 2007; Stowell 2007).

Under a Tense analysis, it is expected that the morpheme *ó* would express FUTURE Tense. The syntactic structure under a Tense analysis is exemplified in (316). I assume that the temporal ordering relation under Asp is telicity dependent (in the sense of Bohnemeyer and Swift 2004). Thus, stative and activity verbs have a [+imperfective] value in Asp, whereas accomplishment and achievement verbs have a [+perfective] value. Recall that all predicates in Saamáka are (derived) states and therefore the temporal ordering relation in Asp indicates that the topic time is fully included in the time of situation, or formally: TT IN TSit expressing IMPERFECTIVE.

(316) a. SUBJECT *ó* VP.

b.



6.1.2.2 Composition of Modality

Modality is concerned with the attitude or opinion of a speaker towards the eventuality or proposition expressed. It is subcategorized into epistemic and circumstantial or root modality. The former refers to the knowledge state of the speaker at the time of utterance, whereas the latter indicates the agent's desires, expectations, abilities, and norms regarding the circumstances in a world. It can be subcategorized into bouletic, deontic, dynamic, and teleological (Bybee et al. 1994; Palmer

2001; von Stechow 2006; Hacquard to appear). Under a Kratzer' (1977; 1991; 2002; to appear) style analysis, modality expresses quantification over possible worlds. The interpretation of a modal depends on the values of its modal force, modal base and ordering source. Modal morphemes expressing assumptive epistemic, intention/commitment and prediction/expectation have a universal modal force (in the sense of Copley 2002; Werner 2003; Matthewson 2006; Tonhauser to appear). This implies that in all possible worlds, the proposition p is true. A proposition expressing intention has a circumstantial modal base and an ordering source which favours those worlds where the agents intentions or wishes are realised (in the sense of Copley 2002; Tonhauser to appear). If the ordering source were empty, it would imply that a proposition expressing intention would always become true at a future moment. A proposition expressing intention does not have to entail that the proposition will be realised at a future moment. A proposition expressing prediction has a circumstantial modal base and a stereotypical ordering source (in the sense of Copley 2002). This ordering source indicates the normal course of events. Readings of prediction are often considered to be modal in nature. Under a modal analysis, prediction indicates that the speaker predicts an eventuality to be true at a future moment. A possible world analysis for the morpheme \acute{o} is exemplified for (317).

(317) Context: What are you planning to do?

Mi \acute{o} gó kándi nóúnóu.

1SG MOD go lie now

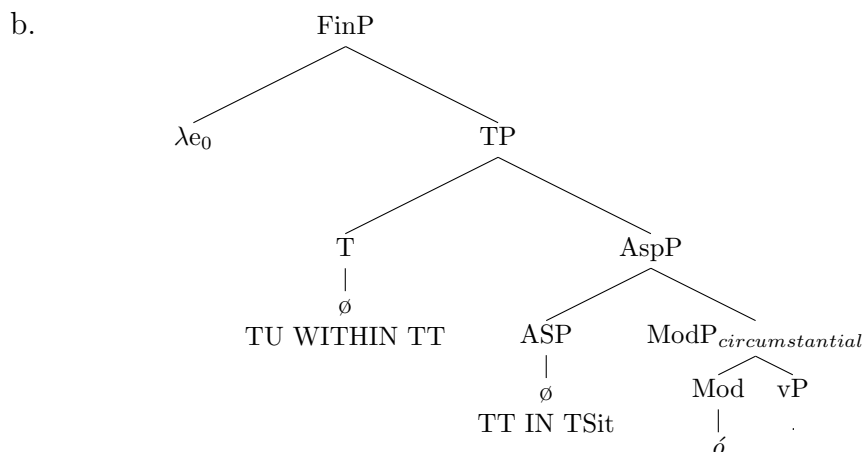
'I will go to bed now'.

- a. Modal Force = Universal
- b. Modal Base = Circumstantial
- c. Ordering Source = Intentional

Following Hacquard (2006, 2010), I assume that the modal base is triggered by the modal complement (and thus not by the discourse context as proposed by Kratzer) and the ordering source is pragmatically determined. Epistemic modal morphemes take a whole proposition in their scope, whereas circumstantial modal morphemes only modify an eventuality. The former is anchored to a speech event which is located in FinP, and the latter to a vP event located in AspP. From this it follows that epistemic modality is situated higher in the functional structure of the clause than circumstantial modality. The former precedes Tense and the latter follows Tense and Aspect. Furthermore, a modal sentence refers to two time intervals: a modal anchor time and a modal evaluation time (in the sense of Condoravdi 2002; Laca 2008). The former indicates the temporal perspective and the latter indicates the temporal orientation of the modal morpheme. Under a Modal analysis, the morpheme \acute{o} denotes a circumstantial reading and is situated in $\text{Mod}_{\text{circumstantial}}$.

The modal anchor time has a present perspective, and the modal evaluation time has a future orientation. The temporal ordering relation in TP expresses that the time of utterance equals the topic time, or, $TU = TT$. As for the Tense analysis, the temporal ordering relation in AspP is telicity dependent. The phrase structure of *ó* under a modal analysis is presented in (318).

(318) a. SUBJECT *ó* VP.



Both these trees in (316) and (318) should deliver the correct semantics of the morpheme *ó*. The present chapter investigates which of the two analyses, Tense of Modality, is correct.

This chapter is organised as follows: Section 6.2 investigates the semantic and syntactic characteristics of the morpheme *ó*. The aim of Section 6.3 is to determine whether the morpheme *ó* is a Tense or Modal morpheme. I provide evidence in favour of the latter hypothesis by demonstrating the similarities between the modals *musu* and *sa*, and the morpheme *ó* with regard to their semantic and syntactic behaviour. Section 6.4 discusses the formal theoretical analysis of *ó* as a modal morpheme. In Section 6.5, I focus on counterfactuality in Saamáka, which is expressed by combining the temporal pronominal *bi* and the morpheme *ó*. The chapter then concludes with a summary.

6.2 Meaning and Interpretation of *ó*

In this section, I discuss the several interpretations of the morpheme *ó*. A proposition containing this morpheme is ambiguous between four different readings: a simple future reading, a future-in-the-past reading, a past-in-the-future reading,

and an assumptive epistemic reading. Each interpretation is discussed and illustrated with examples.

6.2.1 Simple future reading

The morpheme *ó* expresses a future reference reading of the embedded eventuality which implies that it modifies an eventuality which has not occurred yet, but is expected to occur, meaning that the eventuality is located in the future after an anchor time. This anchor time can be the time of utterance, but it can also be some other contextually established time located prior to the time of utterance. The morpheme *ó* expresses a simple future and future-in-the-past reading respectively. As a morpheme expressing simple future, *ó* embeds all four aspectual verb classes: states, activities, accomplishments and achievements.

In (319), the stative verb, *kóto* (=‘to be cold’), is modified by the morpheme *ó*. The eventuality, *dí nyanyá kóto pói* (=‘the food is very cold’), is located in the future relative to the anchor time set by the matrix clause. This proposition conveys a reading of prediction expressed by the speaker.

- (319) Context: The speaker’s brother is late for dinner.
 Té dí tén u mi baáa kó a wósu nóo dí
 when DET time FU 1SG brother come LOC house NARR DET
 nyanyá ó kóto pói.
 food MOD cold very
 ‘When my brother comes home, the food will be cold’.

In (320)¹, the morpheme *ó* embeds a number of activity verbs; *tyumá* (=‘to burn’), *woóko* (=‘to work’) and *kóti* (=‘to cut’). All of these activities are located after the time of utterance and they express a reading of prediction².

- (320) Context: Someone is talking about the preparations for planting peanuts.

¹In (320), *ó* has fused with the pronoun *yu/i* which expresses second person singular which results in *yoó*.

²Each activity in (320) is expressed twice. The second time, the activities are modified by the phrase *té i kabá* (=‘when you have finished’). It indicates the end point of an eventuality. Moreover, every eventuality in this proposition is introduced by the narrative adverbial *nóo*. This adverbial introduces a new topic time and advances a narrative in time. In (320), each eventuality is located in the future of each newly established topic time.

Nóo i tyumá nóo yoó tyumá té i kabá nóo
 NARR 2SG burn NARR 2SG.MOD burn until 2SG finish NARR
 yoó woóko nóo yoó woóko té i kabá nóo
 2SG.MOD work NARR 2SG.MOD work until 2SG finish NARR
 yoó kóti. Kóti pindá tubu.
 2SG.MOD cut cut peanut bed
 ‘Then you burn, then you will burn it completely then you will work, you
 will work completely and then you will cut. Make peanut beds’.

The proposition in (321) contains the accomplishment predicate *folóisi gó a fóto* (=‘to move to Paramaribo’). The eventuality is located in the future of the time of utterance and conveys a reading of intention: it is the agent’s intention to make the eventuality become true.

- (321) Context: What are your plans for the future?
 Mi ó folóisi gó a fóto.
 1SG MOD move go LOC Paramaribo
 ‘I will move to Paramaribo’.

Another sentence in which an accomplishment verb merged with *ó* is illustrated in (322). The sentence indicates that at an unspecified moment in the future the man intends to make a boat.

- (322) Dí muyée bi ta náí wán koósu nóo dí wómi táki dá
 DET woman PST IMP sew ART cloth NARR DET man say give
 én táa mi ó mbéi wán bóto.
 3SG COMP 1SG MOD make ART boat
 ‘The woman was sowing a cloth. Then, the man said to her: I will make
 a boat’.

The propositions in (323) and (324) demonstrated that *ó* can embed achievement verbs. The latter is a conditional and it indicates a warning. Event e_1 refers to the eating of a plant event, and event e_2 to the dying event. The speaker predicts that event e_2 will be caused by acting out event e_1 .

- (323) Context: A young man and an elderly man are talking about hunting in the forest. The elderly man is too old to go hunting. He is telling the young man about his hunting experience back in the day. Nowadays the animal population in the forest has changed a lot. The young man mentions to the elderly man that it is difficult to track down and hunt certain animals nowadays.

Ée i gó nóúnóu sééi yá ó kúi ná wán kwaikwai
 if 2SG go now self 2SG.NEG MOD kill NEG ART kind of bird
 sééi móo.
 even more
 ‘If you go now, you will not kill a kwaikwai anymore’.

- (324) Context: What will happen if I eat this plant?

Ée i nyá hén yoó déde.
 if 2SG eat 3SG 2SG.MOD die
 ‘If you eat it, you’ll die’.

The propositions in (319) - (324) show that the morpheme *ó* modifies all four primitive semantic categories: statives, activities, accomplishments and achievements. It locates the embedded eventuality in the future of the time of utterance. The eventuality has not occurred at the time of utterance but is expected to occur. It expresses different future readings as remote, immediate, and scheduled/planned. A sentence which expresses a schedule situation is exemplified in (325).

- (325) Context: A woman is pregnant. This is not her first pregnancy and her previous childbirths were very difficult. The medical care in Paramaribo is better equipped to handle a difficult labour. Therefore, she and the people in the medical clinic of the village have decided that she will be brought to Paramaribo to give birth there.

Dí muyée á ó sa palí akí a o gó pali
 DET woman NEG MOD MOD give birth here 3SG MOD go give birth
 a fóto bigá déé fósu palí feen a bi taánga
 LOC P because DET.PL first give birth FU.3SG 3SG PST strong
 pói.
 very

‘The woman will not be able to deliver her baby here. She will go and give birth in Paramaribo because her previous childbirths were very difficult’.

The morpheme *ó* co-occurs with temporal adverbials denoting a future moment, as exemplified in (326) - (328). The temporal adverbial in (326), *amanyá* (=‘tomorrow’), refers to a more specific time at which the eventuality will take place.

- (326) Context: What are you planning to do tomorrow?

Amanyá mi ó dé a kamía.
 tomorrow 1SG MOD BE LOC place
 ‘Tomorrow I will be at home’.

A similar description can be provided for (327) and (328).

- (327) Context: When is your wife going to harvest her peanuts?
 Capie ó hon pindá a dí wíki dí ta kó.
 C MOD tear peanut LOC DET week DET IMP come
 ‘Capie will harvest the peanuts next week’.
- (328) Context: When will the girl sing?
 Dí muyéémíí ó kandá a tú yúu.
 DET girl MOD sing LOC two hour
 ‘The girl will sing at two o’clock’.

The morpheme *ó* can also co-occur with a temporal adverbial denoting the speech moment, *nóúnóu* (=‘now’), as exemplified in (329) - (330).

- (329) Context: This extract refers to habits involved in a traditional mourning celebration. The speaker is telling me that they also sing special songs. I ask her if she is allowed to sing one for me. She replies:
 Nóúnóu akí ée mi ó kandá no?
 now here if 1SG MOD sing Q
 ‘If I will sing something right now, isn’t it?’
- (330) Context: The extract is from the beginning of a hunting story. The participants in the narrative just started their hunt.
 Nóúnóu akí yoó ába kíiki.
 now here 2SG.MOD cross creek
 ‘Now you will cross the creek’.

In an out-of-the-blue context, the morpheme *ó* cannot co-occur with a temporal adverbial denoting a moment prior to the time of utterance, as demonstrated for *éside* (=‘yesterday’) in (331).

- (331) *A ó wáka éside a mátu.
 3SG MOD walk yesterday LOC forest
 Intended reading: ‘She will walk in the forest yesterday’.

6.2.2 Future-in-Past reading

In (319) - (330), the time to which the situation embedded under the morpheme *ó* is anchored is not always specified. The morpheme *ó* indicates that the eventuality will take place at a time in the future after this anchor time, which is assumed to be the time of utterance. However, the morpheme *ó* is not obliged to take the time of utterance as the anchor time. It can also take some other contextually given anchor time, which is located prior to time of utterance. This gives rise

to a future-in-the-past reading, as exemplified in (332) - (335)³. In the former, *ó* modifies an eventuality in an embedded clause. Event e_2 , *bebe dí desi* ('to drink the medicine'), is located in the future of the eventuality in the matrix clause, event e_1 , while the whole proposition has occurred prior to the time of utterance. Event e_1 creates the time to which event e_2 can be anchored, or, $e_1 = AT < e_2 < TU$.

- (332) Context: This proposition refers to a miscarriage of one of the girls in the village. She took some medicine which induced a miscarriage. Having an abortion is not accepted in the Saamáka society. The women in the village assume that the girl was forced by the father of her foetus. They are talking about what this girl should have said to him.
 A bi musu táki táa á ó bebé dí deési.
 3SG PST MOD say COMP 3SG.NEG MOD drink DET medicine
 'She should have said that she would not drink the medicine'.

A similar description can be presented for the propositions in (333) and (334)⁴ which are taken from a conversation with an elderly woman who is talking about the flood in 2006. The anchor time of (333) and (334) is situated at the time of this flood and the eventualities modified by *ó* are located in the future of this anchor time. Based on our knowledge that Yeye is telling us her experience of a past situation, we know that these eventualities took place prior to the moment of speech, meaning: $AT < e < TU$. The proposition in (334)⁵ indicates that *ó* does not entail that an eventuality will become true at a future moment.

- (333) Context: This extract demonstrates Yeye's desperation during the first moments of the flood. She talks about what happened at that moment.
 Hén dí mui Amoima táa Yeye i déde. Únfá yoó
 NARR DET child Amoima COMP Yeye 2SG dead how 2SG.MOD
 dú, mi táa. Andí mi ó dú. Andí mi ó dú? Mé
 do 1SG COMP what 1SG MOD do what 1SG MOD do 1SG.NEG
 sa kumútu akí móo.
 MOD come.out here more

³Since the whole proposition is located prior to the time of utterance, I have translated *ó* in these examples with 'would' instead of 'will'.

⁴The following abbreviations are relevant for these extracts. L = Laurens, my guide and interpreter; Y = Yeye, an elderly woman who was interviewed, and the main narrator. This conversation was recorded on March 24, 2008 in Pikinslee.

⁵In (334), *ó* has fused with the pronoun *yu/i* which expresses second person singular which results in *yoó*.

‘Then the child Amoima said Yeye have you died? What would you do, I replied. What would I do? What would I do? I could not come out of here anymore’.

- (334) Context: Yeye and Laurens are talking about the morning after the flood when people realised the damage that had been done. Yeye focuses on the people who wanted to go to their vegetable gardens. In order to get there, they needed a boat.

a. Té mámáte fuu gó dóu alá náo á dé sondí
when morning FU.1PL go arrive there NARR NEG ?BE? thing
móo.

more

L: ‘When in the morning we arrived there, there was nothing left’.

b. Ée yoó gó a bákase náo sembe á dé
if 2SG.MOD go LOC vegetable garden NARR person ?NEG ?BE
fu tyá a bóto yá sa gó.

FU carry LOC boat 2SG.NEG MOD go

Y: ‘If you would go to your vegetable garden, and no one was there to take you by boat, you couldn’t go.’.

The final example discussed here is (335) for which the anchor time has been established prior to this extract. It is the time at which the narrator went hunting which is located before the time of utterance, or, $AT < TU$. There are three occurrences of the morpheme *ó* in this extract. It indicates that the eventualities are located after the anchor time but before the time of utterance: $AT < e < TU$.

- (335) Context: The main narrator, Baifu, is an elderly man who talks about his hunting experiences. In this particular story, Baifu is going hunting with someone else. He tells us the best way to hunt a type of animal.

U wáka té kuma u tú bandya ku bandya. U tapá akí
1PL walk until like 1PL two next with next 1PL close here
de a u fési. Náo de ta kó kaásiába de sééi.
there LOC 1PL face NARR 3PL IMP come cross over there even/self
Hén de ta kó de. Té déé mbéti ó kó so de
NARR 3PL IMP come there when DET.PL animal MOD come so 3PL
musu pasá léti míndi. Dí fósu wán ée yu súti hén de
MOD pass precisely middle DET first ART if 2SG shoot 3SG there
a ó biá beeko. De pasá wán písi. Hén mi
3SG MOD turn around? ? 3PL pass ART place NARR 1SG
táa wómi mi ó súti yu.
COMP man 1SG MOD shoot 2SG

‘We walked until we were next to each other. We stopped there. Then they were coming and were opposed to each other. Then they were coming. When the animals would come, they had to pass precisely in between. The first one, if you shot it, it would turn around. They (=the animals) passed a place. I said: Man, I would shoot you’.

The propositions in (332) - (335) indicate that the morpheme *ó* is not required to take the time of utterance as anchor time, and that it can also take some other contextually given (past) time as anchor time. The embedded eventuality is located in the future of this anchor time.

6.2.3 Past-in-the-Future reading

The morpheme *ó* expresses a past-in-the-future reading, as previously pointed out in Chapter 4, and exemplified in (336) - (340) below. The interpretation of *ó* in these propositions implies that an anchor time is located in the future of the time of utterance, while the eventuality is located prior to this anchor time, or, $TU < AT$; $AT > e$. Although the time of utterance and the eventuality are not directly ordered with regard to each other, the embedded eventuality has not occurred at the time of utterance in these examples: $TU < e$. The proposition in (336) expresses two different eventualities. Event e_1 refers to the arriving at home event of the speaker and event e_2 indicates the cleaning of the fish event by the agent. Event e_1 sets the anchor time to which event e_2 is anchored. The morpheme *ó* modifies the predicate expressed by event e_2 . Based on the data discussed above, it would be expected that the presence of *ó* triggers an interpretation which locates event e_2 after an anchor time: $AT < e_2$. However, all my consultants claim that although event e_2 has not been completed at the time of utterance, it is expected that it is completed at the anchor time set by event e_1 , or, $TU < e_1 = AT > e_2$.

- (336) Té wi kó a wósu nóo dí muyéémí *ó* kóti
 when 1PL come LOC house NARR DET girl MOD cut
 déé físi.
 DET.PL fish
 ‘When we have come home, the girl will have cleaned the fish’.

The anchor time of (338) is set by event e_1 , *ée i tooná kó* (=‘if you have returned’), which is located in the future of the time of utterance. Event e_2 indicates the

writing of the letter event, and the completion of this event⁶. This completion occurs prior to event e_1 : $TU < e_1 = AT > e_2$.

- (338) Ée i tooná kó nóo mi ó skífi í bíffi akí kabá.
 if 2SG return come NARR 1SG MOD write DET letter here finish
 ‘When you come back I will have finished writing this letter’.

A similar description is given for the propositions in (339) and (340).

- (339) Context: Discussing the work on the vegetable gardens. This specific extract is about planting rice and what the women usually do.
 Dí yoó paandí alísi té i kabá i nángo ta lúku
 when 2SG.MOD plant rice until 2SG finish 2SG IMP.go IMP look
 én ée a lépi no?
 3SG if 3SG ripe Q
 ‘When you will have planted rice completely you go and check it regularly if it is ripe, don’t you?’
- (340) Context: B is setting out on a journey. A intends to sell her own house while B is away. A tells B about this.
 Té fii kó móo mi ó séi dí wósu u mi.
 when FU.2SG come more 1SG MOD sell DET house FU 1SG
 ‘When you return, I will have sold my house’.

The overt structure of a past-in-the-future sentence does not differ from the overt structure of a simple future sentence. In both cases the only overt TMA morpheme present is *ó*. This raises the question of how this difference in temporal interpretation can be accounted for. Past-in-the-future constructions and their temporal interpretation are addressed in Section 6.3.3, where I argue that the morphological null Perfect morpheme is present in the underlying structure of these sentences which gives rise to the past interpretation of these sentences.

⁶The presence of the main verb *kabá* (=‘to finish’) in the serial verb construction in (338) does not have to imply that the eventuality is completed at this future anchor time. While unmarked, the verb *kabá* has a past time reference interpretation. When embedded under *ó*, the proposition receives a future time reference interpretation, as demonstrated in (337).

- (337) a. Dí wómi kabá hén.
 DET man finish 3SG
 ‘The man has finished it’.
 b. Dí womi ó kabá hén.
 DET man MOD finish 3SG
 ‘The man will finish it’.

The presence of the main verb *kabá* in (338) does not indicate the completion of event e_2 at the anchor time.

6.2.4 Assumptive epistemic modality reading

The final interpretation of the morpheme *ó* studied here is its epistemic reading, as exemplified in (341) - (343)⁷. In these propositions, *ó* conveys a reading in which the speaker is slightly less certain about the truth value of the proposition than the necessity modal *musu*, but the speaker is more committed to the truth value of the proposition than when using the possibility modal *sa*. Palmer (2001) refers to these types of epistemic readings as assumptive epistemic modality. Interesting is the temporal orientation of the embedded eventuality in these propositions. In (341) and (343), *ó* embeds a stative verb, *rot* (=‘to be rotten’) and *sábi* (=‘to know’) respectively and the eventuality has a present temporal orientation, while in (342), the morpheme modifies an eventive verb, *dá lési* (=‘to teach’), and it denotes a past temporal orientation. Please note that the number of these types of clauses is limited in my corpus.

- (341) Dí maripá *ó* rot bigá a bi dé a wáta.
 DET maripa MOD rotten because 3SG PST BE LOC water
 ‘The maripa should/will be rotten because it has been in the water’.
- (342) Context: You are walking through the village and you see one of the teachers walking. You assume that he has finished teaching for today.
 Nóúnóu Freddy *ó* dá lési.
 now Freddy MOD give class
 ‘Freddy should/will have taught now’.
- (343) Bigá ée yá gó a sikóo wán dáka nóo yá
 because if 2SG.NEG go LOC school ART day NARR 2SG.NEG
ó sábi soní akí, ée ná sembe kondá dá i.
 MOD know thing here if NEG person tell give 2SG
 ‘Because if you didn’t go to school you will/might not know these things if no one has told you’ (Kuse, 1977, 3).

6.2.5 Summary

The morpheme *ó* is ambiguous in four ways: it conveys a simple future reading, a future-in-the-past reading, a past-in-the-future reading and an assumptive epistemic modality reading. As for the other TMA morphemes discussed in the present study, I aim to give a unified analysis for these four different interpretations of *ó*. The following section discusses the classification of *ó* as a Tense morpheme or a Modal morpheme and aims to establish to which functional category *ó* belongs.

⁷The glosses and English translation of the proposition in (343) are mine.

6.3 Morpheme *ó*: Tense or Modality?

This section aims to determine the best way to categorise the morpheme *ó*: as a Tense morpheme or as a Modal morpheme. The description of the meanings and interpretations of *ó* in the previous section indicates that it is very difficult to argue in favour of a unified Tense analysis for *ó*. Under such an analysis, it would be expected that *ó* would express a temporal ordering relation of precedence between topic time and time of utterance, where the topic time is located after the time of utterance. Problematic for such an analysis are the past-in-the-future and assumptive epistemic readings, in which the embedded eventuality conveys a non-future reading. Section 6.3.1 lists arguments against a Tense analysis of *ó*. Close examination of the data indicates that *ó* has characteristics which are similar to the ones of the modals *musu* and *sa*, on a semantic level as well as on a syntactic level. In Section 6.3.2, I demonstrate that a modal analysis for *ó* accounts for all of its semantic and syntactic characteristics.

6.3.1 Problems for the *ó* as Tense category analysis

This section briefly discusses why a Tense analysis for *ó* cannot account for all the characteristics of *ó* and therefore, has to be abandoned. Under such a hypothesis, the morpheme *ó* would be assumed to be a Tense head which would express a precedence relation between topic time and a contextually relevant anchor time: AT BEFORE TT expressing FUTURE. It would be expected that *ó* only modifies an eventuality which has a future reference reading relative to an anchor time. However, eventive verbs embedded under the assumptive epistemic reading of *ó* have a past temporal orientation, as demonstrated in (342) above and (344) below. Stative verbs, meanwhile, convey a present temporal orientation of the embedded eventuality, as exemplified in (341) and (343) above. The latter is repeated here.

- (343) Bigá ée yá gó a sikóo wán dáka nóo yá
 because if 2SG.NEG go LOC school ART day NARR 2SG.NEG
ó sábi soní akí, ée ná sembe kondá dá i.
 MOD know thing here if NEG person tell give 2SG
 ‘Because if you didn’t go to school you will/might not know these things
 if no one has told it to you’ (Kuse, 1977, 3).
 a. EvT = Present
- (344) Dí maripá *ó* kó deé bee bigá a bi dé a wáta.
 DET maripa MOD come dry ? because 3SG PST BE LOC water
 ‘The maripa should/will have become rotten because it was in the water’
 (the speaker knows, because s/he has seen it lying in the water).

a. EvT = Past

This non-future temporal orientation of the embedded eventuality is totally unexpected under a hypothesis that argues in favour of a Tense analysis of *ó*. Furthermore, the past-in-the-future reading is also problematic for a Tense analysis. Since a Tense head only expresses a temporal ordering relation between topic time and time of utterance, it cannot explain why in the case of a simple future and future-in-the-past, the eventuality is located after an established anchor time, and in case of a past-in-the-future reading, before an anchor time. The nature of the location of the eventuality with regard to the anchor time should be taken into account when all the characteristics of the morpheme *ó* are explained. The aim of the present study in this section is to provide a unified analysis of *ó*. As a result, a FUTURE Tense hypothesis does not explicate all the characteristics of *ó*, and therefore it cannot hold.

6.3.2 Similarities between the morpheme *ó* and the modal morphemes *musu* and *sa*

This section investigates similarities regarding the semantic interpretation and the syntactic distribution between the morpheme *ó* and the modals *musu* and *sa*. First, here is a short overview of the similarities between *ó* and the modals *musu* and *sa* that will be discussed in this section:

- ambiguity between circumstantial and epistemic modality
- availability of two time intervals for modification by adverbs
- temporal interpretation of epistemic reading is tied to the state vs. event distinction
- similarity regarding ordering restrictions
- inability to occur with *bi* in their epistemic reading

Based on these similarities, this section investigates whether a Modal analysis would be able to account for the semantic and syntactic characteristics of *ó*. In the literature, a modal analysis for morphemes which indicate a future tense interpretation is not uncommon (Huddleston 1995; Copley 2002; Werner 2003 for English, Matthewson 2006 for St'át'imcets, Tonhauser to appear for Guaraní).

The next sections illustrate a number of similarities between the morpheme *ó* and the modals *musu* and *sa*. The focus of these sections are the simple future, future-in-the-past and assumptive epistemic readings of *ó*, while the past-in-the-future reading is left aside for the moment but to which we will return in Section 6.3.3.

6.3.2.1 Ambiguity between circumstantial and epistemic modal readings

Recall that the necessity modal *musu* and the possibility modal *sa* are ambiguous between circumstantial and epistemic modal readings. This section aims to demonstrate that *ó* is also ambiguous between these two modal readings. For examples of the modals *musu* and *sa*, I refer to reader to Chapter 5. Modal readings of intention and prediction have a circumstantial modal base, while the assumptive epistemic reading of *ó* has an epistemic modal base.

The proposition in (345) conveys a modal reading of intention (or dynamic volition in Palmer's 2001 terminology). The modal base is circumstantial and the ordering source is intentional. The modal anchor time is set by Tense which expresses PRESENT Tense and the modal evaluation time has a future orientation.

- (345) Té i kabá nóo mi o paká i u dí woóko.
 when 2SG finish NARR 1SG MOD pay 2SG FU DET work
 'When you have finished, I will pay you for the work'.

In (346)⁸, *ó* conveys a modal reading of prediction. The proposition has a circumstantial modal base and a stereotypical ordering source. The modal anchor time has a present perspective and the modal evaluation time has a future temporal orientation.

- (346) Context: A woman is talking about what people used to take with them to the forest in the old days.
 Débóóko mámate té yu hópo nóo yoó téi láí. Ée
 next day morning when 2SG lift up NARR 2SG.MOD take thing if
 yu muyée nóo yoó téi paabi.
 2SG woman NARR 2SG.MOD take plate
 'The next day when you got up, you would take things. If you were a woman then you would bring plates'.

The proposition in (347) expresses an expectation. Expectation here, is a subcategory of prediction. The difference between a modal reading of prediction and of expectation is very difficult to establish, as these readings are extremely contextually dependent. A modal reading of expectation indicates the speaker's expectations with regard to the truth value of the proposition at a future moment. The proposition has a circumstantial modal base and a stereotypical ordering source. It has a present temporal perspective and a future temporal orientation.

⁸The proposition in (346) expresses a future-in-the-past reading. Since the eventuality is located prior to the time of utterance, *ó* is translated into English with 'would'.

- (347) Context: A thief has been caught by the police. The thief is handcuffed. A child asks her mother why the police handcuffed him. The mother says:

Dée sikóútu feée táa a ó kulé gó.

DET police fear COMP 3SG MOD run go

‘The police are afraid that she will run away’.

When *ó* conveys an assumptive epistemic reading, the modal base is epistemic, and describes an eventuality ‘in view of what the speaker knows based on available evidence’. The ordering source combines a stereotypical ordering with an informational one, as exemplified in (344) which is repeated below. As already pointed out in Section 6.2, the modal anchor time is anchored to the time of utterance, and the modal evaluation time has a past temporal orientation.

- (344) Dí maripá ó kó deé bee bigá a bi dé a wáta.
 DET maripa MOD come dry ? because 3SG PST BE LOC water
 ‘The maripa should/will have become rotten because it was in the water’
 (the speaker knows, because s/he has seen it lying in the water).

To summarize, under a possible world analysis, *ó* has a universal modal force and is compatible with a circumstantial modal base and an epistemic modal base. The ordering source refers to the intentions/wishes of the agent (intentional, bouletic), to the normal course of events (stereotypical), or to information deduced from the discourse environment (informational). This is summarized in Table 6.1.

Modal Force	Modal Base	Ordering source
<i>ó</i> universal/necessity	no restrictions	no restrictions

Table 6.1: The morpheme *ó* in possible world semantics

6.3.2.2 Availability of two time-intervals

In a sentence containing *ó*, two time intervals are available: the modal anchor time and the modal evaluation time, which are both available for modification by temporal adverbials, as illustrated in (326) and (330) which are repeated here.

- (326) Amanyá mi ó dé a kamía.
 tomorrow 1SG MOD BE LOC place
 ‘Tomorrow I will be at home’.

- (330) Nóúnóu akí yoó ába kíki.
 now here 2SG.MOD cross creek
 ‘Now you will cross the creek’.

In the former, the temporal adverbial *amanyá* (=‘tomorrow’) modifies the modal evaluation time, whereas in the latter, the temporal adverbial *nóúnóu* (=‘now’) modifies the modal anchor time. Modification of the modal anchor time is not expected under a Tense analysis.

6.3.2.3 Temporal interpretation of epistemic modal clauses

The modal evaluation time of a sentence containing *ó* correlates with modal base and dynamicity of the verb. A circumstantial modal base gives rise to a future orientation of the embedded eventuality regardless of aktionsart (see Section 6.2 for examples), whereas the modal evaluation time of modals with an epistemic modal base correlates with dynamicity of the verb; stative verbs convey a present temporal orientation, whereas eventive verbs convey a past temporal orientation. This is summarized in Table 6.2.

Dynamicity	Modal Base	ModT	Dependent	EvT
stative	circumstantial	present	Tense	present/future
	epistemic	present	TU	present
nonstative	circumstantial	present	Tense	future
	epistemic	present	TU	past

Table 6.2: Aktionsart, Modal Base and Modal Evaluation Time

For the modal morphemes *musu* and *sa*, I argued that the morphological null Perfect morpheme is present in the underlying structure when the modal base is epistemic. The null Perfect morpheme gives rise to the past time reference interpretation of the eventuality. Its presence is required by the stativity requirement of PRESENT Tense, meaning that if the morphological null Perfect is not present, the epistemic reading of *ó* cannot surface. The modal anchor time of epistemic modal morphemes is anchored to the time of utterance, and they embed the time of utterance. Since the time of utterance indicates a moment in time, it can only combine with stative predicates. In order for an eventive verb to combine with the time of utterance, it needs to merge with a state-deriving functional head such as the null Perfect, which creates a Result state of the embedded eventuality and thus satisfies the requirement of PRESENT Tense placed on its complements. Recall that circumstantial modal morphemes occur below Tense in the functional hierarchy and that modal morphemes create a stative predicate of the complement

they embed (in the sense of Werner 2003) which satisfies the stativity requirement of PRESENT Tense. Modals shift the modal evaluation time forward in time (in the sense of Palmer 2001; Condoravdi 2002; Werner 2003; Stowell 2004) and this forward shifting effect gives rise to the future temporal orientation of the modal evaluation time of circumstantial modal morphemes.

To sum up, the temporal orientation of the modal evaluation time of the epistemic reading of *ó* is caused by the morphological null Perfect morpheme in the underlying clause structure, whereas of the circumstantial reading it results from the temporal characteristics of the modal itself.

6.3.2.4 Ordering Restrictions

The morpheme *ó* also shows similarities with the modal *musu* with regard to their syntactic distribution. Recall that the modal morphemes *musu* and *sa* are able to occur in double modal constructions and when they do, they occur in a fixed *musu sa* order. Any deviations from this order are judged ungrammatical. The speculative epistemic interpretation of *sa* does not surface when this modal combines with *musu*, only its deontic permissive and dynamic ability reading. Whereas *musu* can be interpreted both in its deductive epistemic and its deontic obligation readings.

The morpheme *ó* cannot co-occur with the modal *musu*, neither when the former precedes the latter nor when the latter precedes the former, as exemplified in (348).

- (348) a. *Dí muyée *ó* musu dóu na Atjoni fuúku bigá dí
 DET woman MOD MOD arrive LOC A early because DET
 pási a fóto a boóko.
 road LOC P 3SG break
 Intended reading: ‘The woman will be obliged to arrive early in Atjoni because the road to Paramaribo is bad’.
- b. *Dí muyée musu *ó* dóu na Atjoni fuúku bigá dí
 DET woman MOD MOD arrive LOC A early because DET
 pási a fóto a boóko.
 road LOC P 3SG break
 Intended reading: ‘It must be that the woman will arrive early in Atjoni because the road to Paramaribo is bad’.

Semantically it would not be unexpected for future time reference to co-occur with deontic obligation. These combinations are attested cross-linguistically, as demonstrated for Hungarian in (349)⁹ and Jamaican Creole in (350).

⁹Thanks to Éva Dékány (personal communication) for providing this Hungarian example.

- (349) Május 1-töl fizet-ni fog kell-eni.
 May 1-from pay-INF FUT MOD-INF
 ‘From May 1st, we will have to pay’.
- (350) Jan wi mos kom tumara.
 J FUT MOD come tomorrow
 ‘John will certainly come tomorrow’ (Winford, 1993, 88).

It is possible in Saamáka to combine the future time reference *ó* with a modal expression of obligation, as demonstrated in (351) where it modifies the complex predicate construction *ábi (f)u*. This construction combines the (auxiliary) verb *ábi* (=‘to have’) with the prepositional complementizer *fu* and conveys a deontic obligation reading.

- (351) Dí muyée ó ábi u kóti alísi ée a kó béte bigá
 DET woman MOD have FU cut rice if 3SG come better because
 dí alísi feen lépi.
 DET rice FU.3SG ripe
 ‘The woman will have to harvest rice, if she gets better, because her rice is ripe’.

The question that needs to be answered here is how can this incompatibility of co-occurrence be accounted for? A semantic restriction with regards to their interpretation seems to be ruled out, as the data in (349) - (351) demonstrates. It could be possible that the morphemes are mutually exclusive because they occupy the same syntactic slot in the functional sequence of heads. If this were true, we would expect that *ó* behaves exactly the same as *musu* with regard to its interaction with the possibility modal *sa*, for example. It would thus be predicted that *ó* always precedes *sa* and that an *ó sa* order expressing future permissive is infelicitous. The former expectation is ruled out, but the latter is not, as illustrated in (352) and (353) respectively.

- (352) a. Dí míi ó sa wáka a mátu.
 DET child MOD MOD walk LOC forest
 Referring to a 2 year old child: ‘The child will be able to walk in the forest (by herself)’.
 or ‘The child will be allowed to walk in the forest (by herself)’.
- b. *Dí míi sa ó wáka a mátu.
 DET child MOD MOD walk LOC forest
- (353) Án ó sa duumí akí tidè e.
 3SG+NEG MOD MOD sleep here today NARR
 ‘S/he will not be allowed stay here tonight’

Since *ó* can combine with *sa* in its deontic permissive reading, it will be very hard to argue that *musu* and *ó* are in complementary distribution.

Interestingly, as for the combination *musu sa*, the speculative epistemic reading of *sa* in combination with *ó* is infelicitous and only its deontic permissive and dynamic ability readings surface. Recall Chapter 5 on Modality in which I postulated a stipulation constraining the ungrammaticality of the *sa musu* order which, under a cartographic approach to language structure, would be expected to be possible. To rule out this ungrammatical order, I postulated a semantic constraint stating that in Saamáka, existential modal quantification over possible worlds cannot precede universal modal quantification over possible worlds. The data discussed here indicates that this constraint cannot account for the ungrammaticality of the co-occurrence of *musu* and *ó* (both are universal quantificational modals) and therefore, this constraint needs to be adjusted. I argue that universal modal quantification cannot be dominated by another modal quantification. In other words, universal modal quantification must always be the highest quantifier over the worlds variable. The fact that *ó* is subject to this constraint that was independently stated for the modal morphemes is future evidence that it forms a natural class with modals and not Tense. I return to this semantic constraint in Section 6.4.

6.3.2.5 Inability to occur with *bi* in the epistemic reading

This section discusses the interaction between *ó* and the temporal pronominal *bi*. The combination of the morpheme *ó* with the temporal pronominal *bi* gives rise to a counterfactual interpretation of the proposition, as in (354)¹⁰. When these morphemes co-occur, *bi* always precedes *ó*. Recall that in their epistemic reading *musu* and *sa* are infelicitous to co-occur with *bi*, therefore I expect this is also true for the assumptive epistemic reading of *ó*. This expectation is confirmed by (355).

- (354) Context: This extract discusses the flood of 2006.
 Té de a dóu. Píkí so móo nóo a bi ó síngi hén.
 until there 3SG arrive little bit more NARR 3SG PST MOD sink 3SG
 A bi ó síngi híi dí kónde. So a fíká lánɡa lánɡa le gó
 3SG PST MOD sink all DET village so 3SG remain long long ? go
 alá.
 there
 ‘It (=the water) came until there. A little bit further and it would have
 been under water. It would have been underwater, the whole village.
 Thus, it has remained there for a long time’.

¹⁰Counterfactuality in Saamáka is studied in Section 6.5.

- (355) A bi ó síngi húi dí kónde.
 3SG PST MOD sink all DET village
 *‘It will have sunk whole the village’.

The next section aims to explain the temporal interpretation of past-in-the-future sentences.

6.3.3 Past-in-the-future reading

In sentences expressing a past-in-the-future reading, an anchor time is established which is situated in the future after the time of utterance: $AT > TU$. The eventualities expressed in these constructions have occurred prior to this anchor time, and are situated after the time of utterance, i.e., $AT > e$; $TU < e$, as illustrated in (338), which is repeated below.

- (338) Ée i tooná kó nóo mi ó skífi í bíffi akí kabá.
 if 2SG return come NARR 1SG MOD write DET letter here finish
 ‘When you come back I will have finished writing this letter’.
 a. $TU < AT$; $AT > e$

The questions that this interpretation of *ó* raises are: how can its temporal interpretation be explained and how does the past-in-the-future reading differ from the simple future reading? For contrast, the proposition in (321) conveys a simple future reading, and is repeated for convenience.

- (321) Mi ó folóisi gó a fóto.
 1SG MOD move go LOC Paramaribo
 ‘I will move to Paramaribo’.

The only overt TMA morpheme present in the surface structure of both propositions is the morpheme *ó*. What is the source of this difference in temporal interpretation? That this difference in temporal interpretation is due to aktionsart is unlikely, because in both propositions, the morpheme modifies an accomplishment verb. Secondly, it is also unlikely that this difference is due to a difference in modal base; if that were the case, it would be expected that (321) would have a circumstantial modal base and (338) would have an epistemic modal base. However, Condoravdi (2002, 2003) argues that epistemic modality cannot modify an eventuality which is situated in the future after the time of utterance. Crucial to the interpretation of epistemic modality is the settledness of the eventuality. Although the speaker might not be aware of how the outcome of the eventuality is settled, the outcome of the eventuality in the actual world has to be determined prior to the time of utterance. Consequently, the proposition in (338) does not

have an epistemic modal base, but a circumstantial modal base. The proposition in (338) can be rephrased as follows: At the time of utterance, the speaker predicts that at a contextually established time in the future, the agent has done a certain thing. I postulate that this sentence expresses a modal reading of prediction which implies a circumstantial modal base. The sentence in (338) has a present perspective and a future orientation. The proposition in (321) on the other hand expresses a modal reading of intention. It has a circumstantial modal base and a present perspective of the modal anchor time and a future orientation of the modal evaluation time. In other words, the propositions in (321) and (338) both have a circumstantial modal base and they only differ in their temporal interpretation. In order to explain the difference in temporal interpretation, I postulate that the morphological null Perfect morpheme is present in the underlying structure of the latter. Its presence gives rise to the past interpretation of the eventuality. Since *ó* is interpreted as circumstantial modality, the null Perfect morpheme is not required to satisfy the stativity requirement of the temporal ordering relation in Tense; in this case, PRESENT Tense. However, as the data in Section 6.2 demonstrated, a circumstantial reading of *ó* is allowed to embed a stative complement (see examples (314), (319) and (326) above). The null Perfect morpheme cannot be restricted to not co-occur with a circumstantial modal base. It might be that its presence is triggered by the type of clause because all of the examples in my corpus expressing a past-in-the-future reading are temporal ‘when’ clauses. I leave this to further research.

6.3.4 Summary

This section argued in favour of a modal analysis of the morpheme *ó*. It was shown that the morpheme has a number of semantic and syntactic characteristics in common with the necessity modal *musu* and the possibility modal *sa*. The main similarities are listed below. All three morphemes are ambiguous between a circumstantial modal base and an epistemic modal base. Second, the temporal interpretation of the epistemic reading of these morphemes is tied to the state vs. event distinction, meaning that the modal evaluation time correlates with the dynamicity of the verb. Stative verbs give rise to a present temporal orientation of the modal evaluation time and eventive verbs to a past temporal orientation. Thirdly, in combination with the temporal pronominal *bi*, the epistemic reading of these morphemes is infelicitous because the modal anchor time of epistemic modals is anchored to the time of utterance (in the sense of Hacquard 2006, 2010). Since *bi* establishes a contextually relevant past anchor time, the modal anchor time of epistemic modals and the anchor time established by *bi* are incompatible. Consequently, when merged with *bi* only their circumstantial interpretation surfaces.

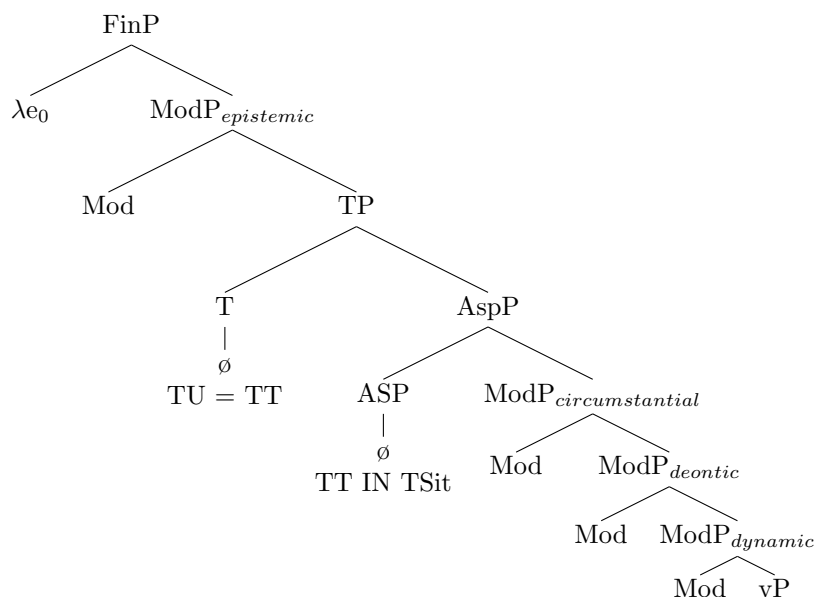
In the case of *ó*, this gives rise to a counterfactual reading.

In the next section, the syntactic composition of the morpheme *ó* is given. It has two positions in the hierarchy of functional projections: one below Tense and Aspect, and one above Tense. The former location gives rise to the circumstantial reading of *ó* and the latter to its epistemic reading.

6.4 The syntactic composition of *ó*

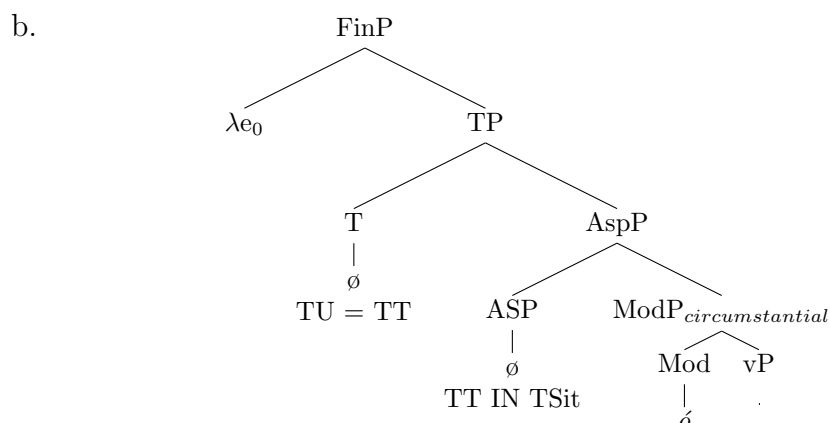
The previous section established a number of similarities between *ó* on the one hand and *musu* and *sa* on the other. Therefore, I claim that *ó* is a modal morpheme which has a universal modal force (as does the necessity modal *musu*) and it combines with a circumstantial and epistemic modal base, while the ordering source ranges from stereotypical to intentional to informational. It expresses a modal reading of intention, prediction and assumptive epistemic. Following Hacquard (2006, 2010), I assume that the interpretation of the modal base depends on the time/individual pair it combines with and the modal complement. Recall that epistemic modals are anchored to the time of utterance and they are speaker-oriented, whereas for circumstantial modals the modal anchor time is set by Tense and they are agent-oriented (or to be more specific, oriented toward the discourse participants relevant to the eventuality). The position of the event binder directly effects the position of the modals; the event binder for epistemic modals, λe_0 , is situated in Fin, and for the circumstantial modals, situated in Asp (in the sense of Hacquard 2006, 2010). Additionally, epistemic modality embeds a large modal complement which includes Tense, while circumstantial modality embeds a small modal complement which excludes Tense. Consequently, in their epistemic reading, modals are situated in $\text{Mod}_{\text{epistemic}}$ above Tense, and in their circumstantial reading in $\text{Mod}_{\text{deontic}}$ or $\text{Mod}_{\text{dynamic}}$, which are below Tense and Aspect (in the sense of Hacquard 2006, 2010). These assumptions for *musu* and *sa* are adapted in a way such that they explain the characteristics of *ó*. The morpheme *ó* can co-occur with the deontic permissive reading of *sa* and therefore the former in its circumstantial reading cannot be situated in $\text{Mod}_{\text{deontic}}$. I postulate that it is situated in $\text{Mod}_{\text{circumstantial}}$ in its modal reading of intention and prediction and in $\text{Mod}_{\text{epistemic}}$ in its assumptive epistemic modality reading. The functional head expressing $\text{Mod}_{\text{circumstantial}}$ is situated above $\text{Mod}_{\text{deontic}}$ and $\text{Mod}_{\text{dynamic}}$ and below T and Asp in the hierarchy of functional projections, as illustrated in (356).

(356)



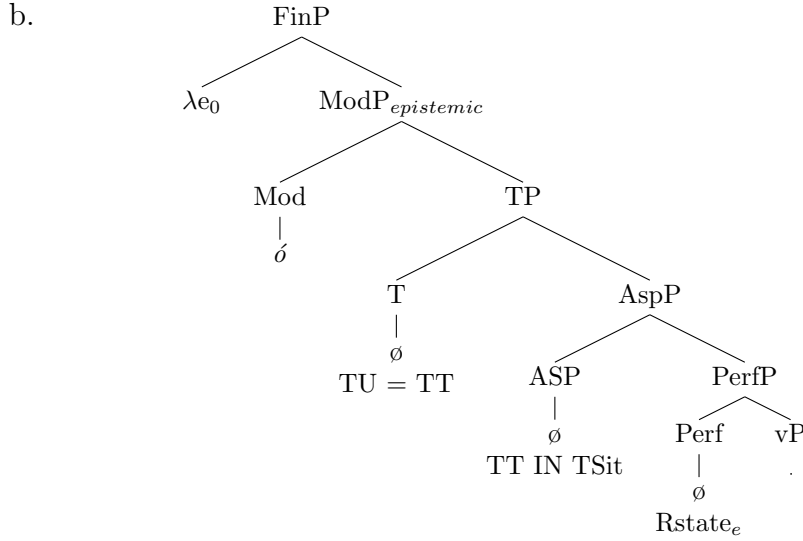
The proposition in (345), which is repeated below, expresses a modal reading of intention which implies that *ó* is situated in $\text{Mod}_{\text{circumstantial}}$. Recall that the temporal ordering relation between topic time and time of situation in AspP always expresses that the topic time is fully included in the time of situation, IMPERFECTIVE Aspect. Tense indicates a temporal ordering relation between topic time and time of utterance which expresses PRESENT Tense. The phrase structure of (345) is presented in (345-b).

- (345) a. Mi *ó* wási déé lái fii dá i.
 1SG MOD wash DET.PL thing FU.2SG give 2SG
 ‘I will do the dishes for you’.



The proposition in (342), which is also repeated, conveys an assumptive epistemic reading and consequently has an epistemic modal base. The modal *ó* is located above Tense in the functional hierarchy. Tense denotes that the time of utterance occurs simultaneously with the topic time: $TU = TT$ expressing PRESENT Tense. Recall that in Saamáka, PRESENT Tense denotes a point in time and consequently it can only combine with states. Events require a non-trivial interval to become true and therefore they cannot be true at a moment. In order for an eventive verb to combine with the PRESENT Tense in Saamáka they need to be embedded by a state-deriving functional head such as Perfect. In order for the epistemic reading of *ó* to come about, the morphological null Perfect morpheme is required to be present in the underlying structure of the clause. The composition of Perfect assumed in the present study is such that it creates a Result State of the embedded eventuality which is able to combine with PRESENT Tense in Saamáka. Furthermore, its presence accounts for the past reference of the embedded eventuality when the modal base is epistemic. The phrase structure for (342) is presented in (342-b)

- (342) a. Nónónou Freddy ó dá lési.
 now Freddy MOD give class
 ‘Freddy should/will have taught now’.



The current functional hierarchy of heads does not explain why \acute{o} cannot co-occur with *musu* and why *sa* in its speculative epistemic modality reading cannot precede \acute{o} in its intentional or predictional reading. To elucidate the impossibility of these readings, I postulate, in the next section, a semantic constraint which is placed on top of this functional sequence.

6.4.1 Constraint Against Universal Modal Subordination

In Chapter 5; Section 4.2 it was demonstrated that a more fine-grained syntactic structure does not explain the ungrammaticality of the *sa musu* order and therefore I proposed a semantic constraint which states that existential modal quantification cannot dominate universal modal quantification: $*\exists < \forall$. Unfortunately, this semantic constraint cannot account for the incompatibility of *musu* and \acute{o} . In addition, I ruled out the idea that these two modal morphemes are mutually exclusive because they are situated in the same syntactic head in the functional hierarchy. Instead, I postulate that Saamáka has a **Constraint Against Universal Modal Subordination** which states that universal quantificational modal operators cannot be dominated by other modal operators regardless of their quantificational force, as specified in (387).

- (357) **Constraint Against Universal Modal Subordination:**
 No modal with universal modal force can be in the scope of another modal operator.

The next section discusses counterfactual clauses in Saamáka. Counterfactuality is expressed by combining the temporal pronominal *bi* and the modal morpheme *ó*.

6.5 Counterfactuality

In this section, I focus on counterfactual clauses in Saamáka, which are expressed by combining the temporal pronominal *bi* and the modal *ó*, as illustrated in (358).

- (358) Context: At the end of a conversation, we are taking the woman we have interviewed and she replies by saying:
 U ábi dí tangí bigá ée unu á ke u bi ó
 2PL have DET thanks because if 2PL NEG want FU.2PL PST MOD
 pasá gó fu nóo fá mi fan ku unu de.
 pass go FU NARR how 1SG talk with 2PL there
 ‘Thank you, because if you did not want for you to pass here and how I talked with you’.

Counterfactuality indicates hypothetical eventualities with a factual background. It refers to a possibility at a past moment which has not been realised, as demonstrated in (359), which implies that a counterfactual eventuality does not hold in the actual world. In counterfactual conditions, possible relations between two eventualities are imagined, as exemplified in (360). The world would slightly change if these correlations existed. The speaker is aware that in the actual world this correlation does not exist.

- (359) At that time, he might still have won the game but he didn’t in the end (Condoravdi, 2002, 62).
 (360) If he had been smart, he would have been rich (Iatridou, 2000, 232).

A counterfactual clause can refer to a past and/or present eventuality. They denote an unrealised past or present possible eventualities respectively. There is disagreement in the literature regarding the existence of future counterfactuals. Since future eventualities are undetermined and their outcome is unknown at the time of utterance, the speaker cannot know what the eventuality will turn out to be in the actual world. Counterfactuality conveys a reading in which the speaker is aware of the non-existence of the proposition in the actual world (in the sense of Lewis 1981, 1986; Iatridou 2000; Condoravdi 2002; Abusch 2008; Kratzer to appear). The literature disagrees on whether the falsity of the antecedent in a counterfactual clause is entailed or implied. Based on the literature, I assume that this is language specific (see Cho 1997; Bhatt 1997; Nevins 2002; Lai 2007;

Tonhauser 2009 for discussion on counterfactuality in a number of different and unrelated languages). When it is an implicature, the counterfactuality can be cancelled. This implies that the speaker cannot assume that the eventuality expressed by the antecedent is false. If the non-realisation of a clause cannot be denied, counterfactuality is entailed.

Counterfactual clauses are modal sentences which have a metaphysical modal base. A metaphysical modal base indicates ‘what may be/might have been in a world *w*’ (in the sense of Condoravdi 2002)¹¹. A counterfactual clause has a past perspective and a future orientation. The future orientation implies that the eventuality is located in the future after the modal anchor time and not necessarily in the future after the time of utterance. The modal anchor time of a past counterfactual is situated at a moment in time at which the outcome of the eventuality is unknown. The modal evaluation time is situated in the future after the modal anchor time, which is a moment in time at which the outcome of the eventuality is not settled. A metaphysical modal base is not available when the outcome of the eventuality is assumed to be known (in the sense of Condoravdi 2002, 2003).

Section 6.5.1, a summary of Iatridou (2000) is presented whose ideas on counterfactuals are taken as theoretical background for the analysis of counterfactuals in Saamáka in Section 6.5.3.

¹¹Abusch (2008) aims to show that it is problematic to assume a metaphysical modal base for counterfactual propositions in certain situations. A metaphysical modal base implies that all worlds up to the topic time are exactly the same. However, the truth value of a proposition can change by shifting conceptual assumptions such as the information given in the discourse context. The counterfactual propositions in (361) seem contradictory, but they are both true in their own context.

(361) Context: There were two huge beautiful old trees in my front yard. In a summer storm, one of them was blown down. Fortunately, it fell away from the house onto the driveway, rather than towards the house onto my husband’s office. When we looked at the broken trunk, we saw that it was rotted inside, so this was a dangerous tree. The trees were of similar appearance and age.

- a. Husband’s argument: I might have been killed, because **the tree might have fallen onto my office**. Let’s cut down the other tree. It might fall onto my office in another storm.
- b. Wife’s argument: We bought the house for the trees, and now you want to cut them down? Anyway the tree guy told us that because of the location of the rot in the trunk, the tree could only fall away from the house. So **the tree could not have fallen onto your office**. There is no reason to cut down the other tree (Abusch, 2008, 3/4).

To explain this discrepancy, Abusch argues that certain counterfactual propositions do not have a metaphysical modal base but a circumstantial modal base. I refer the interested reader to Abusch (2008) for discussion.

6.5.1 Theoretical Assumptions

The analysis of counterfactuals in the present study is adapted from Iatridou (2000) who argues that the past tense morphology in counterfactuals is a ‘fake’ past tense. This implies that although the morphology indicates past tense, it does not contribute a past time reference reading to the counterfactual proposition. Palmer (2001) points out that the function of the past tense morphology in counterfactual clauses is not to situate an eventuality in time, but to indicate that the speaker does not refer to an eventuality in the actual world but to an eventuality in a non-actual world. This is exemplified with (362) which expresses a future counterfactual interpretation. The verb in the antecedent carries past tense morphology although the possible eventuality is located in the future.

(362) If Charlie played tomorrow they would lose (Ippolito, 2002, 17).

A similar description can be given for past counterfactuals, as exemplified in (363). Past counterfactual refers to a past possibility which is unactualised. These clauses contain two layers of past tense and it would be expected that two layers of past tense would express a past perfect interpretation. However, the proposition in (363) expresses a simple past.

(363) If Charlie had played baseball yesterday, they would have lost (Ippolito, 2002, 17).

Iatridou (2000) has developed Palmer’s idea into a formal analysis. She explains the presence of past tense morphology in these constructions by assuming that it does not express solely past time reference, but an exclusion relation which ranges over times and worlds. This particular interpretation of past tense morphology as one of ranging over times or worlds depends on the discourse context in which it occurs. The exclusion feature of past tense morphology is given in (364).

(364) $T(x)$ excludes $C(x)$ (Iatridou, 2000, 246).

$T(x)$ refers to the Topic (x) ‘*the x we are talking about*’ and $C(x)$ to ‘*the x that for all we know is the x of the speaker*’ (Iatridou, 2000, 246). This feature indicates when it ranges over times, the topic time excludes the time of utterance, and when it ranges over worlds, the topic world excludes the actual world.

With regard to counterfactuals, past tense morphology indicates that the ‘*actual world is not among those worlds that we are talking about*’ (Iatridou, 2000, 248). Important for Iatridou’s argumentation is the fact that counterfactuals are cancellable without creating a contradiction. In certain languages (such as English and Modern Greek), counterfactuality is not entailed, but it is a conversational implicature. As exemplified for English in (365).

- (365) If the patient had the measles, he would have exactly the symptoms he has now. We conclude, therefore, that the patient has the measles (Iatridou, 2000, 232).

That counterfactuality is a conversational implicature is not true for all languages¹². Lai (2007) and Tonhauser (2009) argue that in Iquito (Zaparoan) and Guaraní respectively counterfactuality is entailed and that it cannot be cancelled, as exemplified for Guaraní in (366). I refer the interested reader to these studies for discussion.

- (366) Context: Juan had a very bad accident.
 O-mano-mo'ã *ha o-mano.
 A3-die-CF and A3-die
 Intended reading: 'He almost died and he died' (Tonhauser, 2009, 536).

This section continues with a description of the semantic and syntactic characteristics of counterfactual clauses in Saamáka (Section 6.5.2) and an analysis of counterfactuality along the lines of Iatridou (2000) (Section 6.5.3).

6.5.2 Meaning and interpretation of Counterfactuals in Saamáka

In Saamáka, a counterfactual reading is expressed by combining the temporal pronominal *bi* with the modal morpheme *ó*. In counterfactual conditionals, counterfactual morphology appears in the consequent clause whereas in the antecedent clause the eventuality is modified by the morpheme *bi* only. The temporal pronominal precedes the modal, as exemplified in (367). The reverse order is ungrammatical, as in (368).

- (367) Ée dí mui bi kái nóo mé bi ó deen méiki.
 if DET child PST cry NARR 1SG.NEG PST MOD give.3SG milk
 'If the child had cried I would not have given her milk'.
 (368) *Senni ó bi gó duumí.
 S MOD PST go sleep
 Intended reading: 'Senni would go to sleep'.

¹²Nevins (2002) demonstrates a correlation between counterfactual morphology and whether the counterfactual is cancellable or not. In languages which have specific counterfactual morphology (e.g. Chinese, Tagalog), the falsity of the antecedent is not cancellable. In these languages, counterfactuality expresses a presupposition and not an implication. Whereas in languages which use past tense morphology to convey a counterfactual reading (e.g. Dutch, English), the falsity of the antecedent can be cancelled, meaning that in these languages, counterfactuality denotes an implicature.

In the antecedent, the temporal pronominal modifies the verbal predicate. When the modal *ó* also occurs in the antecedent, the sentence is judged ungrammatical, as illustrated in (369).

- (369) *A bi ó bigí u mbéi wán wósu ée a bi ó ábi
 3SG PST MOD begin FU make ART house if 3SG PST MOD have
 móni.
 money
 Intended reading: ‘S/he would begin to build a house if s/he had money’.

A sentence without the occurrence of the temporal pronominal in both the antecedent and the consequent results in a conditional clause, as exemplified in (370).

- (370) Ée í míi lási í ganía nóo hén taatá ó fón hén.
 if DET child lose DET chicken NARR 3SG father MOD hit 3SG
 ‘If the child loses the chicken his father will beat him’.

In Saamáka, counterfactual clauses can be divided into past and present counterfactuals. Past counterfactuals indicate that the eventuality does not obtain at a past moment, as exemplified in (371) - (373). In the latter example, the achievement verb *wíni* (=‘to win’) is modified by *bi ó* in the consequent and the predicate *sa wégi wán hondo kiló* (=‘can lift a hundred kilos’) by the temporal pronominal *bi* in the antecedent. The proposition expressed by the antecedent is located prior to the time of utterance and the exact moment in time is left unspecified. The consequent clause is located in the future of the antecedent clause. The modal anchor time of (371) has a past perspective and the modal evaluation time a future orientation. The proposition has a metaphysical modal base.

- (371) Ée Senni bi sa wégi wán hondo kiló nóo a bi ó
 if Senni PST MOD weigh ART hundred kilo NARR 3SG PST MOD
 wíni.
 win
 ‘If Senni was able to lift a hundred kilos he would have won’.

A similar description can be given for (372) and (373). In the former a stative verb is modified by the counterfactual and in the latter an achievement verb. Both sentences have a past perspective and a future orientation.

- (372) Ée mé bi sí mi máti éside a dí ndéti nóo
 if 1SG.NEG PST see 1SG friend yesterday LOC DET night NARR
 mé bi ó sábi táa a kó.
 1SG.NEG PST MOD know COMP 3SG come

‘If I had not seen my friend yesterday evening, I would not have known that s/he had come’.

- (373) Ée mi bi sábi táa Senni bi ábi heépi fanóudu nóo
 if 1SG PST know COMP Senni PST have help necessary NARR
 mi bi ó heépi hén ma mé bi sábi.
 1SG PST MOD help 3SG but 1SG.NEG PST know
 ‘If I had known that Senni needed help, I would have helped him, but I didn’t know’.

Present counterfactuals imply that the eventuality is not realised at the time of utterance, as in (374) - (375). The proposition in (374) contains the stative verb *líbi* (=‘to live’) which is modified by the counterfactual *bi ó*. The eventuality expressed by the consequent clause occurs simultaneously with the eventuality expressed by the antecedent. Both eventualities in the counterfactual condition are stative verbs and are situated at the time of utterance. The modal anchor time has a present perspective and the modal evaluation time has a present orientation.

- (374) Ém bi ábi hía móni, mi bi ó líbi wán súti líbi.
 if.1SG PST have much money 1SG PST MOD live ART sweet life
 ‘If I had money, I would live a good life’.

A similar description can be given for (375) in which an accomplishment verb is modified by the counterfactual.

- (375) Ée yu bi gó a sikóo, nóo i bi ó feni woóko.
 if 2SG PST go LOC school NARR 2SG PST MOD find work
 ‘If you went to school then you would find a job’.

Counterfactual clauses are compatible with temporal adverbials denoting a past moment, the time of utterance or a future moment. The temporal adverbial specifies when the embedded eventuality was not realised, as illustrated for the past temporal adverbials in (376) and (377).

- (376) Mi bi ó balí wósu éside.
 1SG PST MOD sweep house yesterday
 ‘I would have cleaned the house yesterday’.
- (377) Dí muyée bi ó kabá u hon pindá ma á bi
 DET woman PST MOD finish FU uproot peanut but 3SG.NEG PST
 gó a bákase éside ku tidé.
 go LOC backside of village yesterday with today
 ‘The woman would have finished harvesting peanuts, but today and yesterday she didn’t go to her vegetable garden’.

When a temporal adverbial denoting the time of utterance modifies a counterfactual clause, the result is a present counterfactual. In (378), the temporal adverbial phrase, *dí yúu akí* (=‘this hour’), modifies the antecedent clause and in (379), the consequent clause. For both propositions, the eventuality expressed by the consequent is not realised at the time of utterance.

- (378) Ée i bi báí híla beée dí yúu akí nóo yu bi ó
 if 2SG PST buy much bread DET hour here NARR 2SG PST MOD
 á sondí u nyá éti.
 have thing FU eat still
 ‘If you had bought a lot of bread now, you would still have something to eat’.
- (379) Ée mi bi fiká akí, dí yúu akí mi bi ó déde.
 if 1SG PST remain here DET hour here 1SG PST MOD die
 ‘If I had stayed here, I would have been dead now’.

Temporal adverbials expressing a future moment are also allowed in counterfactual clauses. The temporal adverbial *amanyá* (=‘tomorrow’) modifies the eventuality in the consequent in both (380) and (381).

- (380) Amanyá a bi ó gó ku hén taatá a hóndi ma fútu
 tomorrow 3SG PST MOD go with 3SG father LOC hunt but foot
 feen boóko tidé.
 FU.3SG break today
 ‘Tomorrow s/he would have gone hunting with her/his father, but her/his foot broke today’.
- (381) A bi ó kó amanyá ée a bi á móni.
 3SG PST MOD come tomorrow if PST have money
 ‘He would come tomorrow, if he had money’.

The interaction of temporal adverbials and counterfactual morphology indicates that in Saamáka counterfactuals can refer to past, present or future possible eventualities which are unrealised. We can also derive that aktionsart does not influence the temporal interpretation of a counterfactual clause. All four semantic classes can co-occur with past, present and future temporal adverbials. The temporal adverbial triggers the temporal interpretation, and not aktionsart.

In certain languages, counterfactuality is entailed while in others it is an implicature. There are a number of diagnostics to test this, of which, two diagnostics are investigated in the present study.

First, a proposition which conveys a counterfactual reading can denote that the speaker does not know whether the eventuality took place or not. The fact that the speaker is allowed to express that she does not know the outcome of an eventuality indicates that counterfactuality is not asserted and not conveyed by entailment, as exemplified in (382)¹³ and (383).

- (382) Naáse dí wómimíi dé nóúnóu? Mé sí hén éside. Mi
 where DET boy BE now 1SG.NEG see 3SG yesterday 1SG
 bi sí hén wán pási a dí wíki akí. Óto éside mi
 PST see 3SG ART way LOC DET week here other yesterday 1SG
 bi sí hén pálá so. A bi táki da mi táa a o
 PST see 3SG quickly so 3SG PST say give 1SG COMP 3SG MOD
 tooná gó a dí wósu. A bi ó gó téi Remes a
 return go LOC DET house 3SG PST MOD go take R LOC
 fóto. Mé sábi ée a gó kaa.
 Paramaribo 1SG.NEG know if 3SG go already
 ‘Where is that boy now? I didn’t see him yesterday. I saw him this week.
 The day before yesterday, I met him briefly. He told me he would come
 to the house again. He would pick up Remes in Paramaribo. I don’t
 know if he went already’.
- (383) Context: It is 8 o’clock. Someone is looking for the speaker’s brother.
 The speaker doesn’t know where her/his brother is, only that he would
 be home at 7.
 Mé sí én ma a bi táa a bi ó kó a
 1SG.NEG see 3SG nut 3SG PST COMP 3SG PST MOD come LOC
 séibi yúu.
 seven hour
 ‘I haven’t seen him, but he had said that he would be back by 7’.

A second diagnostic is the cancellability property of counterfactual clauses. When it is cancellable, counterfactuality is an implicature. If it cannot deny the non-realization of the eventuality, counterfactuality is an entailment. Since counterfactuality can be cancelled in Saamáka it expresses an entailment, as illustrated in (384).

¹³This is an elicitation which is inspired by an extract from a narrative in Sranan adapted from Winford (2000b).

- (384) Ée dí wómi bi ábi malaria nóo a bi ó ábi
 if DET man PST have malaria NARR 3SG PST MOD have
 déé lo péi síki akí. Hén mbéi mi méni táa dí wómi
 DET.PL same sort sick here therefore 1SG think COMP DET man
 ábi malaria.
 has malaria
 ‘If the man had malaria he would have the same symptoms. Therefore I
 think that the man has malaria’.

From these three examples, I derive that *bi* is not strictly temporal, but like English PAST Tense morphology, a generalized non-actual marker.

6.5.3 Syntactic composition of counterfactuality

The analysis of counterfactuality in Saamáka proposed here is based on Iatridou (2000) who argues that past tense morphology expresses an exclusion feature. This feature indicates a variable which ranges over times and worlds. When it ranges over times, the topic time excludes the time of utterance and when it ranges over worlds, the topic world excludes the actual world. Important for Iatridou’s analysis is that counterfactualities are a conversational implicature and that they can be cancelled. The propositions in (382) - (384) above indicated that this is a valid assumption to claim for counterfactuals in Saamáka.

Before we can adapt Iatridou’s analysis of counterfactuality, my analysis of *bi* as a pronominal temporal variable needs to be adjusted. I propose that the temporal pronominal *bi* not only ranges over times, but also over worlds depending on the discourse context in which it occurs, which implies that it not only establishes the anchor time making it not the time of utterance, but some contextually given past time. In addition, though, it is also able to establish the anchor world making it not the actual world, but some contextually provided anchor world. Recall that *bi* is situated in FinP in the underlying structure in which a number of anchors are hosted: location, person, times, worlds (in the sense of Rizzi 1997; Ramchand 2008; Ritter and Wiltschko 2009). The possibility of *bi* to range over worlds is, thus, not in contradiction with its position in the functional sequence. Eventualities consist of world/time pairs, and therefore I propose that *bi* is not a temporal pronominal

but a pronominal situational variable which ranges over times and worlds and is situated in Fin¹⁴.

In a counterfactual clause in Saamáka, *bi* modifies the eventuality in the antecedent, and *bi ó* modifies the eventuality in the consequent, as in (375), which is repeated here.

- (375) Ée yu bi gó a sikóo, nóo i bi ó féni woóko.
 if 2SG PST go LOC school NARR 2SG PST MOD find work
 ‘If you went to school then you would find a job’.

I postulate that *bi* in the antecedent and *bi* in the consequent are co-indexed. Both range over worlds, establishing the anchor world as some hypothetical world. They express a present possibility in a non-actual world w_1 which has a factual background and is very similar to the actual world w_0 . The difference is that the proposition expressed in the antecedent, p , holds in this hypothetical world w_1 , but not in the actual world w_0 . The proposition in the consequent q also does not hold in the actual world w_0 , but only in the hypothetical world w_1 . The eventuality expressed by the consequent has a future temporal interpretation. The modal evaluation time is situated in the future of the modal anchor time. The modal morpheme *ó* contributes this future time reference interpretation to a counterfactual clause (in the sense of Palmer 2001; Condoravdi 2002; Werner 2003; Stowell 2004).

Past counterfactuals, as in (371), are analysed in a similar fashion. The situational pronominals in the counterfactual are co-indexed and express that the actual world w_0 is excluded from the topic world w_1 . The presence of the modal morpheme *ó* gives rise to a future time reference reading of the eventuality in the

¹⁴Additional support for the assumption that *bi* is a situational pronominal comes from the following characteristics in which the appearance of *bi* not only indicates whether the eventuality expressed is no longer relevant at the time of utterance, but in addition, it can convey information about the presence of certain participants in the conversation, as exemplified in (385).

- (385) a. A bi táki táa a kii mbéti.
 3SG PST say COMP 3SG kill animal
 ‘S/he said that s/he has killed animals’.
 b. A táki táa a kii mbéti.
 3SG say COMP 3SG kill animal
 ‘S/he said that s/he has killed animals’.

Due to the implication that an eventuality embedded under *bi* is no longer relevant at the time of utterance, the most natural reading of (385-a) is that the person who has killed animals is not nearby whereas (385-b) implies that this person is present when the sentence is uttered. In these propositions, the presence of *bi* indicates whether the agent is present or not in the discourse setting of (385).

consequent, and sets the modal evaluation time to one located in the future after the modal anchor time.

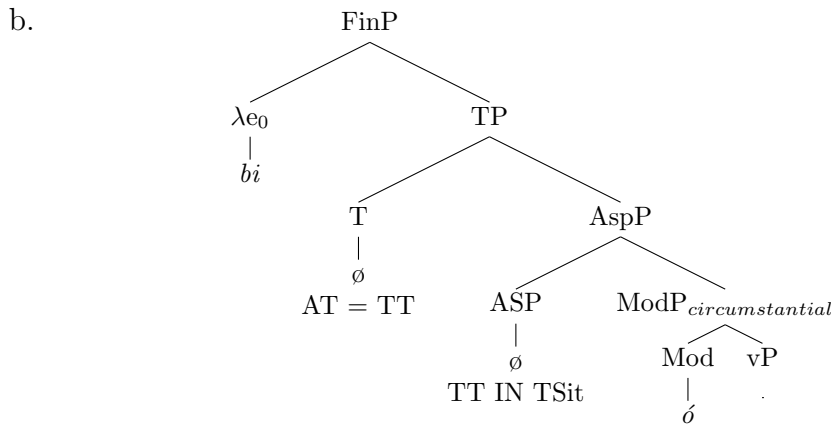
- (371) Ée Senni bi sa wégi wán hondo kiló nóo a bi ó
 if Senni PST MOD weigh ART hundred kilo NARR 3SG PST MOD
 wíni.
 win
 ‘If Senni was able to lift a hundred kilos he would have won’.

The attentive reader might have noticed that the surface structure of a past counterfactual clause is exactly the same as the surface structure of a present counterfactual clause. The situational pronominal *bi* modifies the eventuality in the antecedent and the combination *bi ó* modifies the eventuality in the consequent. No other overt TMA morphology is present in the surface structure. However, the two clauses differ in their temporal interpretation. In past counterfactuals, the eventuality in the antecedent is located prior to the time of utterance, and in present counterfactuals the eventuality is located simultaneously with the time of utterance. Often in Saamáka, dynamicity plays an important role in the temporal interpretation of a clause. However, the data in Section 6.5.2 demonstrated that aktionsart does not influence the temporal interpretation of counterfactual clauses—regardless of aktionsart, a counterfactual clause can have a past, present or future time reference interpretation. The counterfactual clauses in (375) and (371) both modify an eventive verb in the consequent. If the difference in temporal interpretation between present and past counterfactuals cannot be explained by dynamicity, the question rises what can account for this difference? I argue that this difference is due to the presence of the morphological null Perfect morpheme in the underlying structure of past counterfactuals and its absence in present counterfactual clauses. The null Perfect morpheme is present in both the antecedent and the consequent clause of a past counterfactual clause. Its presence indicates that the embedded eventuality, in both the antecedent and the consequent, is located prior to a contextually established anchor time which in the default is the time of utterance. The presence of the morphological null Perfect morpheme in counterfactual clauses is not required, it is merely allowed as would be expected from any morpheme of a language.

Now we can start to investigate where *ó* in its counterfactual interpretation is situated in the hierarchy of functional projections. Recall that the temporal ordering relation in Tense expresses a simultaneous relation between the topic time and the time of utterance, or PRESENT Tense. This temporal ordering relation places a stativity requirement on its complement. Recall also that this stativity requirement can be satisfied by any state deriving functional head. A circumstantial modal morpheme creates a derived state of the embedded complement, and con-

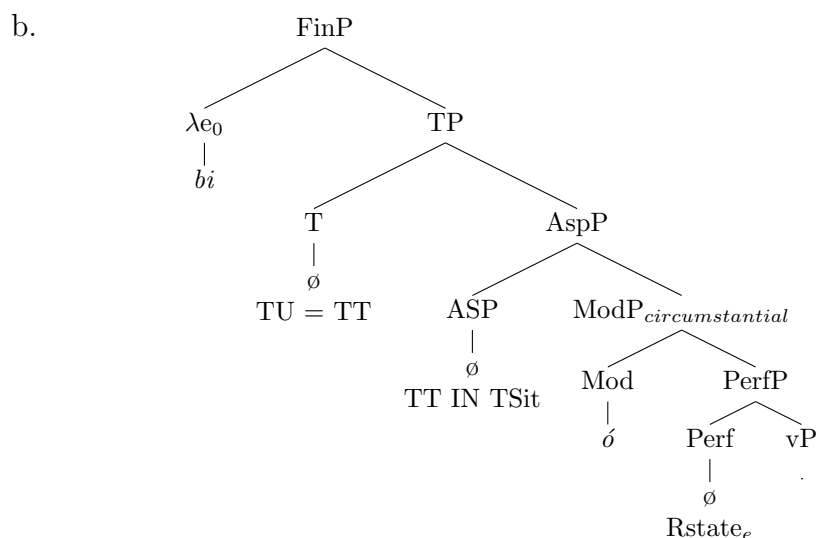
sequently it satisfies the stativity requirement placed by PRESENT Tense on its complements. As a result, the modal morpheme *ó* in counterfactual clauses must be situated below Tense in functional sequence and in $\text{Mod}_{\text{circumstantial}}$ (in the sense of Condoravdi 2002; Copley 2002). A similar conclusion can be drawn from the fact that the situational pronominal *bi* is present in counterfactual clauses. The interaction of the modal morphemes *musu*, *ó* and *sa* and the situational pronominal did not give rise to epistemic readings of these modals. I argued that the modal anchor time of epistemic modals is always anchored to the time of utterance (in the sense of Hacquard 2006, 2010). I extend this characteristic of epistemic modal morphemes with the requirement that they have to be anchored to the actual world. Thus, when the modal morpheme *ó* is used in a counterfactual clause it cannot be located in $\text{Mod}_{\text{epistemic}}$ in the hierarchy of functional projections (in the sense of Condoravdi 2002; Copley 2002). The phrase structure of the present counterfactual in (375) is presented in (375-b).

- (375) a. Ée yu bi gó a sikóo, nóo i bi ó féni woóko.
 if 2SG PST go LOC school NARR 2SG PST MOD find work
 ‘If you went to school then you would find a job’.



The underlying structure of the past counterfactual (371) is presented in (371-b).

- (371) a. Ée Senni bi sa wégi wán hondo kiló nóo a bi
 if Senni PST MOD weigh ART hundred kilo NARR 3SG PST
 ó wíni.
 MOD win
 ‘If Senni was able to lift a hundred kilos he would have won’.



6.5.4 Summary

This section discussed counterfactuality in Saamáka which is expressed by combining the situational pronominal *bi* and the modal morpheme *ó*. In this section, I adjusted my analysis of the morpheme *bi* from a pronominal temporal variable to a pronominal situational variable. This was necessary, because under an Iatridou (2000) style analysis, *bi* not only ranges over times, but also over worlds; establishing a past contextually relevant anchor time *and* world. Consequently, the situational pronominal *bi* denotes the nonactual world w_1 in which the hypothetical eventuality is true. Furthermore, I explained the difference in temporal interpretation between past and present counterfactuals by arguing that the morphological null Perfect morpheme is present in the underlying structure of the former and is absent in the latter.

6.6 Summary

This chapter studied the semantic interpretation and syntactic distribution of the morpheme *ó* which expresses a simple future reading, a future-in-the-past reading, a past-in-the-future reading and an assumptive epistemic modality reading. It was investigated whether the morpheme was a functional Tense element or a functional Modality element and it was demonstrated that the latter functional category was better in accounting for all of the semantic and syntactic characteristics of *ó*. I argued that *ó* has a universal modal quantification and is compatible with a circumstantial modal base and an epistemic modal base. In its epistemic reading, *ó* is situated in $\text{Mod}_{\text{epistemic}}$ which is located above Tense in the functional hierarchy

while in its circumstantial reading, *ó* is situated in $\text{Mod}_{\text{circumstantial}}$ which is located below Tense and Aspect, but above $\text{Mod}_{\text{deontic}}$ and $\text{Mod}_{\text{dynamic}}$.

Additionally, I discussed counterfactual constructions which are composed of the morpheme *bi* and the modal *ó*. I adapted a Iatridou (2000) style analysis for the analysis of counterfactual clauses in Saamáka which argues that the past tense morphology in counterfactual clauses does not convey a temporal interpretation and rather denotes an exclusion relation which ranges over times and worlds. The counterfactual clauses indicated that my temporal pronominal analysis for *bi* had to be adjusted to state that *bi* is a pronominal situational variable which is able to establish an anchor time and an anchor world.

The semantic and syntactic description of the core TMA morphemes in Saamáka is now complete. In next chapter I will give an overview of the main points made in this dissertation and present the hierarchy of functional projections in the IP domain for Saamáka.

Chapter 7

Synthesis and Discussion

7.1 Putting the pieces together

The present study concentrated on exploring the hierarchy of functional projections in the IP domain of Saamáka and focused on the characteristics of the core TMA morphemes. In order to establish the exact nature of a functional sequence of heads in a language, it is crucial to study the semantic and syntactic characteristics of each individual TMA morpheme. Once the semantic interpretations and syntactic distribution of an individual morpheme have been established, we can start to argue for a certain position of this morpheme in the functional sequence, and derive a label for this morpheme. It was established that Saamáka has a number of core TMA morphemes: imperfective *ta*, a morphological null Perfect morpheme, possibility modal *sa*, necessity modal *musu*, modal *ó*, a covert Aspect head which expresses IMPERFECTIVE, a covert Tense head which expresses PRESENT Tense and situational pronominal *bi*. In the previous chapters it was demonstrated that most of the morphemes can convey several interpretations for which I aimed to give a unified analysis. Before I present a synthesis of the whole study, I give a brief summary of each chapter first.

Chapter 2 focused on the difference in temporal interpretation between a proposition containing an unmarked stative verb (present time reference) and an unmarked eventive verb (past time reference). To explain this difference, I postulated that Saamáka has a morphological null Perfect morpheme in its TMA paradigm. Perfect is a complex functor which consists of three functional heads: Tense (expressing PRESENT), Aspect (expressing IMPERFECTIVE) and Perfect which creates a Result state of the embedded eventuality (in the sense of Comrie 1976; Parsons 1990; Musan 2001). Since PRESENT Tense is restricted to embed a stative complement, Perfect is obligatorily present in the underlying structure when unmarked

eventive verbs combine with PRESENT Tense. The presence of Perfect satisfies the stativity requirement of PRESENT Tense, and thus eventive verbs can be embedded under PRESENT Tense. The null Perfect is situated below Tense and Aspect in the functional sequence.

In Chapter 3, I discussed the functional category of Aspect. Saamáka has a general imperfective morpheme *ta*, which can convey a habitual, inchoative and progressive reading, and creates an in-progress state of the embedded eventuality (in the sense of Parsons 1990). These readings differ in the type of complement they embed, inchoative/progressive denotes a singular event and habitual a plural event (in the sense of Ferreira 2005). The morpheme *ta* occupies a single functional head, ImpP, and it is situated just above vP and below Tense, Aspect and Perfect in hierarchy of functional projections. In this chapter, I also argued that the temporal ordering relation between topic time and time of situation expressed by Aspect is covert. I assume that this ordering relation is telicity-dependent; atelic verbs like states and activities convey an Imperfective reading, while telic verbs like accomplishment and achievements convey a Perfective reading (in the sense of Bohnemeyer and Swift 2004) and in the default Aspect in Saamáka embeds a stative complement, consequently Aspect always expresses that topic time is fully included in time of situation: TT IN TSit expressing IMPERFECTIVE. Aspect is situated below Tense and above Perfect and Imperfective.

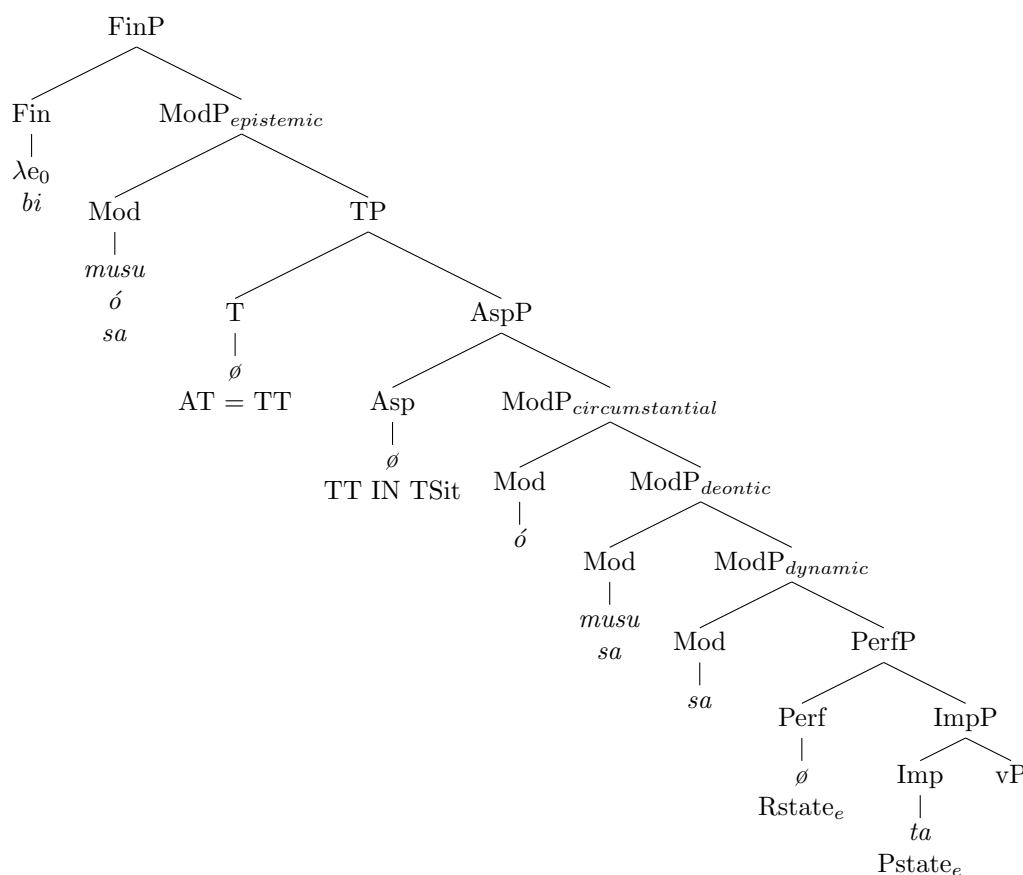
The functional category of Tense, a functor which expresses a temporal ordering relation between topic time and time of utterance, was the focus of Chapter 4. In Saamáka, Tense expresses a relation of identity between topic time and time of utterance, or, $TU = TT$ expressing PRESENT Tense, which refers to a moment in time (and not to an interval). Consequently, PRESENT Tense is restricted to merge with a stative complement. Since events need a non-trivial interval to evolve they cannot be true at a moment in time. Therefore, in order for eventive verbs to combine with PRESENT Tense, they have to be coerced into a state (which can be done by Perfect, imperfective *ta*, or modal morphemes), while stative verbs combine with PRESENT Tense without any problems. Furthermore, I studied the morpheme *bi* which expresses that an eventuality is situated prior to the time of utterance. I argued that it is a pronominal situational variable which establishes the anchor time and/or anchor world directly and makes it not to be the time of utterance and/or actual world but some contextually relevant past time and/or anchor world. The morpheme is situated in Fin in the functional hierarchy of heads (in the sense of Enç 1987; Giorgi and Pianesi 2001; Higginbotham 2009).

The characteristics of the necessity modal *musu* and the possibility modal *sa* were studied in Chapter 5. The former can convey a deontic obligation and a deductive epistemic modality reading and the latter a dynamic ability, deontic permissive and speculative epistemic modality reading. To explain these different readings and to keep a unified analysis, a purely semantic approach (in the sense of Kratzer 1977, 1991, 2002, to appear) seemed to be insufficient. Hacquard's (2006; 2010) ideas, which combine Kratzer's possible world semantics with Cinque's (1999; 2001) cartographic approach, were therefore adopted. It was demonstrated that these different readings are associated with different types of complements, resulting in different positions in the underlying structure; in their epistemic reading, the modals are situated above Tense in $\text{Mod}_{\text{epistemic}}$, while in their deontic and dynamic readings they are situated in $\text{Mod}_{\text{deontic}}$ and $\text{Mod}_{\text{dynamic}}$ respectively, which are below Tense and Aspect and above Perfect and Imperfective.

In Chapter 6, I studied the morpheme *ó* which can convey a simple future reading, a future-in-the-past reading, a past-in-the-future reading and an assumptive epistemic modality reading. Since this morpheme has a number of crucial semantic and syntactic characteristics in common with the modal morphemes discussed in Chapter 5, I argued in favour of a modal analysis to explain its semantic interpretation and syntactic distribution. Like the other two modals, *ó* occupies two positions in the underlying structure; $\text{Mod}_{\text{epistemic}}$, which is above Tense and $\text{Mod}_{\text{circumstantial}}$, which is below Tense and Aspect and above $\text{Mod}_{\text{deontic}}$ and $\text{Mod}_{\text{dynamic}}$.

The hierarchy of functional projections in Saamáka is presented in (386).

(386)



The current functional sequence leaves two unexplainable distributional facts open, and to elucidate all the attested TMA morpheme orderings, two independent factors that constrain certain morpheme interactions have to be formulated in addition to this functional hierarchy of heads proposed in (386). One constraint concerns the ungrammaticality of a proposition in which a universal modal is dominated by another modal, and the other constraint concerns the infelicity of the epistemic modality reading when modal morphemes co-occur with the situational pronominal *bi*.

The data discussed in Chapter 5 and Chapter 6 demonstrated that the universal modal morphemes *musu* and *ó* cannot co-occur and that they cannot be embedded by the existential modal morpheme *sa* when it is interpreted in its speculative epistemic modality reading (as would be predicted by the functional sequence in (386)). I postulated that this was due to an independent semantic constraint, **Constraint Against Universal Modal Subordination**, which states that universal modals cannot be dominated by other modal operators and that they have to be the first modal in a sequence of modal morphemes, i.e. $\forall <$

∃. This **Constraint Against Universal Modal Subordination** is defined in (387).

(387) **Constraint Against Universal Modal Subordination:**

No modal with universal modal force can be in the scope of another modal operator.

I assume for now that this is a language specific constraint, but it might be a tendency across other languages.

Secondly, in combination with situational pronominal *bi*, the epistemic reading of the modal morphemes is infelicitous. The modal anchor time of epistemic modal morphemes is anchored to time of utterance (in the sense of Palmer 2001; Condoravdi 2002; Hacquard 2006, 2010) therefore in their epistemic reading, they cannot merge with the situational pronominal *bi*. The function of *bi* is to establish an anchor time which is situated prior to the time of utterance. This anchor time established by *bi* cannot function as a modal anchor time for epistemic modals, because there is a mismatch in the interpretation of *bi* and the modal anchor time of the epistemic modal interpretation. This is formulated by (Hacquard, 2006, 123) as follows: ‘*It is conceptually fine to report a (current) epistemic state about a past state of affairs, whereas it is not possible to request someone to bring about a past state of affairs*’ (Hacquard, 2006, 123). In other words, she constrains epistemic modal morphemes to have a present perspective of the modal anchor time.

In combination with these two semantic constraints, the hierarchy of functional projections in (386) predicts the distributional properties of TMA morphemes, their interaction, their ordering and their interpretation. The data presented in Section 7.2 demonstrates that all attested combinations correspond to the hierarchy of functional heads, as presented in (386) above, in combination with these two semantic constraints.

7.2 The ordering of the core TMA morphemes in Saamáka

In order to establish the overt manifestation of clausal functional heads, it is important to study the ordering of TMA morphemes when they co-occur and the semantic interpretation(s) of these constructions. Based on the extended projection of functional heads as proposed in (386), two predictions regarding the order of TMA morphemes can be formulated. These general predictions are presented in (388).

- (388) a. Subject *bi musu sa ta* Verb
 b. Subject *bi ó sa ta* Verb

TMA morpheme interactions have been briefly discussed in each chapter which studied the syntactic distribution of each individual morpheme. The possible combinations are listed below and any order that deviates from the functional hierarchy as presented in (386) above were systematically judged ungrammatical by my consultants¹.

When the situational pronominal *bi* embeds the necessity modal *musu*, a past obligation reading surfaces (390).

- (390) A bi músu túwe hén mánu fu a sa tán a
 3SG PST MOD throw away 3SG husband FU 3SG MOD stay LOC
 dí kónde.
 DET village
 ‘She was obliged to divorce her husband in order for her to be able to stay in the village’.

The combination of *bi* with the possibility modal *sa* can convey a past permissive or a past ability reading, as exemplified in (391) and (392) respectively.

- (391) Éside ndéti mi bi sa gó u mi mamá a gandá.
 yesterday night 1SG PST MOD go FU? 1SG mother LOC village
 ‘Yesterday night I was allowed to go with my mother to town’.
- (392) Context: There is money on the table while you are at your neighbour’s place. You know that Senni was in your house at that time. When you return to your house, you see that the money is still on table.
 Senni bi sa fufúu í móni ma á dú én.
 S PST MOD steel DET money but 3SG.NEG do 3SG
 ‘Senni was able to steal the money, but he didn’t’.

¹Unfortunately, there is one exception. The phrase structure in (386) predicates that the situational pronominal *bi* precedes the necessity modal *musu*. This prediction is borne out, as illustrated in (390). However, it is also possible for *musu* to precede *bi*, as exemplified in (389).

- (389) I musu bi spaar dí moni fii bíga nóúnóu yáa ábi móni.
 2SG MOD PST save DET money FU.2SG because now 2SG.NEG have money
 ‘You should have saved your money, because now you don’t have money’.
 or *‘It must be that you saved your money, because now you don’t have money’.

A proposition in which *musu* precedes *bi* receives a past obligation interpretation whereas an epistemic reading of *musu* is infelicitous. I will discuss this unexpected ordering in Section 7.5.

When the situational pronominal *bi* co-occurs with imperfective *ta*, the proposition can convey a past progressive or past habitual reading, as illustrated in (393) and (394) respectively.

- (393) Dí wómi bi ta bebé wáta. Dí Senni ta kó hén a
 DET man PST IMP drink water when S IMP come NARR 3SG
 píki hén táa a súti wán dyanga.
 tell 3SG COMP 3SG shoot ART deer
 ‘The man was drinking tea when Senni was coming to his place and said that he shot a deer’.
- (394) Mi oma á bi ta paandí kasábásúti, soso kasába
 1SG grandmother NEG PST IMP plant sweet cassava bitter cassava
 a bi ta paandí.
 3SG PST IMP plant
 ‘My grandmother did not used to plant sweet cassava, but she did used to plant bitter cassava’.

In combination with the dynamic ability interpretation of the possibility modal *sa*, the necessity modal *musu* can be both interpreted as expressing deontic obligation and deductive epistemic modality, as demonstrated in (395) and (396) respectively.

- (395) Dí womímí musu sa kóti páu faa sa woóko akí.
 DET boy MOD MOD cut tree FU.3SG MOD work here
 ‘The boy is obliged to be able to cut trees in order for him to be able to work here’.
- (396) Context: Senni has gone to Paramaribo today. Since he has not yet called you, you don’t know if he has arrived already. However, it is 6 o’clock and you assume that he arrived in Paramaribo already.
 Senni musu sa dóu a fóto kaa.
 Senni MOD MOD arrive LOC P already
 ‘Senni must have been able to arrive in Paramaribo already’.

This combination can also result in a deductive epistemic modality with a deontic permissive reading, as in (397).

- (397) Context: A girl sprained her ankle a couple of weeks ago and she was not allowed to walk, but the speaker has just now seen her pass by his place.
 Dí muyéemí musu sa waka.
 DET girl MOD MOD walk
 ‘It must be that the girl is allowed to walk’.

The functional hierarchy of heads as presented in (386) predicts that *musu* in its deontic obligation reading cannot co-occur with *sa* in its deontic permissive reading. This prediction is borne out. In order to express these two modal interpretations in a single construction, my consultants constructed bi-clausal structures, such as the one in (398).

- (398) Dí tatá ku dí mamá musu táki bifó dí mǐ sa gó
 DET father with DET mother MOD talk before DET child MOD go
 a sikóo.
 LOC school
 ‘The father and the mother are obliged to give permission for the child to go to school’.

The combination of necessity modal *musu* with imperfective *ta* results in a deductive epistemic modality and progressive aspect interpretation or a deontic obligation and habitual interpretation, as in (399) and (400).

- (399) Context: Someone wants to know where Jacky is. She has just passed by the speaker’s place in the direction of the river.
 Jacky musu ta wási láí dyúnsu mi sí a pasá gó a lío
 J MOD IMP wash thing just now 1SG see 3SG pass go LOC river
 ku láí a hédi.
 with thing LOC head
 ‘Jacky must be doing the dishes. Just now I saw her pass and go to the river with things on her head’.
- (400) Hǐ sembe musu ta nyá fíí dé a líbi.
 all person MOD IMP eat FU.2SG BE LOC live
 ‘Everyone must eat regularly in order to stay alive’.

When the modal *ó* combines with possibility modal *sa*, the former can be interpreted as expressing future time reference and the latter deontic permission or dynamic ability, as illustrated in (401) and (402) respectively.

- (401) A ó sa gó a dí fesa dí wiki ó hópo de.
 3SG MOD MOD go LOD DET party DET week MOD lift there
 ‘She will be allowed to go to the party next week’.
- (402) Ée dí womímí subí gó a líba nóo a ó sa boóko
 if DET boy climb go LOC top NARR 3SG MOD MOD break
 dí kokonóto.
 DET coconut
 ‘If the boy climbs in the tree he will be able to fetch the coconut’.

The combination *ó* and *sa* can also result in an assumptive epistemic modality reading of the former and a dynamic ability reading of the latter, as exemplified in (403).

- (403) Dí womímíí ó sa dóu a wósu sónte
 DET boy MOD MOD arrive LOC house at this hour of the day
 bigá a kumútu fuúku a fóto.
 because 3SG come.out early LOC P
 ‘It must be so that the boy is able to arrive at home about now, because he came out of Paramaribo early’.
- (404) Situation: Senni has gone to P today. The speaker doesn’t know if he has arrived already, cause he hasn’t called. However, it is 6 o’clock and the speaker knows that the road is rather good. So, the speaker thinks that he might have arrived already.
 Senni o sa dóu a fóto bigá séibi yúu kisi kaa.
 S MOD MOD arrive LOC P because seven hour catch already
 ‘Senni should have arrived in Paramaribo (by now) because it is already seven o’clock’.

When modal *ó* combines with imperfective *ta* the result is a proposition in which the former can be interpreted as expressing future time reference and the latter as expressing progressive aspect, as illustrated in (405).

- (405) Context: Discussing how to prepare a vegetable garden for the first time
 Té dí sónúhátí té dí sónu háti tyiká nóo yu ó
 when DET midday when DET sun hot enough? NARR 2SG MOD
 gó súti fáya a dí goón nóo a ó kisi. Nóo a
 go shoot fire LOC DET ground NARR 3SG MOD catch NARR 3SG
 ó ta tyumá té lóntu dóu kuma fá yu kóti hén.
 MOD IMP burn until round arrive like manner 2SG cut 3SG
 Fa: When it is midday, when the sun is bright enough, you will ignite a fire at the vegetable garden where it will burn. Then it will burn around in the way you have cut it.

Imperfective *ta* can also convey a habitual reading when it is embedded by *ó*, as in (406).

- (406) Context: Talking about the old days, when traveling to Paramaribo was a very long trip (up to 7 days) and certain products were scarce.

Dí ameeekánóli hén wá bi ábi. Dí sondí u ábi kuma
 DET kerosene 3SG 1PL.NEG PST have DET thing 1PL have like
 ameeekánóli nóo kandéa. Kandéa hén u bi o ta ábi.
 kerosene NARR resin resin NARR 1PL PST MOD IMP have
 U ta púu dí kandéa a mátu ten mbei butá a sáku.
 1PL IMP pull DET resin LOC forest therefore put LOC bag
 Té yu púu butá a sáku kaa nóo hén yu ó ta
 when 2SG pull put LOC bag already NARR NARR 2SG MOD IMP
 sendé ta kó kaa. Hén yu ó ta tyá kuma
 shine IMP come already NARR 2SG MOD IMP carry like
 ameeekánóli. Da di kóni fu bosi kónde sembe.
 kerosene BE DET knowledge FU forest village person
 ‘Kerosene, we didn’t have it. The thing we had like kerosene was resin.
 Resin, that was what we had. We gathered the resin in the forest and
 put it in a bag. When you placed it in a bag already then you would turn
 it on and it was coming already. Then you would carry it like kerosene.
 That is the knowledge of the people living in the forest’.

This combination can also result in a proposition, as in (407), in which *ó* expresses assumptive epistemic modality and *ta* expresses progressive aspect.

- (407) Context: Someone wants to know where Senni is. The speaker is rather sure that he is fixing the radio at this moment, because he mentioned before to the speaker that he planned to do that today.
 A ó ta mbéi dí ladio.
 3SG MOD FU IMP make DET radio
 ‘It will be that he is fixing the radio’.

When the possibility modal *sa* combines with imperfective *ta*, the former can be interpreted as expressing deontic permission or dynamic ability while the latter can be interpreted as expressing habitual aspect, as illustrated in (408) and (409) respectively.

- (408) Dí womímíi sa ta sún a lío.
 DET boy MOD IMP swim LOC river
 ‘The boy is allowed to swim regularly in the river’.
- (409) Dí womímíi sa ta peé híbi wán wíki.
 DET boy MOD IMP play every ART week
 ‘The boy is able to play every week’.

These two readings of *sa* can also combine with *ta* when it is interpreted as expressing progressive aspect, as in (410) and (411).

- (410) Dí mǐi sa ta lúku tv té a ta nyá u?
 DET child MOD IMP look television when 3SG IMP eat Q
 ‘Is the child allowed to be watching television when she is eating?’
- (411) Mi sa ta haíka póku ta léi lési.
 1SG MOD IMP listen music IMP learn lesson
 ‘I can be listening to music and studying (at the same time)’.

When *sa* conveys a speculative epistemic modality reading, it can combine with *ta* in its progressive reading, as exemplified in (412).

- (412) Context: The speaker is at her vegetable garden in the forest. Her oldest daughter goes to school and will join her after school. Around the time that the daughter is coming, the speaker sees that it is going to rain shortly.
 Dí mǐi sa ta kulé gó a bákase bigá tyúba
 DET child MOD IMP run go LOC back side of village because rain
 ta kó.
 IMP come
 ‘The child might be running to our vegetable garden, because it is going to rain’.

In Saamáka, it is also possible to combine three and even four TMA morphemes in a single clause. When the situational pronominal *bi* combines with necessity modal *musu*, the latter is always interpreted as expressing deontic obligation. When imperfective *ta* combines with these two TMA morphemes, it can be either interpreted as expressing habitual, as in (413), or progressive, as in (414).

- (413) Dí mi dé píki mi bi musu ta balí wósu híni wán
 when 1SG BE small 1SG PST MOD IMP sweep house every ART
 dáka, ma mé bi sábi táa mi musu bali wósu híni
 day but 1SG.NEG PST know COMP 1SG MOD sweep house every
 wán dáka.
 ART day
 ‘When I was small I had to clean the house every day, but I didn’t know that I had to clean it every day’.
- (414) Dí wómi bi musu ta jéi ú.
 DET man PST MOD IMP hear 1PL
 ‘The man was obliged to be hearing us’. (‘It was our intention that the man heard us’.)

When *bi* and *musu* precede possibility modal *sa*, the latter contributes a dynamic ability reading to the proposition, as exemplified in (415)

- (415) Dí mamá u dí wómimíí akí án bi musu dá
 DET mother FU DET boy here 3SG.NEG PST MOD give
 pasi fu a bi musu sa gó a dí fesa.
 permission FU 3SG PST MOD MOD go LOC DET party
 ‘The mother of this boy here who should not have given permission for
 him was obliged to be able to go to the party’.
- (416) Ée a bi sí mi nóo a bi musu sa fan ku mi.
 if 3SG PST see 1SG NARR 3SG PST MOD MOD talk with 1SG
 ‘If s/he had seen me, s/he was obliged/had to be able to talk with me’.

The combination of *bi* with modal *ó* results in a counterfactual interpretation. In a counterfactual construction imperfective *ta* can be interpreted as expressing habitual or progressive, as demonstrated in (417) and (418) respectively.

- (417) Senni bi ó nángo ta duumí.
 S PST MOD IMP.go IMP sleep
 ‘Senni would sleep regularly’.
- (418) Dí yúu akí ée dí womi á bi síki nóo dí wósu akí
 DET hour here if DET man NEG PST ill NARR DET house here
 a bi o ta féifi.
 3SG PST MOD IMP paint
 ‘At this hour, if the man was not ill, he would have been painting THIS
 HOUSE.’.

In a counterfactual clause, the possibility modal morpheme *sa* can convey a deontic permissive reading or a dynamic ability reading, as in (419) and (420).

- (419) A bi ó sa gó ku baisígi a sikóo.
 3SG PST MOD MOD go with bike LOC school
 ‘S/he would be able to go to school with the bike’.
 or ‘S/he would be allowed to go to school with the bike’.
- (420) Dí wómi de bi ó sa mbéi wán wósu ma
 DET man there PST MOD MOD make ART house but
 aáá moni.
 3SG.NEG.have money
 ‘That man would be able to build a house, but he does not have money’.

The combination of *bi*, *sa* and *ta* results in a past ability reading of a habitual eventuality, as illustrated in (421).

- (421) Context: Talking about the old days

Dí ameeekánóli díi toch. Wá bi sa ta báí dí
 DET kerosene expensive right 2PL.NEG PST MOD IMP buy DET
 ameeekánóli.
 kerosene
 ‘The kerosene was expensive, right. We could not buy kerosene’.

When *ó* is interpreted in its assumptive epistemic modality reading, *sa* can express dynamic ability and *ta* can express progressive, as in (422)

- (422) Situation: The water has been standing on the fire for some time now. The speaker cannot see it (s/he is inside while the water is currently boiling outside), but she says to herself:
 Dí wáta ó sa ta bóí nóúnóu bigá a dé a fáya
 DET water MOD MOD IMP cook now because 3SG BE LOC fire
 lóngi kaa.
 long already
 ‘It will be that the water is able to be boiling now, because it has been on the stove for some time already’.

This combination can also result in a future time reference reading of *ó*, a dynamic ability reading of *sa* and a habitual reading of *ta* (423).

- (423) A ó sa ta kulé gó a sikóo.
 3SG MOD MOD IMP run go LOC school
 ‘S/he will be able to run to school’.

The propositions in (424) and (425) illustrate that four TMA morphemes can co-occur in a single sentence.

- (424) A bi ó sa ta sún.
 3SG PST MOD MOD IMP swim
 ‘S/he would have been able to swim regularly (but s/he does not)’.
- (425) Senni bi musu sa ta dé a wósu.
 S PST MOD MOD IMP BE LOC house
 ‘Senni was obliged to be able to be at home (but he was not at home)’.

The propositions in (390) - (425) illustrate the possible TMA combinations, the order of the morphemes, and their semantic interpretation(s). The predictions regarding TMA combinations and their orderings derived from the phrase structure in (386) (which is rephrased in (426) below) in combination with two semantic constraint proposed in Section 7.1 and which were reintroduced in (388), are borne out. The latter is repeated here.

- (426) [Fin_{bi} [Mod_{epistemic} [T(PRESENT) [Asp(IMPERFECTIVE) [Mod_{circumstantial}
[Mod_{deontic} [Mod_{dynamic} [Perf_{Rstate} [Imp_{Pstate}]]]]]]]]]
- (388) a. Subject *bi musu sa ta* Verb
b. Subject *bi ó sa ta* Verb

In other words, all the attested TMA orders in Saamáka conform to the hierarchy of functional projections which only generates predicted orders and it does not over-generate. The data presented in (390) - (425) demonstrate that TMA morphemes in Saamáka occur in a rigid Tense-Modality-Aspect order².

In the introduction of the present study, I stated that it was my aim to analyse Saamáka in a cartographic approach and to investigate if the functional sequence in Saamáka confirms the validity of Cinque's (1999; 2001) proposed universal hierarchy of functional projections. In the next section of this chapter, I compare the ordering of functional heads for Saamáka as has been established in the present study in order to determine whether it confirms the validity of Cinque's proposed universal functional sequence. Furthermore, I will return to another point raised in Chapter 1 regarding the contribution and relevance of the present study for the creole genesis debate. My proposal for the functional sequence in Saamáka is compared to the proposals for Gungbe (Aboh 2004), one of Saamáka's substrate languages, and Jamaican Creole (Durrleman 2000), which arose under similar socio-historical circumstances as Saamáka did. It will be demonstrated that it is very difficult to make a comparison with these two languages because the assumptions and analyses by Aboh and Durrleman are quite different from mine, therefore it is difficult to make any claims with regard to the origin of Saamáka and the creole genesis debate.

7.3 Cartographic Approaches

The focus of the present study was the hierarchy of functional projections in Saamáka. In the introduction of this dissertation, I presented an overview of Cinque's (1999; 2001) ideas regarding a universal functional hierarchy of heads. By careful observation, I provided a decomposition of the extended IP domain in Saamáka. One of the aims of the present study is to determine if Saamáka provides evidence in favour of a universal functional sequence as proposed by Cinque (1999, 2001), therefore I compare the findings in this study with Cinque's articulated clause structure. To refresh our memories, the functional hierarchy of the IP

²An exception to this are the distributional properties of the necessity modal *musu*, which can follow and precede the situational pronominal *bi*. This *musu bi* order is discussed in Section 7.5.

distribution of TMA morphemes differs; and third, certain morpheme orders deviate from the those found in Cinque's universal hierarchy. These three points are closely intertwined and it would be difficult to discuss them separately, therefore I discuss them morpheme by morpheme.

In Cinque's universal sequence, FUTURE Tense occupies a separate head. However, the discussion of the morpheme *ó* indicated that Saamáka does not have a special head for FUTURE Tense (Chapter 6). The detailed study of this morpheme demonstrated that the semantic interpretations and syntactic distribution of *ó* show similarities with those of the modal morphemes *musu* and *sa* and therefore I argued in favour of a modal analysis of *ó*, and thus against a Tense head analysis. Thus, it follows that it is not necessary to assume that FUTURE Tense occupies a special node in the functional hierarchy of Saamáka. The morpheme *ó* occupies two positions and is situated in $\text{Mod}_{\text{epistemic}}$ and $\text{Mod}_{\text{circumstantial}}$ ³.

Second, the functional hierarchy of Saamáka, as presented in (386), has fewer modal heads than does Cinque's proposed hierarchy in (428). Deontic modality is subdivided into obligation and permissive modality, which in Cinque's universal sequence occupy two different positions; the former is located above the latter. In Saamáka, these two readings cannot be combined because they belong to the same set of deontic modality and, consequently, compete for the same position. This is in agreement with the findings presented in Nauze (2008) who claims that deontic modal morphemes cannot be stacked. Saamáka has a single functional node, $\text{Mod}_{\text{deontic}}$, in which both deontic obligation and deontic permission are situated.

Furthermore, also in agreement with Nauze, but in disagreement with Cinque, is the ordering of modal morphemes in Saamáka when they co-occur. Cinque

³The claim that FUTURE Tense occupies a separate head is based on data from, among others, Guyanese Creole, Hatian Creole and Sranan (Cinque, 1999, 59-63), in which PAST Tense co-occurs with FUTURE Tense to express counterfactuality, as illustrated for Guyanese Creole in (431).

(431) Jaan bin gu riid.
 J PST FUT read
 'John would have read' (Gibson, 1986, 585).

Interesting in this respect is that in the present study the morphemes which superficially could be analysed as expressing PAST Tense and FUTURE Tense, *bi* and *ó* respectively, are not defined as Tense morphemes but as a pronominal situational variable and a modal with universal quantification respectively. In light of the analysis provided in the present study, it would be interesting to examine whether the traditional labels for these morphemes in Guyanese Creole (and other creole languages) would still hold, or whether it would be possible to adjust their labels to the findings of the present study. I leave this for future research.

positions dynamic ability above deontic permissive while Nauze orders dynamic modality below deontic modality. In Saamáka, both readings, dynamic ability and deontic permissive, are expressed by the possibility modal *sa* which cannot be doubled, and thus these two readings are incompatible. However, in its deontic obligation *musu* can interact with the dynamic ability reading of *sa* and if these modal morphemes do, the former precedes the latter. Since both deontic modal morphemes are situated in the same functional head ($\text{Mod}_{\text{deontic}}$), I argue that $\text{Mod}_{\text{permissive}}$ is situated above $\text{Mod}_{\text{ability}}$ in the underlying structure of the clause. From this we can draw the conclusion that with regard to the positioning and interaction of the modal morphemes, Nauze's ordering is more accurate in predicting the ordering of modal elements in Saamáka than Cinque's universal sequence.

Thirdly, imperfective *ta* is ambiguous in three ways: it can express habitual, inchoative and progressive; and each interpretation occupies its own functional node in the universal sequence as proposed by Cinque: $\text{Asp}_{\text{habitual}} < \text{Asp}_{\text{generic/progressive}} < \text{Asp}_{\text{inceptive (I)/(II)}}$. To elucidate the Saamáka data, I argued that *ta* occupies a single position in the underlying structure of the clause. The inchoative and progressive reading both refer to a single eventuality which is ongoing at the topic time, and the difference between these two readings dependent upon aktionsart. The internal structure of states and achievements is such that they cannot co-occur with progressive and this incompatibility gives rise to an inchoative reading.

To account for the difference in interpretation between habitual aspect and progressive aspect, I argued that they differ in the type of complement they merge with; the former with plural eventuality (PL) and the latter with a singular (SG) eventuality. Habitual denotes several re-occurrences of an individual eventuality at a certain topic time while inchoative/progressive denotes a single eventuality at a certain topic time (in the sense of Ferreira 2005). Both readings of *ta* express that the eventuality is ongoing at the topic time and both are situated in ImpP which is located right above vP in the functional hierarchy of heads. In other words, a difference in complement does not necessarily imply that *ta* occupies several positions in the functional hierarchy. Interactions with other core TMA morphemes do not provide evidence in favour of the assumption that these two readings of *ta* are located in different heads in the functional sequence. However, they might if one were to assume a more fine-grained functional structure.

Furthermore, *ta* is the lowest (core) TMA morpheme in the hierarchy of functional heads in Saamáka, therefore it does not conform to Cinque's universal sequence in which habitual aspect is situated above all circumstantial modal heads, and progressive and inchoative are situated higher than modal heads expressing obligation, ability and permission. Since *ta* is situated very low in the functional sequence, it follows that when it interacts with other (core) TMA morphemes it is

always the final morpheme in the sequence, or, put more simply: *ta* always follows all other (core) TMA morphemes in Saamáka. Consequently, the interactions of the modal morphemes *musu*, *ó* and *sa* with imperfective *ta* and their respective orderings do not validate Cinque's universal sequence.

The positions of TMA morphemes indicate that the Saamáka functional sequence is less articulated than Cinque's universal functional hierarchy. A reason for this is that I have handled ambiguity differently than Cinque; not every different label is introduced via a new functional head in the functional sequence. It has been my aim to specify as few functional heads as possible and not to have heads for the sake of having an extended functional sequence. It is my opinion that each functional head needs to be justified using syntactic and semantic argumentation. In order to establish whether a functional element expresses a separate functional head, the semantic interpretations and syntactic distribution of each individual morpheme was investigated and afterward compared to these of other TMA morphemes. Only when these characteristics indicated that morphemes are situated in different positions, did I assign them their own functional position. A less articulated functional sequence influences (indirectly) where TMA morphemes are situated in this hierarchy, and this affects possible TMA combinations and consequently the order in which individual TMA morphemes occur in these combinations. Interestingly, the interactions of the modal morphemes in Saamáka do affirm the three claims made by Nauze (2008) regarding possible modal combinations and the order of these combinations; epistemic modality only scopes above deontic modality and it cannot scope under deontic modality, and deontic modal elements cannot be stacked. The functional hierarchy proposed for Saamáka, as in (386) above, also indicates that there are a number of similarities with Cinque's universal sequence. Saamáka follows the very general and broad order of functional heads; Tense is situated below Epistemic modality and above Deontic and Dynamic modality and Aspect. Moreover, the core TMA morphemes are ordered in a rigid manner which supports Cinque's assumption that functional heads are ordered in a single order.

There are a number of hypotheses which aim to explain the origin of and assumed similarities amongst creole languages. One of the trends in these hypotheses is the universalist hypothesis, which postulates that assumed similarities are due to Universal Grammar; and another is the substrate hypothesis, which argues that these similarities are due to relexification of the substrate languages. This section demonstrated that Saamáka does not validate the universal sequence of functional heads as proposed by Cinque (1999, 2001). Of course, this does not mean that Saamáka is different from all other languages. The universalist hypothesis about a universal functional sequence could still be correct, but it could be that the

Cinque version is not exactly right, and we need to fine-tune it by looking at more languages.

The next section aims to investigate whether it is possible to make any claims regarding the exact nature of the similarities in the hierarchy of functional projections in Saamáka on the one hand and Gungbe and Jamaican Creole at the other. Gungbe has been argued to be a substrate language of Saamáka (Smith 1987). It is unclear whether or not a comparison of the decomposition of the extended projection of functional heads in the IP domain in Saamáka and Gungbe provides evidence in favour of the substrate hypothesis. In light of creole genesis debate, it is important to study whether the similarities between Saamáka and Gungbe are more than an accidental pattern. In addition, I aim to compare Saamáka to Jamaican Creole in order to establish whether the (assumed) similarities among creole languages are validated by the data and analyses presented in the present study.

7.3.1 Comparison with Gungbe and Jamaican Creole

An important discussion in Creole Studies is the creole genesis debate, however, many issues surrounding this debate have not yet been settled. Although providing an answer to this highly complex question is not a primary aim of this dissertation, in my introduction, I raised the question of how similar Saamáka is to Gungbe and Jamaican Creole, and if these findings contribute to the creole genesis debate. I summarized studies concerning the hierarchy of functional projections in Gungbe (based on Aboh 2004; Aboh and Nauze 2008) and in Jamaican Creole (based on Durrleman 2000). The functional sequence of TMA heads in Gungbe is reproduced from Chapter 1 below in (432). In (433) the functional hierarchy of heads in Jamaican Creole is presented which is also reproduced from Chapter 1.

- (432) [Mood_{conditional} [Mood_{deontic} [T(Future) [Mood_{necessity} [Mood_{possibility} [Asp_{habitual} [Asp_{progressive} [Asp_{prospective}]]]]]]]] (Aboh and Nauze, 2008, 225)
- (433) [Mod_{epistemic} [T(Past)/T(Future) [Mod_{necessity} [Mod_{obligation} [Mod_{ability/permission} [Asp_{anterior} [Asp_{continuative} [Asp_{retrospective} [Asp_{generic/progressive} [Asp_{prospective} [Asp_{completive}]]]]]]]]]] (Durrleman, 2000, 224).

Although both Aboh and Durrleman take Cinque's universal hierarchy of functional heads as a starting point of their investigation, a close examination of both studies reveals that it is rather difficult to compare them because they adopt different theoretical assumptions and functional labels. These two functional sequences have their general order of Mod-Tense-Mod-Aspect heads in common, but other similarities are difficult to establish for the aforementioned reasons. As a result,

it is also difficult to compare my analysis of the Saamáka core TMA morphemes with the findings established in these studies. Another problematic issue is that the present study is situated at the syntax/semantic interface while both Aboh's and Durreleman's studies are mainly syntactically oriented. This implies that they were not so much interested in the semantic interpretations of the core TMA morphemes in the languages they studied and they designated the most common labels for their morphemes based on a general semantic description. Something uncovered in the present study, however, is that we cannot take for granted that a TMA morpheme belongs to a certain functional category based solely on a superficial semantic description. To establish the label of a certain morpheme, one must thoroughly study its semantic interpretations, as well as its syntactic distribution. When such a study is not undertaken, it is very difficult to establish the hierarchy of functional projections in a language. In order to compare the functional hierarchy of heads in these three languages and to determine whether these languages have a similar functional sequence, it is important to adapt similar assumptions and to investigate the semantic and syntactic characteristics of each individual morpheme in a systematic manner. At the present moment, I cannot make any claims with regard to similarities between Saamáka on the one hand and Gungbe and Jamaican Creole on the other. Before I would make such a claim, the semantic and syntactic characteristics of the core TMA morphemes in Gungbe and Jamaican Creole need to be re-investigated in a similar fashion to the present study.

7.4 Major theoretical claims of the dissertation

In this section, I discuss and list innovative claims proposed in this dissertation. I concentrate on three main novel proposals: firstly, I argue in favour of a morphological null Perfect morpheme, which is an original analysis of the stative vs. eventive distinction with regard to temporal interpretation; secondly, I postulate that *bi* is a pronominal variable, which is a novel analysis of a temporal morpheme; thirdly, I analyse *ó* as a modal morpheme, thus contributing to the discussion of the functional category of future reference.

In Chapter 2, I presented a novel account of the stative/dynamic split found in so many creole languages. Recall that unmarked stative verbs convey a present time reference reading and eventive verbs convey a past time reference reading. To explain the characteristics of propositions containing eventive verbs, I argued that Saamáka has a morphological null Perfect morpheme which is obligatorily present in the underlying structure of these propositions. Perfect is a complex functor which consists of three functional heads; Tense (expressing PRESENT), Aspect

(expressing IMPERFECTIVE) and Perfect (in the sense of Musan 2001) which indicates that the embedded eventuality is located prior to the time of utterance. The composition of Perfect adapted in the present study sides with the view that Perfect creates a Result state of the embedded eventuality (in the sense of Comrie 1976; Parsons 1990; Musan 2001). Since PRESENT Tense expresses an identical relation between topic time and time of utterance (i.e. $TU = TT$) which indicates a moment in time, PRESENT Tense is constrained to embed a stative complement. In order for eventive verbs, which require a non-trivial interval to become true, to co-occur with PRESENT Tense, they have to be embedded under a state deriving functional head such as Perfect. Since Perfect creates a derived state, it satisfies the stativity requirement that PRESENT Tense places on its complements. Stative verbs already satisfy this requirement and as a result, they convey a present time reference interpretation of the proposition. Thus, arguing in favour of a morphological null Perfect morpheme in Saamáka's TMA paradigm provides an interesting explanation of the stative/eventive distinction when it comes to differences in the temporal interpretation. Furthermore, the Saamáka data confirms Parsons' (1990) understanding of the composition of Perfect.

Secondly in Chapter 4, I presented my ideas regarding the morpheme *bi*, which was an innovative analysis of a so-called Tense morpheme as a pronominal situational variable. My analysis demonstrated that one cannot assume something is a Tense head because it expresses a temporal interpretation, and that a detailed study of the semantic and syntactic characteristics are necessary in order to establish the exact nature of a morpheme. There are many different ways for a language to refer to an eventuality which is situated prior to the time of utterance and, this does not necessarily have to be expressed by PAST Tense. In Saamáka, this is done via elements which are either aktionsart sensitive (such as the null Perfect) or discourse sensitive (such as *bi*). Although the presence of *bi* indicates that an eventuality is located in the past, it does not denote a temporal ordering relation between topic time and time of utterance (as is expected from a Tense head). It establishes an anchor time and, once the anchor time is established, the presence of *bi* is no longer necessary and therefore it can be omitted. Its characteristics make it very difficult to argue in favour of a Tense head analysis. It was demonstrated that its characteristics can be explained by arguing that it is situational pronominal which establishes the anchor time directly and is located in Fin in the functional hierarchy of heads. The morpheme *bi* carries a presupposition which constrains the anchoring situation to be a contextually relevant situation prior to the time of utterance. This novel analysis of a temporal morpheme as a pronominal situational variable is a compelling analysis to explain the characteristics of

bi, and might also explain similar types of temporal morphemes in other languages.

The focus of Chapter 6 was the future time reference morpheme *ó*, and it aimed to place its analysis within the ongoing debate on the functional category of future reference; Tense or Modality. I provided new arguments to analyse future reference as Modal category, based on the syntactic distributional features of the morpheme *ó*. A close examination of its semantic and syntactic characteristics demonstrated that *ó* has a number of crucial characteristics in common with the necessity modal morpheme and the possibility modal morpheme. I argued that the simple future reading, future-in-the-past reading and the past-in-the-future reading are to be analysed as expressing different sub-readings of the modal category expressing circumstantial modality, and the assumptive epistemic modal reading as epistemic modality. The analysis of *ó* in the present study contributes to the ongoing discussion on whether future reference is a functional Tense or a functional Modality category by providing new arguments in favour of the latter category.

7.5 Further directions, speculations and problems

In this section, I discuss issues which are problematic and/or relevant for future research.

In Section 7.2, I pointed out in a footnote that the necessity modal morpheme *musu* can precede the situational pronominal *bi*. One of my consultants systematically presented me a *musu bi* order when I aimed to elicit a past obligation reading while my other consultants did not present such an order, however all confirmed that such an order is grammatical⁴ in Saamáka. This order is not predicted by the functional sequence of heads in Saamáka, as presented in (386), nor is it predicted by the two extra semantic constraints formulated. It is possible that this *musu bi* order is influenced by Sranan. In Winford's (2000a) study on the functional category of modality in Sranan, he observes a few occurrences of this *musu ben* order in his corpus. Since the consultant who systematically provided the *musu bi* order was raised in Paramaribo it might be that he has been exposed to this order in Sranan from an early age. It might be that the semantic interpretation of *musu* in Sranan differs from its counterpart in Saamáka (if we speculate that *musu* might be a Mood category situated in the CP domain of these constructions) and that this explains why in Sranan, a *musu ben* order is grammatical. I leave this

⁴A proposition containing a *musu bi* order can only convey a past obligation reading, and an epistemic interpretation of *musu* in this context is infelicitous.

for further research.

Another problematic issue is the behaviour of the universal modal morphemes *musu* and *ó*. When they interact with other modal morphemes, a modal with universal modal quantification cannot be dominated by another modal operator regardless of its modal quantification. The infelicity of any double modal construction which deviates from this $\forall < \exists$ constraint is intriguing, because it denotes an ordering restriction which is not linearizable under a cartographic approach to language structure. In other words, the hierarchy of functional projections in Saamáka does not predict this restriction and it thus systematically over-generates. In order to explain this I postulated an extra semantic constraint: **Constraint Against Universal Modal Subordination**, which states that no modal with universal modal force can be in the scope of another modal operator. Furthermore, it is intriguing that in other languages as well, a universal quantificational element has a strong preference to precede an existential quantificational element (see Beghelli and Stowell 1997 on quantifier scope in English; Cormack and Smith 2002 on modals and negation in English; Nilsen 2003 on the scope interaction of adverbs). The exact nature of the restriction of universal quantificational modal morphemes not to scope under other modal elements is left for further research.

Since Saamáka is underrepresented language there are still many things to explore in the semantics and syntax of the language. In this section, I only pointed out those which are directly related to the topic of this dissertation.

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Appendix A: Questionnaires

The questionnaires elicited with my consultants are listed below, some are adopted from Dahl (2000) which is referred to as Dahl, from Bouquiaux and Thomas (1992) referred to as B&T and from Bettina Migge and Donald Winford (personal communication) referred to as M&W. The Saamáka to Dutch elicitations which were used for grammaticality judgments are not included here.

Questionnaire 1

- (434) What is your brother doing right now?
My brother WRITE a letter
- (435) What will your brother be doing when we come home?
[Dahl FUTURE Q3] My brother WRITE a letter
- (436) What are you planning to do?
[Dahl FUTURE Q5] I WRITE a letter
- (437) [Dahl FUTURE Q9] If you put a stone in the plastic bag, it will break.
- (438) [Dahl FUTURE Q10] If you put a stone in the plastic bag, it will break
- (439) According to the contract:
[Dahl FUTURE Q12] We WORK NOT tomorrow
- (440) Talking to someone who is leaving in a while.
[Dahl FUTURE Q17] When you RETURN, I WRITE this letter (=I FINISH it already at that time).
- (441) Said as an order by a teacher leaving the classroom.
[Dahl FUTURE Q18] When I RETURN, you WRITE this assignment (=YOU FINISH it then).
- (442) Uttered as a promise:
[Dahl FUTURE Q20] I PROMISE to COME to you tomorrow.
- (443) [Dahl FUTURE Q21] You MUST GO to bed before you GET tired (to-day).

- (444) (Yesterday evening) [Dahl FUTURE Q22] I GO to bed before my brother COME home.
- (445) Mother to child:
[Dahl FUTURE Q24] If you not STOP PLAY with that ball I TAKE it away.
- (446) Talking about the speaker's plans for the evening:
[Dahl FUTURE Q31] I WRITE a letter.
- (447) Talking about the speaker's plans for the evening:
[Dahl FUTURE Q32] I GO to town.
- (448) Talking about the speaker's plans for the evening:
[Dahl FUTURE Q33] I GO to bed early.
- (449) Talking about the speaker's plans for tomorrow:
[Dahl FUTURE Q40] I WORK in my vegetable garden.
- (450) My brother is tired. [Dahl FUTURE Q45] He FALL ASLEEP early in the evening.
- (451) [Dahl FUTURE Q65] When I GET home in the evening, my mother BE HAPPY.
- (452) [Dahl FUTURE Q66] If it RAIN tomorrow, I STAY at home.
- (453) [Dahl FUTURE Q67] If it BE COLD tomorrow, we STAY at home.
- (454) [Dahl FUTURE Q68] If I GET money tomorrow, I BUY a present for you.
- (455) [Dahl FUTURE Q69] If I GET money today, I BUY a present for you.
- (456) [Dahl FUTURE Q70] My brother SAY yesterday that he COME here today.
- (457) [Dahl FUTURE Q71] My brother HOPE yesterday that you COME here today.
- (458) [Dahl FUTURE Q76] My brother WANT (now) to buy a house.
- (459) [Dahl FUTURE Q78] My brother WANT (now) to be a fisherman.
- (460) [Dahl FUTURE Q80] I HAVE TO thank my brother for helping me.
- (461) [Dahl FUTURE Q81] My brother MUST sell his house now.
- (462) [Dahl FUTURE Q83] My brother CAN lift this stone.
- (463) [Dahl FUTURE Q84] My brother CAN read and write.

- (464) What you DO when you COME home in the evening?
[Dahl FUTURE Q87] I WRITE a letter, (then) I DRINK some tea and (then) I GO to bed.
- (465) [Dahl FUTURE Q91] My brother SAY (now) that he GO to town tomorrow.
- (466) [Dahl FUTURE Q93] My brother BELIEVE (now) that it RAIN tomorrow.
- (467) Yesterday when I woke up in the morning, there were dark clouds in the sky.
[Dahl FUTURE Q110] I took my umbrella, because RAIN in a few minutes.
- (468) A child asks: Can I go now?
[Dahl Perfect Q5] Mother: You DO your homework?
- (469) Question: Can you swim in this lake? (=Is it possible for anybody to swim in this lake?)
[Dahl Perfect Q7] Yes, at least I SWIM in it several times.
- (470) Do you know what happened to me yesterday?
[Dahl Perfect Q9] I WALK in the forest. Suddenly I STEP on a snake. It BIT me in the leg. I TAKE a stone and THROW (it) at the snake. I DIE.
- (471) A question asked at 9AM: Why do you look so tired?
[Dahl Perfect Q16] I WAKE UP at 4AM this morning.
- (472) A has got his wages and says:
[Dahl Perfect Q20] I GET my wages today, so I can now BUY you a beer.
- (473) [Dahl Perfect Q22] A: When you BE BORN?
B: I BE BORN on the first of June 1950.
- (474) B's sister is known to have gone to another town.
a. [Dahl Perfect Q28] A: Your sister COME BACK?
b. No, she still GO AWAY.
c. [Dahl Perfect Q29] B: No, she NOT COME BACK yet.
- (475) The window is open but A has not noticed that. A asks B why is it so cold in the room?
[Dahl Perfect Q40] I OPEN the window.
- (476) I was told you always forget you umbrella somewhere. Is it true?
[Dahl Perfect Q45] Yes, this year I LOSE five umbrellas.

- (477) Why do you look so tired?
[Dahl Perfect Q47] I NOT SLEEP for three days.
- (478) A has just seen the king arrive and reports it to B, who knows that the king has been expected to visit their town but does not know that he has not actually arrive.
[Dahl Perfect Q55] The king ARRIVE!
- (479) A has just seen the king arrive. The event is totally unexpected.
[Dahl Perfect Q56] The king ARRIVE!
- (480) A comes to the kitchen very agitated and tells B what he has just seen happen:
[Dahl Perfect Q58] The dog EAT our cake.
- (481) A comes from the kitchen where he has just seen the sad remains of the cake. He tells B what he assumes to have happened:
[Dahl Perfect Q59] The dog EAT our cake.
- (482) Said by a person who has just heard about the event but has not seen it.
[Dahl Perfect Q68] My sister just TELL me that the king ARRIVE.
- (483) A and B are not in the room in which B's son has been doing his homework.
a. [Dahl Perfect 70] A: Is your son still doing his homework?
b. B: No, (I think) he FINISH (it) by now (or: already).
- (484) A's sister finished writing two letters just before A come home. A tells:
[Dahl Perfect Q75] When I COME home yesterday, my sister WRITE two letters.
- (485) Looking at a house.
[Dahl Perfect Q80] Who build this house?
- (486) Can I get my wages now?
[Dahl Perfect Q82] I NOT PAY you your wages before you FINISH the entire job.
- (487) Can I get my wages now?
[Dahl Perfect Q83] I PAY you your wages after you FINISH the entire job.
- (488) [Dahl Perfect Q88] Those who GET their wages tomorrow certainly GO to have beer.
- (489) [M&W Q1a] The child can swim well.
- (490) [M&W Q1b] The child has grown strong. He can swim a mile.
- (491) [M&W Q2a] The child can read well.

- (492) [M&W Q2b] Since he got his glasses, the child can read better
- (493) [M&W Q3] He's really strong. He can lift a hundred kilos.
- (494) [M&W Q4a] That woman has bad eyes; she can't see well.
- (495) [M&W Q4b] That woman is blind. She cannot see.
- (496) [M&W Q5] I have money, so I can go to the party.
- (497) [M&W Q6] I don't have money, so I can't go to the party.
- (498) [M&W Q7] When I was young I could run very fast, but now I can't.
- (499) [M&W Q8] I won't be able to come tonight, because I'm ill.
- (500) [M&W Q9] The boy can stay here tonight (He has my permission to do so)
- (501) [M&W Q10] The boy can't stay here tonight (He's not allowed to)
- (502) [M&W Q14] (Mother to child) If you behave well, you will be able to go play with the other ones.
- (503) [M&W Q15] (Mother to child) If you don't behave well, you won't be able to go play with the other ones.
- (504) [M&W Q17] I may come tonight, if I have time.
- (505) [M&W Q18] John may go to France next week.
- (506) [M&W Q22] The child could have taken the money, but he didn't.
- (507) It might be that John took the money, but I don't know.
- (508) [M&W Q23b] The boy took the money; he's a thief.
- (509) [M&W Q27] Everyone must eat in order to live.
- (510) [M&W Q28] You must come tonight if you want your money.
- (511) [M&W Q29] (Mother to child) You must not talk to me like that.
- (512) [M&W Q32a] When I was small, I had to (was supposed to) clean the house.
- (513) [M&W Q35] John must be at home now. (= It's probable that John is at home now)
- (514) [M&W Q36] [someone knocks on the door] That must be John, I'm sure of it.
- (515) [M&W Q38] John must have gone to bed already; his house is dark. (= It must be the case that John has gone to bed already)
- (516) [M&W Q39] John should find a wife before he gets too old.

- (517) [M&W Q42] I was supposed to bake a cake today, but I didn't have time.
 (518) [M&W Q43] I should have stayed at home, but I went out.

Questionnaire 2

- (519) [M&W Q11] (Mother to child) If you want, you can (may) go to the river and play.
 (520) [M&W Q12] (Mother to child) If you don't clean the yard, you can't go to play.
 (521) [M&W Q13] Last night my mom told me I could go to town.
 (522) [M&W Q19a] That person may be at home now (= It's possible that John is at home now)
 (523) [M&W Q19b] That person is at home now.
 (524) [M&W Q24] I left the door open last night. Anyone could have entered the house.
 (525) [M&W Q25a] If I'd known she needed help, I would/could have helped her.
 (526) [M&W Q26] If the car had hit me, I could have been killed.
 (527) [M&W Q30] Children, you must listen to what your parents say.
 (528) [M&W Q31] (Mother to child) You must wash your hands before you eat.
 (529) [M&W Q33] I had to go to the store this morning.
 (530) [M&W Q37] The children must have eaten the cake (= It must be the case that the children ate the cake)
 (531) [M&W Q43a] (The car has run out of gas). I should have filled it up.
 (532) [M&W Q44] I want to live forever.
 (533) [M&W Q45] I wanted to come to the party.
 (534) [M&W Q47] I need some money for food.
 (535) [M&W Q48] John needed my help last night, but I was ill.
 (536) [M&W Q49] If I had money, I would buy a car.
 (537) [M&W Q50] If I was his mother, I'd spank him.
 (538) [M&W Q51] If I didn't have money, I wouldn't have any friends.

- (539) [M&W Q52] If I hadn't seen him last night, I would not have known he was in town.
- (540) [M&W Q55] If I'd known she was here, I would/might have gone to see her.
- (541) [M&W Q54] If you had stayed in school, you might be able to find a job today.
- (542) Last night at 8PM:
[Dahl Progressive Q3] When John came, ann still WORK
- (543) [Dahl Progressive Q4] Last year we (usually) CLEAN THE HOUSE on Saturdays (now we do it on Thursdays).
- (544) Somebody on the phone wants to know bout John: the answer is: John is near me
- a. [Dahl Progressive Q7] He READ a newspaper.
 - b. [Dahl Progressive Q9] He SING a song.
 - c. [Dahl Progressive Q10] He GIVE a present to his sister.
 - d. [Dahl Progressive Q11] He TELL a story to his sister.
 - e. [Dahl Progressive Q16] He CHASE chickens (out of the house).
 - f. [Dahl Progressive Q18] He WRITE a book.
 - g. [Dahl Progressive Q23] He BEGIN to peel the cassava.
 - h. [Dahl Progressive Q24] He FINISH to peel the cassava.
- (545) Look out of the window now!
[Dahl Progressive Q36] The sun SHINE.
- (546) [Dahl Progressive Q37] The water BOIL (shall I make tea?).
- (547) Look what a shame!
[Dahl Progressive Q38] The apples ROT on the tree.
- (548) [Dahl Progressive Q41] The mountain SURROUND the forest.
- (549) on the phone: Is Ann with you right now?
- a. [Dahl Progressive Q44] No, she DANCE (in the next room).
 - b. [Dahl Progressive Q46] She SHOP. She left one hour ago.
- (550) During the whole time of the class:
[Dahl Progressive Q49] Ann TALK to her neighbour (in fact, she carried on even afterwards).
- (551) [Dahl Progressive Q58] Ann STAND in the room (right now).
- (552) [Dahl Progressive Q63] At that time, he GO to dance every Saturday.
- (553) [Dahl Progressive Q66] Ann LEAVE tomorrow.

- (554) [Dahl Progressive Q67] Ann LEAVE in a minute.
- (555) [Dahl Progressive Q79] Tom must FEED the animals (I guess).
- (556) [Dahl Progressive Q80] Ann should TEACH now (I guess).
- (557) It's no use trying to swim in the lake tomorrow.
[Dahl Future Q8] The water BE COLD (then).
- (558) The boy is expecting a sum of money.
[Dahl Future Q13] When the boy GET the money, he BUY a present for the girl.
- (559) My brother is late for dinner.
[Dahl Future Q26] When he ARRIVE, the food BE cold.
- (560) Talking about the speaker's immediate plans:
[Dahl Future Q38] I GO to bed.
- (561) Talking about the speaker's plans for tomorrow:
[Dahl Future Q38] I GO to town.
- (562) The weather is changing.
[Dahl Future Q51] It be COLD in the evening.
- (563) [Dahl Future Q53] the sun RISE at 6 o'clock every morning.
- (564) [Dahl Future Q72] My brother SAY yesterday that he COME here next week.
- (565) [Dahl Future Q74] My brother SAY yesterday that it BE COLD today.
- (566) What you DO right now?
[Dahl Future Q95] I WRITE a letter to my brother in order that he KNOW that I COME to see him.
- (567) [Dahl Future Q111] I met your brother a few days ago. He was worried, because he GO to the doctor next day.

Questionnaire 3

- (568) [M&W Q16a] It may rain tonight (= It's possible it will rain tonight)
- (569) [M&W 2Q 9b] Maybe I don't see you anymore
- (570) [M&W 2Q 10a] Shall I go immediately?
- (571) [M&W 2Q 10b] The boss said that I should work in the kitchen.
- (572) [M&W 2Q] John cannot be at home now. I just saw him at the market
(= It's not possible that John is at home now).

- (573) [M&W 2Q] The children can't be swimming now. They are at home (= It's not possible that the children are swimming now).
- (574) [M&W 2Q] The man cannot be alive. The car hit him very hard (= It's not possible that the man is alive).
- (575) [M&W 2Q] John cannot know where we are. We did not tell him (= It's not possible that John knows where we are).
- (576) [M&W 2Q] The boy could not have taken the money. He was with me (= It's not possible that the boy took the money).
- (577) [M&W 2Q] Melanie could not have been here yesterday. She was in the city (= It's not possible that Mary was here yesterday).
- (578) Somebody on the phone wants to know about John: the answer is: John is near me
- [Dahl Progressive Q8] He BUILD a shelter (for the chickens).
 - [Dahl Progressive Q19] He HAVE his hair CUT (right now).
 - [Dahl Progressive Q20] He MAKE the child EAT the porridge (right now).
 - [Dahl Progressive Q22] Well, (right now) she FLY to Amsterdam.
- (579) A : I need my blue shirt right now; where is it?
[Dahl Progressive Q29] It HANG on the nail.
- (580) [Dahl Progressive Q30] I took the photo exactly while John THROW the stone against the window.
- (581) [Dahl Progressive Q31] (Right now) The climber REACH the top of the mountain.
- (582) [Dahl Progressive Q39] Now, unexpectedly) Peter KNOW the answer.
- (583) Somebody on the phone wants to know about John: the answer is: John is near me
- [Dahl Progressive Q47] He PLAY FOOTBALL (as usual).
- (584) [Dahl Progressive Q48] (Yesterday, during my sleep) Ann PLAY for 2 hours all by herself.
- (585) [Dahl Progressive Q53] The level of the water INCREASE slightly since yesterday.
- (586) [Dahl Progressive Q57] The old man DIE (but finally they found the right medicine).
- (587) [Dahl Progressive Q70] Yesterday, while Ann READ in her room, Martin PLAY on courtyard.

- (588) What did you do yesterday evening?
[Dahl Progressive Q71] I STUDY, I READ the paper, I EAT, and then I GO to bed.
- (589) Mother to daughter, whom she wants to punish:
[Dahl Progressive Q74] you NOT GO to that party!.
- (590) [Dahl Progressive Q81] (I am so tired) I BAKE all day since I got up this morning.
- (591) [Dahl Progressive Q82] When John came home yesterday, he was very tired because he WORK hard all week.
- (592) A: I want to give your sister a book to read, but I don't know which one. Are there any of these books that she READ already?
[Dahl Perfect Q1] B: Yes, she READ this book.
- (593) Is the Granma still alive?
[Dahl Perfect Q3] No, he DIE.
- (594) This happened to me just an hour ago:
[Dahl Perfect Q12] I SIT under a tree, when an apple FALL on my head.
- (595) A: don't talk so loud! You'll wake up the baby.
[Dahl Perfect Q30] He WAKE up already.
- (596) She is still watching television! how long she DO that?
[Dahl Perfect Q48] She WATCH (it) for three hours.
- (597) A is still living in his town:
a. [Dahl Perfect Q49] A: I LIVE here for seven years.
b. [Dahl Perfect Q50] A: I LIVE here all my life.
- (598) B is setting out on a journey. A intends to sell her own house while B is away. a tells B about this:
[Dahl Perfect Q84] A: When you COME BACK next year, I SELL my house.
- (599) A began working here in June for almost thirty years ago. It is April and A tells that the anniversary is approaching:
[Dahl Perfect Q85] A: In June this year I WORK here for thirty years.
- (600) [M&W Q59] If he hadn't got sick yesterday, he would have been painting the house now.
- (601) [M&W Q60] If he hadn't got sick, he would have been able to paint the house yesterday.
- (602) [M&W Q61] If she had seen me, she would have had to talk to me.

- (603) [M&W Q62] When she sees me, she will have to talk to me.
- (604) [M&W Q63] If she gets the money, she will be able to go home.
- (605) If she does not get the money, she will not be able to go home.
- (606) [M&W Q64] When she was a little child, she had to work hard at home.
- (607) [M&W Q65] If she wants me to pay her well, she will have to keep working hard every day.
- (608) [M&W Q66] He always has to eat as soon as he awakes.
- (609) [M&W Q67] The boy will have to go to school tomorrow.
- (610) The boy will not have to go to school tomorrow.
- (611) Context: 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. She might have gone to the river to fish.
- (612) Context: A boxing match is coming up. Boy A had beaten boy B before therefore the speaker says:
That boy must be able to win the fight (because he has beaten him before).
- (613) (Yesterday) When my sister COME BACK from her vegetable garden she FRY fish.
- (614) Mother to child on her birthday: You NOT FINISH your plate (because I allow you).
- (615) Mother to child: You MUST FINISH your plate.
- (616) Freddy broke his foot before he ARRIVE in the village.
- (617) (Yesterday)
a. The man was obliged to fix the roof, but he didn't.
b. The man was obliged to fix the roof and he did it.
- (618) Teacher to parents: In a while your child will know how to read and write.

Questionnaire 4

- (619) The boy must be able to lift that stone (you know because you've seen him doing it before).
- (620) Doctor to parents of a child who has broken her leg: The girl will be able to walk again.
- (621) If the girl has finished her homework, she is allowed to go the party.

- (622) (Now) The woman BEGIN to pound the rice.
- (623) (Now) The woman FINISH to pound the rice.
- (624) (Yesterday evening) Freddy EAT before he COME to my place.
- (625) Senni must go to Paramaribo.
- (626) (This morning) The girl FINISH to clean the fish.
- (627) (This morning) The girl NOT FINISH to clean the fish.
- (628) Will you clean the fish for me (because I cannot do it)?
- (629) (Talking about a young girl who cannot swim) If she goes in the water, she will die.
- (630) (Someone is late) I have to run to catch the bus.
- (631) When the boy was small, he HUNT with his father.
- (632) (When my grandfather was young) My grandfather loved to go fishing.
- (633) (Last week) The boy HIT the man before he GO to Paramaribo.
- (634) (This morning) The girl MUST RUN to school because she was late.
- (635) The man must know how to hunt.
- (636) a. (Now) The woman WALK in the forest.
b. (Yesterday) The woman WALK in the forest.
- (637) The boy must start to study for his exam (because he has it tomorrow and he hasn't studied at all).
- (638) The girl must finish her homework before she is allowed to play outside.
- (639) In the old days, the woman was able to fish in the river.
- (640) (Yesterday) When she COME to my place, she SIT DOWN on a bench.
- (641) a. The man told us that he FISH last week.
b. The man told us that he FISH next week.
- (642) What did the woman do yesterday?
She START to READ a book.
- (643) (Now) When the man START to HIT the drum, the girl START to DANCE.
- (644) Yesterday my brother FISH and my sister BOIL the fish.
- (645) (When my brother was young) He PLAY FOOTBALL every Saturday.
- (646) It is early. I should be able to arrive before 5PM in Paramaribo.

- (647) What did the man do when he was younger?
He HUNT.
- (648) (Right now) The woman FINISH to COOK.
- (649) (Right now) The woman START to COOK.
- (650) Tomorrow the women START to PLANT the rice.
- (651) Tomorrow the women START to HARVEST the rice.
- (652) Parent about child: I want that he attends school.
- (653) I want him to give me my money back.
- (654) Senni beliefs that Freddy KILL the chicken (yesterday).
- (655) What is the woman going to do right now?
She BATHE near the river.
- (656) What is Freddy doing right now?
Freddy TRY to SWIM ACROSS the river.
- (657) I want to ask you if you could buy a chicken for me?
- (658) Senni beliefs that Freddy BE at the river right now
- (659) I don't like to go to school.
- (660) (Later today) I ASK Senni if he CATCH a fish for me.

Questionnaire 5: MISC

- (661) When Senni GO to party he SEE Lathoya.
- (662) When Senni LIFT a hundred kilo he WIN.
- (663) The woman GO to her vegetable garden until she COME back.
- (664) The woman HARVEST rice today, but she FINISH NOT.
- (665) It is cold in the room. The window is closed. A enters the room and asks
B: 'Did you open the window and close it again'. B answers:
 - a. [Dahl Perfect Q38] I OPEN the window and CLOSE it again.
 - b. [Dahl Perfect Q39] I NOT OPEN the window
- (666) A: Has your sister returned from Paramaribo already?
 - a. [Dahl Perfect Q41] No, she COME BACK and is now staying with
us.
 - b. She BE in Paramaribo still.
- (667) I LIVE in Paramaribo for 5 years, but now I NOT LIVE there.

- (668) [Dahl Perfect Q 49] I LIVE here for three years and I still LIVE here.
- (669) What was the girl doing yesterday?
The girl SING at two o'clock.
- (670) What was the girl doing yesterday?
The girl DANCE at two o'clock.
- (671) When was the girl dancing yesterday? The girl DANCE before two o'clock.
- (672) When did Senni left?
Senni GO yesterday
- (673) When did Senni arrive?
Senni ARRIVE at 5 o'clock.
- (674) Where did Senni go?
Senni GO FISH.
- (675) a. Lathoya SAY that she BE ILL now.
b. Lathoya SAY that she BE ILL but she BE BETER now.
c. Lathoya SAY that she BE ILL last week.
- (676) Lahtoya SAY that the world BE ROUND
- (677) a. Senni SAY that he BATH today.
b. Senni SAY that he BATH now.
- (678) Teacher to student: The girl ALLOW READ book.
- (679) The woman READ because she has gone to school.
- (680) The boy is very strong.
He LIFT that big piece of wood.
- (681) Pregnant woman: When you COME BACK next year, I GIVE BIRTH.
- (682) When you COME BACK next year, I MOVE to Paramaribo.
- (683) (Last week) Seen WALK in the forest.
The birds SING and the frogs CROAK.
The river RUN slowly.
Senni SIT DOWN next to a tree.
- (684) (Last year) The children BUILD a boat.
Lathoya SEW the sail and Senni CHOP wood.
They SAIL for the first time in april.
- (685) [B&T Q2.1] Did you seen my son yesterday?
a. Yes, I saw him.
b. No, I did not see him.

- (686) [B&T Q2.2] What were you doing this morning?
a. I was crushing rice.
- (687) [B&T Q2.3] What were you peeling this morning?
a. I was peeling cassava.
- (688) [B&T Q2.4] What did you kill yesterday?
a. I did not killed anything.
b. I killed a deer.
- (689) [B&T Q2.5] Whom did you see in the village?
a. I did not see anyone.
b. I saw only an old man.
- (690) [B&T Q2.6] Who saw you going to the village?
a. Nobody saw me.
b. Only a little boy saw me.
- (691) [B&T Q2.9] He came yesterday.
- (692) [B&T Q3.1] I (have) finished skinning the fish.
- (693) [B&T Q3.2] He (has) just left.
- (694) [B&T Q3.3] He (has) just arrived.
- (695) [B&T Q34.1] She sings while grinding the rice.
- (696) [B&T Q34.2] She laughs while preparing the food.
- (697) [B&T Q34.3] He sings at the same time he works the ground.
- (698) [B&T Q34.4] She sews a cloth while telling me a story.
- (699) [B&T Q34.5] While he was speaking to me, he looked at the tree.

Questionnaire 6: Modality and Negation

- (700) Senni should not fly to Amsterdam.
- (701) Lathoya must not go to school tomorrow.
- (702) You should not eat your rice.
- (703) You must not give food to the child, he has just eaten..
- (704) You must eat more vegetables.
- (705) Senni cannot have left because his bag is still here.
- (706) Senni cannot climb in trees.
- (707) The dog cannot catch that ball, because he is tied to tree.

- (708) Lahtoya is not allowed to go to the party.
- (709) Senni cannot be at home, I just saw him in the village.
- (710) I did not expected that you could say something like that about me.
- (711) Lathoya should not come tomorrow because I am ill.
- (712) Parent has a meeting with the teacher today:
The teacher said that Senni is not allowed to watch television today because he has a lot of homework.
- (713) A is walking through the village when A sees Lathoya, one of the school children. It is morning and all the children are suppose to be at school. Shouldn't Lathoya be at school?
- (714) Lathoya is not allowed to eat peanuts because she is allergic.
- (715) A has an appointment with Senni, who is always late. This time A does not have much time because she has another appointment. Senni should not come late to the appointment we have.
- (716) A offers B to bring her home. B replies:
You do not have to bring me, because I know the way.
- (717) A left Atjoni around 6PM. It gets dark around 7PM. It is a two hour boat ride from Ajoni to Pikinslee. Therefore,
Senni NOT ARRIVE during the day, he ARRIVE when it BE night.
- (718) Lathoya NOT GO to school, her mother does not want her to go.
- (719) Mother to child: When I COME BACK, you CLEAN room.
- (720) Vera NOT GO to school, because her family does not have enough money.
- (721) In the beginning, the boy could not climb trees because he was too small.
- (722) Father to children: The children are not allowed to eat before I come home.
- (723) A boy comes often to see a girl. Her father doesn't approve of him, so he tells his daughter:
The boy is not allowed to come here.
- (724) The woman must not plant rice now, the time for planting rice has passed already.
- (725) [B&T Q19.1] He come in spite of his illness.
- (726) [B&T Q19.2] Although his hut is far away, I visit him every day.
- (727) [B&T Q19.3] He hit me event though I had not done anything.
- (728) [B&T Q20.1.1] He does not come here (ever).

- (729) [B&T Q20.1.2] He will not come.
- (730) [B&T Q20.1.4] Rastafarians do not eat salt.
- (731) [B&T Q20.2.1] He did not come yesterday.
- (732) [B&T Q20.2.2] He did not eat this morning.
- (733) [B&T Q20.2.3] He did not eat the fish; he was not hungry.
- (734) [B&T Q20.3.1] He has not come yet.
- (735) [B&T Q20.3.3] He has not eaten the fish yet.
- (736) [B&T Q20.3.4] He does not eat fish yet; he is still ill.
- (737) [B&T Q20.4.1] He did not really see it.
- (738) [B&T Q20.4.2] It is not certain that it will rain today.
- (739) [B&T Q21.1.1] He is really ill.
- (740) [B&T Q20.1.2] He certainly saw it.
- (741) [B&T Q20.3.1] Perhaps he is ill.
- (742) [B&T Q20.3.2] Perhaps he lost his knife (in the forest, but it might be at home too).
- (743) [B&T Q20.3.2] Perhaps he has seen the chief.

Questionnaire 7: Modality

- (744) When you cross the boarder to French Guyana you must show your passport to the police.
- (745) Mother to child: You may put the cat outside.
- (746) Senni is ready to go.
- (747) You must know how to swim if you bath in the river.
- (748) The boy will know how to swim if he learns it.
- (749) The man GO home tomorrow because he FINISH his work.
- (750) If the man wants to work here he KNOW how to woodcraft.
- (751) When the old man was young he KNOW how to sail a boat.
- (752) It has not been raining at all lately and this is very atypical for the time of year. Consequently, the crops in the field are getting very dry. A wishes that it starts raining.
If it NOT RAIN, my rice GO bad.

- (753) It is the time for harvesting the rice and lately it has been raining a lot. During a tropical rainstorm, you cannot harvest your rice. A wishes that it stops raining.
It should not rain so I can harvest my rice.
- (754) Talking about one of the school children who is not allowed to play football.
His mother told the boy that he is not allowed to play football.
- (755) Mother to child: Boy, you must come out of the tree.
- (756) A has visited his aunt in Paramaribo. Today A is coming home. His mother knows that he left Paramaribo early and she also knows that the road to Atjoni is in a good condition.
Senni ARRIVE soon, because he LEAVE Paramaribo early.
- (757) There will be a bookodidia latter this week and some of the women are busy preparing the food for this event.
The woman must bake casaba today.
- (758) A girl is not doing well at school. The teacher talks to her parents and tells them that in order for her to be promoted to the next level:
The girl must study hard.
- (759) What did the women do last week?
They HARVEST peanuts.
- (760) What will the women do next week?
They FINISH PLANT peanuts.
- (761) If you want to work here, you must know how to make boats.
- (762) When did the man finished the boat?
The man FINISH the boat last week.
- (763) A is planning to build a house for his wife.
Tomorrow the man BEGIN MAKE stone for the house he will build.
- (764) Talking about a boy who's uncle builds boats:
When the boy is grown up, he can build boats.
- (765) The girls are harvesting the rice while the boys are hunting in the forest.
- (766) What did the women do today?
They HARVEST rice because the rice BE RIPE.
- (767) A boy was walking in the forest when he was attacked by a wild pig which he had to kill.
The boy KILL the wild pig because the wild pig ATTACK him.
- (768) If the boy climbs in the tree he FETCH the coconut.

- (769) When the man was young he DANCE very well.
- (770) [B&T Q46.1] If I came, I would see him.
- (771) [B&T Q46.2] If he had come yesterday, he would have seem him.
- (772) [B&T Q46.3] He would come if he had the money for the trip.
- (773) [B&T Q46.4] He will not come if it rains.
- (774) [B&T Q46.5] He would come if he had had some money.
- (775) [B&T Q46.6] If he comes tomorrow, he will see him.
- (776) [B&T Q46.7] If he wants to come, he will see him.
- (777) [B&T Q46.8] He would have come if you has asked him.
- (778) [B&T Q46.9] He would come if you asked him.
- (779) [B&T Q46.10] He could come if he wanted to.
- (780) [B&T Q46.11] If I go there, I will be beaten.
- (781) [B&T Q46.12] If you stay there, you will be killed.
- (782) [B&T Q46.13] If the child loses the chicken, his father will beat him.
- (783) [B&T Q46.14] If you drink this medicine, you will die.
- (784) [B&T Q46.15] If the baby cries, you will give him some mild.
- (785) [B&T Q46.16] If the baby does not cry, you will not give him any milk.
- (786) [B&T Q46.17] If I had gone down there, I would have been beaten.
- (787) [B&T Q46.18] If you (PL) had stayed here, you would have been killed.
- (788) [B&T Q46.19] If the child has lost the chicken, his father would have beaten him.
- (789) [B&T Q46.20] If you had drunk this medicine, you would have died.
- (790) [B&T Q46.21] If the baby had cried, I would not have given him any milk.

Questionnaire 8: Modality

- (791) The man would have come for his brothers funeral but he did not have money.
- (792) Today A saw B talking to the boatsman and therefore A assumes that B will go to Paramaribo tomorrow.
Senni GO to Paramaribo tomorrow because I SEE he and the boatsman TALK today.

- (793) Looking up at the sky:
I THINK it RAIN today.
- (794) [M&W Q17] I may come tonight, if I have time.
- (795) [M&W Q40] You should save your money.
- (796) I should save money, because I do not have money.
- (797) [M&W Q45] I wanted to come to the party, but I did not have time.
- (798) [M&W Q46] The child is sick very often, she needs a lot of taking care to get better.
- (799) [M&W Q53] If I had know he needed help, I would have helped him, but I did not know.
- (800) If I did not buy bread today I would not have anything to eat.
- (801) [M&W Q58] If you help me, I will give you food.
- (802) [M&W Q28] You must come tonight if you want your money.
- (803) The boy will not have to go to school tomorrow, because the teacher has gone to Paramaribo.
- (804) If the man was not ill yesterday, he would have been able to go hunting today.
- (805) A has passed by B's house and saw a dead animal lying in front of this house. Since B hunts regularly, A derives from the available evidence that:
The man must have hunted because a dead deer is lying in front of his house.
- (806) A knows that B went fishing today. Based on A's experience of the amount of fish in the river, A utters:
The man must have caught fish today because he went fishing.
- (807) A is looking for B's, Kenneth. At the time of utterance, Kenneth is not at home. B didn't see him leave. B does know that Kenneth loves to go hunting in the afternoon.
Kenneth might have gone hunting because he is not at home.
- (808) A wants to know where Jacky is. Just now she passed by B's place in the direction of the river with the dishes.
The woman might have gone to the river to do the dishes.
- (809) A is passing Jacky's house and A smells freshly baked bread. So, B says to herself:
Jacky must be baking bread right now.

- (810) The time for planting rice is almost over and A hasn't planted rice yet, because A has been ill for a while. A has to do it now, otherwise the rice will not be ripe on time and thus the harvest probably will be wasted. The woman must plant her rice today.
- (811) The time for planting peanuts is almost over and A hasn't planted them yet, because A has been ill for a while. A has to do it now, otherwise the peanuts will not be ripe on time and thus the harvest probably will be wasted. The woman must plant her peanuts before next week.
- (812) Mother to her child: You must go to school today!
- (813) A has noticed that the whole week B has been at home. This is unusual because it is the time to plant rice. A knows that B has not finished planting all her rice and B also does not have enough left from B's previous rice harvest. The woman might be ill, because she has been at home the whole week.
- (814) [B&T Q11.1] Let us hope that he comes!
- (815) [B&T Q11.2] May I live long!
- (816) [B&T Q11.5] I hope he dies for the evil he had done me.
- (817) [B&T Q12.1] He is able to come.
- (818) [B&T Q12.2] He is not able to come.
- (819) [B&T Q12.3] He is able to walk in spite of his illness.
- (820) [B&T Q12.4] He cannot read; he is blind.
- (821) [B&T Q12.5] He cannot speak; he is dumb.
- (822) [B&T Q13.1] May I come tomorrow?
- (823) [B&T Q13.2] May I come tomorrow and play with you?
- (824) [B&T Q13.3] You may go; the granma is allowing people to leave.
- (825) [B&T Q14.1] you must eat in order to grow.
- (826) [B&T Q14.3] You must do it.
- (827) [B&T Q14.4] You will have to run to arrive in time.
- (828) [B&T Q16.1] If he wants to come, he will see him.
- (829) [B&T Q16.2] He wants to sing.
- (830) [B&T Q16.3] He wanted to come but he couldn't.
- (831) [B&T Q16.4] He tried to jump and fell.

- (832) [B&T Q40.2] Can you see something inside?
 - a. Yes, I can.
 - b. No I can't.
- (833) [B&T Q40.3] I have finished the work.
- (834) [B&T Q40.4] She finished grinding the rice.
- (835) [B&T Q40.5] He has arrived.
- (836) [B&T Q41.1] I am finishing the work.
- (837) [B&T Q41.2] I am not finishing the work.
- (838) [B&T Q41.3] I have not finished the work.
- (839) [B&T Q42.1] He was going to come when his brother died.
- (840) [B&T Q42.2] He was getting ready to come when I arrived.
- (841) [B&T Q42.3] He was coming here when the was caught.
- (842) [B&T Q44.1] He would do that for me.
- (843) [B&T Q44.2] He would kill his brother for money.

Questionnaire 9: Future

- (844) What are you planning to do right now?
 - a. I BOIL something.
 - b. I WASH thing.
 - c. [Dahl FUTURE Q 5] I WRITE a letter.
 - d. I GO to school.
- (845) Talking about the speaker's plans for tomorrow:
 - a. [Dahl FUTURE Q 41] I WRITE a letter.
 - b. [Dahl FUTURE Q 40] I WORK in my vegetable garden.
 - c. [Dahl FUTURE Q 39] I STAY at home.
 - d. I GO to school.
- (846) What your brother DO when we will arrive, do you think?
[Dahl FUTURE Q 3] He WRITE a latter
- (847) It's no use trying to swim in the lake tomorrow:
[Dahl FUTURE Q 8] The water BE COLD (then).
- (848) What HAPPEN if I eat this mushroom?
[Dahl FUTURE Q11] You DIE.

- (849) Talking about a third person's immediate plans:
[Dahl FUTURE Q64] He GO to bed.
- (850) There are black clouds in the sky.
[Dahl FUTURE Q47] It RAIN (very soon).
- (851) The weather is changing.
a. [Dahl FUTURE Q49] It RAIN tomorrow.
b. [Dahl FUTURE Q52] It be COLD tomorrow.
- (852) My brother SAY yesterday that today he GO to his vegetable garden.
- (853) My brother SAY yesterday that tomorrow he HUNT.
- (854) My brother SAY yesterday that he COME next week.
- (855) [Dahl FUTURE Q73] My brother SAY yesterday that it RAIN today.
- (856) [Dahl FUTURE Q74] My brother SAY yesterday that it BE COLD today.
- (857) [Dahl FUTURE Q75] My brother HOPE yesterday that it BE COLD today.
- (858) What you DO yesterday? [Dahl FUTURE Q96] I WRITE a letter to my brother in order that he KNOW that I COME to see him.
- (859) Uttered at 8 o'clock-the speaker's brother left at 6 and has not returned yet:
[Dahl FUTURE Q109] He RETURN at 7 o'clock.
- (860) (Yesterday evening) I COOK before my brother COME home.
- (861) We must wash in the creek now, because the water in the river BE HIGH.
- (862) I will wash your stuff for you.
- (863) Helena GIVE BIRTH in Paramaribo.
She STAY with her sister.
Tomorrow she FLY to Pikinslee.
- (864) I PROMISE that I MAKE okra soup today.
- (865) The man has married his wife, he BUILD a house for her.
- (866) Tomorrow Senni GO to french Guyana.
- (867) What you DO this evening?
a. I DANCE.
b. We DANCE
- (868) I THINK that I COME next week to your place to dance.
- (869) What are your plans for the future?
I MOVE to Paramaribo.

- (870) Last week Senni SAY that he GO to Paramaribo and STAY there for 5 days.
- (871) [B&T Q4.1] I shall not do anything.
- (872) [B&T Q4.2] My chicken is dead. What shall I do?
- (873) [B&T Q4.3] Won't you go and see the granma about that?
- (874) [B&T Q4.4] Will he arrive tomorrow?
 a. Yes, he will arrive tomorrow.
 b. No, he will not arrive tomorrow, but the day after.
- (875) [B&T Q4.5] Will you work for the granma today or tomorrow?
 a. I shall work for him tomorrow; today I shall rest.
- (876) [B&T Q4.6] Who will go?
 a. I will go.
 b. Nobody will go.
- (877) [B&T Q5.1] What are you going to sing?
- (878) [B&T Q5.2] He is going to come tomorrow.
- (879) [B&T Q5.3] He is just about to leave.
- (880) [B&T Q5.5] He is singing in a moment.
- (881) [B&T Q5.6] He will work in a moment.
- (882) [B&T Q8.2] Tomorrow I will go to X..., (I) will buy some grain, (I) will bring it home to my wife, (I) will tell her to cook it, and we will eat it.
- (883) [B&T Q31.4] What do the children eat?
 a. The children eat rice.
- (884) [B&T Q31.5] Do the children drink beer?
 a. No, the children do not drink beer; they drink water.
- (885) [B&T Q31.6] Do the(name of ethnic group) eat python?
 a. No, they eat game.
- (886) [B&T Q31.7] The child has fallen asleep. The child is asleep now. The child sleeps every day.
- (887) [B&T Q31.8] Do the women do the same work as the men?
 a. No, they do not do the same things.
- (888) [B&T Q31.9] It is the women who sew cloths.
- (889) [B&T Q31.10] It is the men who make benches.
- (890) [B&T Q31.11] It is the women who crush the rice and fetch water.

(891) [B&T Q31.12] It is the men who hunt.

Questionnaire 10: Perfect

- (892) I KNOW Senni since 2000.
- (893) I LIVE in Pikinslee since I BE BORN.
- (894) After dinner:
I EAT too much.
- (895) B's house was broken into.
The police CATCH the thief.
- (896) Vera VISIT Paramaribo many times.
- (897) Since 2005 I BE ILL.
- (898) Once in my life:
I READ the bible.
- (899) What do you do in the evening?
I READ books
- (900) What you DO yesterday evening?
I read a book.
- (901) Senni VISIT Vera last week.
A week before, a spider BITE Vera.
She BE ILL since.
Senni VISIT Vera in two weeks.
At that moment, Vera BE ILL for a month.
- (902) I NOT SEE Lathoya for a while. You KNO where she BE?
a. She BE ILL.
b. She BE ILL but I NOT KNOW if she BE better.
- (903) I have build a house in a year.
- (904) I have build this house for a year, but I am not finished yet.
- (905) What did Senni drank just now?
Senni DRINK tea.
- (906) Since this morning I am drinking tea.
- (907) Since this morning I am dancing.
- (908) Since this morning I am drawing circle.
- (909) What are you doing right now?

- a. I READ a book.
- b. I FINISHED READ a book.
- (910) (Yesterday) Senni WRITE a letter when Lathoya ARRIVE.
- (911) (Yesterday) Senni SLEEP before I COME home.
- (912) (Now) Senni LIFT a hundred kilo and I DO the dishes.
- (913) Senni loves Lathoya.
- (914) (Yesterday evening) Lathoya COOK and Senni PLAY.
- (915) (Now) Lathoya DRINK tea and Senni BE in the room.
- (916) (Yesterday) Lathoya ENTER the classroom and the exams BE on the table.
- (917) (Yesterday) Lathoya RUN to school.
She COLLIDE with Senni.
They FALL on the ground.
- (918) (Yesterday) Lathoya WALK on the street.
She TURN the corner.
She CROSS the street.
Senni SEE Lathoya.
Lathoya ENTER a shop.
- (919) I LOST my glasses and I NOT FIND them yet.
- (920) I LOST my glasses and I FIND them again.
- (921) What you COOK today?
I COOK peanut soup.
- (922) What is the woman doing right now?
The woman PLANT rice.
- (923) What did the man do today?
The man HUNT.
- (924) Since 2008 I LIVE in Pikinslee.
- (925) What did you do today?
All day I WORK in my vegetable garden.
- (926) When does the doctor comes to see your mother?
Every two weeks, the doctor VISIT my mother.
- (927) Where did Senni go?
Senni GO to Paramaribo
 - a. and he RETURN already.
 - b. and he NOT RETURN yet.

- (928) The people START to leave.
The room BECOME empty.
The children ENTER the house.
- (929) When did they leave?
They LEAVE yesterday.
- (930) I EAT cheese one day.
- (931) Since yesterday I READ this book.
- (932) When does Senni uses the car?
He DRIVE the car on Monday and Tuesday.
- (933) Lathoya READ the book on Tuesday and Wednesday, but she NOT FINISH yet.
- (934) [B&T Q8.1] Yesterday I went to X..., (I) bought some grain, (I) brought it home to my wife, (I) told her to cook it, she cooked it and we ate it.
- (935) [B&T Q18.1] He went to have a drink of water. I came to see my sister.
- (936) [B&T Q18.2] He took the spear to kill some game.
- (937) [B&T Q18.3] I'll give you a knife to kill the chicken.
- (938) [B&T Q18.4] The old man gave her son poison so that he would die.
- (939) [B&T Q18.5] The dog ate so much meat the he became ill.
- (940) [B&T Q18.6] He beat his son so that he died.
- (941) [B&T Q18.8] She put poison in my food so that I would die, but it did not work.
- (942) [B&T Q18.9] He came and he saw him.
- (943) [B&T Q37.1] He sets out to work.
- (944) [B&T Q37.2] He began to drink.
- (945) [B&T Q37.3] She started to cry.
- (946) [B&T Q37.4] He did not start work.
- (947) [B&T Q38.1] He is already working.
- (948) [B&T Q38.2] He is already eating.
- (949) [B&T Q38.3] He is already coming.

Questionnaire 12: Complex Predicate constructions

- (950) I said that Senni must eat the banana.

- (951) The man must fish tomorrow otherwise he won't have anything to eat.
- (952) Last week the woman should have planted her rice, but she was ill.
- (953) A is in the forest and he is being chased by a jaguar. If he wants to stay alive he must run faster than the jaguar.
The boy must run fast in order for the jaguar not to catch him.
- (954) Advice of the doctor:
The woman must drink constantly because she is ill.
- (955) The woman must begin to work in order for her to finish on time.
- (956) The woman is obliged to finish harvesting the peanuts, because the day after tomorrow her husband will go and sell them in Paramaribo.
- (957) Next week the woman must begin to plant the peanuts (because it is the season for it).
- (958) The woman would have finished uprooting the peanuts, but yesterday and today she did not go to her vegetable garden.
- (959) Mother to child: You should not be afraid of the doctor.
- (960) What do the children eat?
The children eat meat.
- (961) The boy loves to hunt with his father.
- (962) In the old days, the man hunted but now he has become an old man.
- (963) A wants to build a house but A does not know how to make cement. A asks B if B knows someone who knows how to do this. B knows that his neighbour has recently build a house for his wife. B says:
This man might know how to make cement.
- (964) A knows that B planned to make a cake today. Now A sees that B is walking to the river to do the dishes. A says:
The woman might have finished making the cake.
- (965) What do the boys do on Sunday?
Every Sunday the boys PLAY FOOTBALL.
- (966) Do the boatsmen sail to Atjoni every day?
On Sundays, the boatsmen NOT SAIL to Atjoni.
- (967) In a while this child KNOW how to harvest rice.
- (968) The boy must finish gathering peanuts before his mother returns.

Questionnaire 13: TMA interactions

- (969) Senni has gone to P today. You don't know if he has arrived already, cause he hasn't called you. However, it is 6 o'clock and you know that the road is rather good. So you think that he might have arrived already. Senni must have arrived in Paramaribo already.
- (970) The maripa must be rotten because it has been in the water.
- (971) The child may go to school because she is 4 years old.
- (972) Wilgo cannot go to his vegetable garden because his moped is broken.
- (973) When the police knows what the boy does they will punish him.
- (974) A didn't have any money yesterday. B knows because A asked B for money, but B couldn't give A any. Today B sees A buying beer, so B says:
That man must have gotten money because he has bought beer.
- (975) A sees Senni's mother spanking her son. A knows that she only does this when Senni has done something very bad, so A says:
Senni must have done something very bad because his mother is spanking him.
- (976) A asks B what B's neighbour is doing right now. Yesterday evening the neighbour mentioned to B that she would go to her vegetable garden. B knows she finished harvesting her rice and that it is the time to plant peanuts, so B says:
The woman must be planting peanuts.
- (977) A is walking by Jacky's house and A smells baked peanuts, so A says:
Jacky must be baking peanuts because I am smelling baked peanuts.
- (978) A wants to know where Lathoya is. B doesn't know, but B does know that Lathoya loves fishing. Furthermore, Lathoya's fishing rod is not where it is supposed to be.
Lathoya must have gone fishing because I don't see her fishing rod.
- (979) A wants to know where B's son is. B doesn't know, but B knows that her son loves to play football after school.
The boy might be playing football.
- (980) What is the woman doing?
The woman is making maripa butter.
- (981) The water is standing on the fire for some time now. A cannot see it (A is inside while the water is outside) but A assumes:
The water must be boiling already because it has been on the fire for some time now.

- (982) If that man was not in Paramaribo right now he would be playing the drum.
- (983) We were unable to win the football game because our best man was not playing/was ill.
- (984) The man would be able to build a house, but he does not have any money.
- (985) (Yesterday) The road was good enough for the man to arrive home early.
- (986) The man can play football but his foot is broken.
- (987) The girl is allowed to go to Paramaribo with her teacher, because her mother said that is was okay.
- (988) The child must GO to bed early yesterday because today he HUNT with his father.
- (989) The boy could not stay at the party because his mother was calling him.
- (990) The woman MAKE maripa butter but now she BE old.
- (991) First the woman WALK long to her vegetable garden but now she HAVE one next to the village.
- (992) First the boy was not allowed to walk in the forest by himself, but now he KNOW the way.
- (993) Last year the man had to harvest his rice because his wife BE ILL.
- (994) The rastafarians must work hard in order to finish these benches on time.
- (995) (Last year) The man BE in prison and he NOT GIVE money to his wife.
- (996) (Last year) The woman NOT COOK for her husband because he BE in prison.
- (997) (If the man wants to finish before the rain season)
The man must be able to begin to build the house.
- (998) When we ARRIVE at home the girl MUST FINISH COOK.
- (999) (The boys in Pikinslee went to Botopasi today for a football game)
The boys FINISH PLAY FOOTBALL because I HEAR mopeds.
- (1000)The women must have began to pound the rice because I am hearing the tati.

Questionnaire 14: MISC

- (1001)The man will not come tomorrow because he is ill.
- (1002)The woman is not able to plant rice because she was operated.

- (1003)The man cannot finish building the house because he does not have any money.
- (1004)The girl cannot help me to harvest the rice because she lives in Paramaribo.
- (1005)Tomorrow the man will not teach because he is going to Paramaribo.
- (1006)The woman has not planted rice because she has enough (in her storage).
- (1007)The man has not build a house for his wife because she has already a house.
- (1008)The man did not catch fish today, he hunted.
- (1009)When Jacky plants rice she does not bake bread.
- (1010)The father has not cut the hair of his son (although he promised his wife).
- (1011)The woman should not have gone to Botopasi, but she should have gone to Futuna.
- (1012)(Last week) The woman had her period and thus she was not allowed to cook for her husband.
- (1013)(Now) The woman is not allowed to cook for her husband because she has her period.
- (1014)First the boy could not ride a moped because her father did not have money to buy one.
- (1015)The boy cannot be promoted to the next class because he does not know how to read.
- (1016)(In the old days) The woman NOT PLANT sweet cassava but she PLANT bitter cassava.
- (1017)The woman has not gone to school.
- (1018)(In the old days) The man NOT DANCE but he PLAY the drum.
- (1019)(Now) The boy NOT SLEEP but he PLAY FOOTBALL.
- (1020)(Last week) The woman could not cook for her husband because she BE at her vegetable garden.
- (1021)(Now) The woman cannot cook for her husband she BE at her vegetable garden.
- (1022)(Now) The man NOT WORK in the medical clinic but the man TEACH at school.
- (1023)(Now) The woman NOT EAT but the woman DRINK water.
- (1024)(When the man was young) The man was not allowed to drive a moped because his mother FEAR that he BREAK his arm.

- (1025)What are you doing right now?
I SEW a cloth.
- (1026)(Now) The man WALK in the forest and he SEE an animal.
- (1027)(Last week) The man WALK in the forest and he SEE an animal.
- (1028)(Last week) The women POUND rice when the Granman ARRIVE in the village.
- (1029)(Yesterday) The man DRINK tea when Senni ARRIVE and SAY that he KILL a deer.
- (1030)(Last week) The woman BAKE bread when her brother ENTER the house and he SAY that their mother PASS AWAY.
- (1031)(Yesterday) The woman SEW a cloth when her husband SAY that he BUILD a boat.
- (1032)(Yesterday) Senni COME home and Lathoya READ a book.
- (1033)A child and her mother are in the bank. The child sees a security camera and she asks her mother why it is there. Her mother replies:
They have placed the camera there because a thief might enter the bank.
- (1034)Two thieves are in a house when they hear something. A says to B:
Run, because the police might catch us.
- (1035)A woman is pregnant. This is not her first pregnancy and her previous child-births/ deliveries were very difficult. The medical care in Paramaribo is better equipped to handle a difficult labour. Therefore, she and the people in the medical clinic of the village have decided that she will be brought to Paramaribo to give birth there.
The woman GIVE BIRTH in Paramaribo.
- (1036)(Yesterday) Senni PULL his pants and he JUMP in the water.
- (1037)(Last week) When Lathoya FINISH COOK the peanut soup she EAT it.
- (1038)(Yesterday) Before Senni GO to bed he BATH.
- (1039)(Yesterday) The woman CATCH fish and the woman CLEAN it.
- (1040)(Yesterday) The woman POUND rice after she HARVEST it.
- (1041)Maybe it rained last night let's go and see if the ground is wet.
- (1042)What will we do tomorrow?
We BAKE goma.
- (1043)Maybe Senni will not go to French Guyana next week.
- (1044)Senni could have become a doctor but he started using cocaine.

(1045)After an operation you are not allowed to work for three months.

(1046)The child had to clean the fish but he did not do it.

(1047)The child had to clean the peanuts and he already has done it.

(1048)Where is Senni?

- a. Senni FLY to the Netherlands.
- b. Senni BE at home.
- c. Senni SLEEP in his hammock.

(1049)Senni PLAY football all the time this year.

(1050)Your sister still BE at home?

[Dahl Perfect Q27] No, she already GO AWAY.

(1051)The speaker used to meet his friend once a week, but nowadays he does not see him at all. The football game refers to a different football game each time.

[Dahl Perfect Q79] Every time I MEET him in those years, he TELL me about the football game he just SEE.

(1052)A's sister was not at home when A arrive. Question: Did you find your sister at home? A answers:

[Dahl Perfect Q76] No, I did not find her. She LEAVE.

(1053)Why do you believe what she told you about the Netherlands?

[Dahl Perfect Q78] I BELIEVE her because she BE to (VISIT) the Netherlands.

Appendix B: Elicited narratives

- (1054) Mi bi ta wáka a mátu. Hén mi makisá wán sindéki.
 1SG PST IMP walk LOC forrest NARR 1SG step upon ART snake
 Hén a nyá mi. Hén mi téi wán sitónu. Hén mi náki hén
 NARR 3SG eat 1SG NARR 1SG take ART stone NARR 1SG hit 3SG
 kíi.
 kill
 ‘I was walking in the forrest, when suddenly I stepped upon a snake. It bit
 me. I threw a stone and it died’.
- (1055) Mi bi nángo a bákase di mi dé móo píki te
 1SG PST IMP.go LOC vegetable garden when 1SG BE more small when
 fu mi butá méni mi á lúku goón búnu hén mi
 FU 1SG have attention for 1SG NEG look ground good NARR 1SG
 makisá wán sindéki mása gádu séépi dá mi wán ?kakiti? mi
 step upon ART snake master god self give 1SG ART ? 1SG
 téi wán sitónu vínde náki dí sindéki bi kíi.
 take ART stone throw hit DET snake PST kill
 ‘When I was smaller I went to my vegetable garden. I did not look at the
 ground very well and I stepped upon a snake. I took a stone and threw it
 to the snake which died’.
- (1056) Mi bi ta wáka a mátu. Hén mi makisá wán sindéki.
 1SG PST IMP walk LOC forrest NARR 1SG step upon ART snake
 Hém vínde wán páu de e. Hén a déde.
 NARR.1SG throw ART stick there NARR NARR 3SG die
 ‘I was walking in the forrest. I step upon a snake there and threw a stick at
 it. The snake died’.

- (1057) Mi bi wáka a mátu. Mi sí wán sindéki. A bi nyá mi
 1SG PST walk LOC forrest 1SG see ART snake 3SG PST eat 1SG
 azanganá. Nóo mi bi téi wán stónu náki hén. Nóo a bi
 tibia NARR 1SG PST take ART stone hit 3SG NARR 3SG PST
 déde.
 die
 ‘I walked in the forrest. I saw a snake. It bit me in my leg. I took a stone
 and hit it. It died’.
- (1058) Dí mi dé móo píki mi ta wáka a mátu. Hén wán
 when 1SG BE more small 1SG IMP walk LOC forrest NARR ART
 sindéki bi nyá mi a mi fútu. Hén mi téi wán sitónu vínde
 snake PST eat 1SG LOC 1SG foot NARR 1SG take ART stone throw
 dá dí sindéki. Nóo hén dí sindéki déde.
 give DET snake NARR NARR DET snake die
 ‘When I was small I was walking in the forrest, when a snake bit me in the
 leg. I took a stone and threw it to the snake. The snake died’.
- (1059) Dí mi gó a mátu. Hén mi sí wán sindéki. Hén a nyá
 when 1SG go LOC forrest NARR 1SG see ART snake NARR 3SG eat
 mi a fútu. Hén mi téi wán kódyo vínde náki hén kíi.
 1SG LOC foot NARR 1SG take ART stone throw hit 3SG kill
 ‘When I went to the forrest, I saw a snake. It bit me in my foot. I took a
 stone and threw it to the snake. It died’.
-

- (1060) Senni gó a Vera písi aí wíki pasá alá. Wán wíki fési
 Senni go LOC Vera place LOC.DET week pass there ART week before
 adyáinsi a nyá én. Sénsi í tén de a síki. Senni ó gó
 spider 3SG eat 3SG since DET time there 3SG ill Senni MOD go
 lúku Vera báka tú wíki báka. Aí tén de a suáki wán
 look Vera back two week back LOC.DET time there 3SG ill ART
 líba kaa.
 month already
 ‘Senni went to Vera last week. A week before, a spider bit her. She is ill
 since. Senni will visit Vera in two weeks. At that moment, she will be ill
 for a month’.

- (1061) Senni bi haíka Vera a dí wíki dí pasá. A dí óto wíki
 S PST listen V LOC DET week DET pass LOC DET other week
 neén fési wán adyáinsi bi nyá én. Nóo sénsi a dí
 LOC.3SG before ART spider PST eat 3SG NARR since LOC DET
 tén de hén Vera dé ku síki teluku nóú. Senni ó gó haíka
 time there NARR V BE with ill until now S MOD go listen
 Vera báka tú wíki báka. A dí ló písi tén de kaa
 V back two week back LOC DET some place time there already
 nóo én dé ku síki kaa wán líba.
 NARR 3SG BE with ill already ART month
 ‘Senni went to Vera last week. A week before, a spider had bitten her. Since
 that time, she is ill. Senni will visit Vera in two weeks. At that moment,
 she will be ill for a month’.
- (1062) Senni bi gó a Vera i wíki i pasá de. Wán wíki neén
 S PST go LOC V DET week DET pass there ART week LOC.3SG
 fési hen wán adyáinsi nyá hén. Sénsi dí adyáinsi nyá hén hén
 face NARR ART spider eat 3SG since DET spider eat 3SG NARR
 a síki. Báka tú wíki báka nóo Senni ó kó lúku hén báka.
 3SG ill back two week back NARR S MOD come look 3SG back
 A síki wán líba lóngi kaa.
 3SG ill ART month long already
 ‘Senni went to Vera last week. A week before, a spider bit her. Since then
 she is ill. Senni will visit Vera in two weeks. At that moment, she will be
 ill for a month’.
- (1063) Senni bi gó a Vera písi a dí wíki dí pasá. Bifó dí
 S PST go LOC V place LOC DET week DET pass before DET
 wíki de kabá hén adyáinsi nyá Vera. Hén a síki. Senni ó
 week there finish NARR spider eat V NARR 3SG ill S MOD
 gó lúku Vera báka tú wíki. A dí tén de a bi síki wán
 go look V back two week LOC DET time there 3SG PST ill ART
 líba pasá kaa.
 month pass already
 ‘Senni went to Vera last week. A week before, a spider bit her. Then she is
 ill. Senni will visit Vera in two weeks. At that moment, she will be ill for a
 month’.
- (1064) Senni gó a Vera písi a dí wíki alá. Bifó dí wíki dí
 S go LOC V place LOC DET week there before DET week when
 Senni kó a Vera písi hén wán adyáinsi bi nyá én. Hén
 S come LOC V place NARR ART spider PST eat 3SG NARR

a suáki. Báka tú wiki báka hén Senni ó gó a Vera písi.
 3SG ill back two week back NARR S MOD go LOC V place
 Hén Senni a kó sí Vera táa wán híi líba a suáki.
 NARR Senni 3SG come see V COMP ART all month 3SG ill
 ‘Senni went to Vera last week. A week before, a spider had bitten her. She
 is ill since. Senni will visit Vera in two weeks. At that moment she will be
 ill for a month’.