

Definite descriptions of events: progressive interpretation in Ga (Kwa)

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Abstract

This paper demonstrates that the progressive interpretation in Ga is an effect of the interaction between the imperfective aspect and a definite description of events. Crucially, the data from Ga point to the consequences of the view that definite descriptions of events encode the familiarity of the discourse referent and its uniqueness in bearing the property in question. Namely, they yield direct evidentiality and the necessary ongoingness of the event at the topic time. Thus, the paper identifies previously unattested variation in the semantics of the progressive in a cross-linguistic perspective and shows that not only lexical but also grammatical aspect exhibits striking parallelisms with the nominal domain.

1 Introduction

Deo [2009, 2015b] observed that in a cross-linguistic perspective the imperfective aspect is associated with three different readings: a progressive or event-in-progress reading, a habitual or generic characterizing reading, and a continuous reading with lexically stative predicates. The three readings are illustrated below, based on examples from Polish:^{1,2}

- (1) Q: What is Natalia doing right now?
A: Natalia czyt-a książkę. EVENT-IN-PROGRESS READING
Natalia read-IMPF book.ACC
'Natalia is reading a book.'
- (2) Q: What does Natalia do on Sundays?

¹The glosses used in this paper are as follows: DET = determiner; SG = singular; PL = plural; 1 = First person; 2 = Second person; 3 = Third person; PRT = particle; NOM = nominalizer; NEG = negation; IMPF = imperfective; PROG = progressive; ACC = Accusative, LOC = Locative. An example marked with '*' means that the example was judged to be unacceptable in the given context and I hypothesize that it is for grammatical reasons, '#' also means that the example was judged as unacceptable in the given context but for semantic or pragmatic reasons. Examples without any diacritics were judged as acceptable in the given context.

²Note that also perfective aspect can be associated with an iterative reading, e.g., in Czech [Stunová, 1986, 1991]. Thank you to an anonymous reviewer for pointing my attention to this issue.

A: Natalia czyt-a książkę. HABITUAL READING
 Natalia read-IMPF book.ACC
 ‘Natalia reads a book.’

- (3) Q: Where does Natalia live?
 A: Natalia mieszk-a w Londynie. CONTINUOUS READING WITH ST. PRED.
 Natalia live-IMPF in Londyn.LOC
 ‘Natalia lives in London.’

Looking at Ga, the general imperfective is realized by the suffix *-ɔ*, i.e., sentences with *ɔ*-marked verbs are compatible with all the three readings presented above (see subsection 3.2), example (4) illustrates the habitual reading:

- (4) context: Every Sunday Kofi goes to swim in the ocean.
 Kofi sele-ɔ.
 Kofi swim-IMPF
 ‘Kofi swims.’

Importantly, also clefted sentences with the imperfective form obtain a habitual interpretation, as demonstrated in (5):^{3,4}

- (5) context: Tom’s younger son and daughters do not like swimming and they do not do it, but his oldest son, Kofi, loves swimming and he does it regularly.
 Kofi **ni** sele-ɔ.
 Kofi PRT swim-IMPF
 ‘It is Kofi who swims.’

Interestingly, however, when the definite determiner *lɛ* is added to the VP in clefts with the imperfective form, such a sentence invariably obtains the progressive interpretation, as demonstrated in (6). Crucially also, (6) without the particle *ni* is unacceptable. I call this structure the analytic progressive.

- (6) Kofi **#(ni)** sele-ɔ **lɛ**.
 Kofi PRT swim-IMPF DET
 ‘It is Kofi who is swimming.’
- a. PROGRESSIVE CONTEXT: Tom and his family (wife, two sons, and two daughters) are on the beach. Tom and his wife can see a swimming child.
 ⇒ (6) is acceptable in this context
- b. HABITUAL CONTEXT: Tom’s younger son and daughters do not like swimming and they do not do it, but his oldest son, Kofi, loves swimming and he

³Importantly, as it will be shown later in the paper, (5) cannot obtain a progressive interpretation.

⁴I propose analyzing the Ga *ni*-structure as a cleft because the particle *ni* introduces a structural bipartition into the focused constituent to its left and the backgrounded part to its right as well as gives rise to the exhaustive inference and thus exhibits the typical properties of the cleft structure in a cross-linguistic perspective, see section 3.1 [AUTHOR, to be added later]. Note, however, that the pragmatics of clefts differ significantly cross-linguistically, compare e.g., French and English clefts [e.g., Bourns, 2014; Destruel, 2013; Lambrecht, 2001]. The semantics of the Ga *ni*-structure resembles the semantics of English clefts, but they differ in their pragmatics. I chose to translate the *ni*-structure as a cleft in English because it comes closest to empirical adequacy. Thank you to an anonymous reviewer for pointing this out to me.

does it regularly.
 ⇒ (6) is unacceptable in this context

Importantly, the interpretation of the analytic progressive is restricted to events which are actually ongoing (instantiated) at the topic time, as presented in (7).

- (7) ‘Harry Potter’ **ni** mi kane-ɔ **le**.
 ‘Harry Potter’ PRT 1.SG read-IMPF DET
 ‘I am reading ‘Harry Potter’.’
- a. EVENT INSTANTIATED AT THE TOPIC TIME: Tom can see that his friend John is in the process of reading something. He wants to know what it is.
 ⇒ John can utter (7) in this context
- b. EVENT NOT-INSTANTIATED AT THE TOPIC TIME: Tom and John are jogging. They are talking about books. Tom asks John which books he is reading.
 ⇒ John cannot utter (7) in this context

Moreover, the analytic progressive is used in direct evidence contexts, but typically not in indirect evidence contexts, as illustrated in (8):⁵

- (8) Kofi **#(ni)** sele-ɔ **le**.
 Kofi PRT swim-IMPF DET
 ‘It is Kofi who is swimming.’
- a. DIRECT EVIDENCE CONTEXT: Tom and his family (wife, two sons, and two daughters) are on the beach. Tom can see that his two daughters and the youngest son are playing with sand, and his oldest son, Kofi, is swimming.
 ⇒ Tom can utter (7) in this context
- b. INDIRECT EVIDENCE CONTEXT: The same as above but this time Tom cannot see his oldest son, but the younger one told him that he was in the process of swimming.
 ⇒ Tom cannot utter (7) in this context

These observations lead to the following questions that the paper aims at providing answers to:

- Why do clefted sentences conveying imperfective aspectual inference and with the definite determiner *le* attached to the VP invariably obtain the progressive interpretation? And how is this interpretation derived compositionally?
 ⇒ ANALYTIC PROGRESSIVE PUZZLE
- Why must the analytic progressive refer to events which are instantiated at the topic time?
 ⇒ INSTANTIATION AT THE TOPIC TIME PUZZLE
- Why does the analytic progressive impose evidential restrictions on the interpretation of the sentence?
 ⇒ DIRECT EVIDENTIALITY PUZZLE

⁵In the original example, it is Tom’s daughter, Anna, who is swimming. I have changed this detail for presentational reasons.

I will argue that the analytic progressive is a definite description of events. The definite determiner $l\epsilon$ encodes the information that there is a familiar discourse referent, an event of swimming by Kofi in the case of (8), which is unique in bearing the property in question. The analysis of the progressive interpretation is based on Ferreira [2005, 2016]. He claims that both habitual and progressive are quantifiers over events. Whereas in the habitual a sequence of events is quantified over, in the progressive a singular event is quantified over. Ferreira argues that the singularity of events is introduced by the presence of a covert singular determiner (a number morpheme). By contrast, I argue that the uniqueness of the events in the VP denotation is caused by the interaction between the definite determiner $l\epsilon$ and the notion of exemplification [Kratzer, 2007; Schwarz, 2009]. This also will account for the observation that the analytic progressive can only refer to events which are instantiated/actually ongoing at the topic time. On the other hand, the fact that the definite determiner encodes familiarity of the discourse referent will lead to direct evidentiality in progressive contexts. By that the Ga data contribute to the still growing body of evidence that languages have definite descriptions of other categories than NPs and points to interactions between the definite descriptions with the aspectual system of the language — an observation that has not been discussed in the theoretical literature so far.

The outline of the paper is as follows. In section 2, I present empirical generalizations regarding the semantic properties of the progressive aspect in Ga which lead to the puzzles presented in the introduction. Section 3 presents the main ingredients of the analysis: the semantics of the cleft structure, the imperfective marker $-\text{ɔ}$, and the definite determiner $l\epsilon$. Section 4 puts all the ingredients together and presents the solutions to the puzzles. It starts with accounting for the invariable progressive interpretation of the analytic progressive, because it forms basis for providing the answers for further puzzles. Subsequently, the reasons for which the analytic progressive can only refer to events which are instantiated at the topic time and why it requires a direct evidential context are discussed. Section 6 concludes.

2 Progressive aspectual reference in Ga

Ga (Kwa) is an under-researched language spoken in the Greater Accra Region (Ghana) by ca. 745,000 speakers. Its basic word order is SVO. It is a tonal language with two tones: High and Low. All data in this paper come from my original fieldwork with seven Ga native speakers (five women and two men) in May 2012, February 2013, January 2014, and October 2014 in Accra and one Ga native speaker in Berlin in 2012–2015. The language consultants in Ghana were students at the time of conducting the fieldwork. One of them has a background in linguistics. All of the language consultants grew up in a Ga speaking community and they all speak Ga in their families. To collect the data I used the methodology presented in Matthewson [2004].

Before I dive into a presentation of the data illustrating the semantic properties of progressive aspectual reference in Ga, let me briefly outline some basic assumptions I make. Following Reichenbach [1947] and Klein [1994], among others, I assume a threefold distinction between event time, i.e., the time at which an event takes place, topic time, i.e., the time the speaker talks about, and utterance time, i.e., the time at which the

sentence is uttered. The role of aspect is to relate the event time and the topic time. In particular, imperfective aspect locates the topic time within the running time of the event.

Ga has a rich system of overt aspectual markers [Dakubu, 2008], [AUTHOR, to be added later]. Interestingly, there are many ways of obtaining a progressive interpretation in Ga. For example, one can use the verbal prefix *mii-*, as presented in (9-a),⁶ or a clefted imperfective sentence with the definite determiner *lɛ* attached to the VP, as in (9-b).⁷ The former I call the synthetic progressive and the latter the analytic progressive.

- (9) PROGRESSIVE CONTEXT: Tom and his family (wife, two sons, and two daughters) are on the beach. Tom and his wife can see that Kofi is in the process of swimming. Tom's wife says:
- a. Kofi **mii**-sele. SYNTHETIC PROGRESSIVE
 Kofi PROG-swim
 'Kofi is swimming.'
- b. Kofi *(**ni**) sele-ɔ **lɛ**. ANALYTIC PROGRESSIVE
 Kofi PRT swim-IMPF DET
 'It is Kofi who is swimming.'

Crucially, (9-b) without the particle *ni* is unacceptable and without the definite determiner *lɛ* attached to the VP obtains a habitual interpretation, as demonstrated in (10):

- (10) Kofi **ni** sele-ɔ.
 Kofi PRT swim-IMPF
 'It is Kofi who swims.'
- a. PROGRESSIVE CONTEXT: Tom and his family (wife, two sons, and two daughters) are on the beach. Tom can see that his two daughters and the youngest son are playing with sand and his oldest son, Kofi, is swimming.
 ⇒ Tom cannot utter (10) in this context
- b. HABITUAL CONTEXT: Tom's younger son and daughters do not like swimming and they do not do it, but his oldest son, Kofi, loves swimming and he does it regularly.
 ⇒ Tom can utter (10) in this context

I defend the view that both the synthetic and the analytic progressive entail progressive aspectual reference based on the following evidence. First, both of them are compatible with progressive aspectual reference, as for example in (9), and are incom-

⁶When the Agent is a pronoun, progressive aspectual reference is conveyed by a vowel lengthening, as in (i):

- (i) Tom wants to talk to Anna, so he asks her father where he can find her. Anna's father says:
 E-e-sele.
 3SG-PROG-swim
 'She is swimming.'

⁷Yet another way of obtaining a progressive interpretation in Ga is to use a clefted imperfective sentence with the demonstrative *nɛɛ* attached to the VP, see [AUTHOR, to be added later].

patible with habitual aspectual reference, as illustrated in (11) and (12):⁸

- (11) HABITUAL CONTEXT: Every Sunday Anna goes to swim in the ocean.
 #Anna **mii**-sele. SYNTHETIC PROGRESSIVE
 Anna PROG-swim
 intended: ‘Anna swims.’
- (12) HABITUAL CONTEXT: Tom’s younger son and daughters do not like swimming and they do not do it, but his oldest son, Kofi, loves swimming and he does it regularly.
 #Kofi **ni** sele-ɔ **le**. ANALYTIC PROGRESSIVE
 Kofi PRT swim-IMPF DET
 intended: ‘It is Kofi who swims.’

Second, a compatibility with different temporal references suggests that the synthetic and the analytic progressive are aspectual rather than temporal markers. That both progressive forms are compatible with present temporal reference was shown above with (9). Examples (13) and (14), in turn, demonstrate that the synthetic progressive is also compatible with past and future temporal reference, respectively.

- (13) PAST TEMPORAL REFERENCE:
 A: What were you doing yesterday, when I called you?
 B: **Mii**-kane wolo.
 PROG-read book
 ‘I was reading a book.’
- (14) FUTURE TEMPORAL REFERENCE:
 A: What will you be doing tomorrow at 16:00?
 B: Beni a-baa-tswa ŋmeji 16:00 wɔ **le**, **mii**-kane wolo.
 when 3SG-PROSP-ring bells 16:00 tomorrow DET 1SG.PROG-read book
 ‘Tomorrow at 16:00, I will be reading a book.’

By contrast, the analytic progressive is compatible with past but not with future temporal reference, as illustrated in (15) and (16), respectively.⁹

- (15) PAST TEMPORAL REFERENCE:

⁸An anonymous reviewer pointed out to me that in some cases, progressive aspect is compatible with iterated interpretation, as in (i):

- (i) Roger was running a mile last week. This week he is up to three.

[from Moens and Steedman, 1988, p.18]

I do not have parallel data in Ga, so the question whether the analytic or synthetic progressive in Ga is acceptable in the sentences such as (i) has to await future research. Thank you for pointing my attention to this issue.

⁹Note that also the imperfective marker in isolation, i.e., not in the analytic progressive form, is compatible with present and past but not with future temporal reference, for discussion see subsection 3.2.

Beni mi-ba shia nyε lε, Kofi ni kane-ɔ wolo yε tsu lε
 when 1SG-come home yesterday DET Kofi PRT read-IMP book at room DET
 mli lε.

in DET

‘When I came back home yesterday, it was Kofi who was reading a book in the room.’

(16) FUTURE TEMPORAL REFERENCE:

#Beni ma-ba shia wɔ lε, Kofi ni kane-ɔ wolo yε tsu
 when 1SG.PROSP-come home tomorrow DET Kofi PRT read-IMP book at room
 lε mli lε.

DET in DET

intended: ‘When I come back home tomorrow, it will be Kofi who will be reading a book in the room.’

To sum up, the data in this section gives rise to the following question that should be answered in this paper:

- Why do clefted sentences conveying imperfective aspectual inference and with the definite determiner *lε* attached to the VP invariable obtain the progressive interpretation? And how is this interpretation derived compositionally?
 ⇒ ANALYTIC PROGRESSIVE PUZZLE

Even though both the synthetic and the analytic progressive convey progressive aspectual reference, their semantics is not alike. For example, whereas the synthetic progressive is a general, unmarked form of progressive similar to the English one, the interpretation of the analytic progressive is restricted to events ongoing at the topic time that the speaker has strong, usually direct, evidence for, which is shown empirically in the next sections. Although the aim of this paper is to account for the semantics of the analytic progressive form, for presentational reasons I include the data regarding the evidential properties of the synthetic progressive as well.

2.1 Evidentiality

Evidentiality is a linguistic category that marks the type of evidence (or source of information) that a proposition is based on [e.g., Faller, 2002]. It turns out that whereas the synthetic progressive does not encode any evidential restrictions, the analytic progressive requires direct evidence. This view is motivated empirically by the data presented below in (17) and (18) which demonstrate that the analytic progressive is only acceptable in direct evidential contexts.

(17) DIRECT EVIDENCE CONTEXT: Tom and his family (wife, two sons, and two daughters) are on the beach. Tom can see that his two sons and the youngest daughter are playing with sand, and his oldest daughter, Anna, is swimming. He says to his wife:

a. Anna **mii**-sele.

SYNTHETIC PROGRESSIVE

Anna PROG-swim

‘Anna is swimming.’

speaker saw her cooking.¹⁰

(20) context: Yesterday, I was in Kumasi (the whole day) and Maria was in Accra (the whole day).

a. Beni Lisa tswa nyɛ lɛ, Maria **mii**-hoo gbɛkɛ niyenii.
when Lisa phone yesterday DET Maria PROG-cook evening food
‘When Lisa phoned yesterday, Maria was cooking dinner.’

b. #Beni Lisa tswa nyɛ lɛ, Maria **ni** ho-ɔ gbɛkɛ niyenii **lɛ**.
when Lisa phone yesterday DET Maria PRT cook-IMPV evening food DET
‘When Lisa phoned yesterday, it was Maria who was cooking dinner.’

Note, however, that one of my language consultants accepted (19-b) and (20-b) in the context of (19) and (20), respectively, but she commented that in (20-b) the speaker is more certain that Lisa was cooking than in (20-a). She also said that using (20-b) requires having better evidence than using (20-a). This is in line with the observation that the analytic progressive can also be used in contexts with a rigidly structured program, e.g., in sport competition context. This observation is illustrated in (21):

(21) context: Anna participates in a long-distance swimming competition. Tom, Anna’s father, knows that Anna’s turn to swim is from 13:00–14:00. Tom cannot see Anna but it is 13:30 now.

Anna **ni** sele-ɔ **lɛ**.

Anna PRT swim-IMPV DET

‘It is Anna who is swimming.’

This gives rise the following generalization — the analytic progressive can be used either in direct evidence contexts or in contexts with a rigidly structured program, as sport competition, leading to the following puzzle:

- Why is the analytic progressive only acceptable in direct evidence contexts or contexts with rigidly structured program?
⇒ DIRECT EVIDENTIALITY PUZZLE

Importantly, I propose that the direct evidential meaning is conveyed by the whole structure, i.e., the interaction between the imperfective marker *-ɔ*, the cleft structure introduced by the particle *ni*, and the definite determiner *lɛ*. I have found no evidence which would suggest that the evidential meaning is conveyed by any of these elements in isolation.

¹⁰I do not have data regarding the (in)compatibility of the analytic progressive with other evidential meanings, e.g., reasoning. As for other direct evidential meanings, as auditory or other sensory, the language consultants commented on (i) that in this case the speaker can hear the birds singing:

(i) Loofɔ-ji ni la-a lɛ.
birds-PL PRT sing-IMPV DET
‘Birds are singing.’

Based on this comment, I conjecture that the analytic progressive is compatible with any kind of direct evidentiality, not only visual one.

2.2 Events *not-instantiated* at the topic time

Another way in which the two progressive forms in Ga are distinct is with respect to their (in)compatibility with contexts in which the event is not instantiated at the topic time, i.e., contexts in which the event is not actually ongoing at the topic time. For illustration, consider (22). John might have started reading ‘Harry Potter’ before jogging and he might continue reading it after running. However, the event of reading ‘Harry Potter’ is not actually ongoing at the topic time in (22), because John is not reading ‘Harry Potter’ but jogging at the topic time. Events which are actually ongoing at the topic time I call instantiated at the topic time, events which are not actually ongoing at the topic time I call not-instantiated at the topic time.

It turns out that whereas the synthetic progressive, as the English one, is compatible with events not-instantiated at the topic time, the analytic progressive is not, as demonstrated below:

- (22) context: Tom and John are jogging. They are talking about books. Tom asks John which books he is reading. John replies:
- a. **Mii**-kane ‘Harry Potter.’ SYNTHETIC PROGRESSIVE
 1SG.PROG-read ‘Harry Potter’
 ‘I am reading ‘Harry Potter’.’
- b. #‘Harry Potter’ **ni** mi kane-ɔ **le**. ANALYTIC PROGRESSIVE
 ‘Harry Potter’ PRT 1.SG read-IMPF DET
 ‘It is ‘Harry Potter’ that I am reading.’

Whereas (22-a) is acceptable in the context of (22), (22-b) is not. One of my language consultants gave a comment that (22-b) could be used if the speaker was physically in the process of reading a book while uttering (22-b) and this observation is supported by the data presented below:

- (23) context: Tom can see that his friend John is in the process of reading something. He wants to know what it is. John replies:
- ‘Harry Potter’ **ni** mi kane-ɔ **le**.
 Harry Potter PRT 1SG read-IMPF DET
 ‘It’s ‘Harry Potter’ that I am reading.’

The contrast between (22) and (23) strongly suggests that the unacceptability of (23-b) is not due to the fact that ‘Harry Potter’ is the pivot of the cleft but due to the fact that the event of reading ‘Harry Potter’ in (23) is not instantiated at the topic time, which gives rise to the following puzzle:

- Why must the analytic progressive refer to events which are instantiated at the topic time?
 ⇒ INSTANTIATION AT THE TOPIC TIME PUZZLE

2.3 Summary

In this section, I discussed the two strategies of conveying progressive aspectual reference in Ga, i.e., the synthetic and the analytic progressive. Crucially, the progressive interpretation in the latter is conveyed by the interaction between the particle *ni*, introducing

the cleft structure, the imperfective marker $-\text{ɔ}$ and the definite determiner ɛ attached to the VP. Importantly, when the definite determiner ɛ attached to the VP is not present in the structure, the sentence invariably obtains the habitual interpretation.

Moreover, I presented semantic differences between the two progressive forms in Ga. Whereas the use of the analytic progressive is restricted to events instantiated at the topic time for which the speaker has strong (direct) evidence, the synthetic progressive does not impose any evidential constraints on its interpretation. A summary of the semantic differences between the synthetic and the analytic progressive form is presented in Table 1. In the next section, I present the main ingredients of the analysis which provide the basis for solving the puzzles, i.e., (i) analytic progressive puzzle, (ii) instantiation at the topic time puzzle, and (iii) direct evidentiality puzzle.

Table 1: Semantic properties of the synthetic and the analytic progressive in Ga

	synthetic progressive	analytic progressive
direct evidence	✓	✓
indirect evidence	✓	—
<i>instantiated</i> events	✓	✓
<i>not-instantiated</i> events	✓	—

3 Main ingredients of the analysis: clefts, imperfective, and definiteness

3.1 The cleft-introducing particle *ni*

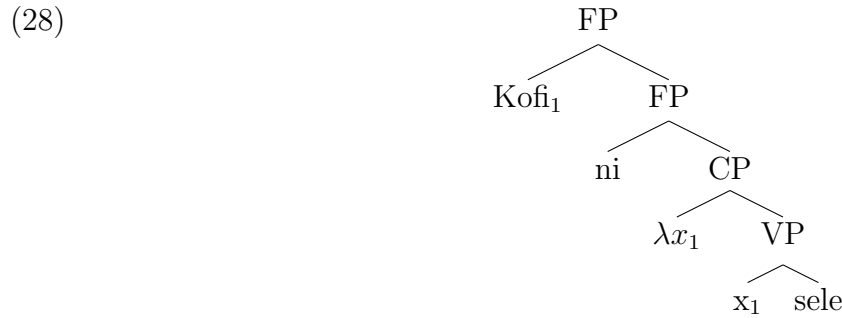
The particle *ni*-introduces a structural bi-partition into the focused constituent to its left (the pivot) and the backgrounded material to its right. It follows that the particle *ni* has a rigid syntactic position, i.e., it can only occur just after the ex-situ focused constituent, as demonstrated in (24) and (25), and it cannot attach to in-situ focused constituents, as shown in (26):

- (24) Q: Who read a book yesterday?
 A: Kofi **ni** kane (***ni**) wolo (***ni**).
 Kofi PRT read PRT book PRT
 ‘It is Kofi who read a book.’
- (25) Q: What did Kofi eat yesterday?
 A: Banku **ni** Kofi (***ni**) ye nyɛ.
 banku PRT Kofi PRT eat yesterday
 ‘It was banku that Kofi ate yesterday.’
- (26) Q: What did Kofi read yesterday?
 A1: *Kofi kane adesawolo **ni** nyɛ.
 Kofi read newspaper PRT yesterday
 A2: Adesawolo **ni** Kofi kane nyɛ.
 newspaper PRT Kofi read yesterday

‘It was a newspaper that Kofi read yesterday.’

I propose that the *ni*-structure is a mono-clausal cleft structure in which the pivot is base generated in its left-peripheral position.¹¹ For illustration, the proposed syntactic structure for (27) is presented in (28):¹²

- (27) A: Who swam?
 B: Kofi **ni** sele.
 Kofi PRT swim
 ‘It is Kofi who swam.’



As for the information-structural properties of the *ni*-structure, the focus is invariably placed on the pivot. It is indicated by the observation that an element out of the pivot cannot answer wh-questions, as illustrated by the unacceptability of (29-A) and (30-A) in the context of the questions given in (29-Q) and (30-Q), respectively:

- | | |
|---|---|
| <p>(29) Q: Namɔ (ni) kane wolo?
 who PRT read book
 ‘Who read a book?’
 A: #Wolo ni Kofi kane.
 book PRT Kofi read
 ‘It is a book that Kofi read.’</p> | <p>(30) Q: Mɛni (ni) Kofi ye nyɛ?
 what PRT Kofi eat yesterday
 ‘What did Kofi eat yesterday?’
 A: #Kofi ni ye abele.
 Kofi PRT eat corn
 ‘It is Kofi who ate corn.’</p> |
|---|---|

Moreover, pivots cannot express aboutness topics, as presented in (31):

- (31) Tell me something about John.
 #John **ni** kane wolo nyɛ.
 John PRT read book yesterday
 intended: ‘As for John, he read a book yesterday.’

VPs can also be the pivot but only in a nominalized form, accompanied either by a finite copy of the verb in its canonical position inside the VP, as in (32-A1), or by *fe*-support (‘do’-support), as in (33-A3):

- (32) Q: What did Kofi do yesterday?
 A1: Sele-mɔ **ni** Kofi **sele** nyɛ.
 swim-NOM PRT Kofi swim yesterday

¹¹For a discussion of syntax of the *ni*-structure, see [AUTHOR, to be added later].

¹²Note that a similar structure in which a cleft-introducing element (the particle *ni* in the case of Ga) intervenes between the index and the pivot was proposed by Hole [2011] for Chinese *shì...de* clefts.

- A2:*Sele ni Kofi sele nyε.
 swim PRT Kofi swim yesterday
 intended: ‘It was swimming that Kofi did yesterday.’
- A3: Wolo kane-mə ni Kofi fee nyε.
 book read-NOM PRT Kofi do yesterday
 ‘It is reading a book that Kofi did yesterday.’

Importantly, the pivot is interpreted exhaustively, as demonstrated by the data in (33). If the pivot would not be interpreted exhaustively, it should be possible to conjoin two sentences with the same VP-descriptions but with different elements in pivots, contrary to fact.

- (33) a. #Felix ni kane-ɔ wolo ni Kofi ni kane-ɔ wolo.
 Felix PRT read-IMPF book and Kofi PRT read-IMPF book
 ‘It is Felix who reads a book and it is Kofi who reads a book.’
- b. Felix kane-ɔ wolo ni Kofi kane-ɔ wolo.
 Felix read-IMPF book and Kofi read-IMPF book
 ‘Felix reads a book and Kofi reads a book.’

Thus, sentences with the *ni*-structure are always exhaustive answers to questions under discussion (QUD) [Roberts, 2014]. This fact will be of central importance for the analysis of the analytic progressive.

Following Büring [2011], I propose modeling the exhaustivity effect triggered by the *ni*-structure as a conditional presupposition. The two meaning components of (32) are presented below in (34) and the lexical entry of *ni* is presented in (35).¹³

- (34) *ni*-STRUCTURE:
- a. *assertion*: $P(x)$
 ‘Kofi swam’
- b. *not-at-issue*: $P(x) \rightarrow x = \max(P)$
 ‘If Kofi swam, then Kofi was a maximal swimmer.’

- (35) $\llbracket \text{ni} \rrbracket = \lambda P. \lambda x : P(x) \rightarrow x = \max(P). P(x)$

For details of the analysis of the cleft structure triggered by the particle *ni* and a discussion of further semantic properties of this structure, see [AUTHOR, to be added later].

3.2 The imperfective marker -ɔ

3.2.1 Imperfective aspect

As it was written in the introduction, Deo [2009] observed that in a cross-linguistic perspective the imperfective aspect is associated with three different readings, i.e., the habitual reading, the event-in-progress reading, and the continuous reading with stative predicates. These readings are also conveyed by verbs marked with the suffix -ɔ, as illustrated below:

¹³I follow the convention of Heim and Kratzer [1998] to write the presupposed material between the semicolon and the dot.

- (36) context: Every Sunday Kofi goes swimming in the ocean.
 Kofi sele-ɔ. HABITUAL READING
 Kofi swim-IMPF
 ‘Kofi swims.’
- (37) context: Tom and his family (wife, two sons, and two daughters) are on the beach. Tom and his wife can see a swimming child. Tom’s wife says:
 Kofi ni sele-ɔ le. EVENT-IN-PROGRESS READING
 Kofi PRT swim-IMPF DET
 ‘It is Kofi who is swimming.’
- (38) Bill sumɔ-ɔ Susan. CONTINUOUS READING WITH STATIVE PREDICATES
 Bill love-IMPF Susan
 ‘Bill loves Susan.’

The suffix *-ɔ* is compatible with past and present temporal reference, as illustrated in (39) and (40), but not with future temporal reference both in matrix and subordinate clauses, as demonstrated in (41) and (42), respectively.^{14,15}

- (39) A: What did you do on Sundays when you were a child?
 B: Mi-kane-ɔ wolo.
 1SG-read-IMPF book
 ‘I read a book.’
- (40) A: What do you do on Sundays?
 B: Mi-kane-ɔ wolo.
 1SG-read-IMPF book
 ‘I read a book.’
- (41) A: What will you do on Sundays over the Summer break?
 B: #Mi-kane-ɔ wolo.
 1SG-read-IMPF book
 intended: ‘I will read a book.’
- (42) context: Anna is telling her friend about her plans.
 #Ma-ya Accra keke le mi-sele-ɔ daagbi.
 1SG.PROSP-go Accra PRT DET 1SG-swim-IMPF every.day
 intended: ‘I will move to Accra, and then I will swim every day.’

Based on the data presented so far and following Kratzer [1998], I propose the following lexical entry for *-ɔ* — it locates the topic time within the running time of the event ($\tau(e)$):

$$(43) \quad \llbracket -\text{ɔ} \rrbracket = \lambda P_{\langle e, t \rangle} . \lambda t . \lambda s . \exists e [t \subseteq \tau(e) \wedge P(e) \wedge e \text{ is in } s]$$

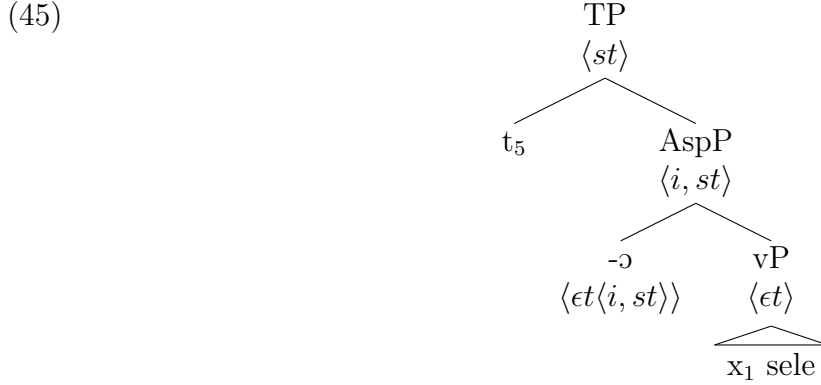
Consider (44):

¹⁴Habits in the future are expressed either by verbs in their unmarked form or by the prefix *baa-*, which conveys prospective aspectual reference [AUTHOR, to be added later].

¹⁵There are at least two conceivable ways in which the incompatibility of the suffix *-ɔ* with future temporal reference could be accounted for. First, there might be a covert non-future tense marker in sentences without the prospective marker *baa-*, analyzed in line with Matthewson [2006]. Second, it might be that the marker *-ɔ* conveys non-future temporal reference. However, both approaches have to deal with some problems, for discussion see [AUTHOR, to be added later].

- (44) Kofi sele-ɔ.
 Kofi swim-IMPF
 ‘Kofi swims’

Its structure up to the TP level is presented in (45), in which ϵ is a type of eventuality, and its interpretation is given in (46).



- (46) $\llbracket \text{TP} \rrbracket^g = \lambda s. \exists e [g(5) \subseteq \tau(e) \wedge e = \text{swim} \wedge \text{Ag}(e) = g(1) \wedge e \text{ is in } s] \approx$ A set of situations in which there is an event of swimming by the agent $g(1)$, the running time of which ($\tau(e)$) includes the contextually provided topic time $g(5)$

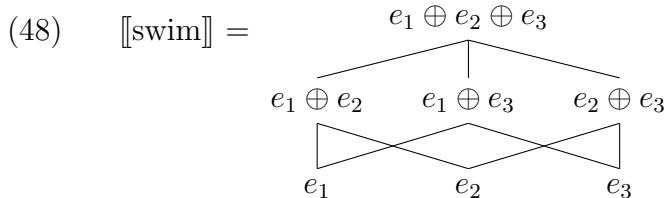
Summing up, the suffix $-ɔ$ is a general imperfective marker which can obtain the habitual reading, event-in-progress reading, and continuous reading with lexically stative predicates. In the next subsection, I briefly discuss how habitual and progressive readings come about.

3.2.2 Habitual and progressive aspect

I assume neo-Davidsonian event semantics [Parsons, 1990; Schein, 1993] in which verbs denote relations between events and their arguments introduced by thematic roles. For illustration, the denotation of the verb *buy* is given below:

- (47) $\llbracket \text{buy} \rrbracket = \lambda x. \lambda y. \lambda e. \text{buy}(e) \wedge \text{Th}(e) = x \wedge \text{Ag}(e) = y$

Moreover, following Kratzer [2008]; Krifka [1992]; Landman [1997], I assume that uninflected verbs denote the set of singular and plural events, i.e., they are number neutral. For example, the denotation of the verb *swim* is the set of all swimming events, singular and plural. Same as nouns, events form a mereological semi-lattice structure:



Now, Ferreira [2005] claims that habitual and progressive have the same temporal (and modal) components, but they differ with respect to the number of events being

quantified over.¹⁶ Whereas in the progressive a singular event is quantified over, thereby expressing the meaning that a singular event is ongoing (49-a), in the habitual plural events are quantified over, thereby expressing the meaning that a sequence of events is ongoing (49-b):

- (49) a. $[[\text{Impf}_{sg}]] = \lambda P_{sg}.\lambda t.\exists e[t \subseteq \tau(e) \wedge P(e)]$ PROGRESSIVE INTERPRET.
 b. $[[\text{Impf}_{pl}]] = \lambda P_{pl}.\lambda t.\exists e[t \subseteq \tau(e) \wedge P(e)]$ HABITUAL INTERPRET.
 [adapted from Ferreira, 2005, p.99]

In light of what has been said so far, it becomes clear why under the lexical entry for the Ga imperfective marker $\text{-}\text{ɔ}$ given in (43), the verbs marked with $\text{-}\text{ɔ}$ are compatible with both progressive and habitual aspectual references. The function of $\text{-}\text{ɔ}$ is to provide the proper relation between the topic time and the running time of the event (the topic time is included in the running time of the event). Since the denotation of verbs is number-neutral (underspecified), the existential quantifier over events introduced by aspect can either quantify over a singular event or over plural events. If there is only one event in the VP denotation, the topic time is by force included in the running time of this event and hence a sentence with the ɔ -marked verb obtains a progressive interpretation. By contrast, if there is more than one event in the VP denotation, the topic time is included within a sequence of events and therefore sentences with $\text{-}\text{ɔ}$ -marked verbs obtain a habitual interpretation.

By that I do not want to say that the plurality of events being quantified over is the only difference between a habitual and a progressive interpretation. However, I do think that the assumption that uninflected verbs are number-neutral together with the observation that quantifying over a singular event invariably leads to the progressive interpretation allows us to derive compositionally the progressive interpretation conveyed by the analytic progressive in Ga.

On Ferreira's [2005] account, whether there is a singularity or a plurality of events in the denotation of the VP depends on the presence of a covert singular or plural determiner (Ferreira calls it a number morpheme). For example, the structure of the English sentence *John painted the house* is given in (50):

- (50) a. $[_{TP} \text{ Past } [_{AspP} \text{ Impf } [_{VP-sg} [_{VP} \text{ John paint the house}]]]]$
 b. $[_{TP} \text{ Past } [_{AspP} \text{ Impf } [_{VP-pl} [_{VP} \text{ John paint the house}]]]]$
 [from Ferreira, 2005, p.97]

By contrast, I argue that the singular event in the denotation of the analytic progressive is not introduced by a covert singular determiner but by the adverbial version of the definite determiner $\ell\mathcal{E}$ and the notion of exemplification, which will be explicated at length in subsection 3.4.

¹⁶For critical comments on the plurality-based analyses of imperfective marking, see for example Deo [2015a].

3.3 The definite determiner *lɛ*

The particle *lɛ* is a cross-categorical definite determiner that attaches to many elements, including NPs and VPs [Dakubu, 2005], [AUTHOR, to be added later].¹⁷ In both cases it conveys the information that a discourse referent is familiar and unique in bearing the property in question. Since this is not a paper on the semantics of the definite determiner in the nominal domain, I only present the data from the verbal domain.

The observation that languages can have definite descriptions of categories other than NPs is not new. For example, Larson [2003] analyzes final clausal definite determiners in Fɔn and Haitian Creole as definite adverbs, Grubic and Zimmermann [2011] propose analyzing the Ngamo background marker *i/=ye* as a definiteness marker of events and Hole [2011] argues that Chinese *shì...de* clefts encode a uniqueness and a familiarity presupposition of events. However, there are at least two important points that make *lɛ* interesting from a theoretical point of view. First, it has the same overt form in both the nominal and the verbal domain. And second, it influences the aspectual interpretation of the sentence. As it was already shown in section 2, whereas the clefted sentence with VP *lɛ* invariably obtains a progressive interpretation, the same sentence without *lɛ* obtains a habitual interpretation:

- (51) PROGRESSIVE CONTEXT: Tom and his family (wife, two sons, and two daughters) are on the beach. Tom and his wife can see a swimming child. Tom's wife says:
- a. Kofi ni sele-ɔ lɛ.
Kofi PRT swim-IMPF DET
- b. #Kofi ni sele-ɔ.
Kofi PRT swim-IMPF
intended: 'It is Kofi who is swimming.'
- (52) HABITUAL CONTEXT: Tom's younger son and daughters do not like swimming and they do not do it, but his oldest son, Kofi, loves swimming and he does it regularly.
- a. #Kofi ni sele-ɔ lɛ.
Kofi PRT swim-IMPF DET
- b. Kofi ni sele-ɔ.
Kofi PRT swim-IMPF
intended: 'It is Kofi who swims.'

The particle *lɛ* attached to the VP has already been discussed in Dakubu [2005]. She refers to Boadi [1974], who claims that the definite determiner in Akan, when used in the

¹⁷The particle *lɛ* has many different functions besides marking NPs and VPs as definite, e.g., it occurs in antecedent of conditionals and subordinate temporal clauses as well as mark topics [Dakubu, 1992],[AUTHOR, to be added later] (see also [AUTHOR, to be added later] for empirical evidence that *lɛ* is a definite determiner in the nominal domain and [AUTHOR, to be added later] for the interaction of *lɛ* with different aspectual references). These functions exhibited by *lɛ* corroborates to its analysis as some kind of background marker. I think that the unified analysis of *lɛ* as a definite determiner and a background marker is possible and can be done e.g., in line with Grubic's [2015] analysis of the the Ngamo (West Chadic) *=i/ye* marker. However, since the unified analysis of the definite determiner *lɛ* is beyond the scope of this paper, it has to await future research. Thank you to an anonymous reviewer for asking for clarification.

same way as in (53), suggests ‘not merely that the event in the proposition occurred, but that it has been referred to earlier in the discourse.’ [Dakubu, 2005, p.19]¹⁸

- (53) Kofi (ni) e-yi lɛ.
 Kofi PRT 3sg-beat DET
 ‘He indeed beat KOFI.’ [from Dakubu, 2005, p.19]

Dakubu [2005] claims that Boadi’s (1974) observation is also valid for Ga. She notes that Ga native speakers comment that in sentences like (53) ‘the event is expected, or otherwise known to the hearer.’ Importantly, my data are in line with these observations. As in the case of NP *lɛ*, the discourse referent picked up by VP *lɛ* (an event described by the VP denotation) must be strongly or weakly familiar [Roberts, 2003]. Empirical support for this view comes from the data presented below.

Compare (54-a) with (54-b). The determiner *lɛ* attached to the VP is unacceptable in contexts in which the interlocutors are not familiar with the VP discourse referent, as in (54-a), and it is acceptable in contexts in which the VP discourse referent is known to the interlocutors, as in (54-b).

- (54) Kofi ni sele lɛ.
 Kofi PRT swim DET
 intended: ‘Kofi swam.’
- a. context 1: We didn’t talk about swimming before. Suddenly, I have decided to tell my friend who was swimming yesterday.
 ⇒ (54) is unacceptable in this context
- b. context 2: We talked about swimming before and we are arguing who swam yesterday.
 ⇒ (54) is acceptable in this context

A language consultant gave a comment that in the case of (54) we must have talked about swimming before and the speaker is putting emphasis that it was Kofi who did it.

Moreover, one can use VP *lɛ* when the discourse referent, an event in the case of the VP *lɛ*, is not previously mentioned in the conversation but just known to the interlocutors, as in (55). It means that the discourse referent picked up by *lɛ* does not have to be strongly familiar, but it can be weakly familiar as well.

- (55) There is a long-distance swimming competition in Accra today. Tom knows that Anna’s turn to swim is scheduled for 13:00-14:00. It is 13:30 now. Tom says:
 Anna ni sele-ɔ lɛ.
 Anna PRT swim-IMPF DET
 ‘It is Anna who is swimming.’

In addition, the use of the VP *lɛ* can also be licensed by direct perceptual evidence. For example, the VP *lɛ* is acceptable in the context of (56) because the event of swimming by Anna is (weakly) familiar to Tom due to the direct perceptual access to the event.

¹⁸Note that my language consultants did not accept the VP *lɛ* without the particle *ni*. It seems that the confusion arises because the particle *ni* can also be realized as a vowel lengthening of the word it attaches to.

- (56) context: Tom and Anna are on the beach. Tom can see that Anna is swimming.
 He says:
 Anna *ni* *sele-ɔ* *lɛ*.
 Anna PRT swim-IMPF DET
 ‘It is Anna who is swimming.’

Turning to the uniqueness inference, since the particle *lɛ* can be attached to the VP only when the cleft-introducing particle *ni* is present in the sentence as well, it is difficult to find an independent piece of evidence that *lɛ* triggers a uniqueness inference also in these cases. Consider (57):

- (57) context: John, Tom, and Maria are in the process of swimming.
 #John *ni* *sele-ɔ* *lɛ*.
 John PRT swim-IMPF DET
 ‘It is John who is swimming.’

That (57) is not acceptable in the provided context could be attributed to the fact that *lɛ* triggers a uniqueness presupposition and therefore it is infelicitous in contexts in which there is more than one event of the given kind. However, since *ni* triggers the exhaustive interpretation of the pivot, namely that John and nobody else is swimming, the same effect is expected without the VP *lɛ*. Therefore, it is difficult to tell whether the observed exhaustivity effect is triggered by *ni* or the uniqueness inference triggered by *lɛ*.

A good test for the uniqueness inference triggered by *lɛ* is to check its acceptability in contexts in which the same agent performs more than one activity of the same kind, for example in a context in which Kofi swam several times. In that case the exhaustivity triggered by the particle *ni*, i.e., that only Kofi and nobody else swims, should not interact with the uniqueness triggered by the particle *lɛ*, i.e., that there is a unique event of the given kind. It means that one would expect *lɛ* to be unacceptable in habitual contexts (in which for example Kofi swims regularly) and acceptable in progressive contexts (in which there is an ongoing unique event of swimming by Kofi). And this is precisely the initial observation of this paper, i.e., sentences with the analytic progressive form are

only acceptable in progressive contexts:^{19,20}

- (58) Kofi ni sele-ɔ lɛ.
 Kofi PRT swim-IMPF DET
 ‘It is Kofi who is swimming.’
- a. PROGRESSIVE CONTEXT: Tom and his family (wife, two sons, and two daughters) are on the beach. Tom and his wife can see a swimming child.
 ⇒ Tom can utter (58) in this context
- b. HABITUAL CONTEXT: Tom’s younger son and daughters do not like swimming and they do not do it, but his oldest son, Kofi, loves swimming and he does it regularly.
 ⇒ Tom cannot (58) in this context

To conclude this subsection, the definite determiner *lɛ* encodes the information that a discourse referent is familiar and unique in bearing the property in question. In the next subsection, I propose a formal semantic analysis of *lɛ* which captures these empirical generalizations.

3.3.1 A formal analysis of the definite determiner *lɛ*

Following Elbourne [2005]; Schwarz [2009] and Arkoh and Matthewson [2013], I claim that the definite determiner *lɛ* takes two arguments: the NP and the pronominal index, which I formally analyze as a variable of type *e*. The lexical entry for *lɛ* is given in

¹⁹In light of what has been said so far, one would expect (i-a) with the unmarked form *sele* to be unacceptable in the context of (i), contrary to fact:

- (i) context: Last year, John swam every day.
- a. John ni sele lɛ.
 John PRT swim DET
 ‘It was John who swam last year.’
- b. #John ni sele-ɔ lɛ.
 John PRT swim-IMPF DET
 intended: ‘It was John who swam last year.’

One possible analysis of (i) would be to say that there is a quantification over the minimal situation in (i-a) containing only a swimming event by John and nothing else and hence *lɛ* could still be analyzed as invoking the uniqueness inference. Since the interaction between the definite determiner *lɛ* and the unmarked form is beyond the scope of this paper, I am leaving it for future research. Note also that, as expected, the same sentence with the imperfective form *seleɔ* is unacceptable in the context of (i).

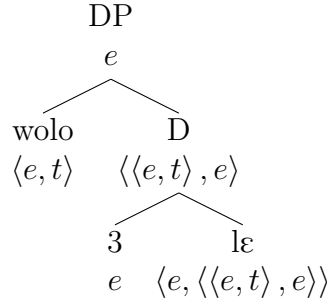
²⁰By that I do not want to say that the progressive interpretation of sentences with the analytic progressive form is triggered solely by the definite determiner *lɛ*. Quite to the contrary, I argue that it is the effect of the interaction between the imperfective marker *-ɔ*, the definite determiner *lɛ*, and the semantics of clefts introduced by the particle *ni*.

(59):^{21,22}

$$(59) \quad \llbracket l\mathcal{E} \rrbracket = \lambda y. \lambda P. \lambda x [P(x) \wedge x = y]. \iota x [P(x) \wedge x = y] \quad \text{[to be revised]}$$

For illustration, the structure of *wolo l\mathcal{E}* ('the book') is presented in (60) and its derivation in (61).²³

(60)



- (61) a. $\llbracket \text{D} \rrbracket^g = \lambda y. \lambda P. \iota x [P(x) \wedge x = y](g(3))$
 $= \lambda P. \iota x [P(x) \wedge x = g(3)]$
 b. $\llbracket \text{DP} \rrbracket^g = \llbracket \text{D} \rrbracket^g(\llbracket \text{wolo} \rrbracket)^g = \iota x [\text{wolo}(x) \wedge x = g(3)] \approx$ the unique individual x such that x is a book and x is identical to $g(3)$

The assignment function maps the covert index to familiar entities and thus it accounts for strongly and weakly familiar uses of $l\mathcal{E}$.

Extending the analysis to the verbal domain, I propose for VP $l\mathcal{E}$ the same lexical entry as for NP $l\mathcal{E}$. Recall that I assume neo-Davidsonian event semantics in which verbs denote relations between events and their arguments introduced by thematic roles. When $l\mathcal{E}$ attaches to the VP, it takes a property (a set of events) and says that there is a unique (singular or plural) familiar event which has this property. As an example, the structure

²¹Note that the lexical entry for $l\mathcal{E}$ in (i) does not trigger an interpretation that a discourse referent is unique in general but that there is a unique familiar discourse referent and this is precisely what $l\mathcal{E}$ does. The data in (i) provides empirical evidence for that claim (see also [AUTHOR, to be added later] for discussion):

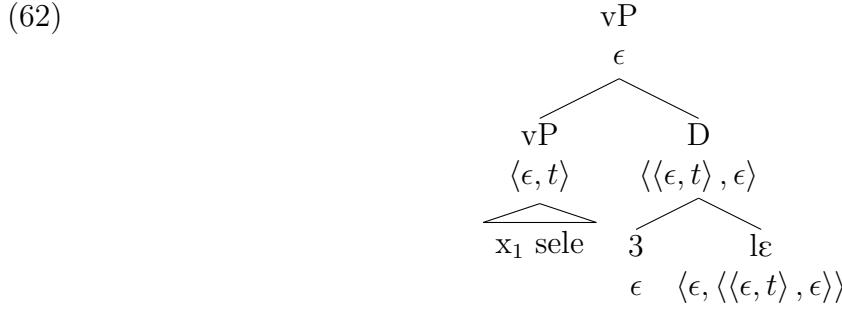
- (i) Mi-na maŋ onukpa l\mathcal{E}.
 1SG-see town elder DET
 'I saw the town elder.'
 a. context: There were five town elders at the celebrations. We've talked about **one** of them.
 \Rightarrow (i) is acceptable in this context
 b. context: There were five town elders at the celebrations. We've talked about **two** of them.
 \Rightarrow (i) is unacceptable in this context

Thank you to an anonymous reviewer for asking for clarification.

²²Note also that using the pronominal index to capture both strong and weak familiar uses of the definite determiner is a departure from the previous works on definiteness which tend to associate the presence of the pronominal index with the strong familiar uses. Thank you to an anonymous reviewer for pointing this out to me.

²³For presentational reasons, I omit the presupposed material.

of *sele le* ('the swimming event') is given in (62) and its derivation in (63):^{24,25,26}

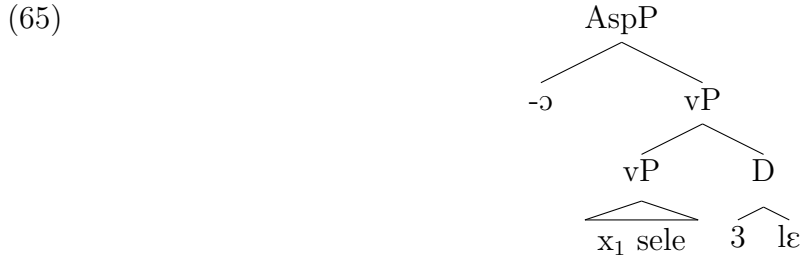


- (63)
- $\llbracket \text{le} \rrbracket^g = \lambda y. \lambda P. \iota e P(e) \wedge e = y$
 - $\llbracket \text{D} \rrbracket^g = \llbracket \text{le} \rrbracket(g(3)) = [\lambda y. \lambda P. \iota e [P(e) \wedge e = y]](g(3)) = \lambda P. \iota e [P(e) \wedge e = g(3)]$
 - $\llbracket \text{vP} \rrbracket = \lambda e. \text{swim}(e) \wedge \text{Ag}(e) = x_1$
 - $\llbracket \text{VP} \rrbracket^g = \llbracket \text{D} \rrbracket^g(\llbracket \text{vP} \rrbracket)$
 $= [\lambda P. \iota e P(e) \wedge e = g(3)](\lambda e. \text{swim}(e) \wedge \text{Ag}(e) = x_1)$
 $= \iota e [\text{swim}(e) \wedge \text{Ag}(e) = x_1 \wedge e = g(3)]$
 \approx the unique event e such that e is a swimming event, whose agent is x_1 and e is $g(3)$

3.3.2 The definite determiner in the analytic progressive

I argue that *VP le* syntactically still behaves like a verb, i.e, it can be labeled as a verbal projection, and therefore it can be taken as an argument by aspect. Consider (64) and its structure given in (65):

- (64) Kofi ni sele- o le.
 Kofi PRT swim-IMPf DET
 'It is Kofi who is swimming.'



A question that arises immediately according to the way I have set things up is why *sele o* is not analyzed as the nominalized form of *sele* ('swim') and why *le* is not claimed to operate on such a nominalized form. A first piece of evidence that '*sele o* ' is not nominalized comes from the cleft structure in Ga. As shown in subsection 3.1, VPs in Ga

²⁴Note that x_1 also receives a value via the the assignment function. However, in order to increase the readability of the formulas, I do not mark it.

²⁵Note also that this is not the final version of the derivation, the lexical entry for *le* will be revised in subsection 3.4 and the derivation in subsection 4.1.

²⁶The structure in (62) is unusual in that D takes vP as its argument and it does not project its properties. It might be that both NP *le* and VP *le* have the same semantics, but they are not of the same syntactic category. For presentational reasons, however, I am labeling VP *le* and NP *le* in a uniform way. A more detailed explication of this issue has to await future research.

can be clefted only in their nominalized form. Therefore, the prediction is that if *sele* were a nominalized form of *sele*, it should be acceptable as the pivot, contrary to fact:

- (66) Q: What is Tom doing right now?
 A1: *Sele-ɔ ni Tom fe-ɔ lɛ.
 swim-IMPF PRT Tom do-IMPF DET
 A2: Sele-mɔ ni Tom fe-ɔ lɛ.
 swim-NOM PRT Tom do-IMPF DET
 intended: ‘It is swimming that John is doing right now.’

A language consultant commented on (66-A1) that it is not a good sentence, it means something like ‘It is swim that Tom is doing right now.’ By contrast, she said that (66-A2) means ‘It is swimming that Tom is doing right now’ and it is fine.

Another piece of evidence that -ɔ is not a nominalized form comes from associative NPs. The test presented in (67) is based on the observation that associative complements within NPs are nominal. The fact that the -ɔ marker is not acceptable in this construction suggests that it is not a nominalization marker.

- (67) Priscilla and Dede are talking about yesterday’s swimming competition. Priscilla says:
 a. Kofi sele-mɔ lɛ sa mi-hiɛ.
 Kofi swim-NOM DET be.agreeable 1SG-self
 b. *Kofi sele-ɔ lɛ sa mi-hiɛ.
 Kofi swim-IMPF DET be.agreeable 1SG-self
 intended: ‘The swimming of Kofi pleases me.’

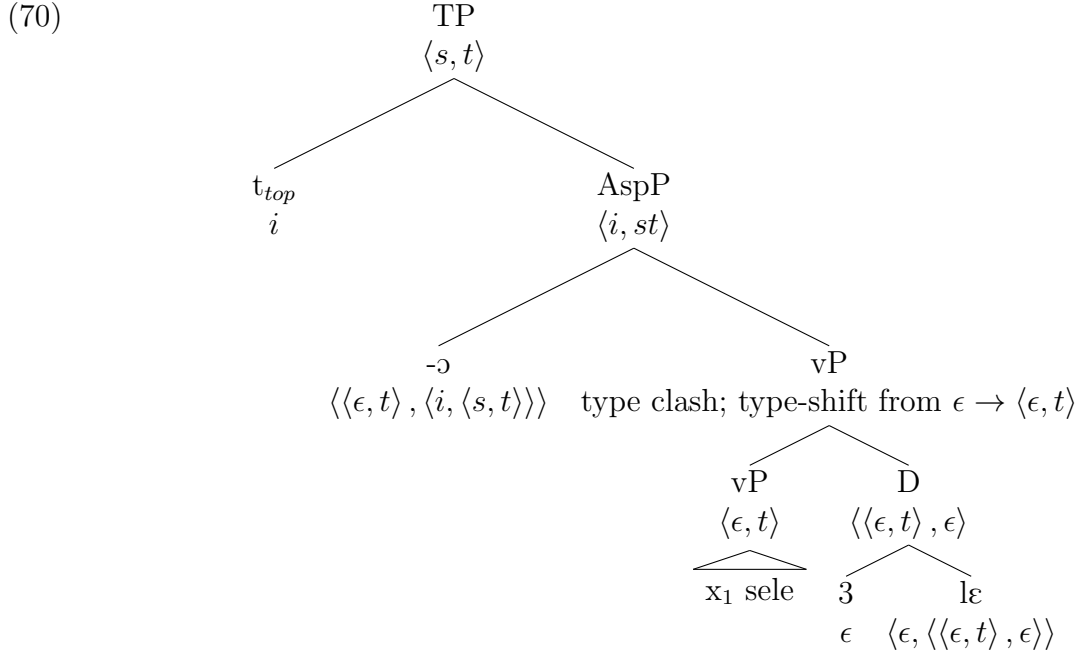
Moreover, verbs marked with -ɔ cannot be taken as an argument by intransitive verbs. Since nominalized verbs should be of the proper type to be an argument of intransitive verbs, the unacceptability of the marker -ɔ in this construction serves as further evidence against the analysis of -ɔ as a nominalizer.

- (68) Kofi and Dede are talking about their favorite sports. Kofi says:
 a. Mi-sumo-ɔ sele-mɔ.
 1SG-like-IMPF swim-NOM
 b. *Mi-sumo-ɔ sele-ɔ.
 1SG-like-IMPF swim-IMPF
 intended: ‘I like swimming.’

Based on the data presented above, I conclude that the suffix -ɔ is not a nominalization marker. Example (70) demonstrates the syntactic structure of (64), repeated below in (69), up to the TP level and (71) presents its formal derivation.²⁷ Due to the type-clash at the vP level (whereas vP is of type ϵ , -ɔ is of type $\langle\langle\epsilon, t\rangle, \langle i, \langle s, t\rangle\rangle\rangle$), the vP denotation is type-shifted from ϵ to $\langle\epsilon, t\rangle$ [Partee, 1986].

²⁷Again, note that all the pronominal elements receive a value via the assignment function. However, in order to increase the readability of the formulas, I do not mark it. The same convention applies to all the subsequent derivations in the remaining part of the paper.

- (69) Kofi ni sele- $\text{\textcircled{3}}$ le.
 Kofi PRT swim-IMPV DET
 ‘It is Kofi who is swimming.’



- (71) a. $\llbracket vP \rrbracket^g = \iota e[\text{swim}(e) \wedge Ag(e) = x_1 \wedge e = g(3)]$
 type clash with Impfv, type-shift form ϵ to $\langle \epsilon, t \rangle$:
 $= \lambda e.e = \iota e'[\text{swim}(e') \wedge Ag(e') = x_1 \wedge e' = g(3)]$
- b. $\llbracket -\text{\textcircled{3}} \rrbracket = \lambda P.\lambda t.\lambda s.\exists e[t \subseteq \tau(e) \wedge P(e) \wedge e \text{ is in } s]$
- c. $\llbracket Asp \rrbracket^g = \llbracket -\text{\textcircled{3}} \rrbracket(\llbracket VP_2 \rrbracket^g)$
 $= [\lambda P.\lambda t.\lambda s.\exists e[t \subseteq \tau(e) \wedge P(e) \wedge e \text{ is in } s]](\lambda e.e = \iota e'(\text{swim}(e') \wedge Ag(e') = x_1 \wedge e' = g(3)))$
 $= \lambda t.\lambda s.\exists e[t \subseteq \tau(e) \wedge [\lambda e.e = \iota e'(\text{swim}(e') \wedge Ag(e') = x_1 \wedge e' = g(3))](e) \wedge e \text{ is in } s]$
 $= \lambda t.\lambda s.\exists e[t \subseteq \tau(e) \wedge e = \iota e'(\text{swim}(e') \wedge Ag(e') = x_1 \wedge e' = g(3)) \wedge e \text{ is in } s]$
- d. $\llbracket TP \rrbracket^g = \lambda t.\lambda s.\exists e[t \subseteq \tau(e) \wedge e = \iota e'(\text{swim}(e') \wedge Ag(e') = x_1 \wedge e' = g(3)) \wedge e \text{ is in } s](t_{top})$
 $= \lambda s.\exists e[t_{top} \subseteq \tau(e) \wedge e = \iota e'(\text{swim}(e') \wedge Ag(e') = x_1 \wedge e' = g(3)) \wedge e \text{ is in } s] \approx$
 a set of situations in which there is a unique swimming event $g(3)$ (singular or plural) whose agent is x_1 and the running time of which includes the topic time

Recall that following Kratzer [2008]; Krifka [1992]; Landman [1997], I assume that the denotation of verbs consists of both singular and plural events. In addition, the *iota* in the denotation of the definite determiner le is compatible with both singular and plural individuals.²⁸ Therefore, (71-d) can convey both the meaning that the singular event is

²⁸The assumption that ι can apply to plural NPs is not uncontroversial. It seems that the plural entity should first be shifted to the maximal plural entity satisfying the NP denotation before being combined with ι , see for example Elbourne [2013]; Schwarz [2009]. Since the definite determiner le is compatible with singular and plural individuals, I am making a simplified assumption that ι is compatible with both singular and plural entities.

ongoing, leading to the progressive interpretation, and that the plural event is ongoing, leading to the habitual interpretation.

Importantly, *lɛ* is compatible with both singular and plural individuals. It is demonstrated in (72) by the acceptability of *lɛ* in all the three contexts provided. Since I argue for a unified analysis of NP *lɛ* and VP *lɛ*, the data in (72) suggest that the singularity of the event in the VP denotation (in the analytic progressive) is not due to the semantics of *lɛ* alone.^{29,30}

- (72) a. context 1: Kofi ate eggplants yesterday (we do not know how many: maybe one or maybe more than one).
 b. context 2: Kofi ate one eggplant yesterday.
 c. context 3: Kofi ate several eggplants yesterday.
 Kofi ye sɛbɛ lɛ.
 Kofi eat eggplant.SG DET
 ‘Kofi ate the eggplant(s) yesterday.’

Note that even though the proposed semantics is already compatible with both progressive and habitual interpretation, it is important to exclude a possible habitual interpretation for sentences with the analytic progressive form. This move is motivated empirically by the observation that the analytic progressive is unacceptable in habitual contexts (see subsection 2). Moreover, the exclusion of the habitual interpretation of sentences with the analytic progressive form will allow to account for the evidential properties of the analytic progressive. However, in order to do so a bit more formal machinery is needed. Namely, the notion of exemplification from situation semantics [Kratzer, 2007].

3.4 Situations, situation pronouns, and exemplification

I assume that sentences are interpreted with respect to two types of situations [Elbourne, 2013; Kratzer, 2007; Schwarz, 2009]: topic situations, i.e., a situation a whole sentence is about, and resource situations, i.e., situations that parts of the sentence are about.^{31,32}

They are present in the syntax in form of situation pronouns. I follow Buring [2004]; Elbourne [2013]; Keshet [2008]; Musan [1995]; Schwarz [2009] in claiming that (resource)

²⁹The language consultants gave a comment that each time Kofi ate definite eggplant(s).

³⁰Note that the denotation of morphologically singular count nouns in Ga, as the denotation of uninflected verbs, is number-neutral [AUTHOR, to be added later].

³¹I am following Kratzer’s (1989; 2007) version of situation semantics which comprises only situations that are part of some possible world with a world being a maximal situation. Consequently, in the situation semantics framework, a proposition is not a set of possible worlds but a set of possible situations.

³²Recall that I assume neo-Davidsonian event semantics. At the same time, I propose couching the analysis of the analytic progressive in Ga in the situation semantics framework. This gives rise to the question of the ontological status of events and situations. Following Cipria and Roberts [2000], I am assuming that events are special kinds of situations, i.e., all events are situations but not all situations are events, and for that they are not (always) interchangeable. For example, while situations are parts of worlds, with a world being a maximal situation, worlds are not maximal events or whereas individuals are situations, they are not events. Mary (with at least one of her properties) is a situation but she is not an event. This view is also compatible with Kratzerian version of situation semantics [Kratzer, 2012]. Thank you to the editor and the reviewer for pointing my attention to these issues.

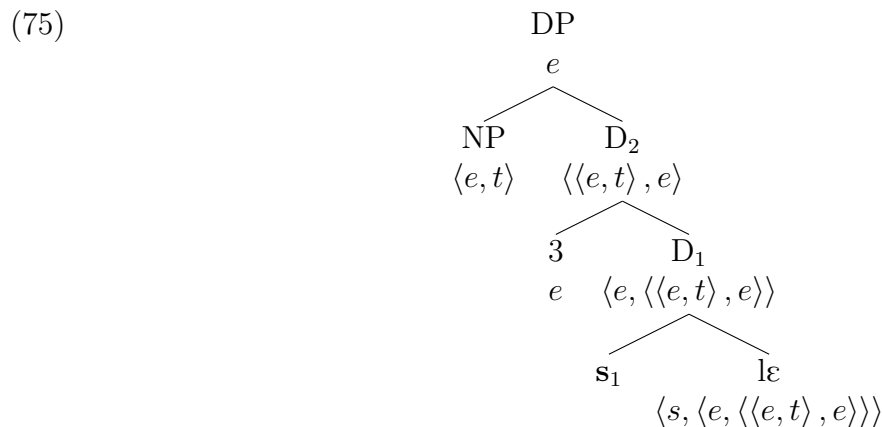
situation pronouns are introduced to the syntax as arguments of strong determiners, as in (73):



Since \mathcal{L} is a strong determiner, I claim that the situation pronoun is also introduced as its argument. The final lexical entry for \mathcal{L} is given in (74), which is a revision of the lexical entry presented in (59):

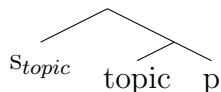
(74) $\llbracket \mathcal{L} \rrbracket = \lambda s. \lambda y. \lambda P : \exists! x [x \text{ is in } s \wedge P(x) \wedge x = y]. \iota x [x \text{ is in } s \wedge P(x) \wedge x = y]$ [final]

The structure of *NP* \mathcal{L} is demonstrated in (75). The variable s is a syntactically represented situation pronoun introducing the situation with reference to which the *NP* denotation is interpreted. As other pronouns, it can be either bound or receive its value from the context via the assignment function. The index 3 is an additional pronominal argument taken by the definite determiner which is mapped by the assignment function to a familiar entity.



Topic situations, on the other hand, are introduced to the syntax as arguments of a topic operator [Schwarz, 2009] whose definition is given in (76). The symbol ‘ \approx ’ stands for the counterpart relation. On Kratzer’s (2007) account of situation semantics, individuals and situations can be part of one world only; they are represented in different possible worlds by their counterparts [see Lewis, 1986].

(76) $\llbracket \text{topic} \rrbracket = \lambda p. \lambda s'. \lambda s. s \approx s' \wedge p(s)$ [from Schwarz, 2009, p.93]



The topic operator takes a proposition p and the topic situation s_{topic} and returns the set of all the counterparts of the topic situation in which p is true.

However, it seems that in some cases the notion of topic situation should be more restrictive; often topic situations should be in some sense minimal. The concept of minimality that I assume is provided by the notion of exemplification [Kratzer, 2007]:

- (77) a. A situation s exemplifies a proposition p iff whenever there is a part of s in which p is not true, then s is a minimal situation in which p is true.
 b. A situation is a minimal situation in which a proposition p is true iff it has no proper parts in which p is true. [Kratzer, 2007; Schwarz, 2009, p.130]

The definiens in (77-a) has the form of implication: $m \rightarrow o$, where m is ‘there is a part of s in which p is not true’, and o is ‘ s is a minimal situation in which p is true.’ The material implication $m \rightarrow o$ equals $\neg m \vee o$.³³ Thus it follows that a situation s will exemplify a proposition p if and only if either (i) there is no part of s in which p is not true, i.e., p is true in all subparts of s or (ii) s is a minimal situation in which p is true.

Consider situation s_1 , situation s_2 and the proposition in (78):

situation s_1 : three turtles

situation s_2 : one turtle

- (78) λs . there is a turtle in s

The proposition in (78) is true in s_1 . However, since there are proper subparts of s_1 in which proposition (78) is true as well (e.g., a subpart of s_1 which consists of two turtles or a subpart of s_1 which consists of just one turtle), s_1 does not exemplify the proposition in (78). By contrast, there is no subpart of s_2 in which the proposition in (78) is true as well. For example, proposition (78) is not true in the subpart of s_2 , which consists of legs of the turtle. Therefore, (78) is not only true in s_2 but also exemplified by s_2 .

Now, consider situations s_3 and s_4 and the proposition in (79). *Atomo* ‘potato’ is a number-neutral noun, i.e., its denotation comprises both singular and plural entities [AUTHOR, to be added later].

situation s_3 : one potato

situation s_4 : two potatoes

- (79) λs .there is *atomo* (‘potato’) in s

A situation which contains one potato, as for example s_3 , exemplifies the proposition in (79), because there is no subpart of this situation in which (79) would be true. Conversely, s_4 does not exemplify (79), because there is a part of s_4 , i.e., a situation in which there is one potato, in which (79) is true.

I argue that there is an analogous mechanism of exemplification in the verbal domain as in the nominal domain. Consider the proposition in (80):

- (80) λs .Kofi swim in s

Recall that I assume, following Kratzer [2008]; Krifka [1992]; Landman [1997], that there are both singular and plural events in the denotation of uninflected verbs and therefore they are number-neutral. Thus analogously to number-neutral nouns, the proposition in (80) is true in a situation with a multitude of swimming events but it is not exemplified by this situation. On the other hand, (80) is not only true in a situation with a single swimming event but also exemplified by this situation.

In the previous literature, topic situations were argued to be identified with the help

³³In classical logic, $m \rightarrow o$ is logically equivalent to $\neg(m \wedge \neg o)$, which by De Morgan’s Law equals $\neg m \vee o$.

of the Question Under Discussion (QUD) [Kratzer, 2007; Schwarz, 2009]. Under the QUD model of discourse [Beaver and Clark, 2008; Büring, 2003; Roberts, 2014], the discourse is structured by (implicit) questions. The ultimate goal of the conversation is to answer the super-question *What is the way the things are?*. This super-question is divided into subquestions which serve as a partial answer to the superquestion. Thus every assertion is an answer to the currently most salient question, the Current Question Under Discussion. Schwarz [2009] shows in his dissertation how a topic situation can be derived from the QUD. That is, under his approach the topic situation of a sentence is the actual situation exemplifying the QUD [Schwarz, 2009, p.99].

I propose instead that situations exemplify propositions, but always with respect to their parts. First, I argue that with respect to which part a proposition is exemplified can be identified with the help of the QUD. Namely, the proposition is exemplified with respect to the element which constitutes an answer to the QUD, i.e., the focus in current approaches [e.g., Beaver and Clark, 2008; Roberts, 2014]. For example, in (81) the proposition is exemplified with respect to the people who swim (not swimming events), in (82) to the places where Joe goes every morning, and in (83) to the amount of swimming events by John.

- (81) Q: Who swims?
 A: A TEACHER swims.
 → the topic situation which exemplifies (81-A) contains one teacher and an unspecified amount of swimming events
- (82) Q: Where does Joe go every morning?
 A: Joe goes TO SCHOOL.
 → the topic situation that exemplifies (82-A) contains one school and an unspecified amount of children going to school and events of going to school
- (83) Q: How many times did John swim yesterday?
 A: He swam TWICE.
 → the topic situation which exemplifies (83-A) contains exactly two swimming events

Second, I assume that a proposition can also be exemplified with respect to the denotation of the strong determiners' sisters. For example, the proposition in (84) is exemplified with respect to the people who swam and the floating mattresses which are present in the topic situation:

- (84) Q: Who swims on the floating mattress?
 A A TEACHER swims on the floating mattress.
 → the topic situation which exemplifies (84-A) contains one teacher, one mattress and an unspecified amount of swimming events

Now, Kratzer [2007] claims that propositions that are exhaustive answers to the QUD are necessarily exemplified by topic situations, whereas non-exhaustive answers are merely true in topic situations. Turning to Ga, sentences with the *ni*-structure are exhaustive answers to the QUD. Therefore, it follows that the presence of *ni* ensures that a proposition expressed by a sentence is exemplified by the topic situation. Consequently, the following generalizations hold:

- **+ni** → a proposition is **necessarily** exemplified by a topic situation
- **-ni** → a proposition is true in a topic situation and it **can**, but it does not have to, be exemplified by a topic situation

For illustration, consider (85):

- (85) Q: Who is swimming?
 A: Kofi ni seleɔ le.
 Kofi PRT swim-IMPF DET.
 ‘It is Kofi who is swimming.’

The presence of *ni* indicates that (85-A) is an exhaustive answer to the QUD. Since (85-A) is an exhaustive answer, the proposition expressed by (85-A) is exemplified by the topic situation. Because of the fact that Kofi is in focus, the proposition is exemplified with respect to its denotation. Moreover, the proposition is also exemplified with respect to the VP denotation, the sister of *le*. Hence, the topic situation of (85-A) consists of Kofi (and nobody else) and one swimming event. Crucially, if there was more than one swimming event in the topic situation then the proposition would not be exemplified by the topic situation.³⁴

To sum up, the particle *ni* signals that the proposition expressed by a cleft is an exhaustive answer to the QUD. Since it is the exhaustive answer, the topic situation exemplifies this proposition which is done with respect to a focused constituent and a denotation of the sister of *le*.

4 Solutions to the puzzles

Now, all the individual pieces of the analysis are here and I can put all the elements together and discuss how they account for the puzzles presented in the introduction. First, I will present the compositional derivation of the analytic progressive. Building on that, I will explain why the analytic progressive can only refer to events which are instantiated at the topic time and where the evidential requirements imposed by the analytic progressive come from.

4.1 The analytic progressive puzzle

Putting all the pieces of the analysis together, the syntactic structure of (86) is as in (87). ‘topic’ is a topic operator which introduces a topic situation variable s_{topic} to the syntax

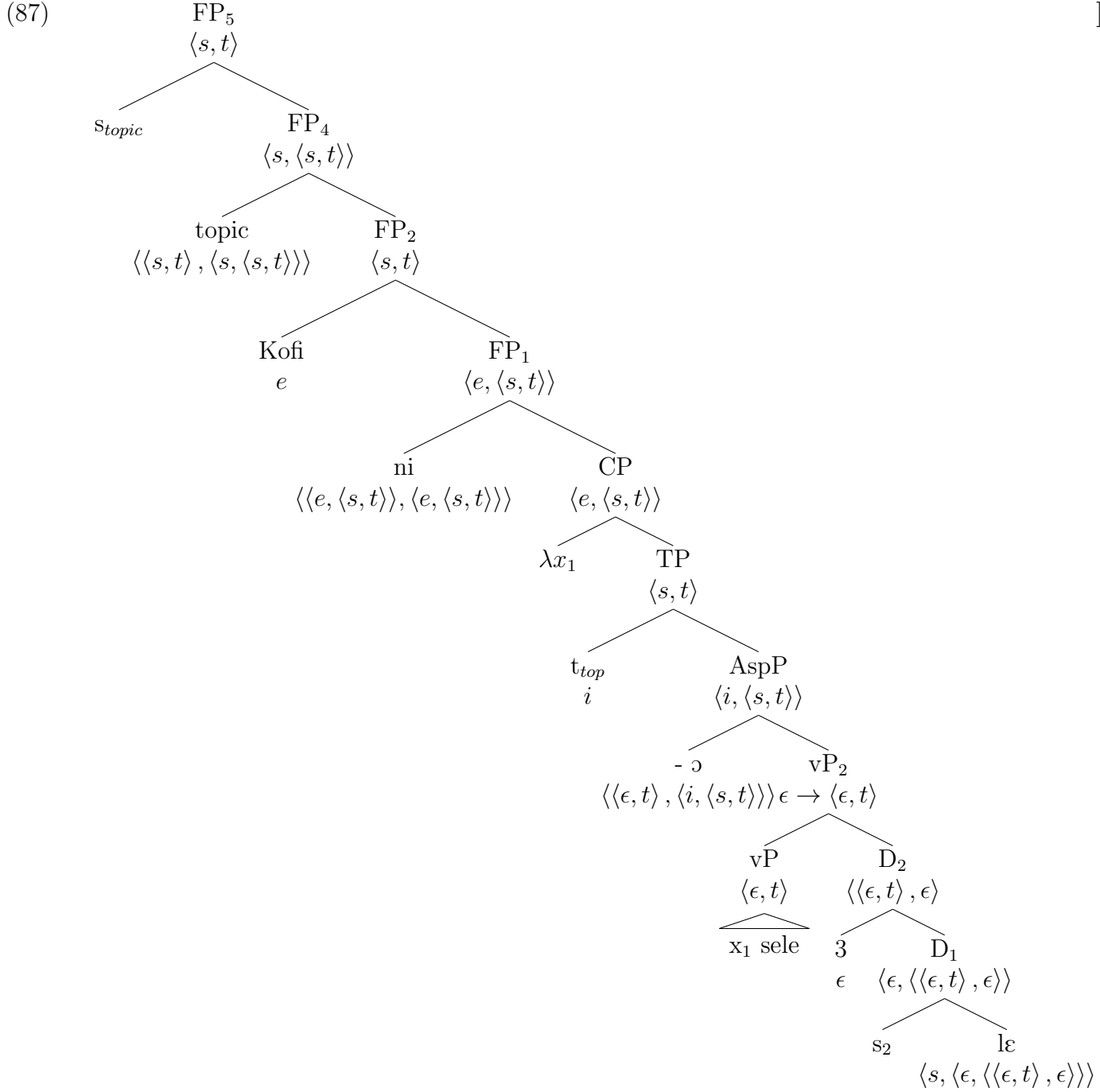
³⁴Due to the assumed parallelism between the nominal and the verbal domain, the analysis predicts that (i) obtains the interpretation that Kofi ate one eggplant:

- (i) Kofi ni ye sebe le.
 Kofi PRT eat eggplant DEF
 ‘Is is Kofi who ate the eggplant’

The issue whether this prediction is borne out or not has to await future research. Thank you to the reviewer for pointing my attention to this prediction.

(see subsection 3.4) and FP stands for a functional projection.³⁵

- (86) Kofi ni sele-ɔ lɛ.
 Kofi PRT swim-IMP DET
 ‘It is Kofi who is swimming.’



The sentence in (86) is a cleft. The presence of the particle *ni* in the structure signals that it is the exhaustive answer to the QUD. Therefore, the topic situation exemplifies

³⁵The labeling FP_1, FP_2 , etc. is in order to refer to nodes in derivations and is not intended to have theoretical implications.

the proposition expressed by (86). In particular, the proposition is exemplified with respect to the focused constituent³⁶ and the sister of the definite determiner le , the vP denotation in the case of (86). The denotation of uninflected verbs is number-neutral, i.e., it comprises both singular and plural events. Recall that when the vP denotation is exemplified, there is only one event of the given kind in its denotation. Therefore, the exemplification ensures that there is only one singular event of swimming in the topic situation of (86). In addition, the definite determiner takes as its argument not only the situation pronoun and the vP denotation, but also an individual pronoun ('3' in the case of (87)). The assignment function maps it to familiar entities, i.e., swimming events. Therefore the meaning of the definite determiner le together with exemplification ensures that there is a unique singular familiar event of swimming in the topic situation. Subsequently, the imperfective aspect conveyed by the marker $-o$ locates the topic time within the running time of the event. Since there is only one familiar event of swimming in the topic situation, the imperfective aspect locates the topic time within the running time of this familiar event. Therefore, (86) can only obtain a progressive interpretation. After computing all the steps of the derivation, one obtains the meaning in (88):^{37,38}

$$(88) \quad \begin{aligned} \llbracket FP_4 \rrbracket^g &= \lambda s'.s' \approx s_{topic} \wedge \exists e[t_{top} \subseteq \tau(e) \wedge e = \iota e'[e' \text{ is in } s_2 \wedge swim(e') \wedge Ag(e') = \\ &Kofi \wedge e' = g(3)] \wedge e \text{ in } s] \\ &\approx \text{the set of counterparts of the topic situation in which there is a unique (singu-} \\ &\text{lar) event}^{39} \text{ of swimming by Kofi (and nobody else), the running time of which} \\ &\text{includes the topic time} \end{aligned}$$

It follows that the analytic progressive refers to the unique event which is actually ongoing at the topic time (i.e., which is instantiated at the topic time). This in turn will straightforwardly explain the second puzzle from section 2, i.e., why the interpretation of the analytic progressive in Ga is restricted to events instantiated at the topic time and will enable to account for the evidential properties of the analytic progressive. I will start in the next subsection with the former.

4.2 Instantiation at the topic time puzzle

As it was presented in section 2.2, the analytic progressive cannot refer to events which are not instantiated at the topic time, as shown below:

- (89) 'Harry Potter' **ni** mi kane- o **le**.
 'Harry Potter' PRT 1.SG read-IMPF DET
 'It is 'Harry Potter' that I am reading.'
 a. context: Tom can see that his friend John is in the process of reading something. He wants to know what it is. \Rightarrow John can utter (89) in this context

³⁶For presentational reasons, in the following discussion of how the progressive interpretation arises in the analytic progressive form, I am not discussing further the fact that the proposition is also exemplified with respect to the denotation of the focused constituent.

³⁷For a whole, step-by-step derivation, see Appendix A.

³⁸For presentational reasons, I omit the presupposed material.

³⁹Note that the singularity of the event in the VP denotation is caused by the exemplification of the VP denotation.

- b. context: Tom and John are jogging. They are talking about books. Tom asks John which books he is reading. \Rightarrow John cannot utter (89) in this context

As it was shown in subsection 4.1, in the analytic progressive, a unique familiar event is quantified over. Subsequently, the imperfective aspect locates the topic time within the running time of that event. As a consequence, the topic time is by force included in the running time of the unique familiar event and thus the event has to be ongoing at the topic time, i.e., it has to be instantiated at the topic time.

Now, the topic time in (89) coincides with the utterance time, i.e., with the actual time of speaking by John. Therefore, in order to felicitously use a sentence with the analytic progressive form, the event described by the sentence uttered by John has to be actually ongoing at the time of speaking. For that, John can utter (89) when he is actually in the process of reading, as it is the case in (89-a). However, he cannot utter (89) in the context in which he is not in the process of reading, as it is the case of (89-b); at the topic time of (89-b), John is in the process of running, not reading.

4.3 Direct evidentiality puzzle

As illustrated in subsection 2.1, the analytic progressive is acceptable in direct evidence contexts but it is unacceptable in indirect evidence contexts. Moreover, the analytic progressive can also be used in a situation in which the speaker refers to the highly structured events, i.e., events that have a rigid time-plan such as for example a swimming competition. The relevant data are repeated below:

(90) Anna **ni** sele-**ə** **le**.
 Anna PRT swim-IMPF DET
 ‘It is Anna who is swimming.’

- a. DIRECT EVIDENCE CONTEXT: Tom and his family (wife, two sons, and two daughters) are on the beach. Tom can see that his two sons and the youngest daughter are playing with sand, and his oldest daughter, Anna, is swimming \Rightarrow Tom can utter (90) in this context
- b. INDIRECT EVIDENCE CONTEXT: The same as in (90-a) but this time Tom cannot see his oldest daughter, Anna, but the younger one told him that she was in the process of swimming.
 \Rightarrow Tom cannot utter (90) in this context
- c. SWIMMING COMPETITION CONTEXT: Anna participates in a long-distance swimming competition. Tom, Anna’s father, knows that Anna’s turn to swim is from 13:00–14:00. Tom cannot see Anna but it is 13:30 now.
 \Rightarrow Tom can utter (90) in this context

I propose that the evidential restrictions of the analytic progressive are an effect of the interaction between the semantics of the definite determiner *le*, in particular its requirement that the discourse referent must be familiar, and the progressive aspectual reference conveyed by the analytic progressive, in particular its requirement that the event has to be instantiated at the topic time.

Recall that the definite determiner *le* conveys the meaning that the discourse referent

picked up by $l\mathcal{E}$ is weakly or strongly familiar. Roberts [2003] provides a taxonomy of familiarity:

- (91) Taxonomy of familiarity:
- a. strong familiarity: the NP has as antecedent a discourse referent introduced via the utterance of a (usually) preceding NP
 - b. weak familiarity:
 - (i) the entity referred to is perceptually accessible to the interlocutors
 - (ii) the entity referred to is globally familiar in the general culture or at least among the participants in the discourse, although not mentioned in the immediate discourse
 - (iii) introduction of the NP's discourse referent is licensed solely by contextual existence entailments
 - (iv) weak familiarity is guaranteed by giving a functional interpretation to the definite description (which function may have to be accommodated) with the intended argument(s) both familiar and highly salient (Bridging)

[from Roberts, 2003, p.304]

Even though the definite determiner $l\mathcal{E}$ is acceptable in all the familiar contexts enumerated in (91),⁴⁰ the felicitous use of the analytic progressive, in which $l\mathcal{E}$ is attached to the vP, is restricted only to the subset of these familiar contexts. This is caused by the fact that in the analytic progressive, the unique event which is instantiated at the topic time is quantified over (see subsection 4.2). Let me explain what I mean based on the examples in (90).

If the speaker has direct evidence that for example Anna is swimming, as in (90-a), then the event of swimming-by-Anna is familiar to the speaker due to the perceptual accessibility of the event. In addition, since the speaker can see that Anna is swimming while uttering the sentence that Anna is swimming, the event is instantiated at the topic time.⁴¹ Therefore, since both requirements — that the event is familiar to the speaker and is instantiated at the topic — are fulfilled in the context, the analytic progressive form can be felicitously used in direct evidence contexts. By contrast, if the speaker heard from somebody else that Anna is swimming, as in (90-b), the event of swimming by Anna is familiar to the speaker due to the previous linguistic material but it is not necessarily instantiated at the topic time. Crucially, the speaker cannot be sure whether Anna is still in the process of swimming at the topic time of (90-b), i.e., at the time the speaker utters the sentence. In particular, it could be that meanwhile Anna has stopped swimming and therefore the event might be not instantiated at the topic time. Thus, the requirement of the analytic progressive form that the event must be instantiated at the topic time is not fulfilled in the context and therefore the sentences with the analytic progressive form cannot be used in indirect evidence contexts.⁴²

⁴⁰See section 3.3 for empirical evidence and [AUTHOR, to be added later] for the semantics of the definite determiner $l\mathcal{E}$ in the nominal domain.

⁴¹Note that in the case (90-a)–(90-c), the topic time coincides with the utterance time.

⁴²The reviewer asked whether the analytic progressive in Ga could be used in the situation in which Tom is at home and his younger daughter tells him over phone that Anna is in the process of swimming. Just after that Tom reports to his wife that Anna is in the process of swimming. While I did not elicit

The analytic progressive form can be however felicitously used in the contexts, in which the time-plan of the events are rigidly scheduled even though the speaker does not have direct access to the event, as in (90-c). Crucially, it is possible because the two requirements imposed by the semantics of the analytic progressive form, i.e., that the event is familiar and instantiated at the topic time, are fulfilled in the context. In particular, since the context of (90-c) specifies that Anna’s father knows about the swimming event by Anna, the event is familiar to the speaker. In addition, since the event was scheduled for 13:00-14:00, the speaker knows that the event is instantiated at the topic time, i.e., at 13:30. Therefore, the analytic progressive form can be felicitously used in (90-c).

To sum up, the evidential properties of sentences with the analytic progressive form are by-products of two requirements imposed on the event by the semantics of the analytic progressive: First, that the event must be familiar to the speaker and second, that the event must be instantiated at the topic time.

Summing up the whole section, the observation that the definite determiner attached to the vP encodes the information that a discourse referent, an event, is familiar and unique in bearing the property in question together with the observation that the suffix $\text{-}\text{o}$ conveys the imperfective aspectual inference enabled to account for the puzzles presented in the introduction of the paper.

5 Two additional puzzles

The presented data give rise also to two additional puzzles, the answers for which are compatible with the analysis developed so far but which do not directly follow from the analysis’ ingredients discussed in section 3. The remaining two puzzles are as follows:

- Why do sentences with the analytic progressive form require *ni*?
⇒ ANALYTIC PROGRESSIVE AND ‘NI’ PUZZLE
- Why do clefted sentences conveying imperfective aspectual inference but without the definite determiner $\text{l}\epsilon$ attached to the VP only obtain a habitual interpretation?
⇒ HABITUAL INTERPRETATION PUZZLE

5.1 The analytic progressive and ‘ni’

As it was shown in section 3.1, sentences with the analytic progressive form are unacceptable without the particle *ni* in the structure, as illustrated in (92).

- (92) Kofi $\#$ (ni) sele- o $\text{l}\epsilon$.
 Kofi PRT swim-IMPf DET
 ‘Kofi swims.’

the progressive forms in this particular scenario, the analysis I proposed predicts that the analytic progressive form would not be acceptable in this situation. Kofi can be pretty sure that Anna was in the process of swimming at the time his younger daughter told him about it. However, at the moment Kofi is reporting it to his wife he cannot be sure anymore whether Anna is still swimming — maybe she was at the end of the pool and finished swimming just after Kofi’s daughter told him about it. Verifying whether this prediction is born out has to await future research.

I argue that (92) without *ni* is judged as being unacceptable for pragmatic reasons. Crucially, the derivation of (92) does not collapse if *ni* is not present in a sentence.⁴³ This is a desired result as there are environments in which *le* can occur without *ni*, e.g., in subordinate temporal clauses, as demonstrated in (93).

- (93) Beni mi-ba shia nyε **le**, Kofi mii-kane wolo yε tsu le mli.
 when 1SG-come home yesterday DET Kofi PROG-read book LOC room DET in
 ‘When I came back home yesterday, Kofi was reading a book in the room.’

I argue that (92) without *ni* is judged as being unacceptable, because it violates Maximize Presupposition [Heim, 1991]:

- (94) MAXIMIZE PRESUPPOSITION:
 Among a set of alternatives, use the felicitous sentence with the strongest presupposition. [from Chemla, 2008, p.142]

Maximize Presupposition can be illustrated based on the contrast in (95):

- (95) a. #A sun is shining.
 b. The sun is shining. [from Singh, 2011, p.150]

Examples (95-a) and (95-b) do not differ in their asserted content. However, (95-b) carries a stronger presupposition than (95-a), i.e., it presupposes that there is a unique sun. In addition, this presupposition is fulfilled in the context. Therefore, because of Maximize Presupposition, it is infelicitous to use (95-a).

The reason for the unacceptability of (92) without *ni* is parallel to the reason for the unacceptability of (95-a). Consider two alternative constructions in (96) and (97):

- (96) Kofi ni sele-ɔ le.
 Kofi PRT swim-IMPF DET
 ‘It is Kofi who is swimming’
- (97) #Kofi sele-ɔ le.
 Kofi swim-IMPF DET
 ‘Kofi who is swimming’

Importantly, events are ontologically different from individuals, i.e., they are instantiated in a world by individuals. Conceptually, it is impossible to identify a swimming event without knowing its agent or a stealing event without being familiar with its agents or themes. However, one is able to identify a stealing-a-ring event or a swimming event by Kofi. Yet if Bill is swimming as well, then it is not an event of swimming by Kofi but an event of swimming by Kofi and Bill. Now, the construction in (96) triggers the exhaustive interpretation that Kofi and nobody else is swimming and thus it unambiguously identifies the swimming event by Kofi. By contrast, (97) does not trigger the exhaustive presupposition and thus the swimming-event is not unambiguously identified. Therefore, (96) triggers a stronger presupposition in comparison to the structure in (97) and thus due to the Maximize Presupposition principle, (97) becomes unacceptable.

It should be also noted that when *le* attaches to NPs, as in (98), the particle *ni* does not have to be present in the sentence.

- (98) context: We have talked about a bank in Osu. I said that I was there yesterday, then Kofi says:

⁴³The structure of (92) as well as its derivation are presented in Appendix B.

Mi-hu mi-tee shikatoohe $\ell\epsilon$ nye .
 1SG-also 1SG-go.past bank DET yesterday
 ‘I also went to the bank yesterday.’

I propose that $\ell\epsilon$ does not require ni in the nominal domain due to the ontological differences between entities and events. In particular, whereas an event identification is done via its agents or themes, an NP identification is not. For that, there is no pragmatic requirement for agents or themes to be exhaustively identified. In other words, whereas the presence of $\ell\epsilon$ in (96) invariably leads to the exhaustive interpretation of the agent or the theme, the presence of $\ell\epsilon$ attached to the NP in (98) does not ensure that the agent is interpreted exhaustively. Therefore, only in the case of the VP $\ell\epsilon$ the exhaustivity presupposition is satisfied and hence the presence of ni is required.

5.2 The habitual interpretation

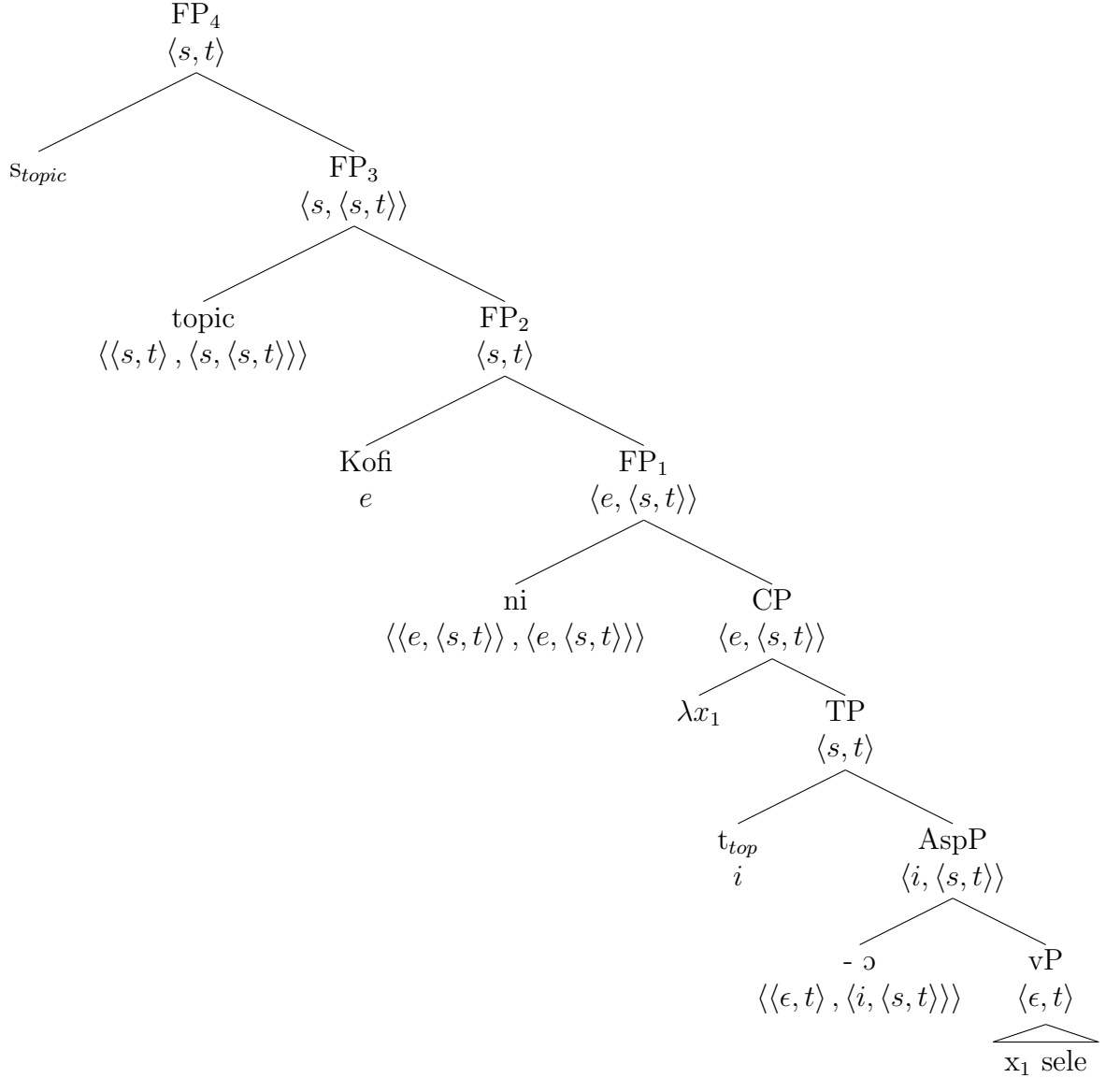
The last puzzle to solve is the question why clefted sentences with the imperfective form but without the VP- $\ell\epsilon$ invariably convey habitual aspectual reference, as demonstrated in (99):

(99) Kofi ni sele- \circ
 Kofi PRT swim-IMPF
 ‘It is Kofi who swims.’

- a. PROGRESSIVE CONTEXT: Tom and his family (wife, two sons, and two daughters) are on the beach. Tom and his wife can see a swimming child.
 ⇒ Tom cannot utter (99) in this context
- b. HABITUAL CONTEXT: Tom’s two sons and daughters do not like swimming and they do not do it, but his oldest son, Kofi, loves swimming and he does it regularly.
 ⇒ Tom can utter (99) in this context

The structure of (99) is presented in (100):

(100)



In the case of (99), the proposition is not exemplified with respect to the vP denotation, because there is no ℓe attached to the vP. Since the denotation of uninflected verbs consists of singular and plural events and the proposition is not exemplified with respect to its denotation, there can be more than one swimming event in the topic situation. Hence, (99) is compatible with both progressive and habitual aspectual reference, as suggested by the formula in (101):⁴⁴

- (101) $[[FP_4]]^g = \lambda s'.s' \approx s_{topic} \wedge \exists e[t_{top} \subseteq \tau(e) \wedge \text{swim}(e) \wedge \text{Ag}(e) = \text{Kofi} \wedge e \text{ in } s']$
 \approx the set of counterparts of the topic situation in which there are event(s) of swimming by Kofi (and nobody else), the running time of which includes the topic time

I propose that the progressive interpretation of (100) is ruled out by the Blocking Principle which says that in case of two competing forms, a more specialized form blocks

⁴⁴For a whole, step-by-step derivation, see Appendix C.

the use of a less specialized form. Now, there are two competing forms: the imperfective clefted sentences without the VP $\ell\epsilon$, as in (103-a), and the analytic progressive form (an imperfective clefted sentence with the VP $\ell\epsilon$), as in (102-b):

- (102) a. Kofi ni sele \circ . GENERAL IMPERFECTIVE
 Kofi PRT swim-IMPF
 ‘It is Kofi who swims.’
- b. Kofi ni sele- \circ $\ell\epsilon$. ANALYTIC PROGRESSIVE
 Kofi PRT swim-IMPF DEF
 ‘It is Kofi who is swimming.’

Importantly, as it was discussed above in the paper, while the analytic progressive can only obtain the progressive interpretation, the imperfective clefted sentences without $\ell\epsilon$ can in principle convey both the progressive and habitual interpretation. Thus, the analytic progressive is a more specialized form and therefore it blocks the use of imperfective clefted sentences without the VP $\ell\epsilon$ in the situations in which the use of the progressive interpretation is required.⁴⁵

6 Summary and directions for future research

The paper discussed the semantics of the analytic progressive in Ga. In particular, it was shown that the progressive interpretation in sentences with the analytic progressive form arises as a result of the interaction between the imperfective aspect, the exhaustivity effect triggered by clefts, and the definite determiner $\ell\epsilon$ attached to the VP. It turned out that the analytic progressive is effectively a definite description of events which crucially is marked by an overt definite determiner. Whereas it was observed in the previous literature that languages have definite descriptions of categories other than NPs [Grubic and Zimmermann, 2011; Hole, 2011; Larson, 2003], the fact that the definite determiner not only has the same overt form but also the same semantics in both domains to the best of my knowledge constitutes an entirely new observation in the theoretical literature.

⁴⁵The reviewer asked why the imperfective clefted sentences (without VP $\ell\epsilon$) generally do not obtain the progressive aspectual reference, while general imperfective in Romance languages can convey the progressive aspectual reference even though there is also a periphrastic progressive form. While the full answer to this question would require a detailed discussion on the semantics of different aspectual references in Romance languages, which is out of scope of this paper, the quick tentative answer is that the empirical landscape in Ga and Romance languages seems to be different. For example, in Italian the sentence *Quando entrai in aula, Leo fumava/stava fumando* is grammatical both with general imperfective and periphrastic progressive (and the general imperfective can convey the progressive aspectual reference), the same sentence with the accomplishment *completare la dimostrazione* ‘to complete the proof’ is only acceptable with the progressive aspect [Bonomi, 1997]. This might suggest that the periphrastic progressive does not actually compete with the general imperfective form and for that does not block the progressive interpretation of the general imperfective in Italian. By contrast, in Ga I did not find any interaction between the clefted imperfective sentences without VP $\ell\epsilon$ and the analytic progressive with different Aktionsarten. That is both the general imperfective and analytic progressive structure are grammatical under the same circumstances. The difference is that while the analytic progressive invariably conveys the progressive aspectual reference, the general imperfective can in principle convey both the habitual and the progressive aspectual reference, the latter however is blocked by the more specialized analytic progressive form.

The analysis of the analytic progressive in Ga as a definite description of events, in which a discourse referent, an event, is familiar and unique in bearing the property in question enabled to account for the puzzles presented at the beginning of the paper. On the more general, theoretical level, the analysis of the analytic progressive as a definite description of events points to the conclusion that not only lexical but also grammatical aspect shows extensive similarities to the nominal domain; the observation that has not been done so far. This in turn suggests that both domains should be analyzed in a parallel manner using the same formal tools.

In addition, the fact that in the analytic progressive, there is a quantification over a unique, familiar event accounts for the evidential restrictions of the analytic progressive. Namely, it explains why the analytic progressive requires direct evidential contexts or contexts in which a course of events is highly-structured, such as sport-competition contexts. Again, the observation that imperfective aspect is associated with a direct evidential meaning is new in the cross-linguistic literature on evidentiality and (im)perfective aspect. In particular, it constitutes an interesting counterpart to the observation that e.g., in Turkish, perfective morphology is ambiguous between conveying a perfective aspectual reference and an indirect evidential meaning [e.g. Izvorski, 1997]. Thus we end up with the following cross-linguistic picture: in some languages, e.g., in Turkish, an indirect evidential interpretation is associated with the perfective aspect, while in others, e.g., in Ga, direct evidentiality is associated with the imperfective aspect. The question is what the evidential status of perfective sentences in Ga and imperfective sentences in Turkish is. Is the perfective aspect in Ga associated with indirect evidentiality and the imperfective aspect in Turkish with direct evidentiality? And if yes, is it a pragmatic or a semantic effect? These questions should be answered in future research.

To conclude, the fact that the progressive interpretation in sentences with the analytic progressive form in Ga arises as an interaction between the clefts, imperfective aspect and a definite description of events not only can account for the semantic properties of the analytic progressive in Ga but also has an impact on the cross-linguistic, theoretical studies on various (linguistic) sub-disciplines. This in turn shows that the semantic field research on under-studied languages is an important and highly needed branch of linguistics which have high potential to shed new light on very often old linguistic problems.

References

- Arkoh, R. and Matthewson, L. (2013). A familiar definite article in Akan. *Lingua*, 123:1–30.
- Beaver, D. and Clark, B. (2008). *Sense and Sensitivity: How Focus Determines Meaning*. Blackwell, Oxford.
- Boadi, L. (1974). Focus-marking in Akan. *Linguistics*, 140:5–57.
- Bonomi, A. (1997). Aspect, quantification and when-clauses in Italian. *Linguistics and Philosophy*, 20:469–514.

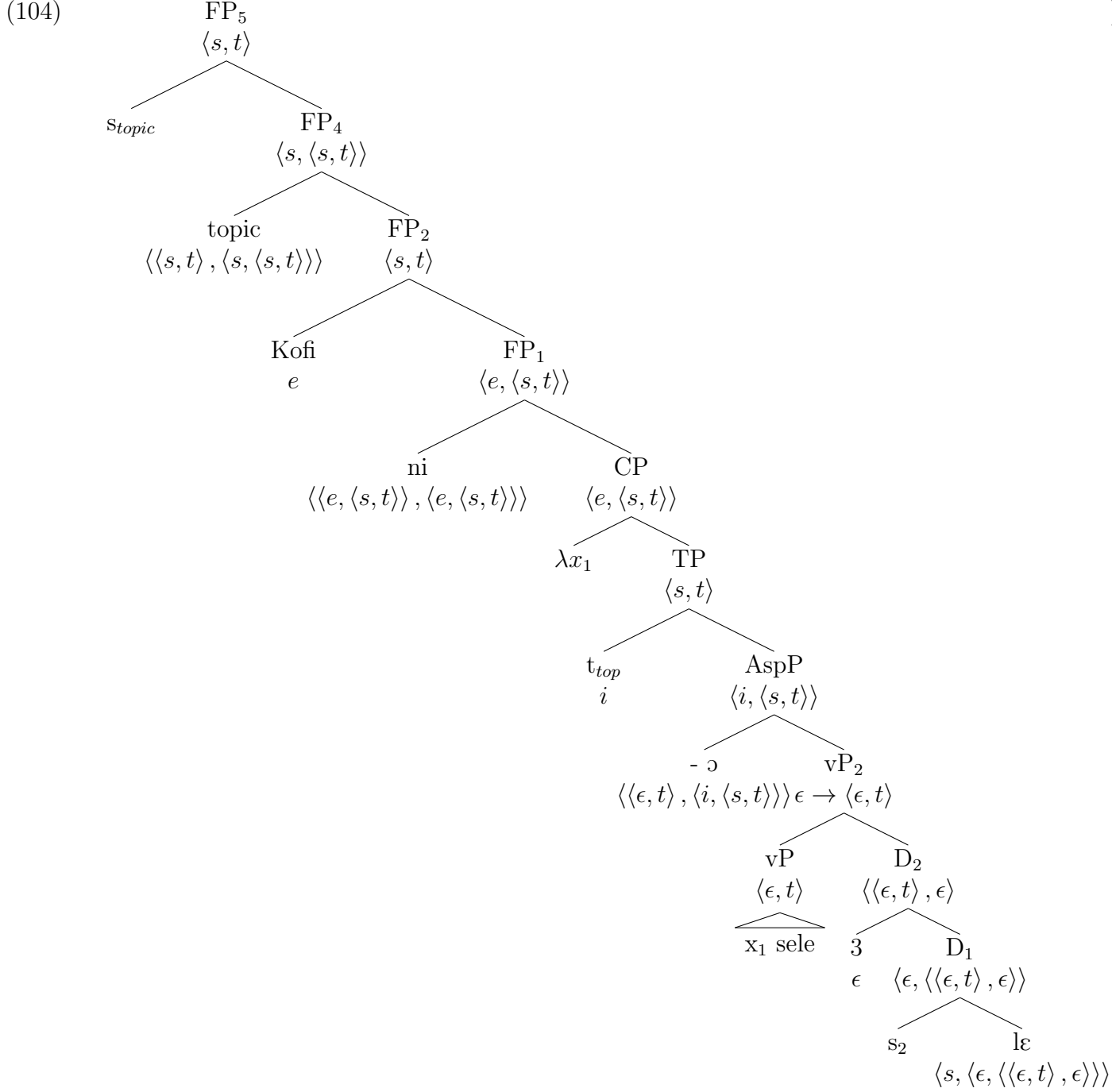
- Bourns, S. K. (2014). Contrasting *c'est*-clefts and *it*-clefts in discourse. In Bourns, S. K. and Myers, L., editors, *Perspectives on Linguistics Structure and Context: Studies in honor of Knud Lambrecht*, pages 199–222. John Benjamins Publishing Company.
- Büring, D. (2003). On d-trees, beans, and b-accents. *Linguistics and Philosophy*, 26(5):511–546.
- Büring, D. (2004). Crossover situations. *Natural Language Semantics*, 12:23–62.
- Büring, D. (2011). Conditional exhaustivity presuppositions in clefts (and definites). Msc.
- Chemla, E. (2008). An epistemic step for anti-presuppositions. *Journal of Semantics*, 25:141–173.
- Cipria, A. and Roberts, C. (2000). Spanish imperfecto and preterito: Truth conditions and Aktionsart effects in a situation semantics. *Natural Language Semantics*, 8:297–347.
- Dakubu, M. E. K. (1992). Contrast in context: Topic, focus, and definiteness in Ga. *Journal of West African Languages*, 22(2):3–16.
- Dakubu, M. E. K. (2005). The syntax of focus in Ga and the significance of related constructions. In *The Conference on Focus in African Languages*, Humboldt University, Berlin.
- Dakubu, M. E. K. (2008). Ga verb features. In Ameka, F. K. and Dakubu, M. E. K., editors, *Aspect and Modality in Kwa Languages*, pages 91–134. John Benjamins Publishing Company.
- Deo, A. (2009). Unifying the imperfective and the progressive: Partitions as quantification domains. *Linguistics and Philosophy*, 32:475–521.
- Deo, A. (2015a). Imperfectivity. In Matthewson, L., Meier, C., Rullmann, H., and Zimmermann, T. E., editors, *Wiley's Companion to Semantics*.
- Deo, A. (2015b). The semantic and pragmatic underpinnings of grammaticalization paths: The progressive to imperfective shift. *Semantics and Pragmatics*, 8(14):1–52.
- Destruel, E. (2013). *An empirical study on the meaning and use of the French c'est-clefts*. PhD thesis, The University of Texas at Austin.
- Elbourne, P. (2005). *Situations and Individuals*. MIT Press.
- Elbourne, P. (2013). *Definite Descriptions*. Oxford University Press.
- Faller, M. T. (2002). *Semantics and Pragmatics of Evidentials in Cuzco Quechua*. PhD thesis, Stanford University.
- Ferreira, M. (2005). *Event Quantification and Plurality*. PhD thesis, Massachusetts Institute of Technology.

- Ferreira, M. (2016). The semantic ingredients of imperfectivity in progressives, habituals, and counterfactuals. *Natural Language Semantics*, 24(4):353–397.
- Grubic, M. (2015). *Focus and Alternative Sensitivity in Ngamo (West Chadic)*. PhD thesis, University of Potsdam.
- Grubic, M. and Zimmermann, M. (2011). Conventional and free association with focus in Ngamo (West Chadic). In Reich, I., Horch, E., and Pauly, D., editors, *Proceedings of Sinn und Bedeutung (SuB) 15*, pages 291–305.
- Heim, I. (1991). Artikel und Definitheit. In von Stechow, A. and Wunderlich, D., editors, *Semantik: ein internationales Handbuch der Zeitgenössischen Forschung*, pages 487–535. de Gruyter, Berlin.
- Heim, I. and Kratzer, A. (1998). *Semantics in Generative Grammar*. Oxford: Blackwell.
- Hole, D. (2011). The deconstruction of Chinese shì ... de clefts revisited. *Lingua*, 121:1707–1733.
- Izvorski, R. (1997). The present perfect as an epistemic modal. In Lawson, A., editor, *Proceedings of Semantics and Linguistic Theory (SALT) 7*, pages 222–239.
- Keshet, E. (2008). *Good Intentions: Paving Two Roads to a Theory of the De re/ De dicto Distinction*. PhD thesis, Massachusetts Institute of Technology.
- Klein, W. (1994). *Time in Language*. London: Routledge.
- Kratzer, A. (1989). An investigation of the lumps of thoughts. *Linguistics and Philosophy*, 12:607–653.
- Kratzer, A. (1998). More structural analogies between pronouns and tenses. In Strolovitch, D. and Lawson, A., editors, *Proceedings of Semantics and Linguistic Theory (SALT) 8*, pages 92–110. Cornell University. Ithaca, N.Y.: CLC Publications.
- Kratzer, A. (2007). Situation semantics in natural language semantics. The Stanford Encyclopedia of Philosophy.
- Kratzer, A. (2008). On the plurality of verbs. In Dölling, J., Heyde-Zybatow, T., and Schäfer, M., editors, *Language context and cognition*, pages 269–299. Walter de Gruyter.
- Kratzer, A. (2012). Facts: Particulars or information units? In *Modals and Conditionals*, pages 161–183. Oxford University Press. initially published in *Linguistics and Philosophy* 25 (2002), 655–670.
- Krifka, M. (1992). Thematic relations as links between nominal reference and temporal constitution. In Sag, I. A. and Szabolcsi, A., editors, *Lexical Matters*, pages 29–53. CSLI.
- Lambrecht, K. (2001). A framework for the analysis of cleft constructions. *Linguistics*, 39(3):463–5016.

- Landman, F. (1997). Plurality. In Lappin, S., editor, *The Handbook of Contemporary Semantic Theory*. Blackwell.
- Larson, R. K. (2003). Event descriptions in Fòn and Haitian Creole. In Adon, D., editor, *Recent development in Creole Studies*, pages 67–90. Walter de Gruyter.
- Lewis, D. (1986). *On the plurality of worlds*. Blackwell.
- Matthewson, L. (2004). On the methodology of semantic fieldwork. *International Journal of American Linguistics*, 70:369–415.
- Matthewson, L. (2006). Temporal semantics in a superficially tenseless language. *Linguistics and Philosophy*, 29:673–713.
- Moens, M. and Steedman, M. (1988). Temporal ontology and temporal reference. *Computational Linguistics*, 14(2):15–28.
- Musan, R. (1995). *On the Temporal Interpretation of Noun Phrases*. PhD thesis, Massachusetts Institute of Technology.
- Parsons, T. (1990). *Events in the Semantics of English*. MIT.
- Partee, B. H. (1986). Noun Phrase interpretation and type-shifting principles. In Groenendijk, J., de Jongh, D., and Stokhof, M., editors, *Studies in Discourse Representation Theory and the Theory of Generalized Quantifiers*, volume 8 of *Groningen-Amsterdam Studies in Semantics*, pages 115–143. Foris, Dordrecht.
- Reichenbach, H. (1947). *Elements of Symbolic Logic*. New York: Dover.
- Roberts, C. (1996/2014). Information structure in discourse: Towards an integrated formal theory of pragmatics. In Yoon, J.-H. and Kathol, A., editors, *OSU Working Papers in Linguistics 49: Papers in Semantics*. The Ohio State University.
- Roberts, C. (2003). Uniqueness and definite noun phrases. *Linguistics and Philosophy*, 26:287–350.
- Schein, B. (1993). *Plurals and Events*. MIT Press.
- Schwarz, F. (2009). *Two types of Definites in Natural Language*. PhD thesis, University of Massachusetts, Amherst.
- Singh, R. (2011). *Maximize Presupposition!* and local contexts. *Natural Language Semantics*, 19:149–168.
- Stunová, A. (1986). Aspect and iteration in Russian and Czech: a contrastive study. *Studies in Slavic and General Linguistics*, 8:467–501.
- Stunová, A. (1991). In defence of language-specific invariant meaning of aspect in Russian and Czech. *Studies in Slavic and General Linguistics*, 16:291–313.

A Analytic progressive in Ga

- (103) Kofi ni sele-ɔ lɛ.
 Kofi PRT swim-IMP DET
 ‘It is Kofi who is swimming.’⁴⁶



- (105) a. $[[lɛ]]^g = \lambda s. \lambda y. \lambda P. \iota e. e \text{ is in } s \wedge P(e) \wedge e = y$
 b. $[[D_1]]^g = [[lɛ]]^g(s_2)$

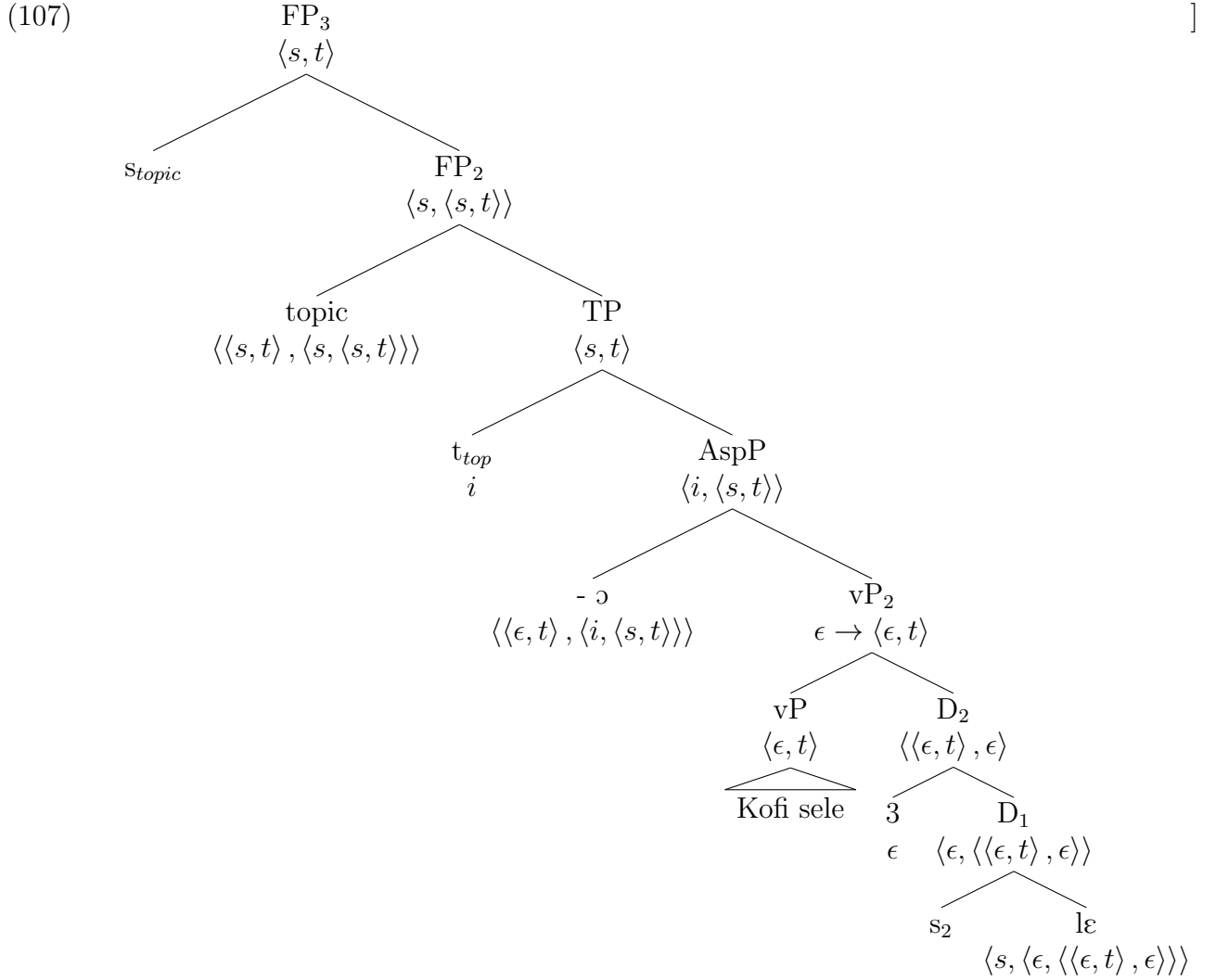
⁴⁶For the ease of presentation, I omit in the derivation the presupposed material introduced by the particle *ni* and the definite determiner *lɛ*.

- $$= [\lambda s. \lambda y. \lambda P. \iota e. \text{is in } s \wedge P(e) \wedge e = y](s_2)$$
- $$= \lambda y. \lambda P. \iota e. \text{is in } s_2 \wedge P(e) \wedge e = y$$
- c. $\llbracket D_2 \rrbracket^g = \llbracket D_1 \rrbracket(g(3))$
 $= [\lambda y. \lambda P. \iota e [e \text{ is in } s_2 \wedge P(e) \wedge e = y]](g(3))$
 $= \lambda P. \iota e [e \text{ is in } s_2 \wedge P(e) \wedge e = g(3)]$
- d. $\llbracket vP \rrbracket = \lambda e. \text{swim}(e) \wedge Ag(e) = x_1$
- e. $\llbracket vP_2 \rrbracket^g = \llbracket D_2 \rrbracket^g(\llbracket vP \rrbracket)$
 $= [\lambda P. \iota e [e \text{ is in } s_2 \wedge P(e) \wedge e = g(3)]](\lambda e. \text{swim}(e) \wedge Ag(e) = x_1)$
 $= \iota e [e \text{ is in } s_2 \wedge [\lambda e. \text{swim}(e) \wedge Ag(e) = x_1](e) \wedge e = g(3)]$
 $= \iota e [e \text{ is in } s_2 \wedge \text{swim}(e) \wedge Ag(e) = x_1 \wedge e = g(3)]$
type clash with Impfv, type-shift form ϵ to $\langle \epsilon, t \rangle$:
 $= \lambda e. e = \iota e' [e' \text{ is in } s_2 \wedge \text{swim}(e') \wedge Ag(e') = x_1 \wedge e' = g(3)]$
- f. $\llbracket \neg \rrbracket = \lambda P. \lambda t. \lambda s. \exists e [t \subseteq \tau(e) \wedge P(e) \wedge e \text{ is in } s]$
- g. $\llbracket Asp \rrbracket^g = \llbracket \neg \rrbracket(\llbracket vP_2 \rrbracket^g)$
 $= [\lambda P. \lambda t. \lambda s. \exists e [t \subseteq \tau(e) \wedge P(e) \wedge e \text{ is in } s]](\lambda e. e = \iota e' [e' \text{ is in } s_2 \wedge \text{swim}(e') \wedge Ag(e') = x_1 \wedge e' = g(3)])$
 $= \lambda t. \lambda s. \exists e [t \subseteq \tau(e) \wedge [\lambda e. e = \iota e' [e' \text{ is in } s_2 \wedge \text{swim}(e') \wedge Ag(e') = x_1 \wedge e' = g(3)]](e) \wedge e \text{ in } s]$
 $= \lambda s. \lambda t. \exists e [t \subseteq \tau(e) \wedge e = \iota e' (e' \text{ is in } s_2 \wedge \text{swim}(e') \wedge Ag(e') = x_1 \wedge e' = g(3)) \wedge e \text{ in } s]$
- h. $\llbracket TP \rrbracket^g = \lambda t. \lambda s. \exists e [t \subseteq \tau(e) \wedge e = \iota e' [e' \text{ is in } s_2 \wedge \text{swim}(e') \wedge Ag(e') = x_1 \wedge e' = g(3)] \wedge e \text{ in } s](t_{top})$
 $= \lambda s. \exists e [t_{top} \subseteq \tau(e) \wedge e = \iota e' [e' \text{ is in } s_2 \wedge \text{swim}(e') \wedge Ag(e') = x_1 \wedge e' = g(3)] \wedge e \text{ in } s]$
- i. $\llbracket CP \rrbracket^g = \lambda x_1. \lambda s. \exists e [t_{top} \subseteq \tau(e) \wedge e = \iota e' [e' \text{ is in } s_2 \wedge \text{swim}(e') \wedge Ag(e') = x_1 \wedge e' = g(3)] \wedge e \text{ in } s]$
- j. $\llbracket ni \rrbracket = \lambda P. \lambda x. P(x)$
- k. $\llbracket FP_1 \rrbracket^g = \llbracket ni \rrbracket(\llbracket CP \rrbracket^g)$
 $= [\lambda P. \lambda x. P(x)](\lambda x_1. \lambda s. \exists e [t_{top} \subseteq \tau(e) \wedge e = \iota e' [e' \text{ is in } s_2 \wedge \text{swim}(e') \wedge Ag(e') = x_1 \wedge e' = g(3)] \wedge e \text{ in } s)$
 $= \lambda x. \lambda s. \exists e [t_{top} \subseteq \tau(e) \wedge e = \iota e' [e' \text{ is in } s_2 \wedge \text{swim}(e') \wedge Ag(e') = x \wedge e' = g(3)] \wedge e \text{ in } s]$
- l. $\llbracket FP_2 \rrbracket^g = [\lambda x. \lambda s. \exists e [t_{top} \subseteq \tau(e) \wedge e = \iota e' [e' \text{ is in } s_2 \wedge \text{swim}(e') \wedge Ag(e') = x \wedge e' = g(3)] \wedge e \text{ in } s]](\text{Kofi})$
 $= \lambda s. \exists e [t_{top} \subseteq \tau(e) \wedge e = \iota e' [e' \text{ is in } s_2 \wedge \text{swim}(e') \wedge Ag(e') = \text{Kofi} \wedge e' = g(3)] \wedge e \text{ in } s]$
- m. $\llbracket topic \rrbracket = \lambda p. \lambda s''. \lambda s'. s' \approx s'' \wedge p(s')$
- n. $\llbracket FP_3 \rrbracket^g = \llbracket topic \rrbracket(\llbracket FP_2 \rrbracket^g)$
 $= [\lambda p. \lambda s''. \lambda s'. s' \approx s'' \wedge p(s')](\lambda s. \exists e [t_{top} \subseteq \tau(e) \wedge e = \iota e' [e' \text{ is in } s_2 \wedge \text{swim}(e') \wedge Ag(e') = \text{Kofi} \wedge e' = g(3)] \wedge e \text{ in } s])$
 $= \lambda s''. \lambda s'. s' \approx s'' \wedge [\lambda s. \exists e [t_{top} \subseteq \tau(e) \wedge e = \iota e' [e' \text{ is in } s_2 \wedge \text{swim}(e') \wedge Ag(e') = \text{Kofi} \wedge e' = g(3)]] \wedge e \text{ in } s](s')$
 $= \lambda s''. \lambda s'. s' \approx s'' \wedge \exists e [t_{top} \subseteq \tau(e) \wedge e = \iota e' [e' \text{ is in } s_2 \wedge \text{swim}(e') \wedge Ag(e') = \text{Kofi} \wedge e' = g(3)] \wedge e \text{ in } s']$
- o. $\llbracket FP_4 \rrbracket^g = \llbracket FP_3 \rrbracket^g(\text{stopic})$
 $= [\lambda s''. \lambda s'. s' \approx s'' \wedge \exists e [t_{top} \subseteq \tau(e) \wedge e = \iota e' [e' \text{ is in } s' \wedge \text{swim}(e') \wedge Ag(e') =$

$Kofi \wedge e' = g(3)]](s_{topic})$
 $= \lambda s'.s' \approx s_{topic} \wedge \exists e[t_{top} \subseteq \tau(e) \wedge e = \iota e'[e' \text{ is in } s_2 \wedge \text{swim}(e') \wedge Ag(e') =$
 $Kofi \wedge e' = g(3)] \wedge e \text{ in } s]$
 \approx the set of counterparts of the topic situation in which there is a unique
(singular) event⁴⁷ of swimming by Kofi (and nobody else), the running time
of which includes the topic time

B The analytic progressive without ‘ni’

- (106) Kofi #(ni) sele-ɔ lɛ.
Kofi PRT swim-IMP DET
intended: ‘Kofi is swimming.’⁴⁸



- (108) a. $[[l\epsilon]]^g = \lambda s.\lambda y.\lambda P.\iota e[e \text{ is in } s \wedge P(e) \wedge e = y]$

⁴⁷Note that the singularity of the event in the VP denotation is caused by the exemplification of the VP denotation.

⁴⁸For the ease of presentation, I omit in the derivation the presupposed material introduced by the definite determiner *lɛ*.

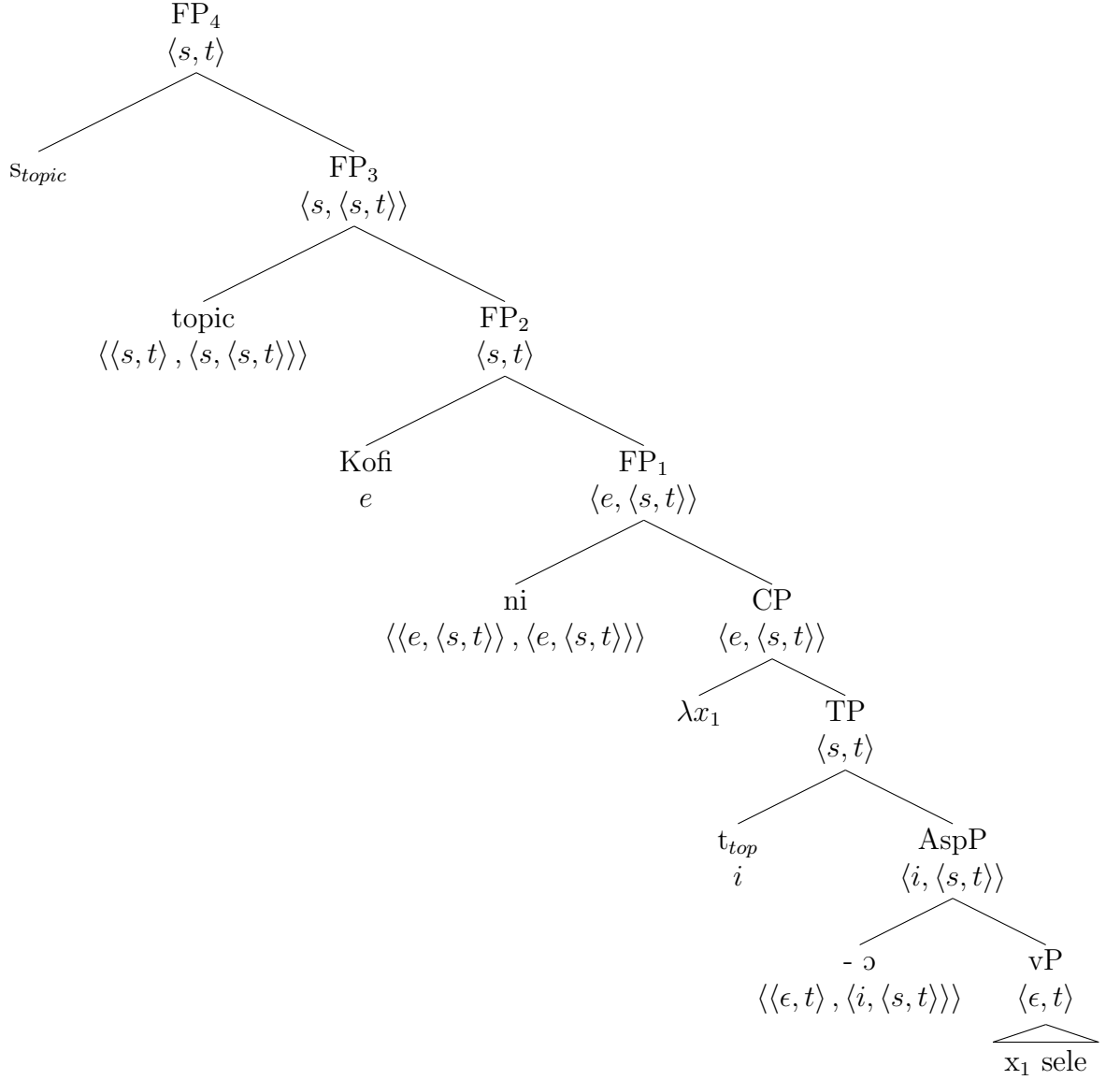
- b. $[[D_1]]^g = [[1\epsilon]]^g(s_2) = \lambda y. \lambda P. \iota e [e \text{ is in } s_2 \wedge P(e) \wedge e = y]$
- c. $[[D_2]]^g = [[D_1]](g(3)) = \lambda P. \iota e [e \text{ is in } s_2 \wedge P(e) \wedge e = g(3)]$
- d. $[[vP]] = \lambda e. \text{swim}(e) \wedge Ag(e) = \text{Kofi}$
- e. $[[vP_2]]^g = [[D_2]]^g([[vP]])$
 $= [\lambda P. \iota e [e \text{ is in } s_2 \wedge P(e) \wedge e = g(3)]](\lambda e. \text{swim}(e) \wedge Ag(e) = \text{Kofi})$
 $= \iota e [e \text{ is in } s_2 \wedge \text{swim}(e) \wedge Ag(e) = \text{Kofi} \wedge e = g(3)]$
type clash with Impfv, type-shift form ϵ to $\langle \epsilon, t \rangle$:
 $= \lambda e. e = \iota e' [e \text{ is in } s_2 \wedge \text{swim}(e') \wedge Ag(e') = \text{Kofi} \wedge e' = g(3)]$
- f. $[[\neg]] = \lambda P. \lambda t. \lambda s. \exists e [t \subseteq \tau(e) \wedge P(e) \wedge e \text{ is in } s]$
- g. $[[\text{Asp}]]^g = [[\neg]]([[vP_2]]^g)$
 $= [\lambda P. \lambda t. \lambda s. \exists e [t \subseteq \tau(e) \wedge P(e) \wedge e \text{ is in } s]](\lambda e. e = \iota e' [e \text{ is in } s_2 \wedge \text{swim}(e') \wedge Ag(e') = \text{Kofi} \wedge e' = g(3)])$
 $= \lambda t. \lambda s. \exists e [t \subseteq \tau(e) \wedge e = \iota e' [e \text{ is in } s_2 \wedge \text{swim}(e') \wedge Ag(e') = \text{Kofi} \wedge e' = g(3)] \wedge e \text{ is in } s]$
- h. $[[\text{TP}]]^g = [[\text{AsP}]](t_{top}) = \lambda s. \exists e [t_{top} \subseteq \tau(e) \wedge e = \iota e' [e' \text{ is in } s_2 \wedge \text{swim}(e') \wedge Ag(e') = \text{Kofi} \wedge e' = g(3)] \wedge e \text{ is in } s]$
- i. $[[\text{topic}]] = \lambda p. \lambda s''. \lambda s'. s' \approx s'' \wedge p(s')$
- j. $[[\text{FP}_1]]^g = [[\text{topic}]]([[\text{TP}]]^g)$
 $= [\lambda p. \lambda s''. \lambda s'. s' \approx s'' \wedge p(s')] (\lambda s. \exists e [t_{top} \subseteq \tau(e) \wedge e = \iota e' [e \text{ is in } s_2 \wedge \text{swim}(e') \wedge Ag(e') = \text{Kofi} \wedge e' = g(3)] \wedge e \text{ is in } s])$
 $= \lambda s''. \lambda s'. s' \approx s'' \wedge \exists e [t_{top} \subseteq \tau(e) \wedge e = \iota e' [e \text{ is in } s_2 \wedge \text{swim}(e') \wedge Ag(e') = \text{Kofi} \wedge e' = g(3)] \wedge e \text{ is in } s']$
- k. $[[\text{FP}_2]]^g = [[\text{FP}_2]]^g(s_{topic})$
 $= \lambda s'. s' \approx s_{topic} \wedge \exists e [t_{top} \subseteq \tau(e) \wedge e = \iota e' [e \text{ is in } s_2 \wedge \text{swim}(e') \wedge Ag(e') = \text{Kofi} \wedge e' = g(3)] \wedge e \text{ is in } s']$
 \approx the set of counterparts of the topic situation in which there is a unique (singular) event of of Kofi swimming, the running time of which includes the topic time

C Habitual interpretation

- (109) Kofi ni sele- \neg .
Kofi PRT swim-IMPV DET
'It is Kofi who swims.'⁴⁹

⁴⁹For the ease of presentation, I omit in the derivation the presupposed material introduced by the particle *ni*.

(110)



Derivation:

- (111)
- $[[vP]] = \lambda e. \text{swim}(e) \wedge Ag(e) = x_1$
 - $[-\text{ } \text{ } \text{ }] = \lambda P. \lambda t. \lambda s. \exists e [t \subseteq \tau(e) \wedge P(e) \wedge e \text{ in } s]$
 - $[[AspP]]^g = [-\text{ } \text{ } \text{ }]([vP]]^g)$
 $= [\lambda P. \lambda t. \lambda s. \exists e [t \subseteq \tau(e) \wedge P(e) \wedge e \text{ in } s]](\lambda e. \text{swim}(e) \wedge Ag(e) = x_1)$
 $= \lambda t. \lambda s. \exists e [t \subseteq \tau(e) \wedge [\lambda e. \text{swim}(e) \wedge Ag(e) = x_1](e) \wedge e \text{ in } s]$
 $= \lambda t. \lambda s. \exists e [t \subseteq \tau(e) \wedge \text{swim}(e) \wedge Ag(e) = x_1] \wedge e \text{ in } s]$
 - $[[TP]]^g = [\lambda t. \lambda s. \exists e [t \subseteq \tau(e) \wedge \text{swim}(e) \wedge Ag(e) = x_1 \wedge e \text{ in } s]](t_{top})$
 $= \lambda s. \exists e [t_{top} \subseteq \tau(e) \wedge \text{swim}(e) \wedge Ag(e) = x_1 \wedge e \text{ in } s]$
 - $[[CP]]^g = \lambda x_1. \lambda s. \exists e [t_{top} \subseteq \tau(e) \wedge \text{swim}(e) \wedge Ag(e) = x_1 \wedge e \text{ in } s] 1$
 - $[[ni]] = \lambda P. \lambda x. P(x)$
 - $[[FP_1]]^g = [[ni]]([CP]]^g)$
 $= [\lambda P. \lambda x. P(x)](\lambda x_1. \lambda s. \exists e [t_{top} \subseteq \tau(e) \wedge \text{swim}(e) \wedge Ag(e) = x_1 \wedge e \text{ in } s])$
 $= \lambda x. \lambda s. \exists e [t_{top} \subseteq \tau(e) \wedge \text{swim}(e) \wedge Ag(e) = x \wedge e \text{ in } s]$
 - $[[FP_2]]^g = [\lambda x. \lambda s. \exists e [t_{top} \subseteq \tau(e) \wedge \text{swim}(e) \wedge Ag(e) = x \wedge e \text{ in } s]](\text{Kofi})$

$$= \lambda s. \exists e [t_{top} \subseteq \tau(e) \wedge \text{swim}(e) \wedge \text{Ag}(e) = \text{Kofi} \wedge e \text{ in } s]$$

- i. $[[\text{topic}]] = \lambda p. \lambda s''. \lambda s'. s' \approx s'' \wedge p(s')$
- j. $[[\text{FP}_3]]^g = [[\text{topic}]]([[\text{FP}_2]]^g)$
 $= [\lambda p. \lambda s''. \lambda s'. s' \approx s'' \wedge p(s')] (\lambda s. \exists e [t_{top} \subseteq \tau(e) \wedge \text{swim}(e) \wedge \text{Ag}(e) = \text{Kofi} \wedge e \text{ in } s])$
 $= \lambda s''. \lambda s'. s' \approx s'' \wedge \exists e [t_{top} \subseteq \tau(e) \wedge \text{swim}(e) \wedge \text{Ag}(e) = \text{Kofi} \wedge e \text{ in } s']$
- k. $[[\text{FP}_4]]^g = [[\text{FP}_3]]^g(s_{topic})$
 $= [\lambda s''. \lambda s'. s' \approx s'' \wedge \exists e [t_{top} \subseteq \tau(e) \wedge \text{swim}(e) \wedge \text{Ag}(e) = \text{Kofi} \wedge e \text{ in } s']] (s_{topic})$
 $= \lambda s''. \lambda s'. s' \approx s_{topic} \wedge \exists e [t_{top} \subseteq \tau(e) \wedge \text{swim}(e) \wedge \text{Ag}(e) = \text{Kofi} \wedge e \text{ in } s']$
 \approx the set of counterparts of the topic situation in which there are event(s) of swimming by Kofi (and nobody else), the running time of which includes the topic time