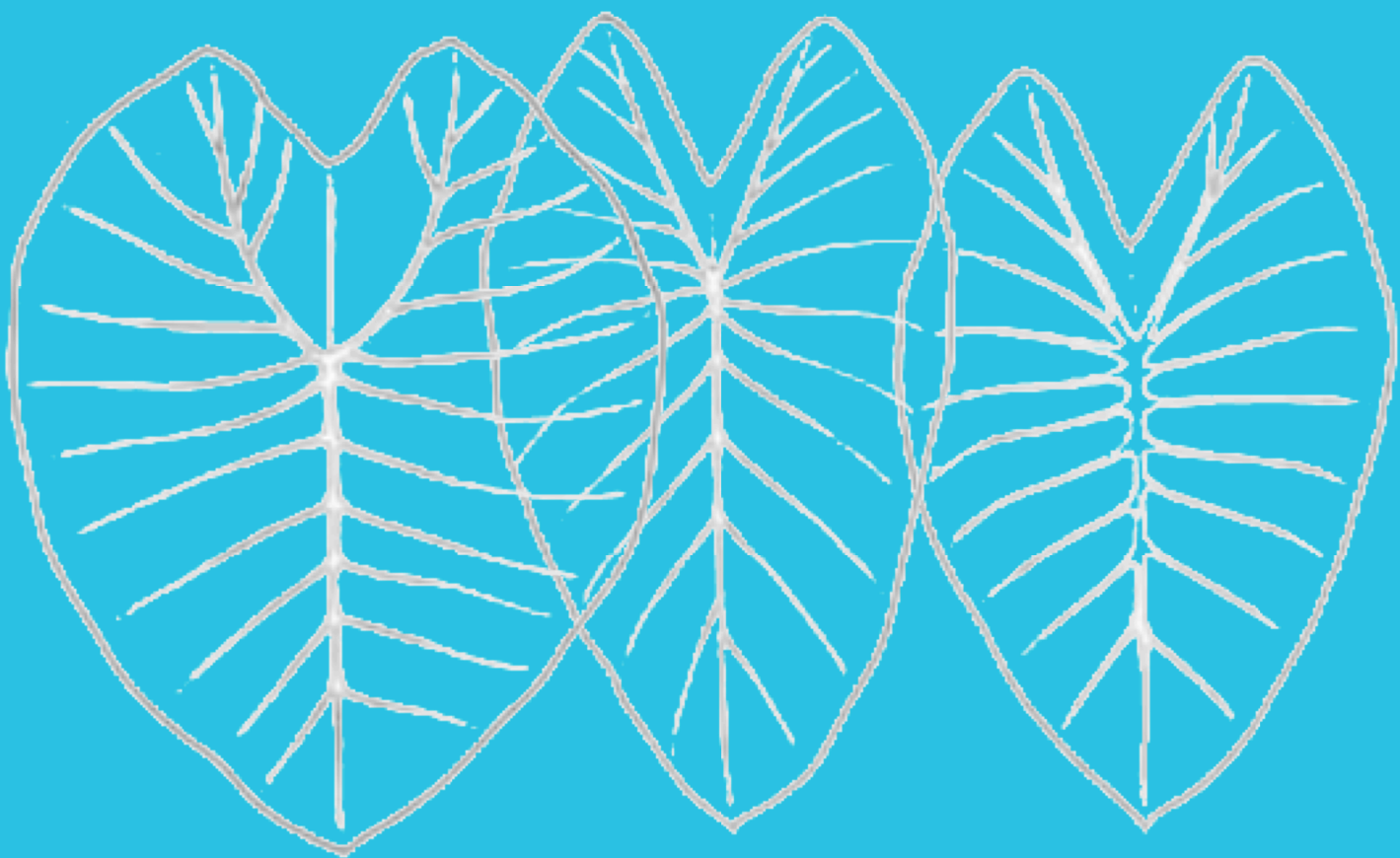
Proceedings of TripleA 5

Fieldwork Perspectives on the Semantics of African, Asian and Austronesian Languages



Ed. by M. Ryan Bochnak, Miriam Butt,
Erlinde Meertens & Mark-Matthias Zymla

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Default *de se*: The Interpretation of the Ewe logophor[1]

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Abstract. This paper aims at evaluating two contradicting generalizations regarding the interpretation of logophoric pronouns, using data from Ewedomegbe (the Northern Ghanaian dialect of Ewe). Clements (1975), for instance, and many others propose that the default interpretation of the Ewe logophoric pronoun *yè* is unambiguously attitude *de se* like PRO in English, see Chierchia (1989). This view is challenged by Pearson (2015), who presents data that shows that *yè* may be read *de re* as well. I presented real-world examples of 'mistaken' identity to ten native informants, as well as examples of dream reports to two native informants. Regarding 'mistaken identity', the judgments confirm the standard view by Clements (1975) and others that the logophoric pronoun *yè* seems unambiguously attitude *de se*. For dream reports, the judgments show that they may not be useful in shedding light on the *de re*, *de se* distinction. I discuss possible explanations for the different judgments.

1 Introduction

Logophoric pronouns are pronouns used in indirect discourse to report the thoughts, feelings, emotions or attitudes of an individual (Clements 1975). As observed by Sells (1987), logophoric pronouns appear within sentential arguments of predicates of communication and mental experience. The canonical use of the logophoric pronoun is to distinguish the attitude holder (the one whose thoughts are being communicated) from all others. This means that in English, when Mawuse utters (1a), a report in the form of (1b) or (1c) is expected.

(1) a. Mawuse said "I am hungry". **Direct discourse**

b. Mawuse said she is hungry. **Indirect discourse**

c. Mawuse claimed PRO to be hungry. **Infinitive construction**

Although (1b) effectively communicates Mawuse's speech in (1a), it is ambiguous. The ambiguity of (1b) stems from the use of the pronoun *she*. Inasmuch as *she* refers to Mawuse, *she* could also refer to some other person who hasn't been mentioned in the discourse. Consequently, to disambiguate (1b), PRO, the null pronominal element which acts as the subject of infinitives and gerunds (Chierchia 1989; Schlenker 1999) is used. PRO is used because when embedded un-

[1]I am grateful to many people for discussions on earlier versions of this material. Firstly, I would like to thank the organisers and audience of TripleA 5 especially, Alassane Kiemtoré, Jozina Vander Klok, Mary Amaechi and Rajesh Bhatt for their useful comments. I am also grateful to my informants for their patience, time and cooperation. Many thanks to Amy Rose Deal for being an inspiration. I gratefully acknowledge comments from Cécile Meier, Chris Collins, Daniel Hole, Ede T. Zimmermann, Esther Rinke, Felix Ameka and audience of CALL 2018, Frank Sode, Hazel Pearson, Heidi Klockmann, Idan Landau, Katharina Hartmann, Malte Zimmermann, Martin Everaert, Petra Schulz, Philippe Schlenker, Selikem Gotah, Winnie Lechner, Zheng Shen; and my colleagues: Astrid, Caro, Eu, Fenna, Lai, Lydia, Melly, Priscilla, Ruby, Sam, Sanja, Yranahan.

der an attitude verb, it is always understood to report a first person's (or second person's) thought (Schlenker 2011). Thus, (1c) does this successfully.

The notion of logophoricity was pioneered by Hagège (1974) who observed that unlike in English, in many African languages including Ewe (Clements 1975), there is a dedicated overt pronoun, different from the third person pronoun, to show logophoricity. The first part of this paper is concerned with the state of the art regarding logophoricity in Ewe, the notion of *de re* and *de se*, and two contrasting views regarding its interpretation. The rest of the paper addresses the problem arising from the contrasting views and outlines some explanations for the varying judgments.

2 Logophoricity in Ewe, *De re* and *De se* Attitude Reports

This section involves logophoricity in Ewe and briefly describes the concept of *de se* and *de re* in relation to logophoricty.

2.1 Logophoricity in Ewe

The logophoric pronoun in Ewe is *yè*[2]. It is used exclusively in indirect discourse in Ewe, and is replaced in direct discourse by the appropriate first person singular pronoun (Clements 1975). Thus, *yè* is restricted to the environment of attitude predicates such as *think*, *say*, *believe*, among others. Should reference be made to any person other than the attitude holder, the third person singular pronoun is used. Notably, Ewe presents a case of obviation (i.e disjoint in reference)[3]. In the scope of attitude predicates, the third person pronoun *é* does not denote the attitude holder. The data[4] below replicates Clements (1975)'s findings on logophoricity in Ewe. Consider (2).

(2) a. Mawuse gblɔ be "dɔ le nye wù-m". **Direct discourse**
Mawuse said COMP stomach is 1SG kill-PROG
'Mawuse said: "I am hungry".'

b. Mawuse gblɔ be dɔ le yè wù-m. **Indirect discourse**
Mawuse said COMP stomach is LOG kill-PROG
'Mawuse$_i$ said she$_i$/$*_j$ is hungry.'

c. Mawuse gblɔ be dɔ le é wù-m. **Indirect discourse: obviation**
Mawuse said COMP stomach is 3SG kill-PROG
'Mawuse$_i$ said she$_j$/$*_i$ is hungry.'

The logophoric pronoun *yè* also has a plural counterpart *yè-wó* which is used to report the thoughts and perceptions of plural attitude holders, as in (3). Note that, obviation pretains here as well (see (3-b)). *yè-wó* differs from the regular third person plural pronoun *wó* and again, in the scope of an attitude predicate *wó* does not refer to the subject of an attitude.

[2]I elicited *yì*, a variant of *yè* from my Peki informants.

[3]I thank Rajesh Bhatt for discussions on the subject.

[4]Some speakers prefer to use the order *wù nye* in (2a). I thank Chris Collins for notifying me.

(3) a. Eli kple Mansa xɔese be yè-wó dze-agbagba.
Eli CONJ Mansa believe COMP LOG-PL do-well
'Eli and Mansa$_i$ believed that they$_i$ did well.'

b. Eli kple Mansa xɔese be wó dze-agbagba.
Eli CONJ Mansa believe COMP 3PL do-well
Eli and Mansa$_i$ believed that they$_j$ did well.'

In Ewe, there are cases where two attitude predicates can interract. As observed by Agbedor (2014), in such instances, coreference is between two possible antecedents, Adzóa and Ama in (4).

(4) Adzóa súsú be Ama gblɔ be yè lɔ Kofi.
Adzóa think COMP Ama say COMP LOG love Kofi
'Adzóa$_i$ thinks that Ama$_j$ said that she$_i$/$_j$ loves Kofi' (Agbedor 2014, p. 58 e.x. 17).

Remarkably, the complementizer *be* is a 'logophoric licensor'[5] in that it always introduces an attitude which may be reported. As is the case cross-linguistically, the complementizer *be* seems to have developed historically from the verb *be* 'say'[6]. Consequently, irrespective of the attitude verb, a report without *be* renders the said report ungrammatical, as shown in (5a). In the case where the attitude verb is *gblɔ*, also 'say', the attitude is marked twice. Consider example (2) again. It is also possible to exclude *gblɔ* from (2) since *gblɔ* may be optional in Ewe. In such instances, as shown in (5b), *be* is assumed to serve as both the verb and complementizer.

(5) a. *Mawuse gblɔ/xɔese/súsú dɔ le yè wù-m.
Mawuse said/believe/think stomach is LOG kill-PROG
'Mawuse$_i$ said/believe/think she$_i$ is hungry.'
[intended: Mawuse said/believed/thought that she is hungry]

b. Mawuse be dɔ le yè wù-m.
Mawuse said stomach is LOG kill-PROG
'Mawuse$_i$ said she$_i$/$*_j$ is hungry.'

2.2 The Philosophical View of *De re* and *De se*

De re and *de se* are Latin words which mean 'of the thing itself' and 'of oneself' respectively (McKay and Nelson 2014). These terms are used in intensional semantics to make referential and attitudinal distinction. Following D. Lewis (1979, pp. 521-539), ascription of properties to individuals is known as attitude *de re*, whereas self-ascription of properties is termed attitude *de se*, also known as 'self-ascription' or 'reference *de se*'. I illustrate this distinction with a well-known example from Kaplan (1989, p. 533).

[5]The term is used by Agbedor (2014).

[6]Examples: *kɔ*, *ká*, *ku-ti* and *ke* are complementizers derrived from the verb *say* in Gokana, Igbo, Chewa and Efik respectively (c.f. Dimmendaal 2001, p. 143)

(6) S1 (*de se*): Kaplan believes: "my pants are on fire."
S2 (*de re*): Kaplan sees himself in a reflecting glass, unaware that he is watching himself. He ascribes to himself, under the description "the one I am watching", the property of wearing pants that are on fire .

a. Kaplan believes that **his** pants are on fire. [✓S1, ✓S2]
b. Kaplan believes **of himself** that **his** pants are on fire. [✓S1, #S2]

In S1, Kaplan holds a *de se* belief about himself. This means that he sees that his pants are on fire and he is aware of this fact. By contrast, in S2, Kaplan has a belief about a certain *res* i.e the one whose pants are on fire, although himself. His mental state is not of someone who says "my pants are on fire". This is known as the *de re* reading. As such, (6-a) can be used to describe both S1 and S2 but (6-b) can only be used to describe S1.

Having described briefly logophoricity, PRO and the philosophical view of *de se* and *de re* attitudes, a close link can be observed between the logophoric pronoun, PRO and attitude *de se*. First, according to (Morgan 1970; Sells 1987, among others), logophoric pronouns behave semantically like PRO. The analogy, therefore, is that since it holds true that both PRO and logophoric pronouns can only be used to report an "I"-attitude, they must have an "I"-reading (*de se*). I move on to discuss the two views concerning this claim.

3 The Standard vs. The Competing View

In determining the interpretation of logophoric pronouns, contexts are known to play an essential role. As a result, scholars have generated scenarios such as (6) to tease apart different readings of logophors. We can summarise the issue at hand in table 1.

Table 1.		
coreference *de se*	coreference *de re*	dis-joint reference
✓*yè*	? *yè*	✓*é*

Do logophoric pronouns like *yè* permit *de re* readings? Two generalisations can be found in the literature concerning the interpretation of the Ewe logophor. I classify them as "the standard" and "the competing" view. I use the term "the standard" in the sense that it is the widely-held view, and "the competing", on the grounds that it stems from more current research that challenges the widely-held view.

"The standard" view generally assigns a *de se* interpretation to logophoric pronouns, i.e when the speech is reported from the first person's perspective (see Sells 1987; Chierchia 1989, etc). In "the competing" view, however, 'pure' Ewe and Mina are used as a case study to show that a *de re* interpretation may be expressed (see Pearson 2012; Pearson 2015). In this section, I present both views with respect to 'mistaken' identity scenarios (3.1) and dream reports (3.2).

3.1 Mistaken Identity Scenarios

The standard take on logophoric pronouns is that they are *de se* elements (see Chierchia 1989; Schlenker 1999; Anand 2006, etc). To refer to an attitude holder in reported speech, a logophoric pronoun or PRO (for English) is used. As Clements (1975) rightly puts it, the logophoric pronoun unambiguously establishes the correct assignment of co-reference. One of the problems, however, arises in the so-called 'mistaken' identity contexts, where the attitude holder seems to be in an 'unconscious' state such that he or she does not have knowledge of being the referent of the reported speech act. Consider (6) and (7).

(7) John is so drunk that he has forgotten he is a candidate in the election. He watches someone on TV and finds that that person is a terrific candidate, who should definitely be elected. Unbeknownst to John, the candidate he is watching on TV is John himself (Schlenker 2011, p. 12).

a. John hopes that he will be elected. true
b. John hopes PRO to be elected (in real-life, John does not want to win). false

(8) John has just found an old paper that he wrote, but he doesn't realize that he is the author of the paper. He reads it and is impressed by what a good paper it is. He says, "whoever wrote this paper is clever" (Pearson 2015, p. 79).

a. John said that he is clever. true
b. John claimed PRO to be clever. false

In the standard view, given (7) and (8), the (a) alternatives are read as true and ambiguous, since *he* can refer to John himself or someone other than John. On the contrary, it is false to report the (b) alternatives as John's hope or speech. It is not the case that John thought "I should be elected" or "I am clever" in (7) and (8). Thus, PRO is not the candidate on TV nor the author of the paper. Alternatives (b) would then be construed *de se*. *De se* requires the awareness of an attitude holder for something to be attributed to him. The difference, therefore, between the alternatives in (a) and those in (b) is the awareness of John in both scenarios.

As stated earlier, logophoric pronouns seem to share distributional properties with PRO in the sense that they can only occur in an embedded clause and when they do, they obligatorily refer to some designated argument of the embedding verb (see Chierchia 1989; Schlenker 1999, etc). Also, as suggested by Reinhart (1990), signalling a *de se* reading is one of the functions of logophoric pronouns in a discourse. In effect, we may conclude that logophoric pronouns are unambiguosly *de se* although it remains an empirical question. In Ewe, logophoricity has been investigated by Clements (1975) and Agbedor (2014), among others. The interpretation of the Ewe logophor was not discussed until Pearson (2015).

In the "competing view", Pearson (2015) proposes *yè* to have a *de re* construal in 'pure' Ewe and Mina (dialect of Ewe spoken in Togo) see (9), a translation of (8) above. According to her, *yè* is a pronoun that picks out the bearer of the attitude (attitude holder) reported by the sentence in which it occurs but does not require that the attitude holder thinks of himself or herself in a first person way, hence, the use of *yè* in (9) with respect to the context in (8). I will return to 'mistaken' identity in (4.2).

(9) John gblɔ be yè nyá agbalẽ.
John said COMP LOG know book
'John$_i$ said he$_i$ is clever.'

3.2 Dream Reports

It is not possible for an individual to inhabit two different worlds at a given time. Thus, we are usually in the third person, when we dream of being another individual. Percus and Sauerland (2003) differentiate between the two identities we have in dreams namely, the 'dream self' (the individual we are in our dreams) and the 'dream subject' (the individual who does the dreaming). In (10), John is the 'dream subject' and Bill, the 'dream self'.

(10) John dreamt that he was Bill and he got married to his granddaughter.

As discussed by Percus and Sauerland (2003), one might expect dream-sentences with more than one pronoun, like (10), to allow readings on which any pronoun can correlate with either the 'dream self' or the 'dream subject'. However, this is not the case. Percus and Sauerland (2003) propose the Oneiric Reference Constraint, from here on, ORC, to, as it were, guide the interpretation of such dream sentences. The ORC says:

> "A sentence of the form X *dreamed that ...pronoun...* allows a reading in which the pronoun has the dream-self as its correlate only when the following condition is met: some pronoun whose correlate is the dream-self on the reading in question must not be asymmetrically c-commanded by any pronoun whose correlate is X" (Percus and Sauerland 2003, p. 5).

In other words, a pronoun which picks out the dream self (*de se*) cannot be c-commanded by another pronoun that merely refers (*de re*) to the dreamer. ORC, therefore, disallows a reading in which the 'dream self', Bill, is the correlate of *his* and the 'dream subject', John, the correlate of *he*, given that *he* c-commands *his*. Pearson (2015) suggests that dream reports serve as productive grounds for testing the claims under discussion due to the possibility of a shift in reference. According to her, in dream reports, a *de se* pronoun should be able to select the 'dream self' whereas, a *de re* one should be able to select the 'dream subject'. In the previous example (10), we can assume the following readings:

In John's dream...

i. Bill$_{dese}$ was marrying Bill's$_{dese}$ granddaughter.

ii. Bill$_{dese}$ was marrying John's$_{dere}$ granddaughter.

iii. # John$_{dere}$ was marrying Bill's$_{dese}$ granddaughter.

iv. John$_{dere}$ was marrying John's$_{dere}$ granddaughter.

Given this pattern for English, we would expect Ewe to behave in a similar manner in (11) and (12). This means that *yè* should pick out Bill (dream self) and *é* should pick out John (dream

subject). On the contrary, *yè* picks out both the 'dream subject' and the 'dream self', similar to option (ii) in the English paradigm, a rather surprising observation. This observation poses questions to the widely-held view about logophorics: whether it is correct to pair up the notions of logophorics and *de se* on one hand, and pair up the concept of 'dream self', 'dream subject' with that of *de re* and *de se* on the other hand. I will maintain the view that the notion of logophoricity and *de se* are closely related. The consequence will be that the theory of interpreting dreams may not be useful for shedding light on the *de re*, *de se* distinction afterall[7], given the behaviour of *yè* in (11) and (12). (11) and (12) simply show that in dreams everything is possible, the 'dream subject' can take the perspective of the 'dream self' because he perceives this person.

(11) John kúdrɔ̃ be yè nye Bill eye yè ɖe yè-ƒe tɔgbuiyɔvi.
John dream COMP LOG COP Bill CONJ LOG married LOG-POSS granddaughter
'John dreamt that he was Bill and he married his granddaughter.'

(12) John dreamt that he was Barack Obama and he gave himself a gift.

a. John kúdrɔ̃ be yè nye Barack Obama eye yè na yè ɖokui
John dream COMP LOG COP Barack Obama CONJ LOG gave LOG REFL
nu-nana aɖe.
thing-give.REDU INDEF
'John dreamt that he was Barack Obama and he gave himself a gift.'

4 Interpretation of *yè*: default *de se*

In light of contrasting views in the literature on 'mistaken' identity scenarios and dream reports, this section contributes to the discussion on the interpretation of *yè*.

4.1 Data Collection

In order to test the interpretation of *yè*, I set up a small elicitation production task. Ten informants [8](native speakers of Ewedomegbe) evaluated the naturalness of sentences over Skype and WhatsApp video, coupled with introspection (native speaker intuition). The voice note feature on WhatsApp was also used to elicit data. Two informants come from Peki, one from Ho central, five from Hlefi and the other two come from suburbs of Ho namely, Sokode Gbogame and Abutia-Teti. The first part of the task was to expose them to structures that did not involve 'mistaken' identity. For instance, Mawuse and Akpene are chatting. Mawuse says to Akpene "I am hungry". What did Mawuse say? *Mawuse gblɔ be*...

Then I provided scenarios from both "standard", "competing" views and discovered scenarios (e.g. (6), (8), (14), etc) and asked my informants to report them in indirect discourse. To guide them, I would ask questions about what the attitude holder *said*, *believed*, *thought*, etc, depending

[7]Ede Zimmermann and Rajesh Bhatt also thought this to be the case.

[8]My informants are multilinguals of Ewedomegbe (Ewe), English and Akan (Asanti twi dialect of Akan). They presently live in Ghana and have had some basic formal training in Ewe (they speak Ewedomegbe, read and write Ewe).

on the type of attitude predicate used. They were given a blank space to fill in the gaps with the appropriate pronoun. For instance, *John be . . . nyá agbale/nú*. In order not to misconstrue the domain of *yè*, I required that they substitute the phrases involving *res* e.g. *John be wó a tsia* ***ame si le*** **TV** ***la dzi*** 'the person on TV', with the suitable pronoun since most of them produced such sentences. Elicitation took a maximum of 30 minutes per session depending on availability and cooperation of the research subjects. English and Ewedomegbe was used interchangeably during elicitation.

4.2 Mistaken Identity Scenarios

As a native speaker, I find Pearson (2015)'s conclusion (*yè* has a *de re* reading) rather untenable. I could think of a situation where a report can be made about what I have said about 'someone, who is actually me', with *yè*, but only as a manner of speaking, maybe for stylistic effects. Suppose I cooked for a group of friends and as a way of complementing myself, I say "whoever prepared this food is a good cook", any of my friends could use (13) to represent my thoughts.

(13) Abby be yè nye nu-ɖa-la nyui.
Abby say LOG is thing-cook-one.who good
'Abby said she is a good cook.'

Apart from a context like (13), it is simply impossible to refer to one's *res* with *yè*. I would not use *yè* in a 'mistaken' identity context. My research subjects were overwhelmed by the informational complexity of the 'mistaken' identity scenarios (e.g. Kaplan's pants on fire). I therefore, took a detour from such scenarios and presented real-world examples[9], which seemed to make the task easier. My research subjects could relate to these examples better.

(14) An Asian woman was declared missing from a party touring the Eldgjá volcanic region in south Iceland after getting off the party's bus to freshen up. She only hopped off the bus briefly, but had also changed her clothes - and her fellow travelers did not recognize her when she climbed back on again to continue the party's journey. When the details of the missing person were issued, the woman reportedly didn't recognize her own description [woman with a pink sweater] and unwittingly joined the search party for herself, see *Daily Mail* for South Iceland Scenario[10]

In the South Iceland Scenario recapped as (15) and (16), (15) is supposed to report the state of mind of the Asian woman at the time of the search. "The Asian woman believes that she is lost" means "The Asian woman believes that the woman in the pink sweater is lost". The difference between the readings is: in the *de se* reading the Asian woman knows that she is the woman with the pink sweater and in the *de re* reading she does not. My informants produced the following sentences with respect to (14):

i. Asia nyɔnu ɔ xɔese be ame aɖe bú 'The Asian woman believed someone was lost.'

[9] I am grateful to Amy Rose Deal for this idea.

[10] http://www.dailymail.co.uk/news/article-2195642/Asian-tourist-unwittingly-joins-search-HERSELF-failing-recognise-tour-group
html. Thanks to Amy Rose Deal for pointing out this example.

ii. Asia nyɔnu la búi be nyɔnu aɖe bú 'The Asian woman thinks a woman is lost.'

Given the replacement task, they then preferred (15) to (16) to capture the belief of the Asian woman although (16) is grammatical in the language.

(15) Asia nyɔnu la xɔese be é bú.
Asian woman DEF believes COMP 3SG is lost
'The Asian woman believes that she is lost.'
[é = the woman with the pink sweater]

(16) Asia nyɔnu la xɔese be yè bú.
Asian woman DEF believes COMP LOG is lost
'The Asian woman believes of herself to be lost.'
[yè ≠ the woman with the pink sweater]

Pearson (2015)'s theory of interpreting logophoric pronouns predicts that the belief of the Asian woman in the South Iceland Scenario may be expressed in Ewe by means of the logophoric pronoun *yè*, having a genuine *de re* reading. However, based on (15), it is evident that logophoric *yè* may not be used in a *de re* reading in Ewedomegbe. It is impossible to interpret *yè* as representing the individual that everybody is looking for in the South Iceland Scenario. The Asian woman would never claim "I am lost" although she will learn at some point that she was missing. Another natural scenario [11] worth pondering over is as follows:

(17) Fatu loves singing. The problem is that she sings very badly. When she sings, she disturbs everybody around. Fatu, however is persuaded that she is a great singer, and that she could have a great artistic career. Things become worse when Fatu gets it into her head to bring out an album. In order to discourage her, her brother decided to record her discreetly on his mobile phone as she was singing in the kitchen. He then sent her the recording with the following question: "She sings well, doesn't she?" Fatu listened to the recording, and answered his brother: "That girl sounds horrible. She doesn't sing well at all". Unfortunately, Fatu does not realize that it is her own voice that she has just heard.

(18) Fatu xɔese be yè me dzì na ha nyuie o.
Fatu believe COMP LOG NEG sing HAB song good NEG
'Fatu believes that she does not sing well.' [yè ≠ the person with the bad voice]

We can observe that (18) is unacceptable given (17). In all worlds compatible with Fatu's believes, she is a great singer. She would never accept (18) as communicating her doxastic state.

4.3 Dream Reports

We have seen in section (3.2) above that *yè* selects both the 'dream subject' and the 'dream self'. From the many discussions with my informants, I observed a difficulty to grasp the idea of "counter-identity" in dreams. Do we really dream of being another? This could be a pschological question and not a linguistic one. Subjects of attitudes may have counterparts to represent them

[11] Many thanks to Alassane Kiemtoré of University of Stuttgart for sharing this scenario with me.

in other worlds but they themselves are not there. My informants could relate to what is known as "malaria-dreams"[12] or better, being younger than they are in reality in their dreams. However, the person they are in their dreams is still them. A possible explanation of *yè* in dream reports is that the use of *yè* signals cognitive access to both the 'dream self' and 'dream subject' even if they are different individuals; or that, *yè* prefers a 'strict'-identity (John is John and John is Bill in all worlds). I tried to push the idea of "counter-identity" once more and (19) was the result. Alternative (i), (ii) and (iv) seemed to be available.

(19) John kúdrɔ̃ be yè nye Bill eye yè abe Bill ɖe yè-ƒe tɔgbuiyɔvi.
John dream COMP LOG COP Bill CONJ LOG as Bill married LOG-POSS granddaughter
'John dreamt that he was Bill and as Bill he married his grand daughter.'

This means John's mental state is of one that says the following: In John's dream...

i. Bill$_{dese}$ was marrying Bill's$_{dese}$ granddaughter ("I dreamt that I was Bill and I, as Bill, married my granddaughter").

ii. Bill$_{dese}$ was marrying John's$_{dere}$ granddaughter ("I dreamt that I was Bill and I as Bill, married my real self's granddaughter").

iii. # John$_{dere}$ was marrying Bill's$_{dese}$ granddaughter.

iv. John$_{dere}$ was marrying John's$_{dere}$ granddaughter ("I dreamt that I was Bill (but it doesnt matter who I was in my dream), I, as my real self, married my real self's granddaughter").

With (19), it is possible that the presence of *abe* 'as' forces a *de se* reading since "as-phrases" have a subject preference[13]. However, this is the best my informants could give me given the difficulty at hand.

5 Explanations

This section attempts to offer some possible explanations to the differences in judgments with respect to 'mistaken' identity scenarios.

5.1 Dialectal Variation: 'Pure' Ewe and Togo Ewe

The differences in judgments could be an effect of different dialects or registers. Note, however, that all dialects of Ewe are mutually intelligible (Ameka 1991). I present the language situation in Ewe and Togo.

'Pure' Ewe belongs to the Kwa branch of the Niger-Congo language family[14]. According to

[12]These are dreams people have after taking medication for malaria. It is usually in the form of nightmares (e.g. one could dream of being dead, in coma or admitted to the hospital). Worse, one could hallucinate.

[13]Thanks to Idan Landau for pointing this out.

[14]It is odd to refer to the variety of Ewe spoken in Ghana as 'pure'. However, I suspect Pearson's informants used the term to refer to the written standard variety of Ewe.

M. P. Lewis, Simons, Fennig, et al. (2009), Ewe can further be classified as an Atlantic-Congo, Volta-Congo, Left Bank, and Gbe language. It has been noted that the name Ewe applies to a written standard (developed in the nineteenth century, with a high degree of coastal content) and several spoken mutually intelligible dialects in the Volta region of Ghana and southern part of Togo (Ameka 1991). Broadly, the dialects spoken in Ghana can be grouped geographically into: Southern or coastal dialects and Northern or inland dialects, characterized indigenously as Ewe-domegbe. The southern dialects are spoken in areas such as Anlo (Aŋlɔ), Tongu (Tɔŋu), Avenor, Dzodze, etc. while the Northern dialects are spoken in areas such as Ho, Kpedze, Hohoe, Peki, Kpando, Fodome, Danyi, Kpele, among others.

Togo, on the other hand, is a multilingual country. According to M. P. Lewis, Simons, Fennig, et al. (2009), 44 languages are spoken in the country. Among the languages spoken, French is the official language, while the interethnic languages used are French and 'Mina' (i.e. the dialect of Ewe spoken in Lome, the capital of Togo). 'Mina' is also known as 'Mina-Ewe', 'Ewe-Mina', 'Gengbe' or simply 'Gen'(Essizewa 2009; C. F. Voegelin and F. M. Voegelin 1964, p. 62).

Strikingly, Gen belongs to the Gbe dialect cluster[15] of which Ewe also belongs (Essizewa 2009). It remains unclear why Pearson's informants chose *yè* in a 'mistaken' identity scenario if for all dialects of Ewe, spoken in both Ghana and Togo, *yè* is a logophoric pronoun used to report the attitude or feelings of some person.

5.2 Methodology

The difference in judgment may also be a result of methods used to elicit data. I adopted elicitation production, coupled with a truth value judgment task (selection and replacement task). The reason was to allow informants to demonstrate their knowledge of the logophoric pronoun, by producing sentences which required the use of this pronoun. The replacement task, particularly, allowed for comparison between my responses and Pearson's. On the other hand, Pearson (2015) used grammaticality judgment as well as truth value judgment tasks. I suppose that the point of the task is not to judge whether or not a sentence is 'good' or 'bad' in the language; otherwise, all the sentences with *yè* is grammatical in the language. This may have influenced Pearson's responses.

5.3 Confused Informants

Differences in judgment could occur as a result of confusion on the part of Pearson's informants which was also the case for my informants. It was observed that the 'mistaken' identity scenarios were notoriously difficult to understand and it was difficult to explain the point of the judgment task to the informants. In such scenarios, the attitude holders are often temporarily disoriented and informants found it hard in deciding from what time to report their attitude; the time when the attitude holders don't know who they are from the time they gained information about their identity.

The first three of my informants reported *yè* as possible in 'mistaken' identity reports as well, but it turned out that they didn't realise a difference between the point of view of the attitude holder and point of view of the reporter. My informants (the first three) judged the sentences on

[15]https://upload.wikimedia.org/wikipedia/commons/0/03/Gbe_languages.png

the grounds that they knew the attitude holders meant to talk about themselves. They certainly misunderstood the point of the test and they confirmed that they may have lacked comprehension. One of them actually said to me "*enya kpakpa makɔmakɔ fomeviwo ka yé ne tsɔ va na mí?*" 'what kinds of confusing stories have you brought to us?' I had to explain the distinction between the attitude holder as *res* meaning, he's not aware that he is himself, and the attitude holder as himself several times for most of my data collection session.

Given that Pearson used grammaticality and truth judgment tasks, I am tempted to also attribute misrepresented sentences of (20), a real-life scenario, to be evaluated by informants. To see this, compare (20-a) with (20-b).

(20) Following a spate of burglaries, a policeman was alerted by CCTV operators that someone was acting suspiciously, and chased after that individual, unaware that it was himself[16].

a. Sodza xɔse be yè nyi fianfitɔ.
Policeman believe COMPL LOG COP thief
'The policeman$_i$ believed that he$_i$ was a thief' (Pearson 2015, p. 99).

b. Kpovitɔ la xɔese be yè le amesi wò bù fìfì le ŋuti la
Policeman DEF believe COMP LOG is person 3SG think thiefing of him DEF
dí-m.
search-PROG
'The policeman believed that he was looking for a suspect' [From my informant].

c. Kpovitɔ la xɔese be é nye fiafitɔ.
policeman DEF believe COMP 3SG COP thief
'The policeman believed that he was a thief.'
[é = the individual being chased by the policeman]

From (20-a) and (20-b) one can observe that the choice of words differ. Note, that one of Pearson's consultants (consultant 3) consistently rejects sentence (20-a). The policeman believed he was looking for a suspect and not a thief. Trivial as this may seem, I think the *res* i.e the individual being chased is that of the CCTV operator (see footnote for full scenario) and not even the policeman. The judgments could have been sharper. Now, suppose it is the case that the policeman was looking for a thief, my infromants would rather produce (20-c) as a suitable construction with respect to the scenario.

5.4 Verbs Used

Interpretation of the logophoric pronoun may depend on the kind(s) of verb. For instance, Chierchia (1989, p. 17) suggests that a verb like *persuade* in (21) has an unambiguos *de se* reading. Whereas, verbs of causation such as, *force*, *make*, etc in (22) unambiguosly have a *de re* reading.

(21) a. John persuaded Mary to be fired.
b. John persuaded Mary to bring about a situation where she is fired.

[16]http://uk.news.yahoo.com/policeman-chased-himself-for-20-minutes-while-looking-for-suspect.html.

(22) a. John forced Mary to leave.
b. John forced Mary to bring about a situation where she leaves.

Chierchia (1989) proposes that (21-a) asymetrically entails (21-b) while, (22-a) entails (22-b) and (22-b) in turn entails (22-a). Mary controls the complement of *persuade* in (21-a). She is persuaded to bring about a situation where she and nobody else is fired, involving an indirect attribution of the property of being fired to Mary. The same cannot be said for the use of force in (22). *yè* does not show up an equivalent Ewe example (23). Instead we use a connecting pronoun *né*, this needs further investigation.

(23) John té-ɖe Mary dzí be né dzó.
John push-unto Mary prep COMP pronoun leave
'John forced Mary to leave.'

Pearson (2015) investigates verbs like *say*, *think* and *believe*. Some of those verbs are known as control verbs and some as exceptional case marking verbs. For 'mistaken' identity scenarios, I found the same judgments for the verbs *gblɔ* 'say', *xɔese* 'believe', *mɔkpɔkpɔ* 'hope' and *bù*/súsú 'think' in Ewedomegbe.

(24) a. John gblɔ be é nyá agbalẽ.
John say COMP 3SG know book
'John$_i$ said that he$_j$ is clever.'

b. John xɔese be é nyá agbalẽ.
John believed COMP 3SG know book
'John$_i$ believed that he$_j$ is clever.'

c. John bù be é nyá agbalẽ.
John thought COMP 3SG know book
'John$_i$ thought that he$_j$ is clever.'

d. John nɔ mɔkpɔkpɔ me be é nyá agbalẽ.
John be hope in COMP 3SG know book
'John$_i$ hoped that he$_j$ is clever.'

My informants would not use *yè* regarding these verbs to communicate John's feelings, if he was unaware that he was the subject of the attitude. They always preferred *é* to *yè*.

6 Conclusion

I conclude that *yè* is a regular logophoric pronoun in Ewedomegbe, just like other logophoric pronouns in other languages. As discussed, an attitude report involving *yè* cannot be used to describe a situation where the attitude holder is unaware of his or her immediate condition. Thus, the awareness of the attitude holder is a prominent condition in determining the interpretation of the logophoric pronoun. Future research would have to show whether there are indeed dialectal dif-

ferences with respect to the interpretation of logophors. Also, future research would have to work with examples like the South Iceland scenario. It would be interesting to investigate the kinds of 'mistaken' identity scenarios that allow a *de se* reading. Although Pearson (2015) involved five informants and I, ten, involving more participants will be great for future work. Concerning dream reports, I propose that dream reports may not be good grounds for shedding light on the *de re*, *de se* distinction. The use of the notions *de re* and *de se* in dream reports seems to be different from the use of *de re* and *de se* in attitude reports. Ewe shows this. It is not possible to say that the dream subject is always *de re*.

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Iterative-Reciprocal Polysemy in Logoori[1]

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Abstract. The affix *-an* in Logoori (Luhya, Bantu) is used to mark iterated events and reciprocal situations. I illustrate that this dual use reflects a single meaning: *-an* is an event-pluralizer which cumulatively pluralizes semantically monovalent events, a category which includes reciprocal events. The analysis predicts *-an*'s morpho-syntactic and semantic distribution. An outcome of the analysis is that reciprocity is *emergent* in Logoori, i.e., it is a result of putting together independently needed semantic processes (Heim et al., 1991). Finally, I discuss cross-linguistic variation in reciprocal "polysemy," focusing in particular on cognate *-an*'s across Narrow Bantu languages.

1 Introduction

Cross-linguistically, markers of reciprocity are known to display a high degree of polysemy: the same marker used for reciprocal situations may also serve some other function(s) in the language (Lichtenberk, 1985; Frajzyngier and Curl, 1999; König and Gast, 2008; Nedjalkov, 2007). Here, I address one such case in Logoori (Luhya, Bantu, JE41), where the verbal extension *-an* can be used to indicate a *reciprocal situation* as in (1a) as well as an *iterated event* at in (1b).[2]

(1) a. *avaana va-lol-an-i*
2child 2SM-see-AN-FV
'The children saw each other.'

b. *Sira y-ashiamul-an-i*
1Sira 1SM-sneeze-AN-FV
'Sira sneezed repeatedly.'

Along with *reciprocal-reflexive* and *reciprocal-sociative* polysemies, Nedjalkov (2007) lists the *reciprocal-iterative* polysemy as one of the three most robustly attested patterns found in reciprocal constructions cross-linguistically. (See also discussions of cross-linguistic patterns in Frajzyngier and Curl 1999; König and Gast 2008). This suggests that the pattern in Logoori is not an accident of the language, rather it reflects a deeper connection between reciprocity and event plurality.

I propose below an analysis of *-an* that semantically, syntactically, and morphologically unifies its use and distribution: *-an* always expresses a cumulative plural event for single-participant (i.e., intransitive) events. While this meaning is transparently observed in (1b), it is a sub-component of the meaning found in (1a). The analysis fully explains not only *-an*'s meaning contribution, but also its morphological and syntactic distribution.

[1]Immense thanks to my Logoori teachers Mwabeni Lavusa Indire, Bernard Lavussa, and Walter Kigali. Thanks also to Pam Munro, Yael Sharvit, Dave Odden, Mike Diercks, Margit Bowler, and audiences at UCLA's American Indian Seminar, the University of Kansas, and ACAL 49 at MSU, and naturally the feedback from attendees of TripleA 5 in Konstanz. All errors are my own.

[2] Luhya (also Luyia) languages are spoken in Western Kenya and Uganda. Logoori is also known as Logoli, Maragoli, Luragooli, Llogoori.

AC : Anticausative
APPL : Applicative
CAUS : Causative
FV : Final Vowel
PRES : Present
PASS : Passive
PAST : Past
REFL : Reflexive
SM : Subject Marker

This paper makes two broader points. First, reciprocity in Logoori is *compositional*. Reciprocal meaning arises as a result of combining independently motivated syntactico-semantic processes, as argued for English in Heim et al. (1991). Second, reciprocal "polysemies" arise when languages grammaticalize — or recruit morphology for — subcomponents of the complex semantics of reciprocity. In these cases, other processes "pick up the slack" for filling in the rest of reciprocal meaning.

2 Iterative use

Attached to some verbs, *-an* can be used to indicate an iterative, or sometimes intensive event Table 1.[3] (See Maslova 2007; Nurse and Philippson 2003 for similar uses in other Bantu languages).

kumera	'to grow' (intr)	*kumerana*	'to grow fast, a lot'
kumeeda	'to increase' (intr)	*kumeedana*	'to increase steadily.'
kusunduka	'to spill' (intr)	*kusundukana*	'to spill here and there'
kwuma	'to freeze' (intr)	*kwumana*	'to freeze over and over'
kwishiamula	'to sneeze'	*kwishiamulana*	'to sneeze over and over.'
kwivora	'to give birth'	*kwivorana*	'to breed, increase in #'s'
kuhanzuka	'to shout'	*kuhanzukana*	'to shout over and over'
kunagora	'to run'	*kunagorana*	'to run over and over, keep running'
...		...	

Table 1: Iterative/intensive uses of *-an*. (*Ku-* is the class 15 infinitival prefix.)

In its iterative use, *-an* expresses two pieces of meaning.

1. The event of the predicate involves a *single participant*. This functionally restricts *-an* to appearing with intransitive predicates.

2. The event of the predicate is a *cumulative plural event*.

I illustrate these two properties in the next sections.

2.1 Property 1: Cumulative plurality

I assume that an event of P is cumulatively plural if it is perceived as being a single event of P with multiple sub-events of P (Krifka, 1989; Sternefeld, 1998). Thus, *-an* is only felicitous where there is a perceived single event involving multiple sub-events, as shown in the following contexts.

(2) *Sira y-ashiamul-an-i*
Sira 1SM-sneeze-AN-FV
'Sira sneezed repeatedly.'

(a) ✓ *Sira had a fit of sneezing.*

(b) ✗ *Over the course of the day, Sira sneezed multiple times.*

[3] I assume that the intensive reading is a type of iterative event.

(3) *kisaga ki-vun-ik-an-i*
7branch 7SM-break-AC-AN-FV
'The branch broke in many pieces.'

(a) ✓ *Sira stepped on a branch, and it broke in many pieces.*

(b) ✗ *Over the course of the day, many people stepped on a branch, breaking it in many pieces.*

It's worth noting that *-an* does not impose any sort of structure on the sub-events. They can be consecutive, as in (2), or they can be simultaneous, as in (3). All that matters is that the sub-events are perceived as being a part of some larger macro-event.

2.2 Property 2: Single-participant events

Though *-an* pluralizes events, it cannot be used with all event-predicates. For instance, it is not permitted with transitive verbs.

(4) a. * *Sira a-ras-an-i mpira*
1Sira 1SM-throw-AN-FV 3ball
[intended: 'Sira threw the ball repeatedly']

b. * *Sira a-duy-an-i Imali*
1Sira 1SM-hit-AN-FV 1Imali
[intended: 'Sira hit Imali repeatedly.'

As can be observed in Table 1, *-an*'s occurrence is restricted to intransitives. However, crucially, *-an* is restricted to a particular kind of intransitive, namely, *semantic intransitives*. I take this term to mean an event which only has a single participant. This differs from *syntactic intransitivity*, which may not involve a single-participant event.

The distinction can be seen in *-an*'s restriction to co-occuring with only one kind of derived intransitive. In Logoori, there are two ways to derive an intransitive verb from a transitive verb: *passivization* and *anticausativization* (Gluckman and Bowler, 2016).[4]

(5) a. *mpira gu-ras-**w**-i (na Sira)* PASSIVE
3ball 3SM-throw-**PASS**-FV by Sira
'The ball was thrown (by Sira)'

b. *mpira gu-ras-**ik**-i (*na Sira)* ANTICAUSATIVE
3ball 3SM-throw-**AC**-FV by Sira
'The ball was thrown (by Sira).' (≈ 'The ball threw.')

One canonical difference between passives and anticausatives is whether reference to the demoted Agent is permitted. Passives permit explicit reference to the implicit Agent in a *by/na*-phrase (5a). Thus, passives are taken to be syntactically intransitive, but semantically transitive, in that the event of the predicate still involves two participants. Anticausatives on the other hand do not permit

[4]The verbal extension *-Vk* has a number of differ labels and uses across Bantu (Nurse and Philippson, 2003). I refer the reader to Gluckman and Bowler (2016) for evidence that its function in Logoori is that of an anticausative marker — though the argument goes through whether this is true or not.

(implicit or explicit) reference to the Agent (5b). This is because anticausatives involve semantic intransitivity: the overall valency has been decreased by one (cf, Kemmer 1993; Haspelmath 1993; Schäfer 2008 among many others).

Returning to *-an*, we observe that it can only pluralize derived anticausatives, and not passives.[5]

(6) a. * *mpira gu-ras-w-an-i (na Sira)*
3ball 3SM-throw-PASS-AN-FV by Sira

b. *mpira gu-ras-ik-an-i (*na Sira)*
3ball 3SM-throw-AC-AN-FV by Sira
'The ball was thrown repeatedly.'
(i.e., it was juggled)

(7) a. * *amaaze ga-sund-w-an-i*
6water 6SM-spill-PASS-AN-FV

b. *amaaze ga-sund-uk-an-i*
6water 6SM-spill-AC-AN-FV
'The water spilled here and there.'
[Speaker comment: 'Like when the waiter brought it to the table. It was sloshing around.']

This follows if *-an* is sensitive to the number of semantic arguments that are associated with the predicate. Observe in fact that there is a distinct transitive (cumulative) event pluralizer *-any* (<-aɲ>). *-Any* may only occur with transitive predicates, and is restricted to passive derived intransitives.

(8) a. * *Sira y-ashiamul-any-i*
1Sira 1SM-sneeze-ANY-FV
[intended: 'Sira sneezed repeatedly.']

b. *Sira a-ras-any-i mpira*
1Sira 1SM-threw-ANY-FV ball
'Sira threw the ball repeatedly' (i.e., he juggled the ball).

c. *mpira gu-ras-any-w-i*
3ball 3SM-throw-ANY-PASS-FV
'The ball was thrown repeatedly' (i.e., it was juggled).[6]

d. * *mpira gu-ras-ik-any-i*
3ball 3SM-throw-AC-ANY-FV

[5]There is no phonological reason to rule out (6a), (7a). Also, no other ordering of the suffixes works.

[6]Note the different ordering of the pluralizer and voice morphology: *-any* must *precede* the passive, but *-an* must *follow* the anticausative. I believe this reflects the different function of anticausative vs. passive heads, rather than a (morpho-)syntactic difference between the two different event pluralizers. See Gluckman (to appear) for more discussion. Thanks to Claire Halpert for useful comments on this topic.

2.3 Defining iterative *-an*

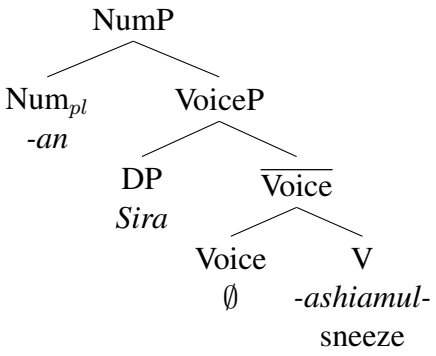
Given that *-an* expresses both plurality and intransitivity, I define *-an* as a cumulative event pluralizer, with a presupposition such that the event it pluralizes only has a single participant. $\leq$ is ordering on events.[7]

(9) $[\![$*-an*$]\!] = \lambda P_{\langle v,st\rangle}\lambda e\lambda w$:
Presupposition: e has a single event participant
Assertion: $\exists e_1, e_2[P(e)(w)$ & $P(e_1)(w)$ & $P(e_2)(w)$ & $e_1 \neq e_2$ & $e_1, e_2 \leq e]$ & $\forall e', e''[P(e')(w)$ & $P(e'')(w) \rightarrow P(e' \oplus e'')(w)]$

I assume that the single event participant restriction can be satisfied by a plural individual (cf Link 1983; Schwarzschild 1996 among others).

I propose that *-an* is an instantiation of verbal number in a Number Phrase (NumP). Syntactically, NumP sits on top of the verbal domain, including the external argument assumed to be in VoiceP (Kratzer, 1996).

(10)



I assume that Bantu verbs are morphologically constructed via head movement reflecting the Mirror Principle (Baker, 1985). As the verb (V) moves up the tree to its surface position (likely in C), it collects heads on its way. The result is that heads which are lower in the structure will appear closer to the root.

The meaning and tree in (9) and (10) make two predictions about the use and morpho-syntactic location of *-an*. First, we predict that subjects should be able to scope under the pluralizer. This prediction is borne out. In the following, the subject is distributed among events of sneezing. Each event involves a single (different) participant.

(11) *In a meeting, everyone sneezed once all at the same time.*

avaana va-shiamul-an-i
2person 2SM-sneeze-AN-FV
'People sneezed.'

The second prediction concerns where *-an* appears with respect to valency increasing and decreasing morphology. *-An* should always appear *outside* of valency decreasing morphology (i.e.,

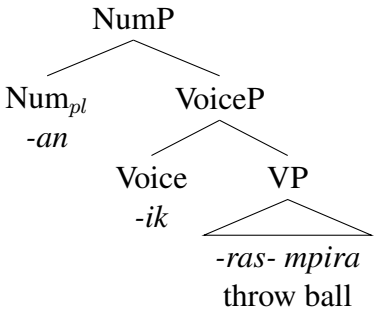
[7] The definition of cumulativity (minus the presupposition) is adapted from Krifka (1989).

the anticausative marker *-Vk*). That is, *-an* may only appear after a single-participant-event verb phrase has been derived.

Again, this prediction is borne out. As we saw earlier, when the anticausative and *-an* co-occur, the anticausative must precede *-an*, which reflects the fact that *-Vk* sits lower in the structure.

(12) a. *mpira gu-ras-ik-an-i*
3ball 3SM-throw-AC-AN-FV
'The ball was thrown repeatedly.'

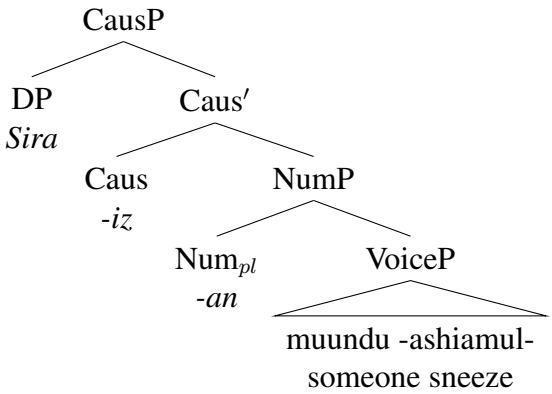
b.



On the other hand, *-an* should always appear *inside* of valency increasing morphology. For instance, when a causative affix *-iz* is added, the valency is increased by one. In this case, we predict that *-an* should only be able to appear inside of *-iz*, since it must pluralize the event before another event-participant is added.[8]

(13) a. *Sira y-ashiamul-an-iz-i muundu* CAUSATIVE
Sira 1SM-sneeze-AN-CAUS-FV person
'Sira made someone sneeze repeatedly.' (**yashiamul-iz-an-i*)

b.



Likewise, when an applied argument is added to the event structure, because this process creates a two-participant event, *-an* must pluralize the event before the argument can be added, predicting that *-an* should appear before the applicative *-el/-il*.

[8]Note that, despite the translation on (13), it is not clear whether *-iz* in fact adds another *event*, in addition to adding another argument. A more accurate translation might be "Sira sneezed someone."

(14) *Sira y-ashiamul-an-il-i muundu* APPLICATIVE
1Sira 1SM-sneeze-AN-APPL-FV person
'Sira sneezed repeatedly for someone.' (**yashiamul-il-an-i*)

Moreover, we have evidence from scope that the added arguments are above the pluralizer. With applied arguments, the added argument cannot scope under the pluralizer. This is evident using the indefinite *muundu*, 'someone.' The example in (14) is not felicitous if Sira sneezed once for a lot of different people. It can only mean that there is some particular person for whom Sira sneezed over and over.

3 Reciprocal use

In addition to its iterative use, *-an* can be used to indicate a reciprocal situation. This use of *-an* is robustly found across (Narrow) Bantu languages (Dammann, 1954; Mchombo, 1993b; Dalrymple et al., 1994; Nurse and Philippson, 2003; Maslova, 2007) among many others.

(15) a. *avaana va-lol-an-i*
2child 2SM-see-AN-FV
'The children saw each other.'

b. *Sira na Imali va-duy-an-i*
1Sira and 1Imali 2SM-hit-AN-FV
'Sira and Imali hit each other.'

As pointed out for Chichewa (Bantu) by Mchombo (1993b, 2007), reciprocal-*an* has many of the core properties we associate with reciprocal markers. For instance, it is subject to locality and c-command conditions (i.e., Condition A).

(16) a. * *avaana va-vor-i [ndii Maina a-lol-an-i]* LOCALITY
2child 2SM-say-FV that 1Maina 1SM-see-AN-FV
'*The children said that Maina saw each other.'

b. * *muremi y-a avaana a-lol-an-i* C-COMMAND
1friend 1-of 2child 1SM-see-AN-FV
'*The children's friend saw each other.'

Similarly, there are conditions on the phi-features of the antecedent: it must be plural.

(17) a. * *Maina a-lol-an-i*
1Maina 1SM-see-AN-FV
'*Maina saw each other.'

Reciprocal constructions also display something akin to "subject-orientation" (putting aside complexities of how to define the term "subject"). For instance, the antecedent for a reciprocal cannot be the Goal in a Double Object construction.

(18) * *Sira a-many-an-i avaana*
1Sira 1SM-show-AN-FV 2child
[intended: 'Sira showed the children each other (in the mirror).']

Finally, reciprocal-*an* always appears outside of valency increasing morphology. The other ordering yields an iterative reading of *-an*.

(19) a. *avaana va-sek-iz-an-i* CAUSATIVE
2child 2SM-laugh-CAUS-AN-FV
'The children made each other laugh.' (≠*vasek-an-iz-i*)

b. *avaana va-hanzuk-il-an-i* APPLICATIVE
2child 2SM-shout-APPL-AN-FV
'The children shouted at each other' (≠*vahanzuk-an-il-i*)

This of course directly contradicts what was observed earlier for the iterative use of *-an*. Indeed, all of the properties associated with the reciprocal use are not observed with the iterative use. There are no conditions on the "antecedent" (i.e., the subject) with iterative-*an*.

However, although there is no apparent (morpho-)syntactic evidence to connect the two uses, we can state that *-an* has a uniform *semantic* distribution. This is because reciprocal situations are also cumulatively plural events with a single (plural) event participant (Klaiman, 1991; Kemmer, 1993; Evans et al., 2011). Thus, we can say that *-an* expresses a *part* of the meaning associated with reciprocity. I will spell out this idea in the next section.[9]

4 The meaning of reciprocity

Reciprocal meaning can be broken down into independent pieces of meaning. This is the central observation of Heim et al. (1991), who argue that a plausible semantics for *each* coupled with a plausible semantics for *other* (plus assumptions about movement) can derive reciprocal meaning in English, since reciprocity always involves some sort of distributor (*each*) and a "distinctor" (*other*).

Since Heim et al, there has been a growing amount of research into the particular semantic pieces that make up reciprocity (Beck, 2001; Schein, 2001; Evans et al., 2011) among others. I focus here on two of them.

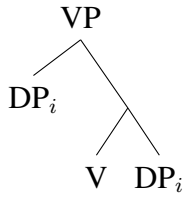
[9]It's worth noting that in Logoori, *-an* cannot appear in the *associative construction*, commonly found in Bantu languages (Dammann, 1954; Vitale, 1981; Maslova, 2007; Dimitriadis, 2008). (It's also called the *sociative*, *comitative* or *discontinuous* reciprocal (Nurse and Philippson, 2003; Maslova, 2007).) The associative allows the plural group whose members are in a reciprocal relation to be syntactically divided between the subject and an associative phrase.

(1) *Sira a-na-pend-an-a na Imali* (Swahili)
* *Sira y-a-yaanz-an-a na Imali* (Logoori)
1Sira 1SM-PRES-love-AN-FV and Imali
'Sira and Imali love each other'

However, associative constructions are possible with inherently reciprocal predicates in Logoori like *kwaagana*, 'to meet,' *kufana* 'to resemble,' etc. Note that all inherently reciprocal verbs appear to bear a lexicalized *-an* marker at the end.

First, reciprocal situations are intransitive — in fact, they describe *single-participant events* in that there is only a single argument of the predicate which fill two distinct grammatical positions (Klaiman, 1991; Kemmer, 1993):[10] The idea is sketched in (20).

(20)



The tree in (20) describes an event with a single participant (DP$_i$) which is mapped to two grammatical positions. (Note that DP$_i$ could itself denote a plurality.) That is, the event of the verb involves one less "distinct" argument (Kemmer, 1993). Indeed, in many languages the reduction in valency is reflected in the appearance of valency-reducing morphology in the expression of reciprocity (Nedjalkov, 2007).

Moreover, reciprocal situations are *cumulatively plural events* (Carlson, 1998; Kemmer, 1993; Schein, 1993; Dimitriadis, 2008). In this respect, they always appear to describe a maximal event of P which consists of sub-events of P.[11]

(21) *Last week, Imali stared at Sira. The following day, Sira stared at Imali.*

a. # *Sira na Imali va-hondolel-an-i*
Sira and Imali 2SM-stare-AN-FV
'#Sira and Imali stared at each other.'
[Speaker comment: "This only makes sense if Sira and Imali are staring at each other at the same time."]

(22) *On Tuesday, Sira kicked Imali. On Wednesday, Imali kicked Sira.*

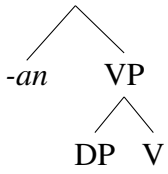
a. # *Sira na Imali va-nagiz-an-i*
Sira and Imali 2SM-kick-AN-FV
'#Sira and Imali kicked each other.'
[Speaker comment: "No… They did it on different days? They need to do it like one after the other."]

Thus, since reciprocals are also cumulatively plural and semantically intransitive, the appearance of *-an* is expected: it is the element that cumulatively pluralizes single-participant events. In other words, *-an* pluralizes a single-participant event, which can be mapped to different syntactic configurations:

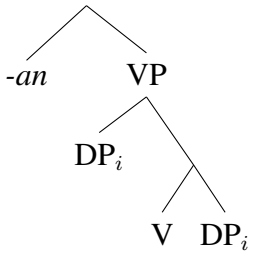
[10] I'll note that reciprocals do not act *syntactically intransitive* in Logoori, unlike in Chichewa (Dalrymple et al., 1994; Mchombo, 1993a). See also Safir and Sikuku 2018 for a similar observation for Lubukusu, a related Luhya language. It's worth noting that *-an* can be used with other syntactically transitive, but semantically intransitive predicates, including cognate objects (e.g., *sneeze a big sneeze*). I take this as further evidence that *-an* is sensitive to semantic, not syntactic transitivity.

[11] It's pointed out in Bruening (2007) that there are differences between stative and non-stative reciprocal expressions. I use both kinds of verbs to control for this.

(23) a. **Iterative use:**



b. **Reciprocal use:**



On this analysis, *-an* does not come with reciprocal meaning; it's always an event pluralizer. The reciprocal meaning must be compositional, i.e., a result of putting together different pieces of the meaning parts of reciprocity, one of which is event plurality of intransitive predicates. I discuss what else is needed to get the meaning in section 5.

Before that, consider again the (morpho-)syntactic reciprocal properties discussed earlier. First, observe that locality and c-command (i.e., Condition A) are enforced because *-an* can only occur with intransitive predicates.

(24) a. * *avaana va-vor-i [ndii Maina a-lol-an-i]* LOCALITY
2child 2SM-say-FV that 1Maina 1SM-see-AN-FV
'*The children said that Maina saw each other.'

b. * *muremi y-a avaana a-lol-an-i* C-COMMAND
1friend 1-of 2child 1SM-see-AN-FV
'*The children's friend saw each other.'

The verb phrase containing *-lol-*, 'see' doesn't describe a single-participant event in either (24a) or (24b).

Similarly, *-an* can never have a non-subject antecedent because it would require that *-an* attach to something that isn't a property of events, say a (low) applicative phrase.

(25) * *Sira a-many-an-i avaana*
1Sira 1SM-show-AN-FV 2child
[intended: 'Sira showed the children each other (in the mirror).']

The verb phrase doesn't describe an event with a single-participant in (25). Moreover, there is no plausible projection below VP that could conceivably be construed as a single-participant event.

Finally, if *-an* appears outside of valency increasing morphology, then it can only have a reciprocal use. Again, this follows as long as the DPs are "indistinct," i.e. are co-referential.[12]

[12]Presumably, the fact that *-an* must appear with a plural antecedent reduces to a blocking effect. With a singular antecedent, the only possible interpretation is that of a reflexive action, which is expressed using the affix *i-* (again, commonly found across Bantu languages). For space reasons, I must leave the expression of the reflexive prefix/object-marker *i-* out of the discussion here. A couple of notes may be useful for future work though. The reflexive appears to cover the semantic space of reciprocals in that it is compatible with Murray's (2008) so-called "mixed" readings. Second, reflexive and reciprocal affixes may co-occur in certain contexts. See Safir and Sikuku 2018 for related observations in Lubukusu (Luhya).

(26) a. *avaana va-sek-iz-an-i* CAUSATIVE
2child 2SM-laugh-CAUS-AN-FV
'The children made each other laugh.' (≠*vasek-an-iz-i*)

b. *avaana va-hanzuk-il-an-i* APPLICATIVE
2child 2SM-shout-APPL-AN-FV
'The children shouted at each other' (≠*vahanzuk-an-il-i*)

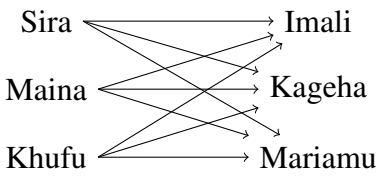
5 The rest of reciprocity

Since *-an* doesn't express reciprocity, only event plurality, then the reciprocal meaning must come from somewhere else. As noted above, there is a long tradition of treating reciprocity as *compositional*. Independent processes that are found in the language "conspire" to create a reciprocal meaning (Heim et al., 1991; Davies, 2000; Faller, 2004). Of particular importance is the well-known fact that there is a parallel between reciprocal situations and relational plurals (Fiengo and Lasnik, 1973; Langendoen, 1978; Dalrymple et al., 1994; Beck, 2001) among others. Both relational plurals and reciprocals involve different mappings between the subject and object, i.e., the "strong" and "weak" readings.[13]

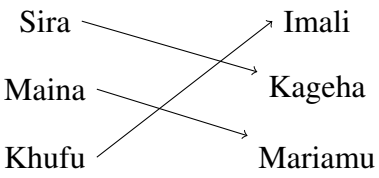
The strong reading is characterized by having every individual in the subject noun phrase be in a relation with every individual in the object noun phrase, and vice versa. Thus in (27), the strong reading holds if each of Sira, Maina, and Khufu all saw each of Imali, Kageha, Mariamu, and Imali, Kageha, and Mariamu were each seen by Sira, Maina, and Khufu.

(27) *avikura va-vagaa va-lol-i* *avakana va-vagaa*
2boy 2-three 2SM-see-FV 2girl 2-three
'Three boys saw three girls.'

Strong reading:



Weak reading (one of many):



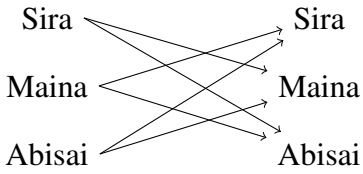
On the weak reading, every individual in the subject noun phrase is in a relation with *at least one* individual in the object noun phrase, and vice versa. Note that in Logoori, these two readings are not morphologically marked in any way. There is some implicit semantic processes, say, a distributivity operator, that creates the mappings.

[13] There are many ways a reciprocal/plural relation can be "weak" — indeed the strong reading can be framed as a type of weak reading (Bruening, 2007). Under the right contexts, all the ambiguities are available in Logoori for both relational plurals, as well as reciprocals. *-An* also gives rise to scope ambiguities with intensional verbs, i.e., *Sira and Imali think they saw each other.*

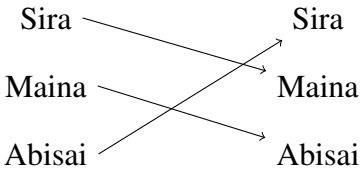
The weak and strong readings are also found in reciprocal situations in Logoori. The strong reading is the one in which each of Sira, Maina, and Abisai sees each (other) boy.[14] The weak reading is where each of Sira, Maina, and Abisai sees (at least) one other boy.

(28) *avikura va-vagaa va-lol-an-i*
2child 2-three 2SM-see-AN-FV
'Three boys saw each other.'

Strong reading:

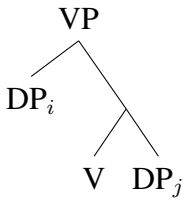


Weak reading (one of many):

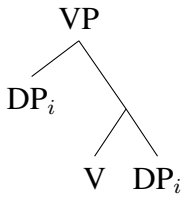


Given that there must be some mechanism for calculating a relational plural, the same mechanism applies in a reciprocal construction. The difference is that the reciprocal involves two co-referential DPs filling each syntactic position.

Plural relation



Reciprocal plural relation



There are many formal theories for how to derive to plural relations (Heim et al., 1991; Beck, 2001; Sternefeld, 1998; Murray, 2008). Any of these is compatible with the proposal above (*modulo* theoretical differences). More importantly, the mapping of the subject and object only form a part of reciprocal meaning. *-An* contributes that the reciprocal situations are also cumulative plural events. In other words, relation plurals are not necessarily cumulatively plural events. This piece of meaning does not come as part of the asserted meaning of relation plural sentences like (27) (though it may be part of pragmatic meaning), thus it must be provided some other way.

6 On reciprocal polysemy cross-linguistically

Among the various types of reciprocal polysemies mentioned earlier, it's notable that the "second" meaning is always something that forms a sub-component of overall reciprocal meaning. For instance, reciprocal-reflexive polysemy (e.g., Romance SE) can be analyzed as the grammaticalization of the a mapping between two co-referentical, possibly plural, individuals. See Murray (2008) for Cheyenne and Safir (1996) more generally. With reciprocal-sociative polysemy (e.g.,

[14] The reflexive relation is left out of strong reciprocity in Logoori — though this is not always cross-linguistically true (Murray, 2008).

Ancient Greek) the marker expresses that there is a collective/cumulative plural individual as a single event participant. See Dixon (1988) for Boumaa Fijian and Dimitriadis (2008) for related Bantu languages. As argued above reciprocal-iterative polysemy grammaticalizes the event plurality found in reciprocal situations. Similar facts have been reported in Davies (2000); Faller (2004). Importantly, (as noted by Nedjalkov (2007)) we don't find, say, a *reciprocal-telic* polysemy, or a *reciprocal-definite* polysemy. This is presumably because telicity/definiteness aren't sub-components of RECIPROCITY.

Finally, what implications does Logoori's *-an* have for the numerous cognate *-an*'s across Bantu? A clue for future work is that *-an* often functions closer to a sociative marker in many Bantu languages (cf footnote 9). This suggests that *-an* is a quantifier in those languages, but over individuals. Interestingly, Maslova (1999) makes essentially this argument. The variation in *-an*'s use could then be attributed to whether *-an* in a particular language is allowed to quantify over individuals, events, or even both. In other words, *-an* is never a "reciprocator," it always expresses some sub-component of reciprocal meaning.

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How to be an embedded clause: *say* complementizers in Bantu[1]

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Abstract. Recent work on a number of Bantu languages has given us new information on the morphosyntax of finite complement clauses in the Bantu family, revealing a rich picture of morphologically complex complementizers (e.g. Diercks 2013, Baker et al 2012, Letsholo and Safir 2017, Pietraszko 2017, Halpert 2018). In this paper, I survey some of this evidence, focusing in particular on complementizers that are built out of *say* verbs. I draw from my own fieldwork on Zulu to show that even when complementizers have a common lexical base, their behavior can vary widely depending on the particular morphological makeup of the complementizer. Comparing Zulu complementizers and those found in some other Bantu languages, we find support for recent semantic approaches to finite complement clauses and can begin to refine their ideas about which syntactic properties correspond to particular embedding strategies (e.g. Elliott 2016, Kratzer 2015, 2016; Moulton 2009, 2015).

1 Introduction

There is a large body of research that investigates the syntactic and semantic status of finite embedded clauses (FCCs). Much of this research has taken English as a starting point, focusing on apparent puzzles such as the distributional puzzle illustrated below: in (1), a CP argument of a verb has the same distribution as a DP argument, while in (2), the distribution of CP and DP arguments of a noun diverge:

(1) a. I know *the story*.
    b. I know *that dinosaurs are extinct.*

(2) a. my knowledge *(of) *the story*
    b. my knowledge (*of) *that dinosaurs are extinct*

A common stance on English FCCs (e.g. Stowell, 1981) is that they are less restricted than DPs in their distribution because the do not require syntactic case. This type of view assumes that FCCs, by nature of their category, can combine with their selecting head (a verb, noun, or adjective) without any need to satisfy other syntactic requirements.

Research on a typologically broad range of languages suggests that there is good reason to believe that FCCs in fact have a more complicated structure, involving, for example, relativization (e.g. Aboh, 2010; Caponigro and Polinsky, 2011; Kayne, 2014). Recent research on FCCs in Bantu languages similarly reveals a growing catalog of morphosyntactically complex embedding strategies that vary across languages and across complementizer type in their properties (for example, Baker and Safir, 2012; Diercks, 2013; Halpert, 2015, 2018; Letsholo and Safir, submitted; Pietraszko, to apepar).

[1]Thanks to my Zulu consultants for their assistance with all data, patience and good senses of humor. Thanks in particular to Mthuli Percival Buthelezi, Monwa Mhlophe, and Mandisa Ndlovu. Thanks as well to participants in my LSA 2017 summer course, the audience at AAA5, Michael Diercks, Angelika Kratzer, and Keir Moulton for useful discussion on some of the ideas and data discussed here.

This paper focuses on some morphosyntactic properties of Bantu FCCs and illustrates what they can teach us about different means of embedding FCCs. In particular, I investigate complementizers that are built from *say* verbs and show that a fine-grained understanding of their morphological makeup is necessary to account for their syntactic behavior.

1.1 Why *say* complementizers?

The discussion of the morphosyntax of FCCs and their complementizers in this paper is informed by some recent semantic approaches to FCCs.

Moulton (2015) argues that embedded argument CPs are predicates of propositional content, of type *e,st*. Although they appear to be arguments of verbs (and nouns), elements of this type cannot saturate *any* predicates. When they combine with non-verbal predicates (like content nouns), they do so via predicate modification. In order to combine with verbal predicates, he argues, FCCs must undergo a short step of A-movement, leaving behind a trace of type *e* to compose with the verb.

This approach captures some key facts about FCCs in a number of languages: it gives us a way to understand the differences in CP vs. DP distribution shown in (1) and (2); it captures meaning alternations between FCCs and propositional DPs (Elliott, 2016). It also correctly predicts observed opacity effects: the A-movement step required for FCCs to compose with the verb renders them opaque for A-movement (but not for A-bar movement). Finally, this semantically-motivated approach converges with syntactic approaches that treat FCCs in some languages as instances of relativization (see again Aboh, 2010; Caponigro and Polinsky, 2011; Kayne, 2014).

At the same time, we know that not all FCCs across languages show these properties. Moulton (2015) himself notes that in some languages, the picture is notably different: FCCs cannot combine with content nominals, are transparent to A movement, and don't otherwise show evidence of having undergone movement. He concludes that these FCCs might be *in situ saturators*. In other words, they have a semantic type that doesn't require the movement operations described above.

What does it mean to be an in situ saturator? Kratzer (2016) suggests that all FCCs are either *nominal modifiers* (i.e., predicates, along the lines of Moulton above) or *verbal modifiers*. Kratzer points out that *that* clauses sometimes do more work than we usually give them credit for, including: force normally unergative verbs to take speech-report interpretations or contain a source for speech interpretations, as in (3a), and yielding harmonic modal interpretations, as in (3b):

(3) a. She grumbled that you didn't explain very well.
    b. She advised that you should explain better.

Kratzer suggests that the articulated left periphery of the embedded clause can be the source of these properties. In particular, high modality operators in an embedded clause can be the true source of modal meanings (as opposed to, say, an attitude verb) and a *say* verb at the very edge of an embedded clause can create embedded speech reports.

Indeed, as Kratzer (2016) notes, many languages have complementizers built out of a (*say*) verb; Moulton (2016) observes, building on Kratzer, that these "verby" complementizers tend to have the signature of *in situ* saturators. This type of FCC, then, would be a verbal modifier. It can remain in situ because it is *not* attempting to saturate an argument slot of a verb, but rather can combine with the predicate via event identification

These ideas provide a useful compass for an investigation of FCCs in Bantu languages, allowing us to probe for behaviors that are typical of *in situ* and *ex situ* saturators and giving us some expectations for what the morphosyntactic makeup of the clausal periphery (and C in particular) might tell us about the behavior of a particular FCC. As we will see in the following sections, *say*-complementizers in Bantu languages are not a unified set: the presence of a lexical *say* verb in the complementizer alone is not predictive of FCC behavior.

In section 2, I turn to Zulu and Ndebele, which have a *say* complementizer with nominal morphology that has more or less nominal properties. FCCs headed by this complementizer appear to combine with the selecting predicate like a nominal argument would. We can compare this complementizer to a different *say* complementizer in Zulu that has aspect and mood morphology; FCCs headed by this complementizer indeed have more properties that Kratzer attributes to verbal modifers. Lubukusu also has a range of *say* complementizers and shows yet another pattern of morphology involving agreement with the superordinate subject (Baker and Safir, 2012; Diercks, 2013). In section 3, I overview the properties of agreeing C in Lubukusu and sketch a possible approach where these FCCs could be treated as verbal modifiers. The initial empirical picture that emerges from these languages shows that syntacticians and semanticists alike should take seriously the rich morphological makeup of C heads in Bantu languages and that these languages present ideal places to investigate our ideas of how FCCs compose with selecting predicates.

2 Flavors of 'say'-complementizer in Zulu

Zulu has multiple complementizers built out of the verbal root *thi* 'say.' I focus here on two of the most prevalent ones: *ukuthi* and *sengathi*.

The first, *ukuthi*, is a generic complementizer, compatible with essentially every FCC type (declaratives, interrogatives, indicatives, subjunctives). The *uku* prefix is noun class 15/17 morphology (also found on infinitive clauses). The second, *sengathi*, has a more restricted distribution. It is a comparative complementizer, typically appearing with subjunctive or modal embedded clauses, though it can also embed indicatives. Its morphological makeup is slightly more complex: *se* is aspect[2] and *nga* is modality, marking potential 'can/may'.

Does the presence of of the *-thi* 'say' root yield the consequences Kratzer might expect? As we will see in this section, these complementizers have radically different distributions and morphosyntactic properties. At a glance, both show properties of in situ saturators (as expected), but a closer look suggests that we need to treat them differently syntactically (and probably also semantically).

2.1 *Ukuthi*'s noun-y tendencies

The examples in (4) illustrate *ukuthi*'s versatility as an FCC complementizer, introducing complements to speech act verbs (4a), verbs of belief (4b), factive verbs (4c), verbs of desire (4d), raising

[2]This is perhaps a bit imprecise: *se* is often translated as meaning something like 'now' or 'already' (Doke, 1997 [1927])... in standard use, it appears as a verbal prefix preceding subject agreement, apparently as a contracted form of a verbal auxiliary.

verbs (4e), and interrogative verbs (4f):[3]

(4) *Ukuthi* **as a neutral complementizer**

a. Ngi-tshel-e uManqoba ukuthi uZuma ngeke a-khokh-e lutho
1SG.S-tell-PFV AUG.1M C AUG.1Z never 1SBJV-pay-PFV 14thing
' I told Manqoba that Zuma won't pay anything'

b. Ngi-sola ukuthi uSipho u-bula-w-e w-umkhovu
1SG.S-suspect C AUG.1S 1S-kill-PASS-PFV COP-AUG.3zombie
'I suspect that Sipho was killed by a zombie.'[4]

c. uSandile u-bon-e ukuthi inkawu i-ny-ile
AUG.1S 1S-see-PFV C AUG.9monkey 9S-shit-PFV
'Sandile saw that the monkey shit itself.'

d. ngi-funa ukuthi uXolani a-win-e umjaho
1SG.S-want C AUG.1X 1SBJV-win-SBJV AUG.3race
'I want Xolani to win the race.'

e. ku-bonakala ukuthi uXolani u-win-e umjaho
17S-seem C AUG.1X 1S-win-PST AUG.3race
'It seems that Xolani won the race.'

f. ngi-buza ukuthi u-kuphi
1SG.S-ask C 1S-15.where
'I'm asking where he is.'

As we saw at the beginning of this section, *ukuthi* is morphologically complex and contains a plausible nominal prefix. Indeed, *ukuthi* CPs share a number of properties with DPs. In particular, as we'll see in this section, CPs can control phi-agreement under the same conditions as nominals and their distribution and morphological marking mirrors that of nominal arguments.

We saw above that *ukuthi* is composed of noun class 15/17[5] morphology on the verb root *-thi*. As I demonstrate in Halpert (2012, 2015, 2018), *ukuthi* CPs can control class 15/17 agreement on verbs—just like nominals. In Zulu, phi-agreement tracks *v*P-external (or pro-dropped) nominals.[6] Class 15/17 object agreement can appear when an *ukuthi* CP is *v*P-external—there is no expletive object agreement in Zulu, so this must be true agreement with CP:

[3]Bantu agreement is for noun class. Zulu has 15 of the 22 Bantu noun classes (numbers 1–11, 14–17); even numbers are typically plurals of odd-numbered classes. A nominal agrees if the noun class marked on the noun matches the number of the agreement marker. I mark class 1 subject agreement as 1S, but 1SG.S for 1st person singular, etc.; object agreement is marked similarly with O. Other abbreviations follow the Leipzig Glossing Rules with the addition of the following: ASSOC associative, AUG augment vowel, FV final vowel, PRO pronominal, YA (present tense) disjoint marker.

[4]Zulu zombies are corpses reanimated by practitioners of malicious magic (*abathakathi*) and kept under the control of a particular person. Throughout this handout, solitary zombies are of the Zulu type, while pluralities of zombies are American.

[5]These two classes have merged in modern Zulu.

[6]I use the distribution of the so-called *conjoint/disjoint alternation* to diagnose the right edge of *v*P. A morpheme *ya* predictably appears on present tense verbs when the verb is at the right edge of *v*P; material that follows a *ya*-marked verb is reliably *v*P-external (Halpert, 2015).

(5) ***v*P-external nominal can control phi-agreement**

a. ngi-funa *uku-dla* $_{vP}$]
1SG-want AUG.15-food

b. * ngi-**ku**-funa *ukudla* $_{vP}$]
1SG-17O-want AUG.15-food

c. ngi-**ya**-**ku**-funa $_{vP}$] *ukudla*
1SG-YA-17O-want AUG.15-food
'I want food.'

(6) ***ukuthi*-CP can control phi-agreement**

a. ngi-funa *ukuthi si-hlul-e* *imikhovu* $_{vP}$]
1SG-want C 1PL.SBJV-defeat-SBJV AUG.4zombie
'I want us to defeat the zombies.'

b. * ngi-**ku**-funa *ukuthi si-hlul-e* *imikhovu* $_{vP}$]
1SG-17O-want C 1PL.SBJV-defeat-SBJV AUG.4zombie

c. ngi-**ya**-**ku**-funa $_{vP}$] *ukuthi si-hlul-e* *imikhovu*
1SG-YA-17O-want C 1PL.SBJV-defeat-SBJV AUG.4zombie
'I (do) want us to defeat the zombies.'

In terms of FCC distribution, a large number of verbal predicates in Zulu take unmarked *ukuthi* FCCs or nominal complements, just as we see in a language like English:

(7) **Verbal predicate: direct complementation**

a. ngi-cabanga [$_{CP}$ *ukuthi* imikhovu i-fik-ile]
1SG-think C AUG.4zombie 4S-arrive-PFV
'I think that the zombies have arrived.'

b. Cabanga [$_{DP}$ *isu* so-ku-hlula imikhovu]!
think AUG.5plan 5ASSOC.AUG-15-defeat AUG.4zombie
'Think of a plan to defeat the zombies!'

Unlike in English, however, when a predicate requires nominal arguments to be marked by an oblique prefix, an *ukuthi* CP complement must be marked by that same prefix. We see this pattern with the oblique/instrumental marker *nga-* in (8) and with comitative *na* in (9):

(8) **Verbal predicate: complements marked by** *nga*

a. ngi-phuph-e [*ngokuthi* imikhovu i-fik-ile]
1SG-dream-PST NGA.C AUG.4zombie 4S-arrive-PFV
'I dreamed that the zombies came.' (*ukuthi)

b. ngi-phuph-e *ngemikhovu*
1SG-dream-PST NGA.AUG.4zombie
'I dreamed about zombies.' (*imikhovu)

(9) **Verbal predicate: complements marked by** *na*

a. A-ngi-vumelan-i *nokuthi* uZuma a-nga-khokh-i lutho
NEG-1SG-agree-NEG NA.C AUG.1Zuma 1SBJV-NEG-pay-NEG 14.thing
'I don't agree with Zuma not paying anything.' (*ukuthi)

b. A-ngi-vumelan-i *nomthetho*
NEG-1SG-agree-NEG NA.AUG.1law
'I don't agree with the law.' (*umthetho)

Finally, we can compare *ukuthi* CPs to nominals in noun complement position. In Zulu, the nominal complement of a content noun (the internal argument of the corresponding verb) is marked with the the so-called 'associative construction' (Sabelo, 1990; Halpert, 2015). This morpheme appears on all adnominal dependents, including possessors, in (10), and other modifiers (11).

(10) **Associative morphology marks possessors**
umkhovu **wo**-mthakathi
AUG.3zombie 3ASSOC.AUG-1wizard
'the wizard's zombie'

(11) **Associative morphology marks nominal modifiers**
isiminyaminya **se**-mikhovu
AUG.7swarm 7ASSOC.AUG-4zombie
'a horde of zombies'

As (12a) and (13a) show, *ukuthi* CPs must also bear this morphology—just like nominals—even though they would be unmarked as the complement to a corresponding verb, as in (12b) and (13b).

(12) a. umcabango [*wokuthi* imikhovu i-fik-ile]
AUG.3thought 3ASSOC.C AUG.4zombie 4S-arrive-PFV
'the thought that the zombies arrived' (*ukuthi)

b. umcabango *wemikhovu*
AUG.3thought 3ASSOC.AUG4zombie
'the thought of zombies'

(13) a. iphupho [*lokuthi* imikhovu i-fik-ile]
AUG.5dream 5ASSOC.C AUG.4zombie 4S-arrive-PFV
'the dream that the zombies arrived' (*ukuthi)

b. iphupho *lemikhovu*
AUG.5dream 5ASSOC.AUG.4zombie
'the dream about zombies'

This behavior is a sharp departure from the pattern we observed in English in (2), where FCCs had a different (and apparently less restricted) distribution than nominal complements to a noun. Zulu, it appears, sidesteps the English puzzle we saw in the introduction: *ukuthi* CPs show the same basic distribution as nominals. While the basic distributional properties show no difference between CPs and nominals in Zulu, systematic differences emerge when we look more closely.

First, *ukuthi* CPs extrapose more easily than nominals—and they do not need to control agreement when they do. The so-called conjoint morpheme *ya* marks present-tense verbs that are final in *v*P (Halpert, 2015). In (14a), the impossibility of *ya* tells us that a true nominal cannot appear outside of *v*P without agreement. In (14b), the grammaticality of *ya* shows that an *ukuthi* clause can extrapose under the same circumstances.

(14) a. * ngi-**ya**-funa $_{vP}$] *uku-dla*
1SG-YA-want AUG.15-food

b. ngi-**ya**-funa $_{vP}$] *ukuthi si-hlul-e* *imikhovu*
1SG-YA-want C 1PL.SBJV-defeat-SBJV AUG.4zombie
'I want us to defeat the zombies.'

Second, *ukuthi* CPs prepose less easily than nominals—they cannot appear in canonical preverbal subject position, as in (15a). The ungrammaticality of the *ukuthi* clause in subject position here contrasts with the grammatical complex nominal subject (containing the *ukuthi* CP) in (15b) and the (nominalized) infinitive clause in (15c).

(15) a. * [$_{CP}$ **ukuthi** wenza izinhlolovo zakho]
C 1S-do AUG.10interview 10ASSOC.2SG.PRO
ku-ya-ngi-jabulisa
17S-YA-1SG.O-happy.CAUS
intended: 'That you're doing your interviews makes me happy.'

b. [$_{DP}$ indaba [yokuthi wenza izinhlolovo zakho]]
AUG.9news 9ASSOC.C 1S-do AUG.10interview 10ASSOC.2SG.PRO
i-ya-ngi-jabulisa
9S-YA-1SG.O-happy.CAUS
'The news that you're doing your interviews makes me happy.'

c. [$_{TP}$ ukw-enza kwakho izinhlolovo] ku-ya-ngi-jabulisa
AUG.15-do 15ASSOC.2SG.PRO AUG.10interviews 15S-ya1SG.O-happy.CAUS
'Your doing the interviews makes me happy.

This second difference has a major syntactic consequence: it leads to hyperraising configurations in Zulu. I argue in Halpert (2018) that *ukuthi* CPs are (phi) goals for T but cannot satisfy T's need for a filled specifier in Zulu (an EPP property on T) due to the distributional restriction observed above. I propose that in Zulu, a T head that agrees with one of these unmoveable *ukuthi* CPs continues to probe (now inside the CP) to find a moveable goal.

This collection of properties suggests that although *ukuthi* CPs are built from a *say* verb and show a number of basic distributional properties that Moulton (2015) ascribes to *in situ* CP saturators, these properties are probably better understood as *nominal* properties. At the same time, they are somehow distinct from nominals—as we saw with their distributional differences from nominals in (14) and (15).

The importance of a close morphosyntactic analysis of complementizers is driven home by Pietraszko (to apepar), who compares these patterns in Zulu to the behavior of *ukuthi* in closely-related Ndebele. In Ndebele, as Pietraszko (to apepar) demonstrates, the basic distributional facts

are the same, but *ukuthi* CPs show even more parallels to nominals. Notably, in Ndebele, *ukuthi* can be productively morphosyntactically decomposed, losing its initial *augment* vowel in precisely the environments where a nominal can (see Halpert, 2015, for an overview of these environments in Zulu)—which Zulu does not permit. In addition, *ukuthi* CPs in Ndebele can appear in canonical subject position. Pietraszko concludes that *ukuthi* CPs in Ndebele involve an overt nominal shell, where the *u* initial vowel is analyzed as a D head that nominalizes the CP. From the outside, then, *ukuthi* CPs in Ndebele are completely syntactically indistinguishable from nominals. This variation between Ndebele and Zulu highlights the fact that Zulu *ukuthi* CPs do not share all properties with nominals. What should we make of this difference? One possibility is that Zulu *ukuthi* CPs involve nominal structure just like in Ndbele, but the Zulu strategy involves a null noun (or D), while Ndebele interprets the *u* of *ukuthi* as an overt D. On such an approach, we could interpret Zulu's distributional differences as a result of restrictions on where null nominal structure can appear.

In short, we learn from *ukuthi* in Zulu and Ndebele that *say*-based complementizers don't need to be verby. Instead, we need to let the morphology on C tell the full story.

2.2 Back to *sengathi*

Sengathi is often translated as 'as if', 'like', 'would that', or 'apparently'. Its distribution is roughly similar to that of comparative complementizers in English (see, e.g. López-Couso and Méndez-Naya, 2012, 2015, and references therein).

Sengathi is used to introduce comparative clauses that modify a main predicate:

(16) a. u-hleka *sengathi* u-ya-qala uku-hleka
1S-laugh C 1S-YA-begin INF-laugh
'He's laughing as if it's his first laugh ever.' (i.e., a lot)

b. u-gula *sengathi* u-zo-fa
1S-be.sick C 1S-FUT-die
'She seems sick enough to die.'

Unlike the English complementizers *like* and *as if*, (components of) which are also used in other comparative constructions, *sengathi* is unrelated to the Zulu comparative preposition *-njenga* (see Bender and Flickinger, 1999; Rooryck, 2000; López-Couso and Méndez-Naya, 2012, 2015, on the English connection):[7]

(17) a. uMfundo u-gijima *njengo-mntwana*
AUG.1M 1S-run like.AUG-1child
'Mfundo runs like a baby.'

b. uMfundo u-gijima *sengathi* u-ng-umntwana
AUG.1M 1S-run C 1S-COP-AUG.1child
'Mfundo runs like he's a baby.'

[7] At a glance, it appears that both elements have the morpheme *nga* in common; a closer look suggests that this is accidental homophony: as Doke et al. (2005) details, *sengathi* developed out of high-toned modal *ngá*, while *njenga-* contains low-toned *nga*, which I suspect developed out of the low-toned instrumental preposition *nga-*.

In clausal comparison, the *sengathi* clause is plausibly a low VP-adjunct. The unavailability of the conjoint *ya* (which would have marked a verb at the *v*P-edge) tells us that the *sengathi* CP must be inside *v*P.

(18) * u-ya-hleka $_{vP}$] *sengathi* u-ya-qala uku-hleka
1S-YA-laugh C 1S-YA-begin INF-laugh
'He's laughing as if it's his first laugh ever.'

Even more strikingly, the *sengathi* clause must appear immediately after the verb. When a *sengathi* clause modifies a predicate with a nominal complement, the nominal cannot intervene between V and *sengathi*—it must dislocate or be *pro* dropped.

(19) a. * u-dla inyama *sengathi* u-ya-yi-qabuka
1S-eat AUG.9meat C 1S-YA-9O-discover

b. (inyama) u-yi-dla *sengathi* u-ya-yi-qabuka
AUG.9meat 1S-9O-eat C 1S-YA-9O-discover
'He's eating it/meat as if he's just discovered it.'

c. u-dla *sengathi* inyama u-ya-yi-qabuka
1S-eat C AUG.9meat 1S-YA-9O-discover
'He's eating as if he's just discovered meat.'

This behavior is reminiscent of certain low adverbs, like *kahle* 'well', which has a similar need to be *v*P-internal and verb-adjacent (Halpert, 2015).[8]

There are a number of environments where *sengathi* clauses are plausibly true complements to the matrix predicate, rather than adjuncts. In particular, it is common in complements to *fisa* 'wish' and *bonakala* 'seem' and can also appear a a complement to some verbs of belief and perception. In these constructions, the embedded predicate can be indicative, but is often subjunctive or modal.

(20) a. ngi-fisa [sengathi si-hlul-e imikhovu]
1SG-wish C 1PL.SBJV-defeat-SBJV AUG.4zombie
'I wish for us to defeat the zombies.'

b. ngi-fisa [sengathi ngi-nga-dla inyama]
1SG.S-wish C 1SG.S-MOD-eat AUG-9meat
'I wish that I could eat meat.'

c. ku-bonakala [sengathi uSipho u-pheka idina]
17S-seem C AUG.1S 1S-cook AUG.5dinner
'It seems like Sipho is cooking dinner.'

d. ngi-zwa [sengathi u-zo-fika kusasa
1SG.S-hear C 1S-FUT-arrive tomorrow
'I think he might possibly arrive tomorrow.'

[8] A possible interpretation of these facts is that these low adjuncts tend to be focused elements. Focused elements in Zulu must be verb-adjacent and *v*P-final, often forcing other material to evacuate *v*P (Cheng and Downing, 2012).

There are a few reasons to think these are cases of true embedding. First, *sengathi* CPs alternate with *ukuthi* CPs in some cases where a complement clause is required (more on this difference later). Second, some verbs strongly prefer *sengathi* CPs. Finally, wh-elements that originate inside a *sengathi* CP can be clefted in the matrix clause (21a), with a corresponding agreement marker in the clause of origin, or can take matrix scope from a position in the embedded clause, as in (21b) (see Sabel and Zeller, 2006, on the basic properties of *wh*-constructions in Zulu):

(21) a. Y-ini o-ku-bonakala [sengathi uSipho u-ya-yi-pheka]?
COP-AUG.9what REL-17S-seem C AUG.1S 1S-YA-9O-cook

b. Ku-bonakala [sengathi y-ini uSipho a-yi-pheka-yo]?
17S-seem C COP-AUG.9what 1S-S 1S.REL-9O-cook-REL
'What does it seem that Sipho is cooking?'

We know from our examination of *ukuthi* that *say*-complementizers in Zulu can have nouny properties. If we look at the morphological clues, as we saw, *sengathi* is different, showing no evidence of nominal properties. Indeed, unlike *ukuthi* CPs, *sengathi* CPs can't control agreement:[9]

(22) a. ngi-fisa [sengathi si-hlul-e imikhovu]
1SG-wish C 1PL.SBJV-defeat-SBJV AUG.4zombie
'I wish for us to defeat the zombies.'

b. * ngi-ya-**ku**-fisa $_{vP}$] [sengathi si-hlul-e imikhovu]
1SG-YA-17O-wish C 1PL.SBJV-defeat-SBJV AUG.4zombie
'I (do) wish for us to defeat the zombies.'

Like adjunct *sengathi* clauses, embedded *sengathi* CPs can't move at all:

(23) * ngi-**ya**-fisa $_{vP}$] [sengathi si-hlul-e imikhovu]
1SG-YA-want C 1PL.SBJV-defeat-SBJV AUG.4zombie
intended: 'I wish for us to defeat the zombies.'

In fact, *sengathi* CPs cannot combine with nominals at all, either directly or via the associative strategy used by *ukuthi* CPs:

(24) a. isifiso sa-mi [*sokuthi* si-hlule imikhovu]
AUG.7wish 7ASSOC-1SG 7ASSOC.C 2PL-defeat.SBJV AUG.4zombie
'my wish that we defeat the zombies'

b. * isifiso sa-mi [(sa-)*sengathi* si-hlule imihovu]
AUG.7wish 7ASSOC-1SG (7ASSOC)-C 2PL-defeat.SBJV AUG.4zombie

It seems reasonable, then, to think of these as the verbal modifier type of FCC (Moulton's in situ saturator): they must be inside *v*P and cannot combine directly with nominals. Moulton (2015) predicts that *in situ* saturator CPs are transparent for raising, but that doesn't seem to be the case for *sengathi* CPs in Zulu: when they combine with raising-predicates, they permit a copy-raising type construction (in contrast to *ukuthi* CPs):

[9] I show in (22b) that class 15/17 agreement with the clause is ungrammatical—the same pattern holds for all possible noun classes.

(25) a. Le ncwadi i-bonakala [*sengathi* abafundi ba-ya-**yi**-thanda]
9DEM 9book 9S-seem C AUG.2student 2S-YA-9O-like
'This book seems/looks like the students like it.

b. * Le ncwadi i-bonakala [*ukuthi* abafundi ba-ya-**yi**-thanda]
9DEM 9book 9S-seem C AUG.2student 2S-YA-9O-like

(26) a. u-bonakala [*sengathi* inja yakhe i-shon-ile]
1S-seem C AUG.9dog 9ASSOC.1PRO 9S-die-PFV
'She looks like her dog just died.'
(speaker comment: 'you have to be looking at her to say this')

b. * u-bonakala [*ukuthi* inja yakhe i-shon-ile]
1S-seem C AUG.9dog 9ASSOC.1PRO 9S-die-PFV

This difference might actually be good news for the Kratzerian take: if an FCC is a verbal adjunct, it would be odd to have transparency for A-movement, despite Moulton's characterization. In the next subsection, I will take a closer look at the differences between *ukuthi* and *sengathi* and return to this question of transparency.

2.3 Ukuthi vs Sengathi

The previous subsections suggest that although both *sengathi* and *ukuthi* are built from a *say* verb, they show different syntactic behavior that likely requires different strategies for semantic composition. We saw that *ukuthi* has a number of nominal properties (while still being distinct from true nominals), while *sengathi* looks more like a verby complementizer.

Table one summarizes the properties of FCCs headed by the two complementizers, in comparison to DPs and infinitives.

	comp to V	phi-features	preposition marked	extrapose w/Agr	SpecTP ok	extrapose w/o Agr	A-extraction
DP	✓	✓	✓	✓	✓	✗	✗
INF	✓	✓	✓	✓	✓	✓	✗
ukuthi-CP	✓	✓	✓	✓	✗	✓	✓
sengathi-CP	✓	✗	✗	✗	✗	✗	✗

Table 1: Clause types and their properties in Zulu

Recall that *sengathi* is morphologically more complex than the basic *say* complementizers that Kratzer (2016) discusses—in particular, it appears to contain a modal morpheme. The modal flavor that it contributes is easiest to see in direct comparison to *ukuthi*.

Kratzer (2016) and Moulton (2016) note that locating the source of modality inside the embedded clause means that the matrix verb is semantically light(er) than we thought. In Zulu, speakers

will often describe *sengathi* and *ukuthi* as interchangeable when both are possible. When you look closely, though, you find systematic meaning differences that have to do with speaker attitude:[10]

(27) **Likelihood of outcome**

a. ngi-fisa *ukuthi* si-hlul-e imikhovu
1SG-wish C 1PL.SBJV-defeat-SBJV AUG.4zombie
'I wish for us to defeat the zombies.' (seems possible)

b. ngi-fisa *sengathi* si-hlul-e imikhovu
1SG-wish C 1PL.SBJV-defeat-SBJV AUG.4zombie
'I want us to defeat the zombies.' (situation seems truly hopeless)

(28) **Reliability of information**

a. ngi-zwa *ukuthi* u-zo-fika kusasa
1SG.S-hear C 1S-FUT-arrive tomorrow
'I heard that he will arrive tomorrow.'

b. ngi-zwa *sengathi* u-zo-fika kusasa
1SG.S-hear C 1S-FUT-arrive tomorrow
'I think that he might possibly arrive tomorrow.'

(29) **Plausibility**

a. uManqoba u-sola *ukuthi* uSipho u-bula-w-e w-umkhovu
AUG.1M 1S-suspect C AUG.1Sipho 1S-kill-PASS-PFV COP-AUG.3zombie
'Manqoba suspects that Sipho was killed by a zombie.' (speaker commits to believing in zombies, even if doubts the M's suspicion)

b. uManqoba u-sola *sengathi* uSipho u-bula-w-e w-umkhovu
AUG.1M 1S-suspect C AUG.1Sipho 1S-kill-PASS-PFV COP-AUG.3zombie
'Manqoba suspects that Sipho was killed by a zombie.' (speaker highly doubts claim and doesn't commit to believing in zombies)

(30) **Factivity**

a. uMandisa u-bona *ukuthi* ngi-ya-m-thanda
AUG.1M 1S-see C 1SG.S-YA-1O-like
'Mandisa sees that I like her.' (factive)

b. uMandisa u-bona *sengathi* ngi-ya-m-thanda
AUG.1M 1S-see C 1SG.S-YA-1O-like
'Mandisa thinks that I like her (but I don't).'

As the examples above show, *sengathi* has a surprisingly wide distribution—but with serious consequences for the interpretation of the upstairs verb (like *bona* above). In languages like Zulu,

[10]A note about these examples: the English paraphrases were offered by a Zulu consultant who was asked to give a grammaticality judgment on the Zulu sentences. Paraphrases were checked with 2-3 other speakers who confirmed the judgment and meaning. The parentheticals reflect information conveyed by speakers in conversations about the context in which these would be used.

then, we may not want to put too many restrictions on "selection" of specialized *say*-based complementizers. This seems like a good result for Kratzer: if these FCCs are in fact more like verbal adjuncts, then they should be able to attach to a wide variety of predicates. The modal contribution that the *nga* morphology makes is most transparent when the matrix verb does not typically receive a modal meaning.

To summarize, this basic comparison of two Zulu *say* complementizers teaches us to pay close attention to the morphological makeup of particular C heads; the verb-y and noun-y tendencies of these Zulu FCCs are written transparently in the morphology on C. We also learn from Zulu that the typology suggested by Moulton (2015) perhaps does not capture the full range of FCC possibilities. The *ukuthi* CPs in Zulu show many properties that Moulton (2015) suggest are typical of *in situ* saturators, but they appear to achieve these properties as a result of their nominal-like structure (though recall that they do not share all properties with nominals). The *sengathi* CPs also show a number of Moulton's suggested *in situ* properties, but they are perhaps better treated as low verbal adjuncts.

3 Lubukusu's verb-y C head

Another Bantu language, Lubukusu, is well-documented as having a variety of C heads and embedded clause types (Baker and Safir, 2012; Diercks, 2013). Baker and Safir (2012) look at differences in syntactic and semantic behavior of different clauses in Lubukusu, but group all FCCs together. Here I focus on the more fine-grained discussion found in Diercks (2013). Diercks gives the following list of C heads that embed declarative clauses (excluding relative or focus-related Cs):

C	use
mbo	generic embedding complementizer
Ø	generic embedding complementizer similar to *mbo*
nga	'because', 'as', 'that'
oli	comparative: 'like', 'as if' (also appears with perception verbs)
bali	'that'; reporting unreliable information
AGR-li	'that'; agrees with superordinate subject

Table 2: Lubukusu FCC heads

Diercks offers the following characterizations of the complementizers: *mbo* has the widest availability, though some speakers feel it's not originally Lubukusu; Ø is also widely available and generic[11]; *nga* is more restricted, typically appearing in reason clauses, but sometimes in more general FCCs; *oli* is described as a comparative and can show up with certain raising verbs; *bali* has an evidential-like reading, indicating that the source of the information in the embedded clause is unreliable; AGR-*li* agrees with the superordinate subject.

The *-li* that appears in these last three complementizers is the verb *say*, so as in Zulu, Lubukusu has a family of morphologically complex *say*-based complementizers. Diercks classifies *oli* and

[11] As far as I can tell, this is at odds with Baker and Safir (2012) on the null C head.

bali as "non-agreeing", as the following agreement paradigm shows, it is plausible that they in fact involve 2ND singular and 3RD plural agreement, respectively:

	SG	PL
1ST	n-di	khu-li
2ND	**o-li**	mu-li
3RD (class 1/2)	a-li	**ba-li**
Class N	N-li	N-li

Table 3: Lubukusu C agreement

The final *say* complementizer involves transparent phi-agreement with the most local superordinate subject (Diercks, 2013, (7)). In other words, agreement on this complementizer is controlled by the subject in the selecting clause, as (31a) below shows:

(31) a. baba-ndu ba-bol-el-a Alfredi **ba-**li a-kha-khile
AUG.2-people 2S-said-APPL-FV 1Alfred 2-C 1S-FUT-conquer
'The people told Alfred that he will win.'

b. Alfredi ka-bol-el-a baba-ndu **a-**li ba-kha-khil-e
1Alfred 1S-said-APPL-FV AUG.2-person 1-C 2S-FUT-conquer
'Alfred told the people that they will win.'

The puzzle that Diercks (2013) investigates is how to capture this funny agree relationship in the syntax, given that the apparent goal of the agreement (the superordinate subject) is above the probe (the embedded C head) and doesn't even need to be the structurally closest DP to C. Diercks' solution is to break the agree dependency into two parts, proposing an operator in the embedded clause that is a subject-oriented anaphor that is locally bound (in the immediate superordinate clause):

(32) $[_{TP}$ Subject$_1$ $\ldots [_{CP}$ OP$_1$ [$\ldots$ C $\ldots$]]]
Binding *Agree*

(33) **Indirect Agree**
i. an unvalued feature (or feature bundle) F is valued by X(P)
ii. X(P)'s features are valued or controlled by some YP.

If we take Kratzer's approach that some FCCs are verbal adjuncts, we might find another way to account for this agreement pattern. In Bantu languages, it is quite common for phi-features from a particular source to be expressed on multiple elements in a phrase; we find it both in clauses with multiple verbs and (often inside nominals) in cases of concord (see, e.g., Carstens, 2001, 2005, 2011; Halpert, 2015). In particular, following Kratzer, if the *say* complementizer is combining with the main verb via event identification, then it's more integrated into the matrix clause than Diercks assumes. The "matching" agreement with the selecting clause is the same sort of matching agreement we get in Bantu auxiliary constructions. Like *sengathi* in Zulu, it also appears that these

agreeing verb-y complementizers in Lubukusu do not permit raising (Diercks, 2013), which would be consistent with the idea that clauses introduced as verbal adjuncts might in fact be opaque for raising.

4 Conclusion

We have now seen a number of FCCs in Zulu, Ndebele, and Lubukusu that are built around *say* complementizers that exhibit a variety of syntactic properties. I have suggested in this paper that there is a direct connection between the morphosyntactic makeup of the complementizer itself and the particular syntactic and semantic properties of the embedded clause. This type of morphologically complex verb-based complementizer is pervasive in the Bantu language family (see, for example Letsholo and Safir, submitted, on agreeing and voice-matching C in Ikalanga), making these languages an ideal place to look to sharpen our understanding of complementizer syntax and semantics. The complexity of these complementizers gives us a way to test recent ideas that FCCs may combine with selecting predicates in fundamentally different ways and may contribute semantic import that was previously attributed to the selecting clause (e.g. Moulton, 2015; Kratzer, 2016). As I hope to have shown here, the view from Bantu indicates that this is a promising line of inquiry.

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Vietnamese Anaphora: Binding Principles and the Lack Thereof[1]

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Abstract. Vietnamese poses a challenge for both classic and competition-based accounts of the Binding Theory. While, at first glance, Vietnamese seems not to be subject to any of the classic Binding Principles, we discuss each of the conditions and argue that Vietnamese still fits within the realm of cross-linguistic patterns. We also present novel data that illustrate *context-dependent* competition based accounts fare better in capturing coreferent readings of personal pronouns.

1 Introduction

The Binding Theory is often seen as a universal set of principles that regulate possible patterns of coreference in natural language. However, cross-linguistic patterns cannot all be accounted for under the assumption of *universal* constraints. In this paper, we investigate the degree to which the Binding Theory guides the interpretation of referring expressions in Vietnamese, a language which allows for apparent violations of *all* three Binding Principles. The crux of the paper focuses on the possible interpretations of *mình* and *nó*, as illustrated below.

(1) *Luna*$_1$ *nói là* *Ginny*$_2$ *trách* *mình*$_{1/2}$
Luna say that Ginny criticize SELF
'Luna said Ginny criticizes her(self).'

(2) *Luna*$_1$ *nói là* *Ginny*$_2$ *trách* *nó*$_{1/2}$
Luna say that Ginny criticize 3SG
'Luna said Ginny criticizes her(self).'

In (1), the reflexive form *mình* can refer back to either the local subject *Ginny* or the long-distance subject *Luna*. Meanwhile, the non-reflexive pronoun, *nó*, in (2) exhibits the same pattern when it appears in the same syntactic environment. This perplexing observation presents an interesting puzzle for syntactic and semantic theories of Binding. Not only is the complementary distribution of reflexives and non-reflexives not met in Vietnamese, but, at first glance, both *mình* and *nó* seem to be impervious to Principles A and B, in their classic form.

In this paper, we discuss data that supports as well as contradicts classic or current accounts of the Binding Theory, and we sketch out an analysis of the distributional and interpretative properties of the referent forms in the language. The organization is as follows. In the next section, we briefly introduce the necessary background regarding the language and classic Binding Theory accounts (Chomsky, 1981, 1986). In the third section, we discuss data which illustrates the lack of the classic binding principles in Vietnamese, with a particular emphasis on Principles A and C. In section 4, we then focus on Principle B, discuss competition-based accounts of the Binding Theory (Reinhart,

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1983; Rooryck & Vanden Wyngaerd, 2011; Roelofsen, 2010) and how the Vietnamese data fares against them. We argue that, in Vietnamese, the bound and coreferent readings for the personal pronoun *nó*, although grammatically possible, are a matter of context-dependent preference. Under a view where competition between forms and interpretations is at play in deriving Condition B effects, another puzzle in Vietnamese is represented by the reflexive marker *tự*, which greatly increases the preference for bound and coreferent readings of *nó*. Section 5 discusses *tự* from the perspective of VP emphatic reflexive markers (Ahn, 2010). Finally, section 6 concludes the paper.

2 Setting the Stage

2.1 Language Background

Vietnamese is part of the Austroasiatic language family and is spoken by roughly 96 million native speakers in Vietnam. The data discussed in this paper is representative of the Southern dialect, as our informants live in the area of Saigon. The data reported in this paper was collected by means of direct elicitation from four primary consultants, both in person and online.

The table in (3) offers an overview of the Vietnamese pronominal system, zooming in on singular pronouns for the sake of simplicity. The morphological form of personal pronouns is sensitive to person, number, honorificity and gender (the latter for honorific pronouns). Meanwhile, the reflexive pronoun is morphologically underspecified: *mình* does not vary across the paradigm.

(3) *Singular Pronouns in Vietnamese*

	PERSONAL	REFLEXIVE
1SG	*tôi*	*mình*
2SG	*bạn*	*mình*
3SG.M.HON	*ổng*	*mình*
3SG.F.HON	*bả*	*mình*
3SG.HHON	***nó***	***mình***

In Vietnamese, gendered pronouns are not only honorifc, but their distribution is more restricted than that of *nó*, their subhonorific counterpart. Consequently, the data discussed in the present paper focuses on the contrast between the subhonorific personal pronoun *nó* and the reflexive *mình* (both bolded in (3)), neither of which is specified for gender.

2.2 Classic Binding Theory

Traditionally, the three Binding Conditions (Chomsky, 1981, 1986) are taken to be innate, independent and universal *principles*. Despite a large body of work over the years, including more recent findings regarding Khanty (Volkova & Reuland, 2014), Jambi (Cole et al., 2017), and Chamorro

(Wagers et al., 2017)), which provide evidence against their universality, the notion of *Binding Principles* is still canon. The most well-known versions of the BT conditions are given below.

(4) a. *Condition A*
An anaphor must be locally bound (in its binding domain).
Chomsky (1986); Büring (2005); Charnavel & Sportiche (2016), a.o.

b. *Condition B*
A pronoun must be free in its binding/coargument domain.
Chomsky (1986); Büring (2005), a.o.

c. *Condition C*
An R-expression must be free. Chomsky (1986)

Although what qualifies as a *binding domain* has been subject to significant changes in the literature on Binding Theory in its classic form, the formulation of the conditions proper has been more or less consistent. With the emergence of competition-based accounts of the constraints on pronominal binding and coreference (see Section 4 for an overview), the arguments in favor of the principles in (4) have varied in strength from condition to condition: Condition A still sees strong support (see Charnavel & Sportiche (2016), for instance), while Condition C has seen a considerable amount of counterevidence (starting with Lasnik (1989)). Nevertheless, the sentences in (5) illustrate how the classic Binding conditions hold in English.

(5) a. *Luna*$_1$ *said that Ginny*$_2$ *criticizes herself*$_{*1/2}$. CONDITION A COMPLIANT

b. *Luna*$_1$ *said that Ginny*$_2$ *criticizes her*$_{1/*2}$. CONDITION B COMPLIANT

c. **Luna*$_1$ *said that Ginny*$_2$ *criticizes Ginny*$_2$. CONDITION C COMPLIANT

In (5a), the reflexive *herself* can only refer to the local subject, and not to the long-distance subject, *Luna*. In other words, *herself* has to be bound by a c-commanding antecedent within the same sentence (*Ginny*), thus obeying Condition A. On the other hand, the personal pronoun *her* in (5b) cannot be bound by a clausemate c-commanding antecedent: non-local *Luna* is an available antecedent for *her*, but clause-mate *Ginny* is not. The utterance in (5b) illustrates that *her* obeys Condition B. Similarly, (5c) shows that, in English, referential expressions (like *Ginny*) cannot be 'bound': a non-pronominal DP cannot be repeated in order to target the same referent. Although English provides evidence for the classic versions of the Binding Conditions, not all languages do. Compare the sentences in (5) to their Vietnamese counterparts below.

(6) a. *Luna*$_1$ *nói là* *Ginny*$_2$ *trách* ***mình***$_{1/2}$
Luna say that Ginny criticize SELF
'Luna said that Ginny criticizes her / herself.'

b. *Luna*$_1$ *nói là* *Ginny*$_2$ *trách* ***nó***$_{1/2}$
Luna say that Ginny criticize 3SG
'Luna said that Ginny criticizes her / herself.'

c. *Luna*$_1$ *nói là* *Ginny*$_2$ *trách* *Ginny*$_2$
Luna say that Ginny criticize Ginny
'Luna said that Ginny criticizes Ginny.'

Even though *mình* is the invariant reflexive pronoun in Vietnamese, (6a) illustrates that *mình*, unlike English *herself*, can corefer with either *Luna* or *Ginny*. In a similar fashion, the personal pronoun *nó* in (6b) can refer to either of the two antecedents, thus violating Condition B in its form in (4b). Finally, the sentence in (6c) shows that repeated names do not lead to ungrammaticality in Vietnamese. The contrast between (5) and (6) naturally leads to the following question: are conditions A, B and C grammaticized in English, but not in Vietnamese?

3 The Lack Thereof

3.1 Principles A and B need not apply

In order to determine whether Conditions A an B are grammaticized in English and Vietnamese, we presented our English and Vietnamese consultants with sentences such as (7a) and (7b), and then asked a question of the type in (8) below, to check the strength of each condition.

(7) a. *Luna says that Ginny often criticizes herself / her.* ENGLISH
b. *Luna nói là Ginny hay trách mình / nó.* VIETNAMESE
Luna says that Ginny often criticizes SELF / 3SG
'Luna says that Ginny often criticizes her.'

(8) *Who does Ginny often criticize?*
a. Luna (LONG DISTANCE) b. Ginny (LOCAL)

While our English consultants make a very strong distinction between *herself* and *her*, the difference between *mình* and *nó* is not as clear cut. To a question like the one in (8), all of our 4 English informants chose the long distance referent, *Luna*, for *her*, and the local referent, *Ginny*, for *herself*. On the other hand, our 4 Vietnamese consultants said that choosing the long-distance referent feels more natural in sentences like (7b), irrespective of whether the pronominal is *mình* or *nó*, and that they prefer *Luna* as an antecedent; however, both interpretations are possible.[2] We take these empirical facts as evidence that the classic versions of Conditions A and B are grammaticized in English, and that they are more of a *preferential* soft constraint in Vietnamese.

[2]This difference between English and Vietnamese was corroborated by the data from an online forced-choice task pilot experiment ran on the two languages, via IbexFarm (Drummond, 2013). There is a slightly stronger preference for the long-distant referent when *nó* is used, but an overall dispreference for the local antecedent.

3.2 A note on C

Another question of interest is whether Condition C is grammaticized in one language, but not in the other. Based on acceptability ratings of sentences such as the ones in (9) coming from 4 speakers of each language, while the English (9a) is rated at around 2.5/7[3], our Vietnamese consultants rate (9b) at around 5.5/7[4]. The three point difference on the Likert scale is informative with respect to how *hard* of a constraint Condition C is in each language.[5] Data like the one in (9) motivates our claim that Condition C might be grammaticized in English, but that it is most definitenly not a hard constraint in Vietnamese.

(9) a. *Hermione knew that Hermione was smart.* ENGLISH: 2.5

b. *Hermione biết là Hermione thông minh.* VIETNAMESE: 5.5
Hermione knew that Hermione smart
'Hermione knew that she was smart.'

At first glance, it seems that Vietnamese does not obey *any* of the classic BT Conditions. However, the observation that the *Binding Principles* face considerable challenges in the face of cross-linguistic data should not be that surprising. Certainty regarding the *classic* version of the BT conditions has wavered singificantly over the years. For instance, not only does Lasnik (1989) briefly discuss that languages like Thai and Vietnamese might not be subject to Condition C, but he also notes, as many do later on as well (Schlenker (2005); Patel-Grosz (2015), a.o.), that English also exhibits Condition C violations. One such case is represented by anaphoric epithets.

(10) a. *Peter convinced John$_1$ that* ***the idiot***$_1$ *is smart.*

b. *Peter convinced the director$_1$ that* ***the director***$_1$ *is smart.*

As illustrated above, epithets like *the idiot*, and even more traditional R-expressions like *the director*, can and do refer to previously introduced antecedents. This data is in direct conflict with Condition C, according to which R-expressions like *the director* should necessarily introduce a new discourse referent within the same sentence. For this and other reasons, more recent versions of the classic Binding Theory accounts, such as Büring (2005), do not explicitly include a Condition C among the Binding Conditions. Despite the difference in acceptability ratings in (9), Vietnamese is not an outlier with respect to Condition C *per-se*: Condition C seems to generally be inconsistently applied. Another possible take on the difference in ratings for the English and Vietnamese alternatives of (9) stems from Gordon et al. (1993), who look at *repeated name penalties*. In this sense, Vietnamese might exhibit a lower repeated name penalty than English.

[3]Two ratings of 2/7 and two ratings of 3/7.

[4]Two ratings of 5/7 and two ratings of 6/7.

[5]Once again, this 3-point difference is corroborated by data coming from an online acceptability rating pilot experiment ran on English and Vietnamese, via IbexFarm (Drummond, 2013).

3.3 Condition A in Vietnamese

Of the three classic BT conditions, the one that truly stands the test of time is *Condition A*. The notion of *exempt anaphora* or *long-distance anaphora* has been a primitive for those working on reflexives ever since Huang & Tang (1991). Crucially, in (11) below, the *self*-pronoun *ziji* has a non-local interpretation in (11): it may refer to the long-distance subject, *Zhangsan*.

(11) *Zhangsan*$_1$ *renwei Lisi hai-le ziji*$_1$. MANDARIN
Zhangsan think Lisi hurt-ASP SELF
'Zhangsan thought that Lisi hurt him' (Huang & Tang, 1991)

An important observation is that exempt anaphora seem to be logophoric (Huang & Liu, 2001; Charnavel & Sportiche, 2016), i.e. perspective-dependent. The take on these exempt anaphora is that they are, in fact, subject to Condition A (Charnavel & Sportiche, 2016). While reflexive pronouns like *himself* are subject to classic Condition A, with the clause being the binding domain, logophors are argued to also be subject to Condition A, with a *larger* discourse-dependent binding domain. In essence, they are bound via a logophoric operator within the sentence; the main difference is that this logophoric operator need not be coindexed with the local subject, but with any perspective holder in the local context (including the speaker).

We assume that Vietnamese *mình* is an exempt anaphor, similarly to Mandarin *ziji* or Icelandic *sig*. For data and argumentation in support of this assumption, see Bui (in preparation). Some of the facts discussed in Bui (in preparation) include the observation that *mình* has an animacy constraint (it can only refer to animate antecedents), that *mình* can refer to the speaker (under certain conditions regarding honorificity) and that it is subject-oriented. The subject-orientation of *mình* is apparent when comparing the *mình* and *nó* alternatives in (12) below.

(12) a. *Ginny*$_1$ *nói với Luna*$_2$ *về mình*$_{1/*2/speaker}$.
Ginny talk with Luna about SELF
'Ginny talked with Luna about herself / me.'

b. *Ginny*$_1$ *nói với Luna*$_2$ *về nó*$_{1/2/*speaker}$.
Ginny talk with Luna about 3SG
'Ginny talked with Luna about her / herself.'

As shown in (12a), *mình* can refer either to the speaker or the subject, *Ginny*, but not the prepositional object antedecent, *Luna*. On the other hand, *nó*, illustrated in (12b), cannot refer to the speaker, but may take either the local subject or the PP object as antecedents. The subject-orientation of *mình* is also evinced in sentences where other topics are introduced in non-subject position. The details of cases like this are further discussed in Bui (in preparation). Consequently, we argue that *mình* tracks the perspective center introduced by subjects, and that it is a long-distance anaphor that obeys a Charnavel & Sportiche (2016) version of Condition A.

So far we have suggested that Vietnamese is not an outlier with respect to the BT conditions, since it does obey Condition A (if *mình* is logophoric) and Condition C violations are common cross-linguistically. However, the personal pronoun *nó* is not subject to classic Condition B or Condition

A: it can be bound by local subjects, and refer to non-local antecedents as well as to previously introduced discourse referents. At this point, we turn to competition-based accounts of Condition B and see how they fare with respect to the Vietnamese data.

4 Condition B in Vietnamese: the view from competition

Although the traditional view assumes that Conditions A and B are universal, independent principles, there is a large body of work in the Binding literature which generates Condition B effects based on competition between the available pronominal forms within a language. In this section, we sketch out the competition-based reasoning and compare it to the Vietnamese data.

4.1 Competition-based BT

The general reasoning behind competition-based accounts of the Binding Theory is based on two main assumptions: i) Condition A holds of reflexive pronouns, and ii) reflexive and non-reflexive pronouns compete. In this sense, Condition B effects are obtained for non-reflexive pronouns by virtue of their competition with necessarily bound reflexive pronouns. This view stems from the intuition put forth in Reinhart (1983) (and later on Reinhart (2006)) that the post-syntactic competition between possible LFs for the same sentence is responsible for generating Condition B effects for non-reflexive pronouns. Reinhart (1983) inspired competition-based accounts at a semantic level (Schlenker, 2005), at a syntactic level (Safir, 2004; Rooryck & Vanden Wyngaerd, 2011; Safir, 2014; a.o.) as well as at a pragmatic level (Roelofsen, 2010), with the latter being more along the lines of Reinhart (1983)'s original proposal. In order to provide a brief overview of how competition-based models work, we lay out the main assumptions of syntactic-based Rooryck & Vanden Wyngaerd (2011) and pragmatic-based Roelofsen (2010) below.

4.1.1 Competing Pronominal Forms

Based on Kratzer (2009), Rooryck & Vanden Wyngaerd (2011) assume that there is a morpho-syntactic split between referential and reflexive pronouns. While referential pronouns are assumed to enter the derivation with valued ϕ-features, reflexive pronouns are argued to be *minimal pronouns* which get their ϕ-features valued via an AGREE relation with their antecedent. In this sense, Binding is an effect of Agreement and Condition B is an artifact of feature-valuation on reflexives: inherently featured pronouns are never bound, since they do not require an AGREE relation.

Rooryck & Vanden Wyngaerd (2011), as well as all other competition-based syntactic accounts, make a key cross-linguistic prediction, spelled out in (13) below. The assumptions that all dedicated reflexive pronouns are *minimal pronouns* and that only these minimal pronouns can (and have to) be bound lead to the following inference: if a language *has* reflexive pronouns, then non-reflexive pronouns cannot be bound, or, non-reflexive pronouns are *free*.

(13) *A Key Prediction*
The presence of Condition B effects depends on whether a language has a **dedicated reflexive** form. The absence of Condition B effects correlates with the absence of specialized reflexive anaphors.

In fact, this prediction has been argued to be met for various languages, including, more recently, Jambi (Cole et al., 2017) and Chamorro (Wagers et al., 2017): the lack of a specialized reflexive form leads to an absence of Condition B effects.

4.1.2 Competing Interpretations

A core contribution of Reinhart (1983) and Grodzinsky & Reinhart (1993) concerns the distinction between binding and corefrence. The claim is that while Condition B targets proper variable-binding, there is a separate rule regarding intrasentential coreference, which targets discourse phenomena, as opposed to syntactic binding. Their version of this rule is given in (14) below.

(14) *Rule I: Intrasentential Coreference*
NP A cannot corefer with NP B if replacing A with C, C a variable A-bound by B, yields an *indistinguishable interpretation*.
(Reinhart, 1983; Grodzinsky & Reinhart, 1993)

In essence, what drives the ungrammaticality of *Ginny*$_1$ *criticized her*$_1$ in (5b) is competition with *Ginny*$_1$ *criticized herself*$_1$ in (5a). Furthermore, Rule I favors the use of a bound variable over a pronoun which could express the same meaning. The assumption is that when a speaker aims to produce a sentence that conveys *Ginny talked about Ginny*, they take into account various alternatives of the same sentence: in this case, the personal pronoun alternative in (5b) and the reflexive alternative in (5a). Rule I states that *her* cannot corefer with *Ginny* in (5b) if its *herself* alternative in (5a), which is a bound reflexive, would yield the desired interpretation. Consequently, disjoint reference is the only possible interpretation for *her* in this sentence.

This post-syntactic computation of alternatives is expanded on by Roelofsen (2010), who provides a pragmatic take on disjoint reference. In this account, Rule I is rehashed as the *Coreference Rule* in (15). An important difference between *Rule I* and Roelofsen (2010)'s version is that the latter directly targets alternatives which would have the same interpretation *in a given context*.

(15) *Coreference Rule*
A speaker will never use a logical form LF in a context C if the LF is semantically indistinguishable from one of its *binding alternatives*.[6]
(Roelofsen, 2010, p.119)

[6] Roelofsen (2010) also provides a formal description of *binding alternatives*, which we do not include for the sake of brevity. Its effect is to explicitly determine that, in each context, a sentence in which a pronoun and an antecedent corefer will have alternatives which employ variable binding of a (possibly reflexive) pronoun instead.

The context-dependent application of the rule in (15) can account for known exceptions to Condition B, such as (16), where both the *himself* and *him* alternatives are allowed in different scenarios.

(16) a. *(Only) Lockhart$_1$ voted for himself$_1$.* b. *(Only) Lockhart$_1$ voted for him$_1$.*

In a scenario like the one in (17), where the question under discussion has to do with professors who voted for themselves, the two alternatives yield indistinguishable interpretations. Assuming that both *him* and *himself* could express that *Lockhart voted for Lockhart*, either via coreference for the former, or variable binding for the latter, the *Coreference Rule* would favor (17a) over (17b). Consequently, (17b) can only be used to express disjoint reference in this context.

(17) CONTEXT: The Hogwarts professors were electing a new headmaster and were discussing which of the professors voted for themselves.

a. *(Only) Lockhart$_1$ voted for himself$_1$.* b. # *(Only) Lockhart$_1$ voted for him$_1$.*

On the other hand, in a scenario like the one in (18), where the question under discussion has to do with professors who voted for *Lockhart*, the two alternatives yield distinguishable interpretations. While *him* can be used in (18) to express a reading where *Lockhart voted for Lockhart*, via coreference, the bound-variable alternative with *himself* only has an interpretation where there was a self-vote. Since (18a) is not felicitous in this scenario, (18b) survives.

(18) CONTEXT: The Hogwarts professors were electing a new headmaster and were discussing which of the professors voted for Lockhart.

a. # *(Only) Lockhart$_1$ voted for himself$_1$.* b. *(Only) Lockhart$_1$ voted for him$_1$.*

This contextual enrichment of the rule on *coreference* may aid in elucidating the Vietnamese data. The following subsection discusses Vietnamese from the perspective of syntactic and pragmatic competition-based accounts of Condition B in the vein of those laid out above.

4.2 Competition in Vietnamese

Going back to Rooryck & Vanden Wyngaerd (2011)'s account, the key prediction in (13) was that languages with a specialized reflexive anaphor exhibit Condition B effects. When it comes to Vietnamese, the question is whether logophors like *mình* should fall under the umbrella term of *dedicated reflexives*. If *mình* is a minimal pronoun which gets its features via AGREE (with the logophoric operator), then Condition B effects are predicted in Vietnamese. On the other hand, if long-distance anaphora are not *specialized reflexives*, in the Rooryck & Vanden Wyngaerd (2011) sense, then this predicts an absence of Condition B effects. However, assuming that long-distance anaphora *are not* dedicated reflexive forms would lead to the expectation that not only is Vietnamese supposed to lack Condition B effects, but so would any language that only expresses reflexivity by means of logophoric pronouns. As far as we know, this is not the case.

Assuming that *mình* is a a Condition A compliant logophor, along the lines of Charnavel & Sportiche (2016) for Icelandic *sig*, as well as a *dedicated reflexive*, then, according to Rooryck & Vanden Wyngaerd (2011), Condition B effects are predicted in Vietnamese. If Condition B does apply in Vietnamese, then the availability of a reading where *nó* refers to its clausemate subject in (19) is surprising. The fact that *mình* is a bound variable does not rule out coreferent readings of *nó*: in (19), the personal pronoun can be interpreted as referring either to *Snape* or to *Lockhart.*

(19) *Snape*$_1$ *nói là* *Lockhart*$_2$ *bầu cho* ***nó***$_{1/2}$
Snape say that Lockhart vote for 3SG
'Snape said that Lockhart voted for him / himself.'

However, it is surprising for (19) to have a reading where *Lockhart votes for Lockhart* only if Condition B is assumed to rule out both binding *and* coreference. As mentioned above, accounts like Reinhart (1983) and Roelofsen (2010) make a clear distinction between variable-bound pronouns and coreferent pronouns. Crucially, under this view, it is *Rule I* or the *Coreference Rule* that would be at play in (19), and not Condition B. With respect to the *Coreference Rule* in (15), the expectation is that the acceptability of either of the two readings in (19) above is context-dependent. And so it is, as shown below.

(20) CONTEXT: The Hogwarts professors were electing a new headmaster and were discussing which of the professors voted for themselves.

a. *Chỉ có* *Lockhart*$_1$ *bầu cho mình*$_1$.
only exist Lockhart vote for SELF
'Only Lockhart$_1$ voted for himself$_1$.'

b. #*Chỉ có* *Lockhart*$_1$ *bầu cho nó*$_1$
only exist Lockhart vote for 3SG
'Only Lockhart$_1$ voted for him$_1$.'

The Vietnamese equivalent of (17), in (20) above, observes the same felicity pattern: the *mình* sentence is available in a context where the question under discussion has to do with *self-votes*, while the *nó* sentence is not. Similarly, the reverse is true in the scenario repeated from (18): like in English, the alternative with the reflexive is not compatible with a scenario where *Lockhart-votes* matter, but the personal pronoun alternative is felicitous in this context.

(21) CONTEXT: The Hogwarts professors were electing a new headmaster and were discussing which of the professors voted for Lockhart.

a. #*Chỉ có* *Lockhart*$_1$ *bầu cho mình*$_1$.
only exist Lockhart vote for SELF
'Only Lockhart voted for himself.'

b. *Chỉ có* *Lockhart*$_1$ *bầu cho nó*$_1$
only exist Lockhart vote for 3SG
'Only Lockhart$_1$ voted for him$_1$.'

We take the data above as evidence for the fact that a *context-dependent* coreference rule, like that of Roelofsen (2010), does apply in Vietnamese. Furthermore, if Roelofsen (2010) is correct, and the unavailability of the third person pronoun in the context in (20) is determined by the competition with binding alternatives, then this also implies that *nó* is *not* a bound variable in these sentences: were *nó* actually bound, then (20b) would not be ruled out. However, the fact that the coreferent

interpretation is possible for sentences like (19), which is not the case for the English alternative, suggests that *Rule I*, in its original form in Reinhart (1983) and Grodzinsky & Reinhart (1993) does *not* apply in Vietnamese. Coreference is only contextually constrained.

Above, we have examined evidence in favor of the existence of a Roelofsen (2010)-type context-dependent *Coreference Rule* in Vietnamese, but against a more general Reinhart (1983) *Rule I*-like restriction on coreference in general. The question at this point is whether *nó* can get bound-variable interpretations. For this reason, we discuss (22) below.

(22) *Mọi đứa con gái*$_1$ *nói về nó*$_{?1/2}$.
every HHON ANIM girl talk about 3SG
'Every girl talks about her.'

According to our four Vietnamese informants, although a bound variable reading of (22) is *possible*, there is a strong preference for the pronoun *nó* to have a disjoint reference reading. Despite the dispreference for bound-variable interpretations, it seems that bound *nó* is not *ungrammatical*, and that the plausibility of a bound-variable reading of *nó* increases in a restricted context: it is much more likely for *nó* to be interpreted as a bound pronoun in a context where the sentence only applies to the girls in some contextually salient room. Although this context-dependent plausibility for a bound LF is more than intriguing, we leave the discussion of this topic for future work.

Currently, Bui (in preparation) is gathering experimental evidence which, among other things, compares preference for bound-variable readings of *nó* in sentences with quantificational DP antecedents and preference for coreferent readings in sentences with referential subjects. Her experimental data will help separate and compare Rule I and Condition B effects, as well as adjudicate whether we are right in assuming that a generalized Rule I is *not* at play in Vietnamese. With respect to a Condition B that only targets *binding*, the data in the aforementioned experiment in Bui (in preparation) can offer a lay of the land with respect to the dispreference for bound-variable readings of *nó* in 'out of the blue' contexts. While we do argue that *preference* is a big factor in the availability of these readings, we realize that there is the fine line between *strong preference* and grammaticized constraints. Nevertheless, we believe that the effect that context restriction has on both coreference and binding (as illustrated in this section), strongly suggests that it is *not* the case that Condition B (or Rule I) is a hard constraint in Vietnamese.

In the final section we focus on the particle *tự* as another piece of the puzzle when it comes to the availability of bound readings for the third person pronoun *nó* in Vietnamese. According to our four consultants, the preference for the bound-variable reading increases of a sentence like (22) increases if *tự* is present, as in the example below.

(23) *Mọi đứa con gái*$_1$ ***tự*** *nói về nó*$_{1/2}$.
every HHON ANIM girl REFL talk about 3SG
'Every girl talks about herself.'

Since Vietnamese can make use of the minimally different alternative in (23) to express that *every girl talked about herself*, the competition between the two sentences might explain why (22) resists bound-variable readings. In what follows we compare *tự* to emphatic VP reflexive markers.

5 An emphatic wrinkle

Besides full-fledged pronouns like *mình* and *nó*, emphatic markers, such as *chính* and *tự*, can also give rise to reflexive interpretations. These markers modify either DPs or VPs, and can be generally captured as DP emphatic reflexives and VP emphatic reflexives, along the lines of Ahn (2010).[7] With respect to VP emphatic reflexives, forms like *herself* can be used as adjuncts to contribute a "without help" interpretation (Ahn, 2010), as illustrated below.

(24) *Luna did it* ***herself***.
= Luna did it without any help.

However, in Vietnamese, the preverbal marker *tự* also greatly increases the likelihood of reflexive readings for sentences with either *mình* and *nó*. This leads to two possible interpretations for a sentence like (25): *Luna* loves herself or *Luna* loves someone else, of her own accord.

(25) *Luna*$_1$ ***tự*** *yêu* *nó*$_{1/2}$.
Luna REFL love 3SG
'Luna loves herself. / Luna loves someone else on her own.'

As illustrated in (26), *tự*-sentences with quantified DP antecedents are also compatible with two different readings. These interpretations are sketched out below.

(26) *Mọi đứa con gái*$_1$ ***tự*** *nói về* *nó*$_{1/2}$.
every HHON ANIM girl REFL talk about 3SG
'Every girl talks about herself.'

a. CONTEXT: *# Dumbledore encouraged the girls to be outspoken and talk about themselves. They didn't want to.*

b. CONTEXT: ✓ *All of the girls wanted to talk about themselves and they did. Nobody made them do it.*

c. CONTEXT: ✓ *All of the girls wanted to talk about Snape and they did. Nobody made them do it.*

Comparing (26a) to (26b), it seems that *tự* requires that there be an identity relationship between the Agent and the person who *wanted* for the event to happen. Although the presence of *tự* signals preference for the bound variable reading in (26b), it is nonetheless the case that an additional reading is available, where *nó* has a disjoint reference interpretation, as in (26c), where the girls deliberately talked about *Snape*. The data in (26) illustrates that the 'without help' interpretation is necessarily encoded in Vietnamese *tự*. However, its role as a facilitator of bound variable interpretations remains puzzling. The fact that *tự* merely improves the likelihood of a reflexive reading, and does not strictly enforce it, is more difficult to account for. The fact that VP emphatic reflexive markers encode an *on their own* description of the event has been discussed in Ahn (2010).

[7] For the sake of brevity, we focus on *tự* below, but the Vietnamese data suggest that *chính* fits the DP emphatic reflexive pattern discussed in Ahn (2010).

Like other VP emphatic reflexive markers, *tự* is sensitive to the syntax-semantics of the predicate. In particular, *tự* seems to require that there be a *vP* which introduces the agentive external argument (Kratzer, 1994). Since the distribution of *tự* is restricted to sentences with *vP*, it is ungrammatical when preceding copular or passive constructions, as shown below in (27) and (28), respectively.

(27) **Hermione* ***tự*** *hạnh phúc*.
Hermione REFL happy
'Hermione is happy on her own.'

(28) **Luna* ***tự*** *bị đánh*.
Luna REFL PASS hit
'Luna was hit on her own.'

Ahn (2010) argues that the distribution of VP emphatic reflexives cannot be generalized merely through the requirement that there be an Agent thematic role. Ahn (2010) proposes that it is *volition*, rather than agentivity, that VP emphatic reflexives are sensitive to: VP emphatic reflexives are not felicitous alongside non-volitional external arguments, as shown below.

(29) a. Non-volitional: *#Guess which medicine cured me itself.*
b. Volitional: *Guess which nurse cured me herself.*

Consequently, in Ahn (2010)'s analysis, the verb to which the VP emphatic marker attaches must license volitional agents, and not just agentive subjects. Arguably, this view also extends to *tự*. The Vietnamese VP emphatic reflexive marker can go with volitional agents, but not with non-volitional causative ones, such as (30): the scaring event could not have been intentional. However, this is not always the case. The marker *tự* may also occur in sentences where the subject is an inanimate non-volitional agent. The syntactic difference between (30) and (31) is unclear.

(30) **Tiếng sấm* ***tự*** *làm tôi sợ*.
sound thunder REFL make me scared
'The thunder scares me itself.'

(31) *Trái banh* ***tự*** *lăn*.
CL ball REFL roll
'The ball rolls on its own.'

Moreover, Ahn (2010) notes that it is ungrammatical for VP emphatic reflexive markers to co-occur with unaccusative verbs, since they lack a volitional agent. However, *tự* can surface in the presence of unaccusative verbs, such as *arrive*, as shown in (32) below.

(32) *Hermione* ***tự*** *đến*.
Hermion REFL arrive
'Hermione arrived on her own.'

The data above reflect only some of a range of exceptions to Ahn (2010)'s proposal. Ahn (2010) argues that the properties of DP and VP emphatic reflexive markers are in complementary distribution. For instance, a contrastive reading is associated with the DP emphatic reflexives, but not the VP ones. However, *tự* in Vietnamese can also get a contrastive reading in certain contexts:

(33) *Luna* ***tự*** *tổ chức bữa tiệc*.
Luna REFL organize CL party
'Luna herself (and not anyone else) organizes the party.'

It seems that the distribution of *tự* both fits and contradicts the pattern for VP emphatic reflexives in Ahn (2010). It is unclear not only what the status of *tự* is in Vietnamese, but also how to capture this increased preference for reflexive readings of pronominal VP complements. Further research is needed to pinpoint an analysis for *tự*; understanding the semantic contribution of *tự* would aid in capturing the Vietnamese binding phneomena and their context-dependent interpretations.

6 Conclusion

A close examination of an understudied language like Vietnamese challenges well-established cross-linguistic generalizations. We provide data which illustrates that, on the surface, Vietnamese displays violations to all three Binding Principles in their classic form. However, we argue that Vietnamese is not an outlier with respect to the Binding Theory. We show that the apparent absence of Principle A effects is in fact due to *mình* being a *Condition A compliant* logophor, along the lines of Charnavel & Sportiche (2016). We further argue that Principle B is not a strict grammaticalized constraint, but rather a soft context-dependent restriction in Vietnamese. We discuss evidence against the classic formulation of *Rule I* (Reinhart, 1983), but in favor of an extension of this account, namely the *Coreference Rule* (Roelofsen, 2010). We argue that context-dependent competition between the logophor *mình* and the personal pronoun *nó* is at play in deriving their distribution and interpretation, and, finally, introduce the puzzle of the VP emphatic reflexive marker *tự* and its effect of increasing the likelihood of a reflexive interpretation. This paper lays the foundation for the further exploration of Binding phenomena in Vietnamese. Work on this topic enhances our cross-linguistic understanding of the nature and source of constraints which underlie referential relationships in natural language.

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Polar question particle *-aa* in Malabar Malayalam[1]

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Abstract. This paper provides an account for the properties of the polar question particle *-aa* in Malabar Malayalm, which is, in some crucial aspects, similar to its Hindi counterpart *kyaa*. Using instances of its occurrence in polar and alternative questions, and non-occurrence in *wh*-questions and declarative disjuncts, we discuss the unique manner in which *-aa* attaches only to clausal disjuncts and try to provide a semantic account for this pattern. Data from other major Dravidian languages have also been used for this purpose. We argue that *-aa* qualifies as a polar question particle since it resides in ForceP and has a presuppositional requirement of a singleton-set question as its complement. An additional supporting argument for this claim is that it exhibits all the diagnostic patterns of a root phenomenon. The second claim of the paper, that *-oo* in Malayalam is a polar question operator, is supported by the fact that it occurs only in polar and alternative questions. Like in more standard Hamblin semantics, we take the line that there is a distinction between the question operator that forms polar questions and the question operator that forms *wh*-questions, because the first takes a single proposition for its complement, whereas the second takes a set of propositions.

1 Introduction

The goal of this paper is to investigate the distribution and properties of the question particle *-aa* in a particular dialect of Malayalam, Malabar Malayalam, spoken in the northern regions of Kerala adjacent to Kannada speaking Karnataka, and come up with a syntactic and semantic account that explains its profile. The presence of the question particle *-aa* in Malabar Malayalam, that is otherwise absent in Standard Malayalam which uses *-oo* for this function, provides an interesting window into the polar/alternative vs. *wh*-question dichotomy, and matrix vs. embedded question particle dichotomy based on morpho-syntactic evidence rather than intonation. We also examine differences between polar question particles like *-aa* and question-operator particles like *-oo*, both of which are present in Malabar Malayalam, like in the adjacent Kannada, Tamil, and Telugu.

We find that the question particle *-aa* of Malabar Malayalam is the Polar Question Particle (PQP) à la Bhatt & Dayal (2018) that occurs in the ForceP projection above the CP, and thus is mostly restricted to matrix contexts. It also has a singleton-set restriction on its complement, a presupposition, relegating its occurrence to polar questions only. Alternative questions with *-aa* are essentially disjunctions of polar questions that are clausal disjuncts, and the disjuncts are larger than CP. These do not involve any movement driven by scope. Smaller disjuncts on the surface are never derived by reduction in Malabar Malayalam, but by clefting. All instances of sub-clausal *-aa* are attachments to cleft pivots, diagnosed both by their syntax and semantics. When *-aa* attaches to both disjuncts, seemingly sub-clausally, it has a narrow focus function, which we derive by a cleft pivot focus mechanism, that is a property of clefts, a rampant strategy in general in Malayalam. Finally, *-aa* cannot occur in Split Questions, as it cannot have a sub-clausal derivation.

[1]We would like to thank the audience of TripleA 5, Konstanz, 2018 for comments and discussion.

In section 2 we discuss the distribution and behavior of *-aa* in various constructions, especially the clausal attachment pattern , the syntactic levels at which it occurs and contrast with the standard variant *-oo*. In section 3, we attempt to come up with a syntactic and semantic explanation of the data we have provided in the previous sections using cross-linguistic data and comparison with old Malayalam. In the final section we summarize our findings and provide a broad explanation of the signature properties of the PQP *-aa*.

2 The distribution of *-aa* in Malabar Malayalam

The particle *-aa* in Malabar Malayalam occurs only in polar/alternative questions, not *wh*-questions, and typically in matrix contexts. It should not be confused with the phonologically shortened form of the copula *aanə*, equative-BE, that occurs in clefts or exclamatives, (1).

(1) a. endə goal-aa(nə)?
what goal-EQ
'What a goal!'

b. ravi pustakam-aa(nə) vaayicc-adə
ravi book-EQ read-CLM
'It is a book that Ravi read.'

2.1 *-aa* in matrix contexts

The *-aa* particle occurs in matrix polar and alternative questions in Malabar Malayalam. Polar questions in Malayalam are marked syntactically, with *-aa* in Malabar Malayalam, and *-oo* in Standard Malayalam. In Dravidian languages in general, an overt syntactic cue is needed, unlike in languages like Hindi (and other Indo-Aryan languages like Bangla, Gujarati, Punjabi, etc) where polar questions are indicated prosodically, and only optionally a Q-particle, polar *kyaa*, occurs (Bhatt & Dayal 2018). Rising Declaratives are also absent in Dravidian.

The location of *-aa* in polar questions in Malabar Malayalam is always clause final, except in clefts. Even in clefts we show that it is clause final, here the clause being the copular pivot clause, with or without an overt copula. In alternative questions, it appears clause finally on both clausal disjuncts. Gapping or reduction never happens. Therefore there are no instances of real sub-clausal *-aa*. Information structural effects involving focus are achieved through clefts, and here the *-aa* appears on both pivot clauses of the cleft structure.

2.1.1 *-aa* in Polar Questions

Polar questions in Malabar Malayalam, like in the surrounding Dravidian languages, Kannada, Telugu & Tamil, but not standard Malayalam, surface with the question particle *-aa*, (2), in matrix clauses. Without the particle *-aa*, the polar question is ungrammatical (without any bias), (3).

(2) ravi pustakam vayicc-aa?
Ravi book read-PQP
'Did Ravi read the book?'

(3) *ravi pustakam vayiccu?
Ravi book read
'Intended: Did Ravi read the book?'

Wh-questions do not surface with any question particle (4)-(5):

(4) ravi endə vayiccu?
Ravi what read
'What did Ravi read?'

(5) ravi endaa(nə) vayiccadə ?
Ravi what read
'What is it that Ravi read?'

A sub-clausal positioning of *-aa* is not possible, (6). There can be boolean disjunction within the polar question, (7), and naturally, it takes scope under the question operator. There is no ambiguity in the sentence, and an alternative reading is simply not available.

(6) *ravi pustakam-aa vayiccu?
Ravi book-PQP read
'Did Ravi read the book?'

(7) ravi pustakam-oo patram-oo vayicc-aa?
Ravi book-DISJ paper-DISJ read-PQP
'Did Ravi read the book or the paper?' [Y/N]

The boolean disjunction can also be that of non-finite clauses, (8). How high up can the boolean disjunction go in finite clauses? It cannot go up to the level of two full clauses, TPs (9).

(8) R vayikuga-oo ezhutuga-oo ceyd-aa?
R read-inf-disj write-inf-disj do-PQP
'Did Ravi read or write?' [Y/N]

(9) *nii poy-oo avan vann-oo-y-aa
you went-DISJ he came-DISJ-PQP
'Intended: Did you go or he come?'

It cannot go up to the evidential marker (which is possibly a little lower in the TP domain), (10), though the *-aa* by itself occurs outside the evidential marker, on the verb, (11).

(10) *nii poy-oo avan vann-oo-nn-aa
you went-DISJ he came-DISJ-EVID-PQP
'Int: Apparently, did you go or he come?'

(11) pustakam vaayicc-enn-aa?
book read-EVID-PQP
'Did *pro* apparently read the book?'

It cannot go upto the MoodP either, (12), which is in line with the claim by Jayaseelan (2014) that Coord(ination)P and MoodP compete for the same slot in the C-domain of Dravidian.

(12) *nii poy-um-oo (all-engil) avan vann-um-oo -aairukyum-aa
you go-FUT-DISJ not-if he come-FUT-DISJ -might-PQP
'Intended: Might, you go or else he come?'

Malayalam derives all these disjunctions using the clefting strategy (not illustrated here).

2.1.2 *-aa* in Alternative Questions

In alternative questions *-aa* occurs on both juncts, (13)-(14). The contrastive connective, *all-engil* 'not-if' occurs optionally in disjunctions, in XOR-YOR(-ZOR...) tuple structures, similar to other contrastive connectives cross-linguistically (Szabolcsi 2018).

(13) nii pooy-aa avan vann-aa?
you went-PQP he came-PQP
'Did you go or did he come?'

(14) nii pooy-aa all-engil avan vann-aa?
you went-PQP not-if he came-PQP
'Did you go or else did he come?'

Interestingly, finite clauses can be disjoined, (15), but not conjoined, as declaratives, (18). Though, even in the disjunction, the disjunction marker *-oo* does not surface (16), possibly because

the clause final *-oo* is confused for the question particle *-oo* which also occurs clause finally [2]. The only way for *-oo* to surface in these disjunctions is to coordinate non-finite clauses, (17). The only way to conjoin these clauses is also by coordinating them as non-finite forms, (19).

(15) nii poyi all-engil avan vannu
you went not-if he came
'You went or else he came.'

(16) *nii poy-oo all-engil avan vann-oo
you went-DISJ not-if he came-DISJ
'Intended: You went or else he came.'

(17) nii pook-uka-oo avan var-uka-oo cey-tu
you went-inf-disj he came-inf-disj do-past
'You went or he came.'

(18) *nii pooy-um avan vann-um
you went-conj he came-conj
'Int: You went and he came.'

(19) nii pook-uka-um avan var-uka-um cey-tu
you went-INF-CONJ he came-INF-CONJ do-PAST
'You went and he came.'

The same is true of polar alternative questions (i.e. alternative questions with positive and negative versions of the proposition), each alternative surfaces with an *-aa*, (20)- (21).

(20) avan vaayicc-aa (all-engil) vaayicc-illa(y)-aa?
He read-PQP not-if read-not-PQP
'Did he read or (else) not read?'

(21) avan vaayicc-aa illa(y)-aa?
He read-PQP not-PQP
'Did he read or not?'

So far we have seen only full clauses as juncts in alternative questions. Is it possible to have either or both parts of the alternative question as sub-clausal juncts? This is possible in both Hindi with *kyaa* (Bhatt & Dayal 2018) and in Telugu with *-aa* (Balusu 2018). It turns out sub-clausal juncts are just not possible in alternative questions in Malabar (or Standard) Malayalam, (22)-(23).

(22) *ravi kaapi-aa caay-aa kuDiccu?
Ravi coffee-PQP tea-PQP drank
'Intended: Did Ravi drink coffee or tea?'

(23) *ravi kaapi kuDicc-aa caay-aa?
Ravi coffee drank-PQP tea-PQP
'Did Ravi drink coffee or tea?'

But what Malayalam does allow is verbal disjuncts, (24)-(25). We treat them as involving gapping (24), or across-the-board extraction, (25).

(24) ravi kaapii kuDicc-aa kalaŋ-aa?
Ravi coffee drank-PQP throw-PQP
'Did Ravi drink coffee or throw it?'

(25) aa maaŋa ravi kaDicc-aa kalaŋ-aa?
that mango Ravi bite-PQP throw-PQP
'Did Ravi bite that mango or throw it?'

2.1.3 *-aa* in Cleft Structures

A case where *-aa* disjuncts seem to appear sub-clausally on the surface involves clefting, (26). But these are also, in fact, clausal disjuncts, with *-aa* suffixed to the null copula, (27), of the pivot clause in a biclausal cleft structure, with pivot and cleft clauses (Jayaseelan & Amritavalli 2005).

[2] Jayaseelan (2014) notes that both conjunction and disjunction of finite clauses are bad in Malayalam.

(26) R coffee-aa tea-aa kuDicc-adə?
R coffee-PQP tea-PQP drank-CLM
'Is it coffee or tea that Ravi drank?

(27) R C aan-aa T aan-aa kuDicc-adə?
R C EQ-PQP T EQ-PQP drank-CLM
'Is it coffee or tea that Ravi drank?'

As seen in (27), the PQP attaches to the copula *aanə*, in line with the clausal attachment hypothesis. Of course, this is also possible in polar cleft questions, (28)-(31). It is also possible to have disjunction in the cleft pivot, (32)-(33).

(28) ravi coffee-aa kuDicc-adə?
Ravi coffee-PQP drank-CLM
'Is it coffee that Ravi drank?

(29) ravi coffee aan-aa kuDicc-adə?
Ravi coffee EQ-PQP drank-CLM
'Is it coffee that Ravi drank?

(30) ravi coffee kuDicc-ad-aan-aa?
Ravi coffee drank-CLM-EQ-PQP
'Is it drinking coffee that Ravi did?

(31) ravi coffee kuDicc-ad-aa?
Ravi coffee drank-CLM-PQP
'Is it drinking coffee that Ravi did?

(32) R C-oo T-oo aan-aa kuDicc-adə?
R C-DISJ C-DISJ EQ-PQP drank-CLM
'Is it Coffee or Tea that Ravi drank? [Y/N]

(33) R C-oo T-oo kuDicc-ad-aa?
R C-DISJ T-DISJ drank-CLM-PQP
'Is it drinking C or T that R did? [Y/N]

The cleft constructions are how information structural effects are achieved in Malayalam polar and alternative questions, as the above examples demonstrate. Thus, the sub-clausal placement strategy that Hindi (Bhatt & Dayal 2018) and Telugu (Balusu 2018) adopt to deliver information structural effects of focus and topic, is replaced in Malayalam by clefting, to deliver the same information structural effects of focus and topic, and the sub-clausal strategy remains unavailable.

2.2 *-aa* in Embedded contexts

In embedded contexts, the preferred question particle is actually *-oo*. It surfaces in both polar and alternative questions, (34)-(35).

(34) avan vaayicc-oo ((all-engil) vaayicc-illa(y)-oo) ennə ñaan coodiccu
He read-DISJ not-if read-not-DISJ QC I asked
'I asked if he read (or (else) did not read).'

(35) nii pooy-oo all-engil avan vann-oo ennə ñaan coodiccu
you went-DISJ not-if he came-DISJ QC I asked
'I asked whether you went or he came.'

Embedded *wh*-questions do not surface with the particle -oo, or any particle at all, (36)-(37).

(36) ravi endə vaayicc-nnə coodiccu
Ravi what read-QC asked
'(I) asked what Ravi read.'

(37) *ravi endə vaayicc-oo-nnə coodiccu
Ravi what read-DISJ-QC asked
'Intended: (I) asked what Ravi read.'

In embedded contexts *-aa* is not acceptable under plain responsive, i.e. veridical predicates, (38), marginal with negated responsive, i.e. under non-veridical predicates, (39), and acceptable though less preferred to *-oo* under rogative predicates, (40)-(41).

(38) *avan kazhich-aa-nnə ariyam
He ate-PQP-QC know
'Intended: (I) know if he ate.'

(39) ??avan kazhich-aa-nnə enikkə ariy-illa
He ate-PQP-QC I-DAT know-not
'I don't know if he ate.'

(40) ?avan kazhich-aa ennə ñaan codiccu
He ate-PQP QC I asked
'I asked if he ate.'

(41) avan kazhich-aa ennə codikkə
He ate-PQP QC ask-IMP
'Ask if he ate!'

2.3 Malabar Malayalam vs. Standard Malayalam in questions

Matrix polar, (42), and alternatives questions, (43), surface with the particle *-oo* instead of *-aa* in Standard Malayalam. The particle *-aa* never shows up in Standard Malayalam, neither in matrix contexts nor in embedded contexts.

(42) ravi pustakam vayic-oo?
Ravi book read-DISJ
'Did Ravi read the book?'

(43) avan vaayicc-oo oraŋi-oo?
He read-DISJ slept-DISJ
'Did he read or sleep?'

So, in Standarad Malayalam, all polar and alternative questions, whether in matrix or embedded contexts are marked with *-oo*, and never with *-aa*. *Wh*-questions are completely unmarked, be it in matrix or embedded contexts.

2.4 Correlatives, Indefinites and Declarative Disjunctions

2.4.1 Correlatives

Correlative constructions in Malabar Malayalam do not permit the use of *-aa* at the clausal level, even though the correlative clause has a clause final particle. Instead, *-oo* is the particle that attaches clause finally, like in Standard Malayalam, and demonstratives *adə* and *eedə* are used to indicate coreference, (44).

(44) ravi eedə$_i$ pustakam vaayicc-oo adə$_i$ enikkə iStamayi
Ravi which book read-DISJ that I-DAT liked
'I liked the book that Ravi read .'
(Lit. 'Which book Ravi read, that I liked.')

2.4.2 Indefinites

Indefinites also follow the pattern of correlatives in using *-oo* instead of *-aa* to indicate epistemic ignorance, as shown in (45).

2.4.3 Declarative Disjunctions

Disjunctions in simple declaratives are also indicated by *-oo*, (46). The morpheme *-aa* is never used as a declarative disjunction, contra the claim of Jayaseelan (2014) for Malayalam dialects.

(45) aar-oo ennə talli
who-DISJ me hit
'Someone hit me.'

(46) ravi padikkuv-oo uraŋuv-oo cheyyuka-aanə
Ravi studying-DISJ sleeping-DISJ doing
'Ravi is studying or sleeping.'

2.5 Polar Question Particle signature of *-aa*

As we saw in all the above subsections, the particle *-aa* in Malabar Malayalam is restricted to polar and alternative questions. Sub-clausal attachment of *-aa* is not possible, unlike say polar *kyaa* in Hindi. The particle *-aa* also displays selectiveness in embedding, or quasi-subordination (Dayal & Grimshaw 2009). A summary of all the findings is given in (47). The particle *-aa*, unlike *-oo*, has only one life –a Q-particle, in Malabar Malayalam. This is also the same in Kannada, Telugu, and Tamil. It shows up only in polar questions and alternative questions in matrix contexts, and displays selectiveness in embedding in embedded contexts.

(47)

	Malabar Malayalam	**Standard Malayalam**
Matrix		
Polar questionss	-aa	-oo
Alternative questions	-aa	-oo
Wh-questions	—	—
Embedded		
Polar questions	-oo (*/??/?-aa)	-oo
Alternative questions	-oo (*/??/?-aa)	-oo
Wh-questions	—	—
Indefinites	-oo	-oo
Boolean Disjunction	-oo	-oo
Correlative	-oo	-oo

3 Analysis

3.1 An earlier account of *-aa*

Amritavalli (2013) analyses the *-aa* in Dravidian as a question operator in the matrix clause, (48), and proposes that *-aa* is covert in *wh*-questions, (49), using examples from Kannada.

(48) makkaLu ba-nd-ar-aa KANNADA
children come-pst-3pl-Q
'Did the children come?'

(49) yeSTu jana sattaru ~~aa~~
how-many people die.pst.3pl Q
'How many people died?'

Similarly, Amritavalli (2013) proposes that the *-aa* in embedded *wh*-clauses in Kannada is a covert interrogative complementizer that co-coccurs with the quotative complementizer *anta*, (50),

and that the *-aa* in embedded polar questions in Kannada is an overt interrogative complementizer that co-coccurs with the quotative complementizer, (51).

(50) [[idanna yaaru baredaru]-~~aa~~ anta] keeLide/kaNDu.hiDide KANNADA
this-ACC who wrote Q QC asked/discovered
'(I) asked/discovered who wrote this.'

(51) tande [[makkalu ba-nd-ar-aa] anta] keeLidaru KANNADA
father children come.pst.3pl-Q QC asked
'The father asked if the children had come.'

Since *aa-anta* complements may be ambiguous between a matrix and an embedded question reading, (52), and since the particle *-aa* need not always scope under *anta*, as we see in matrix clauses, Amritavalli (2013) infers that *-aa* can occur either as an interrogative complementizer in the embedded clause or as a question operator in the matrix clause.

(52) BBC [[[yeSTu jana sattaru]$_{IP}$ ~~aa~~]$_{Q}$ anta]$_{CP}$ heeLitu . / ? KANNADA
BBC how-many people die.pst.3pl Q QC said
(i) . = 'The BBC said how many people died.'
(ii) ? = 'How many people did the BBC said died?'

3.2 Our analysis of *-aa* in Malabar Malayalam

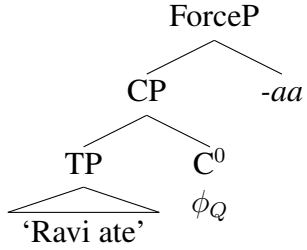
For the analysis of *-aa* as a question operator to go through, Amritavalli (2013) needs to posit a covert *-aa* in matrix *wh*-questions, and to analyse it as an interrogative complementizer in embedded contexts, again a covert *-aa* in embedded *wh*-questions. Transposing this analysis into Malabar Malayalam will again need a number of covert *-aa* morphemes to make the question operator analysis viable. This account will also not be able to account for the selective embedding of *-aa* under rogative vs. responsive predicates that we find in Malabar Malayalam.

As shown in the previous section, what we find is that the *-aa* of the Malabar dialect parallels the distribution of polar *kyaa* in Hindi, as explicated in Bhatt & Dayal (2018) in some crucial respects –first and foremost, it is necessarily limited to polar and alternative questions, never seen in *wh*-questions. Second, it shows selectivity in embedding, i.e, it is perfectly fine in rogative-imperatives, and ungrammatical under veridical-responsive predicates. This portends an analysis of the syntax and semantics of *-aa* along the lines of Bhatt & Dayal (2018), that can explain these properties –a morpheme residing higher up in the clausal spine than the question operator, to explain its matrix prediliction; and a morpheme that comes with a presupposition of a singleton propositional set complement, to explain its polar question restriction.

3.2.1 *-aa* in polar questions

As far as the matrix vs. embedded contrast in the distribution of *-aa* is concerned, it shows the hallmark properties of a root phenomenon. Therefore it should be located on the clausal spine above normal embedded height. It should also be above the location where the interrogative vs. declarative split is determined, since it does not occur in declarative clauses. Following Bhatt & Dayal (2018) we take this position to be minimally the ForceP above C[+Q], as shown in (53).

(53)



Next, how do we explain the selectivity in embedding of *-aa*, its appearance in quasi-subordinated embedded polar questions, but not otherwise? This is a larger pattern than just Malabar Malayalam *-aa*, or Telugu/Kannada/Tamil *-aa*, or even Hindi *kyaa* (Bhatt & Dayal 2018). It is also seen in embedded inversion in English (McCloskey 2006). Following these authors we analyse quasi-subordinated embedded polar questions as involving an extra CP layer, the ForceP layer, as shown in (54). Thus, those subordinations that involve a ForceP like rogative predicates and non-veridical responsive predicates allow for *-aa* to be embedded under them, but those predicates that only take upto the interrogative-C layer like veridical-responsive predicates do not allow *-aa* to be embedded under them, as we saw in the previous section on the patterning of *-aa* in Malabar Malayalam.

(54) a. rogatives and non-veridical responsive: $[_{ForceP}\ [_{CP}\ \mathrm{C}^0_{+Q}\ [_{TP}\ ]]]$
b. veridical responsives: $[_{CP}\ \mathrm{C}^0_{+Q}\ [_{TP}\ ]]$

Finally, how do we explain the restriction of *-aa* to only polar and alternative questions, and its non-occurrence in *wh*-questions? This is the trademark distribution of polar question particles according to Bhatt & Dayal (2018), who propose all such particles to encode a presupposition of a singleton-set denoting complement. We thus follow them in proposing a similar presupposition for the Malabar Malayalam *-aa* as shown in (55).

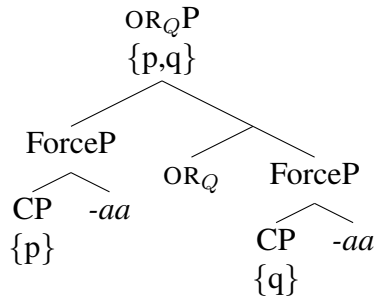
(55) $[\![-aa]\!] = \lambda Q_{\langle st,t\rangle} : \exists p \in Q[\forall q \in Q \rightarrow q = p].Q$

Going by this lexical entry, since it takes a set of propositions, it cannot combine with declaratives. But since the set of propositions it takes is the singleton set, it cannot combine with *wh*-questions. Thus *-aa*'s distribution is restricted to polar questions. Then going by this denotation, when it occurs in alternative questions, it should also compose with only a singleton-set. This is the property we will turn to next.

3.2.2 *-aa* in alternative questions

The data in the previous section has laid out that in alternative questions in Malabar Malayalam, *-aa* must occur on each junct (unlike in Hindi which allows a single *kyaa* in an alternative question). This makes it clear that each *-aa* in an alternative question is composing with a polar question, and together all the polar questions are disjoined to form an alternative question. This is also, surface single *kyaa* appearance disregarding, the analysis proposed by Bhatt & Dayal (2018) for alternative questions in Hindi. The polar questions suffixed with *-aa* are disjoined by an interrogative disjunction operator (optionally spelt out as *all-engil*), as shown in (56), and it has the semantics shown in (57).

(56)



(57) $[\![\text{OR}_\text{Q}]\!] = \lambda Q_{\langle st,t\rangle} \lambda Q'_{\langle st,t\rangle} . Q \cup Q'$

Interestingly, we saw in (15)-(19) that finite declarative clauses cannot be disjoined by the boolean disjunctive particle *-oo*. They have to be coordinated only as non-finite clauses. The reason for this, following Jayaseelan (2014), is that declarative disjunction (OR_BOOLP) and MoodP compete for the same slot in the TP domain. But we have seen from the data that polar juncts can be disjoined (to form alternative questions), and the above tree is a representation of it. Thus, interrogative disjunction of finite clauses, which happens above CP, is fine in Malabar (and Standard) Malayalam, whereas the boolean disjunction of finite clauses, which needs to happen in TP, is ruled out because the finiteness projection and the coordination projection are competing for the same slot. Thus in Malayalam (and other Dravidian languages), we see the opposite pattern of what is normally observed in the literature –disjunction of interrogative finite clauses is allowed but disjunction of declarative finite clauses is disallowed.

We also saw that deletion in the second disjunct is fine when it is verb stranding (24)-(25), but not fine when it is not, (22)-(23). This is another constraint in alternative questions in Malabar Malayalam, that is not found in Telugu or Hindi, where there can be one (seemingly) small disjunct on the surface, but the other one is a surface apparent large disjunct. So the elision in (58) is fine in Malabar Malayalam, whereas the elision in (59) is not good. However, a similar structure in Telugu is fine, (60).

(58) [ravi kaapii kuDicc-aa] [~~ravi kaapii~~ kalaŋ-aa]?
Ravi coffee drank-PQP throw-PQP
'Did Ravi drink the coffee or throw it?'

(59) *[ravi kaapi kuDicc-aa] (all-engil) [~~ravi~~ caay ~~kuDiccaa~~ -aa]
Ravi coffee drank-PQP if-not tea -PQP
'Intended: Did Ravi drink coffee or tea?' [Alt]

(60) [ravi coffee taageeD-aa] (leedaa) [~~ravi~~ tea ~~taageeD~~ -aa] TELUGU
Ravi coffee drank-PQP if-not tea -PQP
'Did Ravi drink coffee or tea?' [Alt]

Thus in Malabar Malayalam tupling with *-aa* (disjuncts of size ForceP) unambiguously leads to alternative questions. The only way to get a polar question interpretation is to have small disjuncts with the boolean disjunctive particle *-oo*, and this does not have an alternative question interpretation. Why doesn't the low occurring boolean disjunction operator get to scope over the question operator that *-aa* signals higher up in the clause, therefore delivering an alternative question interpretation? This is the puzzle we take up in the next subsection.

3.2.3 Scope of *-aa* and boolean disjunction in questions

Why cannot a sentence like (61a) have an alternative question interpretation where the disjunction indicated by the *-oo* is scoping over the question operator indicated by the *-aa*, as shown in (61b)?

(61) a. #ravi kaapi-oo caay-oo kuDicc-aa?
Ravi coffee-DISJ tea-DISJ drank-PQP
'Intended: Did Ravi drink coffee or Did Ravi drink tea?'
b. OR_{BOOL} > -aa > CP[+Q]

If boolean disjunction takes scope over *-aa* (and the question operator below it), the problem is the type-mismatch between what *-aa* delivers and what boolean disjunction expects, as shown in (62). Thus, an alternative question interpretation is not possible for a sentence like (61a).

(62) a. $[\![\text{coffee or tea}]\!] = \lambda \text{P}_{\langle e,t\rangle}.\ \text{P(coffee)} \vee \text{P(tea)}$
b. $[\![-aa]\!] = \lambda Q_{\langle st,t\rangle}.Q$

3.2.4 Information structural effects of *-aa* in cleft questions

Both in Hindi (Bhatt & Dayal 2018) and Telugu (Balusu 2018), sub-clausal or clause-medial positioning of the PQP has information structural effects, with the material to the left of *kyaa* as being not-at-issue or given and the material to the right of *kyaa* as being not specified for this, in Hindi, and the sub-clausal material that *-aa* attaches to in Telugu as being at-issue, and the rest of the material as being not-at-issue.

In Malabar Malayalam (and Standard Malayalam) sub-clausal *-aa* is not possible, as we saw in the last section. The particle *-aa* has to be clause final or verb final. To achieve information structural effects of not-at-issue and at-issue in polar and alternative questions, the strategy employed is that of clefts, discussed in §2.1.3. The cleft pivot, which is marked with *-aa*, is at-issue, and the rest of the cleft clause is not-at-issue. This information structural partition falls out naturally from the syntax-semantics of clefts, as is widely discussed in the literature, which we will not go into here. The partitioning can be tested with favored continuations in gapping (63), and Y/N congruence (64), as discussed in Bhatt & Dayal (2018):

(63) a. ravi coffee-aa kuDicc-adə?
Ravi coffee-PQP drank-CLM
'Is it coffee that Ravi drank?...
b. Tea-aa? 'or Tea?'
c. #Uma-aa ? 'or Uma'

(64) a. ravi coffee-aa kuDicc-adə?
Ravi coffee-PQP drank-CLM
'Is it coffee that Ravi drank?
b. alla, Tea-aa(nə) 'No, it was Tea.'
c. # alla, Uma-aa(nə) 'No, it was Uma.'

3.3 An earlier account of Malayalam *-oo*

Jayaseelan (2001) proposes that all Malayalam questions—both polar questions and *wh*-questions—are marked by a clause final *-oo*, and that there is a superficial deletion rule in Malayalam that deletes an underlying *-oo* in *wh*-questions, as shown in (65)-(66).

(65) aarə wannu-~~oo~~?
who came-DISJ
'Who came?'

(66) avan [aarə wannu-~~oo~~ ennə] paraññu/coodiccu
he who came-DISJ QC said/asked
'He said/asked who came.'

Jayaseelan (2001, 2012) then makes the theoretical claim that the question operator is the disjunction operator universally (C[+Q] = disjunction operator). In Malayalam the question particle *-oo* is a realization of the question operator, C[+Q]. Therefore the homophony of Q-particle and disjunction marker *-oo* is not accidental in Malayalam, and this also explains why the question operator (always abstract in English), is realized as the disjunction marker *-ka* in Japanese. This analysis is therefore an attempt at a unifying analysis, both within the language, and also cross-linguistically with patterns seen in languages like Japanese and Sinhala, as shown in (71).

3.4 Our analysis of *-oo* in Standard and Malabar Malayalam

What is the syntax and semantics of the particle *-oo* seen in polar and alternative questions in matrix and embedded contexts in Standard Malayalam and in embedded contexts in Malabar Malayalam? It cannot be the interrogative complementizer (C_{Int}) for four reasons. First, it occurs in matrix contexts in Standard Malayalam. Second, it doesn't occur with *wh*-questions, either in matrix or embedded contexts in Standard or Malabar Malayalam. Third, this *-oo* co-occurs with another complementizer, the quotative complementizer, in both Standard and Malabar Malayalam, and in fact always needs this complementizer in embedded contexts, (67). Fourth, it occurs on both alternatives, (68), instead of occurring once subordinating the entire embedded clause if it were a complementizer. For the same reasons it is not the clause-typing particle of Cheng (1997) either.

(67) ravi pustakam vaayicc-oo *(ennə) ñaan coodiccu (=34)
Ravi book read-DISJ QC I asked
'I asked if Ravi read the book'

(68) nii pooy-oo all-engil avan vann-oo *(ennə) ñaan coodiccu (=35)
you went-PQP not-if he came-PQP QC I asked
'I asked whether you went or he came.'

We propose that this *-oo* is a realization of the question operator, C[+Q], but unlike Jayaseelan (2001), we restrict its occurrence to polar/alternative contexts, those that it actually surfaces in, because it has a singleton-set complement requirement, a presupposition. Thus, in a sense, it is the CP equivalent of the ForceP *kya:/-aa* that also have a singleton-set presupposition. We encode its meaning as shown in (69). This is in line with what a standard compositional approach to questions requires in a Hamblin semantics, that the question operator for polar questions and *wh*-questions to be different. Thus the polar question operator contrasts with the multi-member set forming question operator that occurs with *wh*-questions.

(69) $[\![[_{-oo}\ \alpha_{\langle st \rangle}]]\!] = \lambda w.A(w)$ where $[\![\alpha]\!] = \{A\}$
defined only if
$\exists p \in \alpha[\forall q \in \alpha \rightarrow q = p]$

Our analysis thus departs from the unificatory attempt of all occurrences of *-oo* of Jayaseelan (2001) for Standard Malayalam. Besides the theoretical gain of unification, the empirical evidence that Jayaseelan (2001) advances for the presence of *-oo* in *wh*-questions is the data from old Malayalam. But on closer examination, we find that these *wh-* contexts are actually non-intrusive contexts, as shown in (70), like those seen in Telugu and Kannada, that Balusu (2018) discusses. In non-intrusive questions, like canonical questions, the speaker raises an issue and thereby signals that (s)he wishes to have it resolved. But unlike canonical questions, the speaker signals that (s)he does not wish to put the addressee on the spot for providing the answer. So the addressee can comply without volunteering the answer, either because (s)he does not have it or because (s)he does not wish or is not willing to provide it. Thus there a form of 'softened' questions. There is no clear evidence for a direct *wh*-question with an *-oo* particle even in old Malayalam.

(70) a. aarə wannu-(w)oo aa-(w)oo?
who came-DISJ PARTICLE-DISJ
'(I wonder/I ask you) who came?'

b. maharSi nintiruwaDi entu-nimittam-aakil-oo iwiDam nookki ezhunaLLi?
great-sage (hon.title) what-reason-be-DISJ this-place seeing came(hon.)
'For what reason is it that the great sage has been pleased to come to this place?'

Across languages, the same particle does appear in *wh*-questions and polar/alternative questions, in languages like Japanese and Sinhala, as shown in (71), from Slade (2011). But we also find that there is a *wh*-question and polar/alternative-question particle split in Tlingit. Thus this adds further evidence to the analysis we are advancing here that the *-oo* in Malayalam is a polar/alternative-question operator. As for the unification of *-oo* in its various manifestations in Malayalam, we observe that even here, whether it occurs in disjunction, or indefinites, or correlatives, it always composes with a singleton-set, an existential or a referent. We set aside a detailed and compositional semantic unification of these occurrences for now.

(71)

	Japanese	Stan.Mal.	Mal.Mal.	Tlingit	Sinhala
Matrix Polar/Alternative Qs	ka	oo	aa	gé	de
Embedded Polar/Alternative Qs	ka	oo	oo	gé	de
Wh-questions	ka			sá	de

3.4.1 Scope of *wh*-phrases with *-oo*

Our semantics of the question operator *-oo* would prevent *wh*-phrases from occurring with it, because they would violate its singleton-set denoting requirement. But there are sentences where a *wh*-phrase occurs in a clause with the question operator *-oo*, as shown in (72), though Malayalam would actually prefer the cleft construction, (73), as observed in Jayaseelan (2001).

(72) john [aar pooy-oo enn] coodiccu?
John who went-disj QC asked
(i) 'Who did John ask whether (he) went?'
(ii) *'John asked who went.'

(73) John [aar pooy-oo enn] aanə coodiccadə?
John who went-disj QC EQ asked-CLM
'It is whether who went that John asked?'

In (72), if *-oo* is a question operator without a singleton-set requirement, it should be able to deliver the embedded *wh*-question interpretation as in (72)ii. But this is ungrammatical. The *wh*-word has to be interpreted outside the scope of the embedded *-oo*, in the scope of the silent matrix question operator, which does not have a singleton-set requirement, delivering the reading in (72)i. The same is again true of an unconditional as in (74), taken from Jayaseelan (2001), where the *-oo*'s singleton-set requirement prevents the *wh*-word from being interpreted in its scope, and instead it is interpreted upstairs under the unconditional *-um*.

(74) aar wannu-(w)oo enn coodicc-aal-um, awar maRupaDi paRay-illa
who came-disj C ask-if-conj they reply say-neg
'No matter for which x, (you) ask if x has come, they will not reply.'

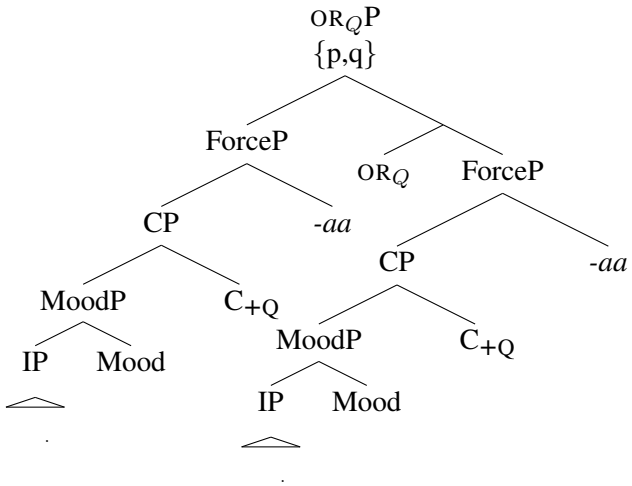
4 Conclusion

Malabar Malayalam *-aa* has two of the three signature properties for a PQP that Bhatt & Dayal (2018) discuss –restriction to polar/alternative questions, and selectiveness in appearing inside embedded polar/alternative questions. The property it does not possess is sub-clausal or flexible syntactic positioning, it always occurs clause finally. We analyse the lack of this property as a result of the predominance of the clefting strategy in Malayalam in general for forming questions and in particular for focusing sub-clausal constituents. It is thus well-suited for being identified as another PQP cross-linguistically, that resides in ForceP and has a presuppositional requirement of a singleton-set question as complement. In the larger South Asian linguistic picture, we surmise that the Dravidian languages in relative contact with the Indo-Aryan languages developed the PQP *-aa*, and that this PQP seeped further south into Malabar Malayalam with its close proximity to Kannada and Tamil. Thus we find a PQP in the furthest south of the Indian peninsula.

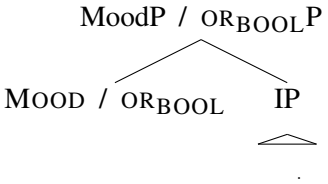
The second major claim of our paper is that the particle *-oo* in Malayalam, both Standard and Malabar, is the polar question operator. This jives well with the surface patterning and distribution of *-oo* in the data. And, in principle, if theoretically there is a possibility for a question particle that presupposes a singleton-set denotation for its complement, there is also a possibility for a question operator that presupposes a singleton-set denotation for its complement. We propose that the Malayalam *-oo* is such a question operator.

An interesting contrast that we explain in our paper is the ability of two finite clauses to be disjoined as an alternative question but not as declaratives. This we attribute to the disjunction operator that coordinates two question clauses (ForcePs in this case, since they contain *-aa*) being at a height where it does not compete for the same slot with the finiteness marking MoodP, (75), in the narrow C domain of the Dravidian languages (Jayaseelan 2014), as opposed to the disjunction operator that coordinates two finite clauses which is at a height where it competes for the same slot in the C-domain as the finiteness instantiating morpheme that resides in MoodP, (76).

(75)



(76)



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The typology of anaphor agreement effect[1]

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Abstract. In this paper, I argue that Rizzi's anaphor agreement effect is in fact not universal as there are languages that show violation to this effect. To the question of why some languages follow anaphor agreement effect and why certain other languages violate it, I demonstrate that this is an independent consequence of whether in a given language the functional head that carries the agreement probe merges first in the structure or the subject DP that that serves as antecedent to the anaphor merges first in the structure. In the former case, the order is Agree $\succ$ Binding, where the anaphor do not have any φ features to control the agreement resulting in anaphor agreement effect and in the later case, the order is Binding $\succ$ Agree, where the anaphor will have acquired the required φ features to control the agreement resulting in violation of anaphor agreement effect.

1 Anaphor Agreement Effect

Rizzi (1990) proposed a generalization called anaphor agreement effect (henceforth, AAE). According to this generalization, anaphors do not occur in a position construed with agreement. Rizzi further claims that this generalization holds 'systematically across natural languages' (Rizzi 1990: 28). The main argument for AAE comes from the dative subject construction in Italian and Icelandic. In these construction (1a), it is not the dative subject but the nominative object that controls the agreement. However if the nominative object is reflexive (1b), then the sentence becomes ungrammatical.

(1) a. Henni leidust þeir
She.DAT bored.3PL they.NOM
'She was bored with them.'

b. *Konunum$_i$ leidust sig$_i$
Women.DAT bored.3PL REFL.NOM
'Women were bored with themselves.' (Icelandic; Taraldsen 1995: 307 (1))

The same facts can be observed in Italian as well, where the reflexive from an agreement controlling nominative object position is ruled out (2a) and the same construction is rescued by having the reflexive in the genitive case, which does not control the agreement (2b).

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The following abbreviations are used in this paper: 1 - first person, 2 - second person, 3 - third person, I, II, III, IV - morphological genders in Archi, b, j , v , d - morphological genders in Ingush, ABS - absolutive, ALL - allative, APPL - applicative, CAUS - causative, CONT - continous, CVB - converb, DAT - dative, DOM - differential Object Marking, EL- elative, ERG - ergative, F - feminine, FUT - future, FV - final vowel, GEN - genitive, IMPERF - imperfective, INF - infinitve, IN - in localization M - masculine, N - neuter, NOM - nominative, NW - non witnessed tense, OBL - oblique, OM - object marking, PERF - perfective, PL - plural, PRES - present, PST - past, REFL - reflexive, SBJ - subjunctive, SG - singular, SM - subject marking, WP - witnessed past tense.

(2) a. *A lorro$_i$ interess-ano solo se-stessi$_i$
To them.DAT matters-3PL only REFL.NOM
'They$_i$ only matter to themselves.$_i$'

b. A lorro$_i$ import-a solo di se-stessi$_i$
To them.DAT matters-3SG only of REFL.GEN
'They$_i$ only matter to themselves.$_i$' (Italian; Rizzi 1990: 33 (15))

Rizzi reasons out that ungrammaticality of (1b) and (2a) can be explained neither by the binding theory nor by the empty category principle. The principle A of the binding theory requires that anaphors be locally bound by the antecedent. In these constrictions, the dative subject serves as a local antecedent for the anaphor, which satisfies the principle A. Similarly, the empty category principle (ECP) requires that the trace of the moved argument should be properly governed. If the trace is governed by the tense, then it is not properly governed but if the trace is governed by the lexical verb, then it is considered to be properly governed. On the assumption[2] that the anaphor moves from its base position to the position adjacent to its antecedent at LF, the trace of the moved anaphor would have violated the ECP if the anaphor is moved from the subject position, which is governed by the Tense. On the other hand, if the anaphor is moved from the object position, then it would not have violated the ECP because the object position is governed by the lexical verb, which qualifies as a proper governor. Given that the anaphor in (1b) and (2a) is in object position, it would not constitute as the violation of ECP. Having ruled out both the binding theory and the ECP, Rizzi proposes that this ungrammaticality is due to the inability of the anaphor to control the agreement on the verb. If the anaphor cannot control the agreement on the verb, then it cannot occur in those agreement controlling position in (1b) and (2a).

Though Rizzi claims that AAE is universal, I will show from languages like standard Gujarati, Archi and Ingush that AAE is not universal. To the question of why some languages follow AAE and why certain other languages violate it, I demonstrate that this is an independent consequence of whether in a given language the functional head that carries the agreement probe merges first in the structure or the subject DP that that serves as antecedent to the anaphor merges first in the structure. In the former case, the order is Agree $\succ$ Binding, where the anaphor do not have any φ features to control the agreement resulting in anaphor agreement effect and in the later case, the order is Binding $\succ$ Agree, where the anaphor will have acquired the required φ features to control the agreement resulting in violation of the anaphor agreement effect.

The paper is structured as follows: in Section 2, I discuss empirical facts from Shona and Kutchi Gujarati, which follow AAE and in section 3, I discuss empirical facts from Standard Gujarati, Archi and Ingush that violate AAE. In section 4, I propose an analysis that derives both the AAE and the violation of AAE. In section 5, I discuss the prediction and falsification of the proposed analysis and section 6 is the conclusion.

[2]The proposal that anaphors move to INFL at LF comes form Lebeaux (1983), which was subsequently assumed in Chomsky (1986).

2 AAE following patterns

Woolford (1999) tests AAE generalization to typologically different types of languages and she suggests that there is no counter-example to this generalization. In this section, I discuss couple of languages that are not discussed in Woolford (1999) but nevertheless prove the robustness of AAE.

2.1 Shona

Shona is a Bantu language belonging to Niger-Congo language family spoken in Zimbabwe. It has both subject marking (SM) and object marking (OM) occuring as a part of verbal morphology. As shown in (3a), SM and OM corresponds to the the noun class of the subject and the object respectively. When the arguments are personal pronoun (3b), they are obligatorily *pro* dropped and information about them are recovered from the SM and the OM.

(3) a. Mufaro a-∅-ri-bik-a bota
Mufaro SM.1-PST-OM.5-cook-FV porridge.5
'Mufaro cooked porridge.' (Storoshenko 2016: 161 (5))

b. *pro* ndì-nó-mù-gèz-bvùnz-à *pro*
1SG SM-PRES-OM-question-FV 3SG
'I question him.' (Dechaine & Wiltschko 2012: 17 (37a))

Following Storoshenko (2016), I take the SM and OM as the agreement markers with the subject and the object respectively. If this indeed the case, then when the reflexive pronoun occurs as the object, an invariable *-zvi* morpheme occurs in the object agreement slot, which does not φ covary with the reflexive.

(4) Shona reflexive marking:

	SM	PRES	OM	wash	
1SG	ndì-	nó-	**zvì**-	gèz-á	'I wash myself.'
1PL	tì-	nó-	**zvì**-	gèz-á	'We wash ourself.'
2SG	ù-	nó-	**zvì**-	gèz-á	'You wash yourself.'
2PL	mù-	nó-	**zvì**-	gèz-á	'You(PL) wash yourself.'
3SG	à-	nó-	**zvì**-	gèz-á	'She washes herself.'
3PL	và-	nó-	**zvì**-	gèz-á	'They wash themselves.'

(Dechaine & Wiltschko 2012: 17 (35))

At this point, it is unclear what exactly this *-zvi* morpheme is as it can be analyzed either as an incorporated reflexive pronoun or it could be analyzed as an object agreement marker. However Storoshenko (2016) points out that *-zvi* marker is in fact a class 8 marker that typically occurs in the context of default agreement. As shown in (5a), when the object is a conjunct DP made nouns belonging to the different noun classes, the *-zvi* morpheme occurs in the object agreement slot. Similarly, in (5b), *-zva*[3] morpheme occurs in the subject agreement slot, when the subject is not a proper DP but rather a clause.

[3] *-zva* is an allomorph of *-zvi* that shows up in certain subject agreement contexts.

(5) a. Nda-∅-**zvi**-tor-a [sadza no-mu-riwo]
SM.1-PST-OM.8-take-FV Sadza.5 and-3-relish
'I took them (sadza and relish).'

b. [Ku-tsav-ir-a mu-mba ma-zuva e-se] **zva**-ka-kosh-a
[INF-sweep-APPL-FV house day every] SM.8-PST-important-FV
'Sweeping the house every day was important.' (Storoshenko 2016: 170 (22))

If *-zvi* is an indeed default agreement marker, then its occurrences in reflexive context in (4) can also be explained straightforwardly if we assume along with Kratzer (2009) that anaphors are born without the φ features and as a result they cannot control the φ or class co-varying agreement and therefore results in default agreement. So the default agreement that obtains with the anaphor confirms Rizzi's AAE.

2.2 Kutchi Gujarati

Kutchi Gujarati belongs to the western Indo-Aryan language, spoken in the Rann of Kutch in the state of Gujarat, India. It exhibits a split agreement pattern: the agreement is with the subject in the imperfective and with the object in the perfective, well described by Patel-Grosz (2014), and Grosz and Patel-Grosz (2014). In this paper, I concentrate only on the perfective aspect as it gives ideal test case scenario to check if the reflexive from the object position can control the agreement or not. First to illustrate its basic agreement pattern in perfective aspect, as shown in (6), the DOM marked object controls the agreement on the verb for number and gender.

(6) a. John Mary-ne jo-y-i
John Mary-DOM see-PERF-FSG
'John saw Mary.'

b. Mary John-ne jo-y-o
Mary John-DOM see-PERF-MSG
'Mary saw John.' (Patel-Grosz 2014: 2 (2))

By replacing the DOM marked object with a reflexive pronoun instead of a proper noun, the agreement facts does not change as the normal expected agreement still obtains as shown below.

(7) a. John potha-ne jo-y-o
John REFL-DOM see-PERF-MSG
'John saw himself.'

b. Mary potha-ne jo-y-i
Mary REFL-DOM see-PERF-FSG
'Mary saw herself.' (Patel-Grosz 2014: 4 (9-10))

At the face of it, the agreement facts in (7) looks like its the anaphors that control the φ co-varying agreement. However, Patel-Grosz argues that it is not the reflexive that controls the agreement but the subject DP. She argues that in Kutchi Gujarati, whenever the reflexive occurs in the agreement controlling position, the agreement shifts to the subject DP. Her evidence for the agreement shift

comes from the following facts in Kutchi Gujarati, where the reflexive object with the dative subject controls the default neuter agreement rather than φ co-varying agreement. If it is the reflexive object that controls the agreement, then change in the case of the subject should not matter to the agreement, however, since the change in the case of the subject to dative case affects the expected agreement pattern, Patel-Grosz establishes that agreement obtains with the subject rather than with the object.

(8) Raj-ne potha-ne jo-vu par-y-u
Raj-DAT REFL-DOM see-N had-PERF-N
'Raj had to see himself.' (Patel-Grosz 2014: 5 (12))

Given this evidence, I take Patel-Grosz's observation to be true in which the agreement target shifts from the object to the subject, whenever the object is reflexive. This fact further attests the empirical validity of the AAE which predicts that anaphor can never control the agreement on the verb.

3 AAE violating patterns

In the last section, we have seen the empirical patterns from Shona and Kutchi Gujarati, where AAE is followed and in this section, I will illustrate the empirical patterns from standard Gujarati, Archi and Ingush, where AAE is violated.

3.1 Standard Gujarati

Standard Gujarati is a closely related language to Kutchi Gujarati. It also exhibits a split agreement pattern: the agreement is with the subject in the imperfective and with the object in the perfective. As shown in perfective aspect in (9), the DOM marked object controls the φ co-varying agreement on the verb. An important difference between Kutchi Gujarati and standard Gujarati is that the subject DP in perfective aspect is marked with the overt ergative case in standard Gujarati but unmarked in Kutchi Gujarati.

(9) Raaj-e sudhaa-ne uʈhaaɖ-i
Raj(M)-ERG Sudha(F)-DOM awakened-FSG
'Raj awakened Sudha.' (Mistry 2000: 344 (18))

Again, when the object is reflexive, it does not affect the agreement pattern as normal agreement obtains.

(10) a. raaje potaa-ne sanḍov-yo
Raj(M)-ERG REFL-DOM involved-MSG
'Raj involved self.'
b. Sudhaae potaa-ne sanḍo-vi
Sudha(F)-ERG REFL-DOM involved-FSG
'Sudha involved self.' (Mistry 2000: 344 (19))

However, the question with regard to (10) is whether it is the reflexive that controls the agreement or is it the case of agreement switch like Kutchi Gujarati. It can be easily established that it is the reflexive object that controls the agreement rather than subject. In (11), when there is a clausal object and ergative subject, there is a default agreement. This shows that ergative subject can never control the agreement. If ergative argument can never control the agreement, then there cannot be any agreement switch in (10).

(11) Raaje$_i$ jaɳaav-yũ [ke Sita jarur aavše]
Raj-ERG informed-N that Sita definitely come.FUT-3
'Raj informed that Sita will definitely come.' (Kinjal Joshi p.c.)

Further evidence for the reflexive object controlling the agreement can be seen by comparing the dative subject construction in standard Gujarati (12a) with that of Kutchi Gujarati (12b). In (12a), the φ co-varying agreement suggests that it is the reflexive controlling the agreement rather than the subject because if the subject controls the agreement, then it would result in default neuter agreement with the dative subject as in the case of Kutchi Gujarati in (12b).

(12) a. Sita-ne pota-ne apnav-i che
Sita(F)-DAT REFL-DOM adopt-FSG be
'Sita wants to adopt herself.' (Gujarati; Kinjal Joshi p.c.)

b. Raj-ne potha-ne jo-vu par-y-u
Raj(M)-DAT REFL-DOM see-N had-PERF-N
'Raj had to see himself.' (Kutchi Gujarati; Patel-Grosz 2014: 5 (12))

The empirical facts prove that it is the reflexive that controls the agreement in Gujarati and thereby, violating AAE.

3.2 Ingush and Archi

Ingush, a Nakh-Daghestanian language, also presents a clear case of AAE violation. It is also an ergative-absolutive language, where only the absolutive argument can control the agreement. In (13), the letters B an J in the gloss of the verbal morphology corresponds the morphological gender of argument in the absolutive case.

(13) a. aaz jett aara-b.oala-b.yr
1SG.ERG cow(B).ABS out-B.go-B.CS.WP
'I led the cow out.'

b. aaz Mariem aara-j.oala-j.yr
1SG.ERG Mariem(J).ABS out-J.go-J.SC.WP
'I led the Mariem out.' (Ingush; Nichols 2011: 432 (5-7))

Given this agreement pattern, it can be shown that reflexive occurs as an absolutive argument and then controls the agreement.

(14) Muusaaz learrha shie xoada-veav
Muusa.ERG on.purpose REFL.ABS cut-V.CAUS.NW.V
'Musa cut himself on purpose.' (Ingush; Nichols 2011: 641 (27))

The source of verbal agreement in (14) can be shown to be from the reflexive object rather than from the ergative subject by changing the case of the subject DP into dative case as in (15). The change in the case of the subject doesn't affect the agreement pattern because the agreement is from the reflexive object.

(15) Suona sie kizjgaa-chy bwarjga+j-eira
1SG.DAT REFL.ABS mirror.GEN-IN eye+J.see.WP
'I(female speaker) saw myself in the mirror.' (Ingush; Nichols 2011: 641 (22))

Again, there is no agreement switch in (15) by comparing it with (16), where it is shown that the argument in dative case cannot control the agreement. If dative argument can never control the argument, then it must be the case that it is the reflexive in absolutive case that controls the agreement (14) and (15). All these facts in Ingush point to the fact that it is a clear case of AAE violation like standard Gujarati.

(16) Suona [yz dika sag voliga] xou
1SG.DAT 3SG good person V.BE.SBJ know.PRES
'I know he is a good person.' (Ingush; Nichols 2011: 547 (40))

Archi, an another Nakh-Daghestanian language, also presents an AAE violation. It is also an ergative-absolutive language, where only the absolutive argument controls the agreement[4].

(17) zari noʕš darc'-li-r-ši e-b-t'ni
1SG.ERG horse(III)SG.ABS post-SG.OBL-CONT-ALL III.SG-tie.PERF
'I tied the horse to the post.' (Archi; Chumakina, Bond and Corbett 2016: 60 (29))

Similar to Ingush, reflexives occur as an absolutive argument in Archi and then controls the agreement.

(18) a. Zalik-li-s inža-w w-ak:u daχon-n-aš
Zalik(I)-SG.OBL-DAT REFL.ABS-I.SG I.SG-see.PERF mirror(IV)-SG.OBL-IN-EL
'Zalik saw himself in the mirror.' (Archi; Bond and Chumakina 2016: 69 (52))

b. laha-s inž-w w-ak:u
child(I).SG.OBL-DAT REFL.SG.ABS-I.SG I.SG-see.PERF
'A boy saw himself.' (Archi; Sadler 2016: 158 (19))

To conclude this section, we have seen empirical patterns in Standard Gujarati, Ingush and Archi presenting a clear case of AAE violation, which is to be contrasted with the empirical patterns in Shona and Kutchi Gujarati which presents a case where AAE is strictly followed. These two contrasting patterns raise the interesting question of why AAE behaves the way it is in these languages and how to account for them. I will present an analysis in the following section that accounts for this question.

[4]The roman letter III in the verbal morphology refers to an agreement marker.

4 Analysis

In this section, I will demonstrate that AAE or the violation of AAE arises as an independent consequence of whether in a given language the functional head that carries the agreement probe merges first in the structure or the subject DP that that serves as antecedent to the anaphor merges first in the structure. When the agreement probe that seeks to agree with the anaphor merges in the structure before the subject DP, the agreement with the anaphor precedes before the binding of the anaphor as schematized in (19). In this order of derivation, the anaphor will not have the required φ features to control the agreement on the verb and as a result AAE holds.

(19) Agree $\succ$ Binding $\rightarrow$ AAE holds

On the other hand, when the subject DP that serves as antecedent to the anaphor merges first in the structure before the agreement probe, the binding of an anaphor will precede the agreement with the anaphor as schematized in (20). In this order of derivation, the subject DP will have acquired the required φ features from binding and can then value the probe from the functional head and eventually resulting in violation of AAE.

(20) Binding $\succ$ Agree $\rightarrow$ AAE violation

Given this proposal, first, I will specify the set of assumptions that are needed for the analysis before actually deriving the AAE facts in the languages.

4.1 Assumptions

I assume that anaphors are born without any φ features (Kratzer 2009) and they acquire their φ features as a result of undergoing agree with their antecedent in syntax. Therefore I take binding to be nothing but an agree operation that operates between the anaphor and its antecedent (Reuland 2001, 2011). Similarly, for the actual verbal agreement, I follow the standard approach of Chomsky's (2000) agree that operates between the uninterpretable and the unvalued features of a probe and the interpretable and the valued features of a goal and as result of agree, the probe's features get checked and valued. For the sake of concreteness, I will continue to refer the agree relation between anaphor and its antecedent as 'binding' and the agree relation between the functional head and its DP as 'agree'. In addition, I assume the direction of agree can be both upward (Zeijlstra 2012) and downward. I also assume the earliness principle (Pesetsky 1989), which demands that an operation apply as soon as its context are met.

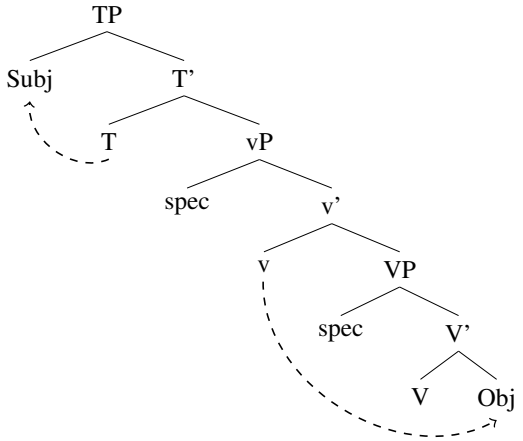
4.2 Default agreement in Shona

Given the background assumptions that I have highlighted above, first, I'll derive the AAE facts in Shona. As we have already seen in (3) (repeated as (21) below), Shona has both subject and object agreement. I take this agreement configuration in syntax as T agreeing with the subject and v agreeing the object as shown in (22).

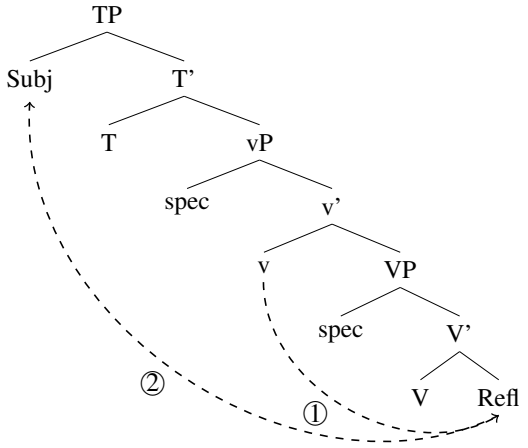
(21) Mufaro a-∅-**ri**-bik-a bota
Mufaro SM.1-PST-OM.5-cook-FV porridge.5
'Mufaro cooked porridge.' (Storoshenko 2016: 161 (5))

An important thing to note from the structure in (22) is that by the time v agrees with the object, the subject would not have merged in the structure. So in the structure with reflexive (23), there is no way that binding could have happened before agree because the subject merges later in the structure. As a result, when v probes down to agree with the reflexive object, the reflexive would not have the required φ features to value the uninterpretable feature of v. As a result, default agreement obtains with the reflexive.

(22) Shona agreement:



(23) Agree $\succ$ Binding :



4.3 Agreement switch in Kutchi Gujarati

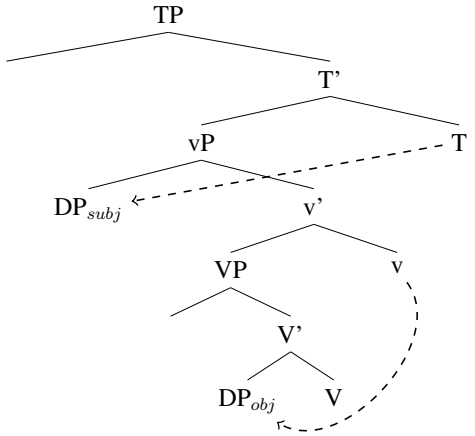
We have already seen that Kutchi Gujarati employs the agreement switch strategy to get around the violation of AAE. It turns out that Kutchi Gujarati is also a language with two agreement probes

and this is seen overtly in analytic tense in (24), where the overt tense auxiliary agrees with the subject and the perfective verb agrees with the object.

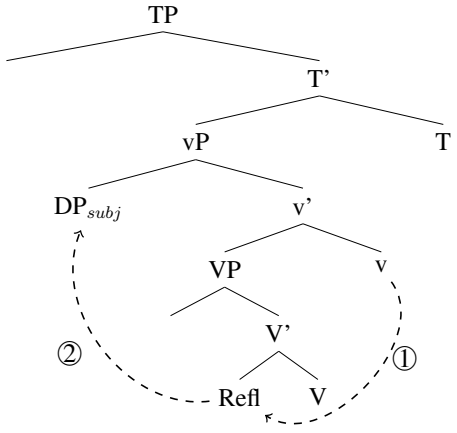
(24) Hu chokra-ne jo-y-a ha-is
I boys-DOM see-PERF-PL be--FUT.1SG
'I will have seen the boys.' (Grosz & Patel-Grosz 2014:11 (9b))

This would again translate in syntax as T agreeing with the subject and v agreeing with the object as in (25) and in the reflexive construction in (26), it is first v that agrees with the object and only then subject DP merges in the structure. So the order of derivation is Agree $\succ$ Binding.

(25) Kutchi Gujarati agreement:



(26) Agree $\succ$ Binding:



Further to derive agreement switch, here, I follow Béjar and Rezac's (2009) cyclic architecture of agreement. In the first cycle, v agrees with the internal argument and if there are features of v that have not undergone agree with the internal argument, then the domain of agree expands to second cycle, where the features that have not undergone agree in earlier cycle, would now undergo

agree with the external argument. This cyclic expansion of agree allows the choice of agreement controller to switch from the object to the subject[5].

4.4 AAE violation in standard Gujarati

Compared to the nested pattern of agreement in Kutchi Gujarati, there is no nested pattern of agreement in standard Gujarati because when the verb agrees with the object (27), the auxiliary also agrees with the object rather than with the subject.

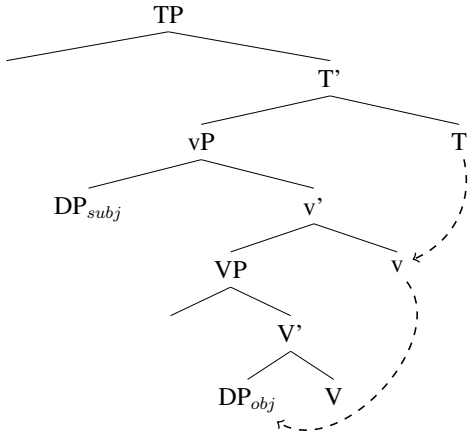
(27) mene khasi av.t-i ha-ti
I-ERG cough(F) come.PROG.-FSG was.PROG.FSG
'I have had a cough.' (Gujarati; Suthar 2005 :58 (279))

This pattern is very similar to object agreement in Hindi as reported in Bhatt (2005).

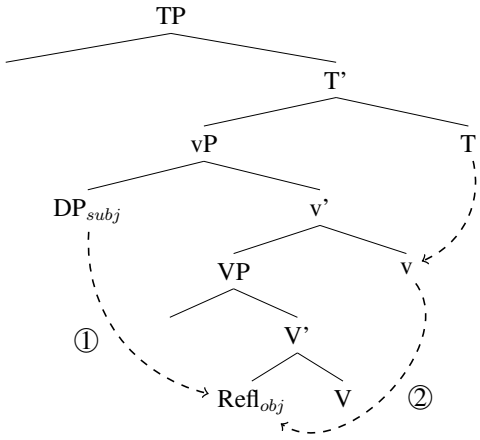
(28) Rahul-ne kitaab parh-ii th-ii
Rahul-ERG book.F read-PERF.FSG be-PST-FSG
'Rahul had read the book.' (Hindi; Bhatt 2005 :759 (2b))

For constructions such as (28), Bhatt (2005) proposes that there is just one probe on T that establishes agree not with the subject DP (because of its ergative case) but with the object DP through v. Therefore when the object DP values the φ features of T, v also get its φ features covalued (though v by itself is not a probe). One way to think about it is that agreement on v is parasitic on T. Following Bhatt (2005), I assume the same for Gujarati as illustrated in (29). And for the construction with reflexive (30), the subject DP merges in the structure before the agreement probe T. Therefore the order of agree operation would be Binding $\succ$ Agree, which predicts AAE violation.

(29) Gujarati:



(30) Gujarati: Binding $\succ$ Agree



[5]I would like to refer the readers to Patel-Grosz (2014) and Murugesan & Raynaud (to appear) for different approaches regarding the exact implementation of agreement switch.

4.5 AAE violation in Ingush and Archi

For Ingush and Archi, I adopt the same analysis proposed for Gujarati, where T is the actual probe and v gets its value as a result of co-valuation. The evidence for T being the only probe in these languages comes again from the analytic tense, where both the overt auxiliary and the perfective verb agrees with the object. As a result of T being a probe, subject DP would be merging in the structure before T and this would result in the order of derivation Binding $\succ$ Agree and eventually resulting in AAE violation.

(31) a. Aaz gazat dieshazh dy
1SG.ERG newspaper.ABS D.read D.PROG
'I am reading a newspaper.' (Ingush; Nichols 2011: 497 (168))

b. laha-s dija w-ak:u-r-ši w-i
child(II).SG.OBL-DAT father(I).SG.ABS I.SG-see-IMPERF-CVB I.SG-be.PRES
'A girl sees (her) father.' (Archi; Chumakina and Bond 2016: 92 (30))

5 Conclusion

In this paper, first, I have shown that Rizzi's AAE is not universal as there are languages like standard Gujarati, Archi and Ingush, where there is a violation of AAE. I have argued that this violation comes about as a natural consequence of subject DP merging in the structure before the agreement probe that seeks to agree with the anaphor. Given this derivational timing of merge, the binding of an anaphor will precede the agreement with the anaphor and as a result, the anaphor will have acquired its required φ feature to control the agreement. It should be, however, noted that the reason why AAE violation does not come about in all the languages is because following three things need to hold for it to happen: (1) T must be an active probe and v should be an inactive probe. (2) The subject should not act as a suitable goal. (3) The language should not resort to default agreement at the first instance of failed agree with the subject. I have shown in this paper that all these three condition holds in standard Gujarati, Archi and Ingush leading to AAE violation.

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Degrees and scales of Kunbarlang[1]

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Abstract. This paper discusses novel data from the non-Pama-Nyungan language Kunbarlang in the domain of degree semantics. I show these data to be problematic for an influential typological account couched within the degree-based framework by Beck et al. (2009). I propose an alternative that builds on the delineation approach in the spirit of Klein (1980), and in particular on recent developments employing measurement theory, such as van Rooij 2011b. The proposed solution both accounts for Kunbarlang data and offers a basis for an alternative semantic typology of comparative constructions.

1 A degree-based typology

There are two main types of approaches to the semantics of comparative and other degree constructions, with an important difference lying in their ontological commitment. One type, usually called *degree-based approaches*, includes analyses by Cresswell (1976) and von Stechow (1984), and much subsequent work. These analyses crucially rely on *degrees* as a primitive type in the semantic ontology: type d. The other type, known as *delineation approaches*, avoid positing a special semantic type for the degrees and treat gradable adjectives as *vague* predicates (e.g. Kamp 1975, Klein 1980, van Rooij 2011a). I begin here by discussing the degree-based approach and a semantic typology that has been advanced within it. The delineation framework will take center stage in §3, after a discussion of Kunbarlang and the problems it poses for the degree-based typology in §2.

In the degree-based approaches, owing to the availability of the dedicated semantic type d, gradable adjectives are analyzed as binary relations between degrees on a scale and individuals. Generally, an expression of type τ will be treated as $\langle d, \tau \rangle$ if it is a gradable predicate, which takes a degree as an argument. By way of example, the English adjective *deep* receives semantics as in (1):

(1) $[\![deep]\!] = \lambda d \lambda x.\textsc{Depth}(x) \geq d$ type $\langle d, \langle e, t \rangle \rangle$

A comparative sentence like (2) may then be rendered along the following lines (3):

(2) Lake Baikal is deeper than Lake Tanganyika.

1. I am very grateful to my Kunbarlang teachers who shared their language with me and were very patient in working on the complex constructions in this paper. In particular, I would like to acknowledge the contribution of Na-kangila Solomon Yalbarr and Ngal-ngarridj Sandra Makurlngu. I wish to thank Liz Coppock for getting me thinking about Kunbarlang comparatives and for helpful discussion at the outset of this work. Nick Sgro-Traikovsky made valuable suggestions to an earlier version of the paper. Last but not least, I am grateful to the audiences at the 2017 Australian Languages Workshop and AAA5 at the University of Konstanz, especially Vera Hohaus, for excellent feedback and discussion. This research was conducted with support from the ARC Centre of Excellence for the Dynamics of Language (Project ID: CE140100041).

(3) $1\mathbf{d}[deep(\mathbf{d}, Baikal)] \succ 1\mathbf{d}[deep(\mathbf{d}, Tanganyika)]$

The logical representation (3) is intended to capture the intuition that what (2) says is that the (maximal) degree of depth that Baikal reaches is greater than the (maximal) degree of depth that Tanganyika reaches.

Recently Beck et al. (2009) have conducted a small-scale, but in-depth typological study that included 14 languages from the different types in Stassen's (1985)/Bobaljik's (2012) morphosyntactic classification.[2] These authors used a 19-item questionnaire, paying particular attention to the following 7 representative constructions:

- differential comparative (DiffC; *2in taller than*)
- comparison with a degree (CompDeg; *taller than 6ft*)
- degree phrase scoping above a modal verb (Scope)
- negative island effect (NegIs; negation in the *than*-clause)
- degree questions (DegQ; *how tall. . . ?*)
- measure phrases (MP; *6'4" tall*)
- comparative subdeletion (SubC; *x is longer than y is deep*)

Based on the availability of the specific constructions in each given language, an interesting pattern emerges. Rather than choosing a random subset of the possible degree constructions, these languages group into four clusters, further motivating three clusters of constructions: every language has either all or none of the constructions in each group. Moreover, the three clusters of constructions appear to be organized along an implicational hierarchy (see table 1), suggesting some underlying hierarchy of the semantic devices that are required for a language to be able to "constructionalize" a particular type of meaning. That is, in this sample of 14 languages there were no languages that would exhibit some of DegQ, MP, and SubC, without also having a (lexicalized) way to express DiffC and CompDeg, or not showing Scope and NegIs effects.

Since in Motu there are no lexical resources (such as words or morphemes) to express any comparative/degree semantics, it is hypothesized to lack the type d from its semantic ontology altogether. This concept of "degree-less" languages, or languages that have only implicit comparison constructions, has received further cross-linguistic support from work on such languages as Fijian (Oceanic; Pearson 2010), Washo (isolate/Hokan; Bochnak 2015) and Warlpiri (Pama-Nyungan;

2. That is, languages with

- explicit comparatives (Bulgarian, Guaran, Hindi-Urdu, Hungarian, Mandarin Chinese, Romanian, Russian, Samoan, Spanish, Thai, Turkish; they also refer to English and German)
- 'exceed' comparatives (Yorùbá and Mooré)
- implicit, or conjoined, comparatives (Motu)

Table 1: Clusters of degree constructions after Beck et al. (2009)

	DiffC	CompDeg	Scope	NegIs	DegQ	MP	SubC
Motu	N	N	n/a	n/a	N	N	n/a
Yorùbá, Samoan	Y	Y	N	n/a	N	N	n/a
Russian, Guaran	Y	Y	Y	Y	N	N	N
Thai, English	Y	Y	Y	Y	Y	Y	Y

Bowler 2016).[3] The semanticists working on those languages have argued in favour of different approaches, both degree-based (e.g. Bochnak) and based on delineation (e.g. Bowler and Pearson).

Beck et al. 2009 offer a parametric solution to this emerging typology, which uses three privative parameters to capture the three clusters of constructions:

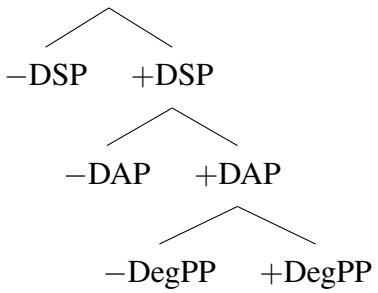
- Degree Semantics Parameter (DSP): does L have gradable predicates of type $\langle d, \tau \rangle$?
- Degree Abstraction Parameter (DAP): does L have binding of degree variables in the syntax?
- Degree Phrase Parameter (DegPP): can the degree argument position of gradable predicates be overtly filled?

In Beck et al.'s (2009: 28) own words,

> [t]he following are the dependencies between the parameter settings: It only makes sense to ask whether a language has abstraction over degree variables if that language has a degree ontology in the first place—i.e. only if we determine a setting [+DSP] need we inquire into the setting of the DAP. If we determine a setting [−DSP] we must have [−DAP] as well. Similarly, the phrases we call DegPs are operators over degrees. They can only occur if the language allows such operators, i.e. has the setting [+DAP]. In this way the parameters explain the dependencies between the data clusters.

Therefore, the parameters can be organized into a decision tree (4), which reflects the observed implicational hierarchy between the clusters in table 1, and thus defines the linearly increasing array of degree constructions available in the language.

(4)



3. See Deal & Hohaus (2018) for a discussion of various senses of *degreelessness*.

Terminals in the tree (4) define the four classes of languages: from the ones that do not show any lexicalization of degree semantics expressions to those that exhibit the full range of relevant constructions. This analysis, which I shall refer to as the *DSP-approach*, makes a number of predictions that will be of crucial relevance for the ensuing discussion. As the authors point out, it is "very important for our theoretical reasoning that empirical properties can be seen as coming in clusters, and that there are dependencies between them in that some options appear to be prerequisites for others" (Beck et al. 2009: 29–30). Thus, on this view, we expect some sort of 'connectedness' among the parameters (as well as among their diagnostic constructions). We notice further that the "theory could be falsified by the discovery of a language that has degree questions and measure phrases, but an (otherwise unexpected) absence of scope mechanisms for degree operators, for instance… More concretely, according to our analysis it should not be possible for a language like Motu to develop degree questions, but not change in any other respect" (op.cit.: 30–31).

There is, of course, a certain logical independence between the parameters and the particular expressions that their positive setting enables: strictly speaking, while presence of a construction indicates the [+] setting of a parameter, absence does not necessarily entail the [−] setting. This is because there can be occasional gaps or other variation in lexicalization of a particular operator, such as equality or inequality operators. I shall explore the limits and consequences of this independence after I have shown the empirical problems presented by Kunbarlang in the next section.

2 Kunbarlang

In this section I give the necessary background on Kunbarlang (§2.1) and then describe the expression of degree-semantics constructions in Kunbarlang (§2.2), showing that it does not fit into Beck et al.'s (2009) typology in a neat way. This will prompt me to explore a different solution to the observed cross-linguistic diversity, one that is based on measurement scales (§4).

2.1 Language background

Kunbarlang is an indigenous Australian language spoken by approximately 40 people in central Arnhem Land. It belongs to the Gunwinyguan family (Alpher, Evans & Harvey 2003; non-Pama-Nyungan), and like other Gunwinyguan languages is highly polysynthetic. The verb is the core of morphosyntactic complexity in Kunbarlang, showing a templatic organization with nine prefixal and two suffixal slots, in addition to the root. Every verb obligatorily indexes person and number of its subject and (if transitive) object, and inflects for tense and mood (there are no non-finite forms); the subject prefixes also indicate tense/mood features.[4] Argument structure can be altered via derivational morphology, and some nominals and adverbials may be incorporated into the verb. In the nominal domain, morphology is noticeably simpler than in other Gunwinyguan languages, but there is a noun class (i.e. grammatical gender) system with five classes. Noun class is an agreement category in the noun phrase: the class is inherent for the nouns and all their modifiers agree in it.

4. I do not separate tense/mood inflection from the verbal root in glossing examples here.

Kunbarlang is an understudied language. Harris's (1969) tagmemic sketch grammar and Coleman's (1982) unpublished honours thesis offer some important descriptive groundwork in the core areas of its grammar, but remain inaccessible to a wide audience, and moreover many aspects of the language have not been discussed in enough detail there. There is currently a full-scale documentation project that aims to expand on that previous work and produce a comprehensive reference grammar of this language (Kapitonov n.d.). All data in the present paper are from the author's original fieldwork in Warruwi, Northern Territory, in 2016–2018.

2.2 Kunbarlang comparative/degree constructions

Kunbarlang is interesting in that its specific array of degree constructions is not quite like any other attested so far. At first glance, it resembles a degree-less language very much. There are no morphological comparatives or superlatives in Kunbarlang, and in that respect it falls within Stassen/Bobaljik's class of implicit comparison languages (which is a widespread type in Australia). In other words, it only has paratactic, but not hypotactic, constructions. The analogue of a predicative phrasal comparative in Kunbarlang is most often expressed via conjunction of clauses with antonymous predicates (5a) or via conjunction of clauses one of which contains a semantically gradable predicate and the other—a predicative negator *karlu* 'not' (5b).[5] Moreover, inequality may be expressed by a conjunction of clauses with the same gradable predicate in each, where one instance is contrasted with the other through intensification with *ngemek* 'yet', as in the comparative of quantity example (5c).

(5) a. *Kundulk bi-nungku man-**djurrkmi**, la mayi bi-ngaybu man-**kukkarlyung**.*
tree DAT-you.GEN III-short CONJ NM.III DAT-I.GEN III-long
'My stick is longer than yours.' [lit. 'Your stick is **short** and mine is **long**.']
[IK1-160618_000-01]

b. *Ngal-bangardi kin-**kukkarlyung**, la Ngal-ngarridj **karlu**.*
II-skin.name II-long CONJ II-skin.name NEG.PRED
'Ngalbangardi is taller than Ngalngarridj.' [lit. 'Ngalbangardi is **tall** and Ngalngarridj is **not**.'] [IK1-160616_000-01]

c. *Bedbe kadda-kalng na-**rleng**, la ngayi **ngemek** nga-kalng na-**rleng** bonj˜bonj.*
they 3PL.NF-get.PST I-many CONJ I yet 1SG.NF-get.PST I-many RDP˜exactly
'I caught more [fish] than they did.' [lit. 'They got plenty, yet I got plenty, too.']
[IK1-160802_002-01]

5. Abbreviations used here are: 1 first person; 2 second person; 3 third person; CONJ conjunction; DAT dative; DEM demonstrative; GEN genitive; I class I; II class II; III class III; IV class IV; NEG negative; NF non-future; NM noun marker; NP non-past; OBJ object; PL plural; PRED predicative; PROX proximal; PST past; RDP reduplication; SG singular .

It is important to note that comparison is implied/inferred with the use of these conjoined constructions, rather than entailed. Consider example (6). It exhibits the crucial ambiguity between a literal and a comparative reading.

(6) *Ninda* *nayi* ***djarrang*** *na-**wanjak*** *la* *ninda* *nayi* ***djaddi*** *na-**rlengbinbin***.
DEM.PROX.I NM.I horse I-little CONJ DEM.PROX.I NM.I frog I-big
LITERAL: 'The horse is little [for a horse], the frog is big [for a frog].'
COMPARATIVE: 'The frog is bigger than the horse.' [IK1-160816_000-01]

The intuition is that the two readings correspond to the different ways to construe the comparison class against which the adjective is evaluated. On the literal (and plausible: the real-life horse is bigger than the real-life frog) reading, which one may call the *global* construal, the horse is evaluated against other horses, and the frog—against other frogs. The comparative reading (which I confirmed by showing the speaker a drawing of these implausibly-sized animals), on the other hand, construes the class as consisting of just those two animals, the mentioned horse and frog. Thus, I conclude that comparison is not constructionalized as the meaning of a conjunction. This will play a role in section 4 when I discuss the difference between the languages with implicit and with explicit comparatives.

This conjoined, or implicit, strategy is used for the vast majority of degree semantics constructions in Kunbarlang:

- predicative phrasal comparatives
- adverbial comparatives
- attributive comparatives
- comparatives of quantity
- clausal comparatives
- differential comparatives [with a measure phrase]
- comparison with a degree [with a measure phrase]
- comparative subdeletion

A systematic survey of the constructions from Beck et al.'s (2009) questionnaire reveals that only one of them has a lexicalized expression in Kunbarlang—namely, measure phrases (7). There is not enough diachronic information to conclude this with certainty, but it is plausible that the construction is a recent borrowing from English; the numerals and measure units, such as *foot* or *meter*, are often loanwords (7b). Notice, however, that original Kunbarlang lexicon can be used as well (7a,c).

(7) a. *Nga-karrme* ***kaburrk*** ***la*** ***kaburrk djanga*** *man-****kukkarlyung*** ***mayi*** ***kundulk****.*
1SG.NF-get.NP two CONJ two foot III-long NM.III tree
'I've got a **four feet long stick**.' [IK1-170620_1SY-03]

b. *Nginda ngunda* ***6 foot kin-kukkarlyung****, karlu, nginda kin-djurrkmi,*
DEM.PROX.II not 6 ft II-long NEG.PRED DEM.PROX.II II-short,
yimarne 4 foot.
like 4 ft
'She's not **6 feet tall**, no, she's short, maybe 4 feet.' [IK1-170616_1SY-01]

c. *kun-****djorlok*** ***korro*** ***middjaba****=ngaybu*
IV-deep at knee=I.GEN
'knee-deep' [ibid.]

Measure phrases are a [+DegPP] construction, since the syntactic phrase that expresses the measure is supposed to occupy the argument position of the gradable predicate. There are no constructions for differential comparatives or comparison with a degree, which are required for the diagnosis of the [+DSP] setting, on Beck et al.'s (2009) analysis. These constructions are *morphosyntactically* prerequisite for the [±DAP] diagnostics, so testing the scope and the negative island effects is trivially not applicable in Kunbarlang. Neither are there other DegPP constructions available: English comparative subdeletion prompts in elicitation yield conjoined clauses, and the only way to form a question is pragmatic: that is, there is a general 'what kind of' question that could be interprered as referring to a kind, some property, or the quantity depending on context (8a). The manner interrogative pronoun for 'how' is not used for degrees and may not directly combine with a gradable predicate (8b).

(8) a. *Birlinj nayi durduk ki-buddu-karrme?*
how NM.I dog 2SG.NF-3PL.OBJ-hold.NP
'What have you got, dog-wise?' [given in response to promt: 'How many dogs do you have?'] [IK1-180606_1SM-01]

b. **Birlinj man-bakkarlyung manda kundulk?*
how III-long DEM.PROX.III tree
intended: 'How long is that stick?' [IK1-170620_1SY-02]

This means that the only parameter that has the positive setting in Kunbarlang is the Degree Phrase Parameter. Moreover, even the DegPP cluster itself is not homogenous: we have MPs, but not DegQs or SubCs, as summarized in table 2. This picture is potentially inconsistent with the implicational hierarchy, viz. the prediction that [+DegPP] ⇒ [+DSP].

There are two main analytical possiblities: (i) try to modify and rescue the DSP-approach, or (ii) seek an alternative analysis. In the following section I begin by discussing the lexicalization solution to the presented problem. I shall conclude that this is not very desirable as it radically weakens the predictive value of the theory, and in its stead I shall propose an alternative analysis stemming from the delineation family of approaches.

Table 2: Kunbarlang against the background of Beck et al.'s (2009) typology

	DiffC	CompDeg	Scope	NegIs	DegQ	MP	SubC
Motu	N	N	n/a	n/a	N	N	n/a
Yorùbá, Samoan	Y	Y	N	n/a	N	N	n/a
Russian, Guaran	Y	Y	Y	Y	N	N	N
Thai, English	Y	Y	Y	Y	Y	Y	Y
Kunbarlang	N	N	n/a	n/a	N	**Y**	N

2.3 A lexicalization quirk?

There is on-going cross-linguistic work within the degree-based paradigm, which indicates considerable variation in the inventories of degree operators, such as equative or comparative operators (e.g. Berezovskaya & Hohaus 2015). This gives us an insight into how the DSP-approach can be upheld. As I have mentioned above, absence of a particular construction in a given language does not per se count as evidence for the negative setting of the relevant parameter, strictly speaking. It remains a logical possibility that an underlying semantic device, such as the degree type, or the order relation, exists in this language, but an accidental lexicalization gap conceals it. For the sake of concreteness, absence of a morphological comparative operator (like the English *-er* or *more*), does not immediately indicate unavailability of the comparison operation ($x > y$) on a conceptual level. Rather, it can be an idiosyncrasy of the lexical inventory.

Following the above reasoning, one may say, in regard of the Kunbarlang data, that the presence of the measure phrase construction validates not just the [+DegPP], but also the [+DSP], even in the absence of independent evidence for the latter. That is, perhaps unit names happened to be the only degree-related kind of expression that got lexicalized in Kunbarlang. This should be enough to resolve the contradiction outlined above.

I wish to argue, however, that such a move is highly undesirable. The main reason is that in this attempt to rescue the DSP-approach, one would render it unfalsifiable. As soon as negative evidence does not count for the negative setting of parameters, there remain no grounds to classify any language at all as degree-less, i.e. not even Motu, Washo or Warlpiri. As soon as lexicalization is allowed to explain away any puzzling gap in the data, all predictive power of the parameters is lost.

I venture that this also was the original intention of Beck et al., and adduce these two quotes to support my claim: "Perhaps [all languages] start with a $[-/-/-]$ setting and may then incorporate scales into the grammar, moving to $[+/-/-]$. This is a change that Samoan, perhaps, has just undergone" (op.cit.: 31). That is their conjecture about the directionality of language change. And further we read: "[m]ore concretely, according to our analysis it should not be possible for a language like Motu to develop degree questions, but not change in any other respect" (ibid.).

How can one remedy the situation instead? I shall argue now that one can preserve the typological insight and at the same time accommodate the Kunbarlang data by using tools from the measurement theory within a delineation framework.

3 Delineation approaches and measurement theory

The main alternative to the degree-based approaches is the family of delineation approaches. Here the gradable adjectives are simple predicates (rather than relations between degrees and individuals), whose extension is crucially context-sensitive. Delineation approaches have a number of appealing features (see Klein 1980 for the original argument and more detail). One is that the meaning of the comparative form of an adjective is a function of the meaning of the positive form. This is in accordance with the compositionality principle and is plausible from the cross-linguistic point of view, since the comparative form is usually morphosyntactically marked w.r.t. the positive form. This is unlike the degree-based approaches, where the positive and the comparative forms are typically derived independently from a common abstract representation (see e.g. an analysis of the abstract positive morpheme in Kennedy & McNally 2005: 350; but to the best of my knowledge, there are no known languages that have an overt POS morpheme). Another is that *nonlinear* adjectives, like the English *clever*, do not give rise to a total ordering, which is required on a degree-based analysis, but not under the delineation approaches.

I follow Klein's (1980) proposal here in assuming that every gradable adjective is interpreted with respect to a *comparison class*, i.e. a set of individuals. Thus, the truth of a sentence like *Lake Tanganyika is deep* is contingent on the contextually supplied comparison class: it is true in the comparison class c iff Tanganyika counts as deep in this class, as represented in (9).[6]

(9) $[\![\mathbf{deep}(Tanganyika)]\!]^c = 1$ iff Tanganyika counts as deep in c

Thus, the truth of (9) depends not only on the physical depth of Lake Tanganyika, but on the context c in which it is evaluated.[7] However, a comparative sentence like *Lake Baikal is deeper than Lake Tanganyika* is context-independent, and is true just in case there exists a comparison class in which Baikal counts as deep, but Tanganyika does not. One straightforward comparison class that verifies it is the class that contains only these two members, Baikal and Tanganyika. A welcome result is that the truth of the comparative statement does not entail that (9) should be false in any random context. Thus, vagueness and context sensitivity of gradable adjectives are preserved.

3.1 Measurement theory

Measurement theory is a framework for mathematical reasoning about measurement and comparison originally developed by Krantz et al. (1971). It uses real numbers as a model of other ordering structures (e.g. scales). The rationale behind this is that the properties of real numbers are well studied and using them as a model could lead to a better understanding of scales in other, non-numerical, domains. The abstract scales can vary in their expressive power, corresponding to different types of natural phenomena. Crucially for our enterprise here, measurement theory can be used in degree semantics (see, a.o., Klein 1991, Sassoon 2010, van Rooij 2011b). These are the

6. I shall use *context* as synonymous with *comparison class* in what follows.

7. Klein (1980), following Kamp (1975), formalizes the 'counts as' notion via the POSITIVE and NEGATIVE EXTENSION of each given predicate ζ, and the EXTENSION GAP that lies in-between accounts for the borderline cases phenomenon shown by vague predicates, i.e. the existence of objects to which it is not clear if the predicate applies (cf. Burnett 2017: 17).

important four types of scales (after Stevens 1946) in the order of increasing informativeness, such that each next one implies the preceding one:

- nominal (classification, e.g. eye colour)
- ordinal (ordering, e.g. competition outcomes)
- interval (difference, e.g. temperature in F or C)
- ratio (proportions, e.g. length or age)

These types of scales can all be represented as ordering structures of the form $\langle X, R\rangle$, where X is a set of individuals and R a relation on that set. The difference between the types of scales lies in the different properties of R. Expositions of this framework in its linguistic applications (e.g. Klein 1991, van Rooij 2011b) typically begin with the ordinal scales, since this is where explicit comparison starts. In this case the relation, let's call it R_O, is a *strict weak order*, i.e. it is irreflexive (IR), transitive (TR) and almost connected (AC).[8]

(IR) $\forall x : \neg R(x, x)$

(TR) $\forall x, y, z : (R(x, y) \wedge R(y, z)) \rightarrow R(x, z)$

(AC) $\forall x, y, z : R(x, y) \rightarrow (R(x, z) \vee R(z, y))$

We can use this class of structures, $\langle X, R_O\rangle$, to formulate the semantics for an (explicit) comparative, e.g. the English suffix *-er*. Writing c for a *context*, i.e. $c \subseteq (D_e)$, and P for a gradable adjective, which to each context c assigns its subset (i.e. the positive extension of that adjective):

(10) $[\![\mathbf{P}]\!]^c = \lambda x.P(c)(x)$

(11) $[\![-\mathbf{er}]\!]^c = \lambda x \lambda P \lambda y \exists c'.P(c')(y) \wedge \neg P(c')(x)$

We notice two things here. First, the formulation of the conditions in (11) renders the comparative adjective a (strict) weak ordering on the set of individuals exactly as defined above (i.e. a particular kind of R_O relation). We may alternatively say $y \succ_P x$, intending $\succ_P$ to be the ordering that the gradable adjective P imposes on its domain. Second, we have the desired result: the comparative form of an adjective is a function of its positive form (10).

8. Note that IR and TR together imply *asymmetry*, i.e. the property that $\forall x, y : R(x, y) \rightarrow \neg R(y, x)$. PROOF: suppose R is symmetric; then $R(x, y) \wedge R(y, x)$. Then by (TR) it must follow that $R(x, x)$; but that contradicts (IR). □

4 Towards a measurement-theoretic typology

As the natural next step from the analysis of the comparative, I observe, together with van Rooij (2011b), that ordinal scales are insufficient to accurately represent *more informative* ordering structures, i.e. some more complex comparative constructions. In particular, we need to be able to express addition for the differential comparatives, and multiplication—for the ratio comparatives (such as *Lake Edward is twice as deep as Lake Albert*).[9] Consequently, one has to make use of other classes of ordering structures, which yield the other scales: *algebraic difference structures* for the interval scales, and *closed extensive structures* for the ratio scales. For space considerations, I do not give full definitions here, but refer the interested reader to van Rooij (2011b: 340–4). I just note informally that the former ones utilize a quaternary, rather than a binary, relation; and the latter ones involve a concatenation operation $\circ$ on X in addition to the strict weak order relation (so, $\langle X, R_O, \circ \rangle$).

I argue that the nominal scales, usually left out from the (Anglo-centric) linguistic discussion of the comparision, are directly relevant for the analysis of implicit comparatives. Arguably, at least some of the paratactic comparatives can be faithfully represented via nominal scales. I would like to propose that nominal scales can be captured by the ordering structures of type $\langle X, R_N \rangle$, where R_N is an *equivalence* relation, i.e. one that is reflexive (RF), transitive (TR above) and symmetric (SM).

(RF) $\quad \forall x : xRx$

(SM) $\quad \forall x, y : xRy \rightarrow yRx$

Equivalence relations in a structure $\langle X, R_N \rangle$ partition the set X into equivalence classes, i.e. subsets such that within each such subset, R_N holds between all its members, but never between members of different subsets (Partee, ter Meulen & Wall 1990: §3.4).

A picture emerges along the following lines: languages differ with respect to which is the most complex type of a scale that they can refer to in their degree-semantics constructions. For instance, in Motu only nominal scales are available, and therefore we only find conjoined comparatives, and no other constructions, there. In Yorùbá or Samoan, on the other hand, the presence of DiffC indicates that interval scales must be available. What does it mean for a language to only have access to ordinal scales? One would expect to find morphological phrasal comparatives, but not any of the [+DSP] constructions. It seems that Nez Perce is exactly such a language (Deal & Hohaus 2018). Presence of ratio comparatives, e.g. in English, would attest to ratio scales being available.

- conjoined comparatives: nominal
- morphological comparatives: ordinal
- differential comparatives (*3in taller than*): interval
- ratio comparatives (*twice as tall as*): ratio

9. Notice that ratio comparatives are not part of Beck et al.'s (2009) questionnaire.

Let us now return to the Kunbarlang measure phrases, which served as the impetus for this investigation. Van Rooij (2011b: 340–1) suggests that ratio scales are required to represent measure phrases, since they allow for multiplication. This is in line with Sassoon's (2010) compositional analysis of unit names. However, I propose that at least in some languages MPs can be analyzed as equivalence classes. That is, some languages treat them as non-decomposable, basic units.[10] If this is on the right track and Kunbarlang MPs are such non-decomposable units, then nominal scales would suffice. This is precisely the purpose that nominal scales serve and the type of information they represent: classifying individuals into groups. Thus, I analyze the puzzling MPs in Kunbarlang as lexicalized unit names. An example rendition follows in (12) for the phrase *kaburrk djanga man-kukkarlyung* [two foot III-long] 'two feet long' (e.g., stick) from example (7a) above.

(12) $[\![\text{kaburrk djanga mankukkarlyung}]\!]^c = \lambda \text{x}.2\text{ft}_{\text{kukkarlyung}}(\text{x})$

The representation in (12) suggests that semantically a measure phrase in Kunbarlang is simply a characteristic function of the '2ft' class, and not a ratio between the length degree of x and the length degree of a unit-object (say, foot; cf. Sassoon 2010).

Piecing the foregoing discussion together, I now make a concrete proposal which shows how the different types of scales can provide a framework for the cross-linguistic variation that we have seen. Table 3 summarizes it concisely:

Table 3: Beginnings of a measurement-theoretic typology

Language	Highest available scale	Degree-based type
Motu, Washo	nominal without unit names	−DSP
Kunbarlang	nominal with lexicalized unit names	↯
Nez Perce	ordinal	↯
Samoan	interval	+DSP
English	ratio	+DegPP

The lightnings (↯) in the degree-based type column indicate that such a language does not have a natural place in the Beck et al.-style typology. At least to the extent that it allows inclusion of Nez Perce and Kunbarlang as subtypes of degree-less languages, the measurement-theoretic typology offers the benefits of a finer gradation than the DSP-approach, as it stands, has to offer.

The final point I want to touch on is the absence of degree questions in Kunbarlang. Intuitively—and indeed on Beck et al.'s analysis (ex. 15–16, pp. 7–8)—DegQ is a direct counterpart of the MP, differing only in that a question word is used in place of the measure unit phrase. I suggest that the reason why Kunbarlang has one but not the other is a genuine lexical gap. It is probable that the construction was borrowed from English and subsequently generalized to include original Kunbarlang numerals and measure units (7a, c). It is then not surprising that a question word is lacking. Recall that there is only one way to form a 'kind'-question, which may be interpreted as referring to degree, manner, quality or quantity, depending on context (8). An alternative hypothesis

10. Cf. also Tiemann, Hohaus & Beck's (2012) degree individuals, i.e. pronominal measure phrases such as *this big* (accompanied by a gesture).

about the absence of DegQ in Kunbarlang would be that these questions and measure phrases are in fact underlyingly dissimilar; for instance, perhaps DegQ necessarily involves quantifier raising, while this can be avoided for MP. To determine whether this is a possibility, further analysis of the Kunbarlang syntax-semantics interface is required.

5 Conclusions and further directions

In this paper I have laid out the groundwork for a measurement-theoretic typology of comparison constructions, building on the ideas of Klein (1980) and their recent development, e.g. by van Rooij (2011b). I have adduced data from the degree sematics domain in Kunbarlang, which prove problematic for the current main typological framework, namely the degree-based one of Beck et al. (2009). The measurement scales of increasing informativeness, I argue, may provide a basis for a typology that is both more fine-grained and empirically more adequate. Essentially, the different approaches make different predictions about which constructions would be more basic due to the inherent mechanics of these formalisms. That is, in a degree-based framework, differential comparatives require a less complex representation. In delineation frameworks, on the other hand, equatives and DegQs are simpler to account for. I contend that we need to broaden our empirical basis beyond the 15–20 languages examined to date, before further-reaching conclusions can be made. That means that a formidable amount of work remains to be done before this proposal can be fully evaluated.

Some of the pressing issues to be explored, as I see them, are these. I have claimed that the different scales form a natural progression, according to the information they can encode, but I have not elaborated on it in detail. In other words, a full formalization of the typology sketched here still needs to be done. Next, I have not discussed, nor indeed analyzed, some of the constructions that were crucial in Beck et al.'s (2009) questionnaire, in particular DegComp, SubC and the ones pertaining to the [±DAP] parameter. That is, part of the challenge that the present proposal has to meet, is to accurately capture the full range of the empirical findings in the previous work. It's relevant to note, however, that the empirical picture that we need to capture is not exactly that presented above, e.g. in (4). For one, Tiemann, Hohaus & Beck (2012) argue that DegPP can be set independently of DAP, and thus the implicational relations are somewhat more relaxed than in Beck et al.'s original formulation.

Finally, I would like to point out that the matters of concern here are most probably more intricate than a choice between a degree-based or measurement-based typology could decide. As has been pointed out by Beck et al. (2009), the principles underlying individual constructions may be more semantic or more syntactic (for instance, the [±DegPP] parameter is a syntactic parameter). Exploring the syntax/semantics interface as manifest in the realm of comparison is one of the overarching tasks in this research program.

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The semantics of perfect in Nafsan and implications for typology[1]

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Abstract. This paper offers an analysis of the semantics of the perfect in Nafsan (South Efate) and argues for several implications for the typology of the perfect aspect. I show that all the functions of the perfect in Nafsan can be derived from placing the Topic Time in the posttime of the event in question, equal to Klein (1994) analysis of the English perfect. The main typological implications discussed within this analysis are: a) perfect in a tenseless language can have present, past, and future perfect readings, b) the interpretation of change of state can arise with perfects through aspectual coercion of states, c) duality with negation can arise as a consequence of the aspectual coercion process and not necessarily from the meaning of 'already'. These three points are taken to argue against the proposed typological category of "iamitive" that unites the meanings of the resultative function of the perfect and 'already' (Olsson, 2013).

1 Introduction

This paper deals with the category of perfect aspect in Nafsan, also known as South Efate [erk] (Southern Oceanic, Vanuatu), and the implications of its semantic analysis for typology.[2]

Perfect aspect has been extensively studied on English and other Indo-European languages, and many semantic theories have been proposed with the aim of unifying the functions of this category (among others, Comrie, 1976; McCoard, 1978; Klein, 1994; Iatridou et al., 2003; Portner, 2003). In typological studies, perfect has been treated as a valid cross-linguistic category (Dahl & Velupillai, 2013), and recently also complemented with another typological category of iamitives (Olsson, 2013). In this respect, the data from Oceanic languages is crucial for our understanding of the typology of perfect aspect. First of all, the mention of the perfect is ubiquitous in Oceanic grammars, which means that this category is strongly represented in this language family. Secondly, it has been noted by several Oceanic linguists that the perfects in Oceanic languages do not behave as expected from our current theories of the perfect. This is the case in Toqabaqita (Lichtenberk, 2008) and Nêlêmwa (Bril, 2016), where the perfect expresses a change of state, and in the latter it can also co-occur with temporal adverbials (Bril, 2016:83). These unusual features have led to two different ways of analyzing the perfect. In the typological approach, these different functions of the perfect, common in Austronesian languages, were taken as symptomatic of a

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[2]All the examples in this paper follow the Leipzig Glossing Rules except DP – direct possession, NEG1 – first marker of discontinuous negation, NEG2 – second marker of discontinuous negation, and PSP.REAL – prospective realis, V – epenthetic vowel preceding suffixes of direct possession.

new typological category, called iamitive (Olsson, 2013; Dahl & Wälchli, 2016).[3] This category is understood as uniting the function of the resultative perfect and the meanings of 'already'. On the other hand, in the formal semantics approach, it has been shown that the analysis of the perfect and perfect-like functions can vary depending on the language. For instance, Koontz-Garboden (2007) argues for a well-behaved perfect in Tongan, whose change-of-state meaning is derived through aspectual coercion. A marker diachronically related to the Tongan perfect has been reanalyzed as an inchoative marker in Samoan (Hohaus, 2017) and Niuean, where it additionally places the event in the Perfect Time Span[4] (Matthewson et al., 2015). In Javanese, Vander Klok & Matthewson (2015) show that the perfect-like marker *wis* should be semantically analyzed as equivalent to the meaning of 'already'.

Following these different perspectives on the perfect in Oceanic languages, the Nafsan perfect lends itself as a good case study, particularly because it can co-occur with temporal adverbials in certain contexts, and it can encode a change of state with stative verbs. In the semantic analysis of the perfect in Nafsan presented in this paper, I show that all functions of the perfect, including the "unexpected" ones, can be be derived from Klein (1994) definition of perfect as placing the Topic Time (TT) in the posttime of the Situation Time (TSit).[5] I analyze all the attested functions of perfect in Nafsan and show how their meanings are derived. By analyzing the processes through which certain "unexpected" meanings are derived, I argue for three main generalizations regarding the nature of Oceanic perfects:

1. Present perfect is incompatible with temporal adverbials. If perfect can occur with temporal adverbials in a tenseless language, this might be due to the reinterpretation of perfect as past or future perfect. In this case, the temporal adverbial is interpreted as being in TSit instead of TT.

2. In languages without any dedicated morphology for the expression of change of state, this meaning can be achieved through aspectual coercion of states marked by perfect (cf. Koontz-Garboden, 2005, 2007).

3. Duality in negation does not necessarily arise from the meaning of aspectual particles like 'already' (Löbner, 1989). It can also arise as a consequence of aspectual coercion of states into changes of state marked by perfect.

Finally, these three points are taken to show the importance of language-internal and system-dependent factors that govern how a specific TMA category will be expressed. This speaks against the category of iamitives, which neglects complex language-internal interactions between semantics, pragmatics, and syntax. In contrast to iamitives, I argue that the perfect as a category that places the TT in the posttime of the TSit is a good candidate for a typologically valid category,

[3]Some of the languages said to have a iamitive category are Indonesian, Mandarin Chinese, Mwotlap (Oceanic), Toqabaqita (Oceanic), Thai, and Vietnamese (Olsson, 2013).

[4](Matthewson et al., 2015) defines it in the following way: "This is an interval whose left boundary is provided by some temporal adverbial, and whose right boundary is provided by tense, and within which an event is placed by the perfect (Iatridou et al., 2001:158)."

[5]TT is the time the assertion is about and TSit is the time at which the event took place (see Klein, 1994).

whose cross-linguistic differences can be explained by different processes operating in individual language systems, without the need to posit different lexical definitions of the perfect.

This paper is structured as follows: Section 2 discusses the methodology, Section 3 outlines the main predicate structure in Nafsan, Sections 4 and 5 analyze different functions of the perfect, Section 6 compares the functions of the perfect and 'already', and Section 7 is a conclusion.

2 Methodology

In this section I describe the methodology for deriving the analysis of the semantics of the perfect and elicitation methods used to elicit specific structures in Nafsan.

In the grammar of Nafsan, Thieberger (2006:168) described the category of perfect aspect by offering a few examples with a resultative function. In order to understand the full distribution of the perfect and all of its available functions, I consulted the corpus of Nafsan (Thieberger, 1995–2018) and collected further data in two field trips to Erakor village (see Figure 1) in 2017 and 2018. During my 2017 field trip I elicited the *perfect* and *future* questionnaires designed by Dahl (2000) with one speaker. I also elicited storyboards developed in the MelaTAMP project and Totem Field Storyboards with several speakers,[6] ranging from 2 to 9 speakers depending on the storyboard. The elicitation process would start by me telling the story in Bislama and then letting the speaker retell it in Nafsan. Depending on the speaker, there was a different level of independence in retelling the story, as some speakers required to consult the text in Bislama referring to a storyboard picture. However, there was no indication of translation effects with any of the speakers, which might result from the fact that categories related to perfect in Bislama behave differently from the Nafsan perfect. In 2017 I used two storyboards targeting change-of-state meanings (von Prince, 2018b; TFS, 2012) I hypothesized that they could be expressed with the perfect, and others targeting modal contexts. Regardless of the intentionally targeted contexts, all the storyboards as parallel texts proved to be an important source for the data on perfect aspect. After developing an analysis of the perfect based on the data collected in 2017, I designed storyboards targeting crucial functions of perfect aspect (Krajinović , 2018; Krajinović, 2018). In my second field trip in 2018 I elicited these storyboards together with the Totem Field Storyboard "Miss Smith's bad day" (Matthewson, 2014). Relevant examples from storyboards will be referenced and explained in the sections below. All the examples with a reference starting by AK1 and including a time stamp come from my fieldwork data archived in PARADISEC (Krajinović, 2017). Examples referenced by an identifier number are taken from the corpus of Nafsan (Thieberger, 1995–2018).

3 The structure of Nafsan

Nafsan is an SVO language with a predicate structure often termed *verbal complex* in Oceanic languages. The verbal complex usually consists of a marker with the person and number reference of the subject and other tense, mood, aspect (TMA) or polarity markers, typically preceding the verb. Subject proclitics are portmanteau morphemes that carry TMA values and they are also the

[6]Storyboards are picture-based stories which contain the intended semantic context and targeted meanings (see also Burton & Matthewson, 2015). All the relevant storyboards are cited throughout the article.

Figure 1: A map of the island of Efate showing the locations where Nafsan is spoken

only obligatory marking of the verb (Thieberger, 2006:149). They attach to any following word: a TMA marker, an auxiliary verb, a benefactive phrase, or the verb (Thieberger, 2006). Each marker occupies a specific morphosyntactic position and its position in the verbal complex is fixed relative to the other elements. Table 1 shows the ordering of these elements in the Nafsan predicate. Each category is exemplified with a given functional word in the second row.

Table 1: Exemplified verbal complex in Nafsan adapted from Thieberger (2006:243)

SBJ.AGR	TMA	NEG1	AUX	BEN	**Verb**	COMPL	NEG2
i= (3SG)	*pe* (PRF)	*ta(p)*	*to* (PROG)	*ga* (3SG)		*su*	*mau*

Table 2: Subject proclitics in Nafsan based on Thieberger (2006:150)

	General	Irrealis	Perfect-agreeing
1SG	*a*=	*ka*=	*kai*=
2SG	*ku*=	*p̃a*=	*kui*=
3SG	*i*=	*ke*=	*ki*=
1DU.INCL	*ta*=	*tak*=	*takai*=, *tai*=
1DU.EXCL	*ra*=	*rak*=	*rakai*=
2DU	*ra*=	*rak*=	*rakai*=
3DU	*ra*=	*rak*=	*rakai*=, *rai*=
1PL.INCL	*tu*=	*tuk*=	*tu*=, *tui*=, *tukoi*=
1PL.EXCL	*u*=	*ko*=	*ui*=, *koi*=
2PL	*u*=	*ko*=	*koi*=
3PL	*ru*=	*ruk*=	*rui*=, *rukui*=

Table 3: TMA markers in Nafsan

TMA marker	Proclitic	Function
pe	**perfect-agreeing, general**	**perfect**
fe	irrealis	immediate future
po	general	prospective realis
fo	irrealis	prospective irrealis
f	general, irrealis	conditional
fla	general, irrealis	potential
ta	general, irrealis	'still'

Thieberger (2006) divides the subject proclitics in three paradigms: realis, irrealis, and perfect. In my work on Nafsan, I reanalyzed realis as a general subject marking unspecified for mood (Krajinović, 2018), and the perfect paradigm as being perfect-agreeing, and not encoding perfect aspect on its own. The perfect-agreeing proclitics can only encode perfect aspect in combination with the perfect marker *pe*. The three subject proclitic paradigms are exemplified in Table 2.

TMA markers attach to the subject proclitics and depending on their meaning, they can combine with only one or two paradigms presented in Table 2. These restrictions are listed in Table 3 for all the TMA markers of that slot.[7] In this paper, I focus on the perfect marker *pe* which can combine with either the general or perfect-agreeing proclitics without a difference in the meaning, although the combination with perfect-agreeing proclitics is considerably more frequent.

4 Past, present, and future perfect meanings

In this section I analyze the functions of the perfect in Nafsan which are equivalent to the functions of past, present, and future perfect in English. These functions are resultative, experiential, and universal perfect, as well as the presence of adverbial restrictions and anteriority readings.

The resultative function of the perfect was tested with the storyboard "Making laplap" (Krajinović, 2018). This story is about two friends who are preparing laplap, Vanuatu's national dish. One of the steps of the cooking process shown in the storyboard is the grating of the taro. One of the friends finishes grating the taro and produces the sentence in (1). For this targeted sentence 6 out of 6 consulted speakers produced perfect aspect on the verb.

(1) *Kineu* ***kai=pe*** *maa ntal su.*
1SG 1SG.PRF=PRF grate taro COMPL
I have grated the taro. (AK1-146-02, 00:02:32.335-00:02:41.410)

As we can see, the process leading up to the completion of grating the taro in the story ensures that a resultative reading is unambiguously intended. Interestingly, when there is no indication of a clear preceding cause of the event, the perfect marking is optional. We can confirm this with an example from the storyboard "Miss Smith's bad day" (Matthewson, 2014). In this storyboard,

[7] This is the TMA slot in Table 1. Auxiliary verbs in the slot AUX do not have restrictions on subject proclitics.

Miss Smith tries to teach her class but gets continuously interrupted by her students. At one point, one student tells her that Bob has fallen asleep, as in (2). In this context, there is no clear cause or a process leading up to Bob falling asleep. This means that the speaker can choose whether they want to express that Bob falling asleep is a resultative state or not. This is confirmed in the Nafsan data, where only 1 out of 5 speakers used the perfect in this context and others resorted to the general marking on the verb.

(2) *Bob* ***ki=pe*** *matur.*
Bob 3SG.PRF=PRF sleep
Bob has fallen asleep. (AK1-146-04, 00:03:25.753-00:03:30.766)

The second function discussed here is the experiential function of the perfect. In the storyboard "Miss Smith's bad day" this meaning is targeted by Miss Smith asking a question in (3) and a student's answer in (4). Perfect was used in both sentences by 5 out of 5 speakers. The analysis that experiential meanings are a function of perfect is supported by the fact that speakers judge sentences without perfect unacceptable with the experiential reading (cf. recording AK1-123-01).

(3) *Fei kin* ***ki=pe*** *pag-ki ntaaf?*
who COMP 3SG.PRF=PRF climb-TR mountain
Who has ever climbed a mountain? (AK1-147-04, 00:00:48.786-00:00:50.800)

(4) *Kineu* ***kai=pe*** *pag-ki ntaf i=skei su.*
1SG 1SG.PRF=PRF climb-TR mountain 3SG=one COMPL
I have climbed a mountain. (AK1-147-04, 00:00:57.590-00:01:01.796)

Experiential readings are also possible with stative verbs. In (5) the state of being red[8] receives an experiential reading.

(5) *Nasuñ neu* ***ki=pe*** *pei miel, me* ***ki=pe*** *tap miel malfanen mau.*
house 1SG.POSS 3SG.PRF=PRF first red but 3SG.PRF=PRF NEG1 red now NEG2
My house has been red before, but it's not red anymore. (Lionel Emil, 04/02/18, based on Koontz-Garboden 2007:142)

Universal ('since') readings of perfect in Nafsan were targeted in the storyboard "Haircuts" (Krajinović , 2018). In this storyboard two friends who have not seen each other in a long time meet and comment on their haircuts. After his friend points out how his hair has grown, the character produces the sentence in (6). In this context, all the speakers that produced the targeted 'since' structure used the perfect.[9]

(6) *nal-u-k ga* ***ki=pe*** *pei top malpei mai malen kin a=to lag*
hair-V-1SG.DP that 3SG.PRF=PRF first big before come when COMP 1SG=PROG sing
eñrom ni band i=skei
inside of band 3SG=one
My hair has been long since I started singing in a band. (AK1-152-03, 00:03:00.705-

[8] In Nafsan all property concepts are verbs.
[9] 3 out of 5 speakers produced the targeted 'since' structure.

00:03:14.338, based on Koontz-Garboden 2007:142)

I turn to the expression of anteriority in Nafsan, which is equivalent to the meaning of past and future perfect in English. In Nafsan, the same form of perfect can express anteriority in relation to the TT in past and future contexts. One such future context is presented in (7).

(7) Context: [B is setting out on a journey. A intends to sell her own house while B is away. A tells B:] (Dahl, 2000:TMAQ 84)

malraan pa=ler mai ntau nen tu me ***kai=pe*** *sor nasum̃ neu kia.*
when 2SG.IRR=return come year that next and 1SG.PRF=PRF sell house 1SG.POSS that

When you come back next year, I will have sold my house. (AK1-132-01)

The interesting property of anteriority readings is that, unlike other readings mentioned so far, they allow a co-occurrence with temporal adverbials. This can be illustrated by the contrast between (8) and (9).

(8) Context: A question asked at 9 o'clock a.m.: Why do you look so tired? Answer: I WAKE UP at 4 o'clock this morning (TT). (Dahl, 2000:TMAQ 16)

kai=pe/* ***a=**pilo 4 oklok pulpog.*
*1SG.PRF=PRF 1SG=wake.up 4 o'clock morning

I woke up at 4 o'clock this morning. (AK1-119-01)

(9) Context: If your alarm is set for 5 a.m. (TT), but by chance you woke up at 4 a.m. (TSit).

Kai=pe *pilo 4 oklok pulpog.*
1SG.PRF=PRF wake.up 4 o'clock morning

I had woken up at 4 o'clock in the morning. (AK1-119-01)

Example (8) evidences that specific temporal adverbial of 4 a.m., which sets the TT, is incompatible with perfect. This is equal to the English present perfect. However, (9) shows that 4 a.m. can be reinterpreted as being in TSit, if there is an indicated TT which is temporally posterior to it (5 a.m. in this case).

This leads us to the semantic analysis of perfect aspect in Nafsan. I adopt the analysis proposed by Klein (1994) for perfect in English, as outlined in (10) and visualized in (11).

(10) Perfect places TT in posttime of TSit (Klein, 1994).

(11) ——pretime——TSit——[**TT=posttime**]——

This analysis explains the resultative, experiential, universal, and anteriority readings where TT is in the posttime of the event described by the verb. It can also explain the incompatibility with temporal adverbials, as in (8). Since perfect places TT in the posttime of the event, the temporal reference of when the event took place is incompatible with its own posttime. However, if the

context provides a salient TT posterior to the event, then perfect can co-occur with a temporal adverbial situated in TSit. Perfect expresses being in the posttime of the TSit, and thus, the event achieves a reading of anteriority in relation to TT.

As a tenseless language, Nafsan has shown that perfect can have either past, present or future readings, which has important implications on adverbial restrictions with perfect. One of the main tests for the perfect cross-linguistically is to see whether it can co-occur with temporal adverbials, since that is not expected from the present perfect. However, in a tenseless language or a language where the perfect cannot combine with tense, the perfect can easily be reinterpreted as either past or future perfect and temporal adverbials as being in TSit.[10] This property needs to be expected from perfects in tenseless languages and included in the typology of the perfect.

5 Change-of-state meaning

In this section I analyze the meanings of change of state that arise with the perfect and I show how they can be derived from the analysis presented in Section 4.

Olsson (2013) observed that in some languages resultative perfect behaves differently from the English perfect when it comes to states. He illustrates this difference by comparing examples (12) and (13), where (12) has the meaning of English perfect and (13) has the meaning of what he calls "iamitives".

(12) The fruit has been ripe.

(13) The fruit is/has become ripe.

Unlike the English perfect, iamitives necessarily express a change of state with stative verbs, in which they resemble the meanings of the aspectual particle 'already'. Essentially, the meaning of change of state is only possible with states which have an initial boundary like 'ripe', but not with properties like 'raw' (Olsson, 2013). This prediction is borne out in Nafsan, where perfect can be used with the property of 'ripe' (14), but not 'raw' (15).

(14) (Imagine some fruit that is common in your area) You can eat this one. It BE RIPE. (Olsson, 2013:47)

ku=tae paam tene, ***ki=pe*** *mam.*
2SG=can eat that 3SG.PRF=PRF ripe
You can eat that, it's ripe. (AK1-156-01)

(15) (Imagine some fruit that is common in your area) You cant eat this one. It BE RAW. (Olsson, 2013:47)

ku=kano paam tene, ***(*ki=pe)*** *i=ta met.*
2SG=cannot eat this 3SG.PRF=PRF 3SG=still raw
You can't eat this, it's still raw. (AK1-156-01)

[10]Cleary-Kemp (2015) has observed this type of behavior with perfect in Koro, a tenseless Oceanic language of Admiralty Islands.

In the storyboard "Haircuts", the meaning of change of state of the hair color was also derived by the perfect, as shown in (16). This shows that the perfect gives rise to a change of state interpretation with states[11] and contrasts with individual-level properties marked only with the general marking, as in (17).

(16) *Malfane nal-u-k* ***ki=pe*** *taar.*
now hair-V-1SG.DP 3SG.PRF=PRF white
My hair is blond now. (AK1-146-03, 00:03:31.991-00:03:33.853)

(17) *ku=lek faat ne faat nen* ***i=top***
2SG=look stone this stone that 3SG=big
You look at that stone. That stone is big. (015.033)

In contrast to the iamitive analysis (Olsson, 2013), I account for these properties of the perfect by maintaining the analysis of placing the TT in the posttime of TSit and adopting the analysis of aspectual coercion proposed by Koontz-Garboden (2007) for Tongan. In Nafsan, like in Tongan, there is no derivational change-of-state morphology, which leads to the possibility of one same verb having both stative and change-of-state interpretations. Although in an example like (17) only a stative meaning is possible, in specific contexts where a stage-level property is described, a stative verb can be coerced into the meaning of change of state. As we can see in (18), the otherwise stative verb *pi* 'be' is interpreted with the change-of-state meaning of 'become'.[12] Since *pi* is marked by the general subject marking, this effect is triggered by the meaning of *pan go* 'until' (literally 'go and').

(18) *ra=po lekor wes pan go* ***i=pi*** *teesa p̃ur*
3DU=PSP.REAL watch 3SG.OBL go and 3SG=be child big
They looked after him until he became a big boy. (074.009)

Example (18) shows that, depending on the context, stative verbs in Nafsan can be coerced into changes of state. This is exactly what happens with functions of perfect that require a dynamic interpretation – the change-of-state interpretations with perfect arise only with the resultative perfect in Nafsan. Experiential and universal functions of perfect are compatible with states without triggering a change-of-state meaning, see examples (5) and (6).[13] A definition of resultative perfect is given in (19).

(19) Definition of the resultative perfect by Koontz-Garboden (2007:124): "A perfect in the resultative reading denotes a state ϕ which is true at an interval R iff there is an interval E, the final moment in E is the initial moment in R, and ϕ is false at the initial bound of E and true at the interval R."

When resultative perfect semantics combines with states, it gives rise to an inference that the state

[11]The meaning of change of state can also be derived with dynamic verbs marked with the progressive marker and perfect.

[12]This is not the only strategy to express the meaning of 'become'. A more frequent strategy in Nafsan would be to say *mai pi*, literally 'come be'.

[13]This also shows that an inchoative analysis as suggested by Matthewson et al. (2015) for Niuean would not explain Nafsan data.

denoted by it was preceded by a change into it, which is in conflict with the stative semantics, and this leads to coercion of states into changes of state (Koontz-Garboden, 2007). Thus, the change of state is interpreted as TSit and TT is placed in the posttime of this change of state. This is illustrated in (20). Regarding the definition in (19), TSit corresponds to E, TT to R, and the posttime to ϕ.

(20) ¬P——[TSit=change-of-state][TT=P]——

Although the iamitive analysis attempts to capture the connection between resultative perfects and the meaning of change of state by analyzing them as a new typological gram, it fails to show the semantic connection between the change-of-state meaning and other functions of the perfect. The case of Nafsan shows that the meaning of change of state is not unrelated to experiential and universal perfects, and anteriority readings. Instead of positing a new typological category, we should focus on the language-internal processes that lead to the perfect developing the change-of-state meaning. The question here is why aspectual coercion of states happens with the perfect in Nafsan. Following Koontz-Garboden's (2007) observations, there are two typological features of Oceanic languages that might make them susceptible to developing this meaning. Firstly, Oceanic languages do not encode the meanings of change of state derivationally and thus need to employ other processes triggered in specific contexts, such as aspectual coercion, to disambiguate the change of state readings from states. Secondly, they do not distinguish verbs from adjectives in the predicate position. This means that property concepts behave like verbs and in a resultative perfect reading require a dynamic interpretation of change of state.

6 'Already': earliness implication and duality

It has been shown that the meaning of change of state, as described in Section 5, is related to the meaning of 'already' (Vander Klok & Matthewson, 2015). Olsson (2013) considers the meaning of 'already' to be an integral part of the iamitive semantics. Coming back to the example of 'fruit being ripe' (Section 5), we can see that the change-of-state meaning in Nafsan is semantically closer to a sentence like (21) in English than it is to the version with English perfect in (12).

(21) The fruit is already ripe.

This section addresses the relationship of the Nafsan perfect meanings with the meaning of 'already'. There are two defining semantic properties of 'already' I explore here. These are the earliness implication and effects of duality with negation. 'Already' has an implication that the event took place earlier than expected (Krifka, 2000). Olsson (2013) also takes "expectedness" that an event was going to take place as a defining characteristic of iamitives. However, in Nafsan the perfect does not have the earliness implication or expectedness as a part of its semantics. Example (22) comes from the storyboard "Fat pig" (von Prince, 2018a), where the main character gets a pig he needs for his big traditional ceremony. He fenced the pig off, but the next day, to his surprise, the pig was not there. As we can see, perfect is used here to indicate the anteriority of the event of 'pig escaping' and the interpretation that the event was expected would not be possible.

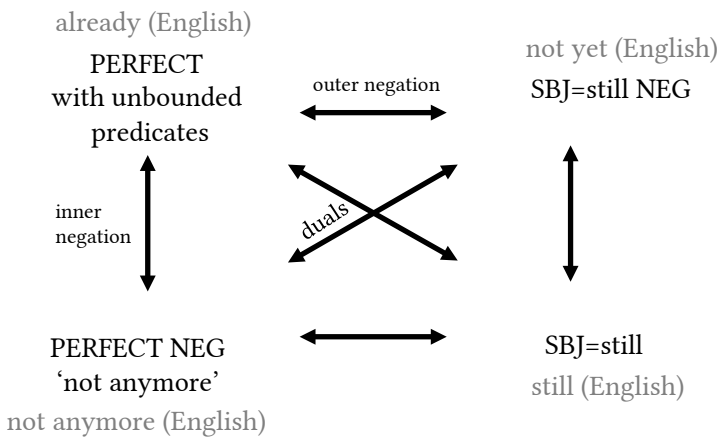

Figure 2: Duality schema with Nafsan perfect (in black font), based on Löbner (1989) and Krifka (2000)

(22) *Me malnran kin i=pan "check", i=pan lak tp̃er ni waak me i=laka na*
but when COMP 3SG=go check 3SG=go see fence of pig but 3SG=see COMP
waak ***ki=pe*** *p̃rai tp̃er,* ***ki=pe*** *sef.*
pig 3SG.PRF=PRF break fence 3SG.PRF=PRF escape
But when he went to check, he went to see the fence with the pig and he saw that the pig had broken the fence, it had escaped. (AK1-022-01, 00:03:24.726 - 00:03:37.121)

The earliness implication does not arise in Nafsan even in the case of resultative readings. Example (23) shows a context from the iamitive questionnaire (Olsson, 2013:48) where an unexpected event is targeted. In Nafsan, perfect can be felicitously used in this case, which shows it does not behave like 'already' in this respect.

(23) How strange, my uncle COME. (He wasnt invited/I thought he wouldn't come.) (Olsson, 2013:48)

Kau, ga ***ki=pe*** *mai!*
Oh 3SG 3SG.PRF=PRF come
Oh, he came! (AK1-156-04)

The second property of 'already' considered here is duality, which has to do with the interaction of 'already', 'still', 'not yet', and 'not anymore' in negation. Löbner (1989) noticed that the outer negation of 'already' is 'not yet', which is truth-conditionally equivalent to the internal negation of 'still'. Also, the outer negation of 'still' is 'not anymore', which is truth-conditionally equivalent to the inner negation of 'already' (Löbner, 1989) . The set of these relationships is illustrated in Figure 2, including both Nafsan and English strategies for expressing these meanings.

As we can see in Figure 2, perfect enters the duality schema entirely only with unbounded predicates, with which the negated perfect obligatorily gives rise to the meaning of 'not anymore', as in (24).

(24) *totur ntau i=nru nal-u-k ga i=miel me malfane nal-u-k*
during year 3SG=two hair-V-1SG.DP 3SG 3SG=red but now hair-V-1SG.DP
ki=pe ta *miel* ***mau***.
3SG.PRF=PRF NEG1 red NEG2
During these two years my hair was red, but it's not red anymore. (AK1-154-03, 00:03:36.645-00:03:52.483)

In the case of perfect-marked bounded predicates, the meaning of 'not anymore' does not arise with negation and we can see this in (25), where the intended meaning is a simple negation of the described event.

(25) *Malen p̃a=ler* ***kai=pe*** *ta mtir natus mau.*
when 2SG.IRR=back 1SG.PRF=PRF NEG1 write letter NEG2
When you come back I will not have written the letter. (by Lionel Emil, 19/06/2018)

However, even with bounded predicates the meaning of 'not yet' cannot be expressed with negated perfect. As we can see in (26), the perfect can only be chosen for positive resultative readings, but not for the negative ones expressing 'not yet'. Instead, the negation of *ta* 'still' and general subject marking is the only possible structure. The reason for this comes from the fact that the only way to express 'not yet' is to negate *ta* 'still'. Since *ta* 'still' is a TMA marker which occupies the same slot as the perfect *pe* (see Table 1), they are morphosyntactically incompatible. In fact, none of the TMA markers of that slot can combine with each other. Thus, the reason perfect is incompatible with 'still' and 'still not'(='not yet') is only morphosyntactic, rather than semantic.

(26) *Ale* ***ki=pe*** *ptu-ki nuan me tomat* ***i=ta*** ***tap*** *ptu-ki nuan* ***mau***.
then 3SG.PRF=PRF give-TR fruit but tomato 3SG=still NEG1 give-TR fruit NEG2
It [pumpkin] gave fruit, but tomato hasn't given fruit yet. (AK1-038-01, 00:01:28.459-00:01:39.486)

In contrast, the 'not anymore' meaning with unbounded predicates deserves a semantic explanation. As shown in Section 5, these predicates are aspectually coerced into changes of state. Thus, if P is the posttime of the change of state, we need to assume that prior to the change of state ¬P was the case, see (27). If we negate P, then, given that it resulted from a change of state, we must assume that prior to that P was the case (28), and this is the meaning of 'not anymore'.

(27) Positive perfect: ¬P——[change-of-state]**[TT=P]**——

(28) Negation of perfect: P——[change-of-state]**[TT=¬P]**——

In conclusion, the meaning of 'not anymore' is simply a result of the aspectual coercion process that affects all unbounded predicates marked with perfect. Equally, the marker *ta* 'still' is morphosyntactically incompatible with the perfect *pe* because they occupy the same morphosyntactic slot. Thus, the effects of duality we see in Nafsan result from different language-internal processes and, in contrast to 'already' in English, these effects are not related to the semantic definition of the perfect.

7 Conclusion

In this paper I analyzed different readings of the perfect in Nafsan, which can all be derived from its definition of placing the TT in the posttime of TSit. These perfect readings were analyzed in comparison to the functions of English perfect, 'already' and the proposed iamitive gram. The semantic space of these three categories, together with the outlined functions of perfect in Nafsan, is illustrated in Figure 3.

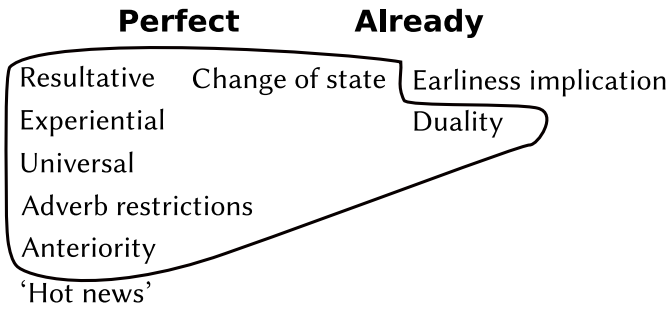

Figure 3: Outlined functions of perfect in Nafsan

The analysis of past, present, and future perfect functions in Section 4 showed that Nafsan does not have adverbial restrictions with perfect in the same sense as the English perfect. Since Nafsan is a tenseless language, the perfect can easily be interpreted with any temporal reference. Thus, although temporal adverbials are incompatible with present perfect readings, in the presence of a temporal adverbial with perfect in Nafsan, it is possible to reinterpret it as past or future perfect. In this case, the temporal adverb is interpreted as being in TSit and another contextually available reference point, posterior to TSit, is the TT where the posttime of the event is situated. This observation has important consequences on the expected behavior of the perfect in tenseless languages. Crucially, co-occurrence with temporal adverbials is not necessarily a sign that we are not dealing with the category of perfect. These co-occurrences might be specific to the meanings of past and future perfect.

The analysis of the meaning of change of state in Section 5 showed that states marked by perfect in Nafsan are aspectually coerced into changes of states. When the resultative perfect combines with states in Oceanic languages, its semantics requires there to be a dynamic event leading to the result state, which causes the aspectual coercion of states into changes of state. Cross-linguistically, there might be several factors that make Nafsan and other Oceanic languages likely to have a change of state interpretation with perfect-marked states. Koontz-Garboden (2005) found that only in languages where states are lexicalized as verbs and not adjectives, as is the case in Oceanic languages, these verbs can be used with both stative and change-of-state meanings. Thus, since the meanings of change of state are not marked derivationally and stative verbs can be coerced into changes of state in certain contexts, perfect aspect is just another context where the aspectual coercion is possible.

Section 6 argued that duality effects with the Nafsan perfect are caused differently from 'already' in English. Firstly, perfect *pe* cannot combine with *ta* 'still' because they occupy the same syntactic position, which explains the lack of 'still not/not yet' and 'still' meanings with perfect.

The second duality effect has to do with the meanings of 'not anymore' which arises only when the posttime of a change of state is negated. This duality effect is a consequence of the aspectual coercion into a change-of-state meaning which implies that the negated posttime did hold prior to the change of state.

The three main arguments made in Sections 4, 5, and 6 evidence that specific "unexpected" meanings of the perfect can be derived successfully without positing the iamitive category. Iamitives are semantically broadly defined by the change of state meaning that differentiates it from "ordinary" perfects (Olsson, 2013). The change of state meanings are taken to derive from the meaning of 'already' and other iamitive functions stem either from the resultative perfect or 'already'. This means that other perfect functions such as experiential or anteriority readings are excluded from its definition as a typological gram. In the case of Nafsan we have seen that neither the change of state meaning nor duality with perfect are semantically related to 'already'. Separate language-internal processes, such as aspectual coercion, and possibly lack of change-of-state morphology lead to such interpretations of perfect-marked verbs. This speaks against the iamitive idea that these change-of-state interpretations are a piece of evidence for a combination of perfect and 'already' meanings. Although some of the meanings analyzed in this paper might superficially resemble 'already', they are in fact instantiations of perfect aspect with the same lexical definition as in English (Klein, 1994). This puts us in a position to conclude that the perfect as a category that places the TT in the posttime of TSit is a good candidate for a typologically valid category. This case study showed us that the differences attested between perfects across languages can often be explained by specific processes operating in their systems and are not necessarily related to different lexical definitions of perfect.

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The Perfect in Mee: New Evidence for a Result State Approach[1]

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Abstract. In this paper, we present new evidence for a result state analysis of the perfect. In Mee (Trans-New-Guinea, Indonesia) the perfect combines a resultative and a universal reading, excluding the experiential one. This contrasts with graded past markers in the language. We argue that only an analysis that makes direct reference to the result state can correctly derive the data.

1 Introduction

Mee, also known as Ekari or Ekagi, is a Trans-New-Guinea language spoken in the West Central Highlands of the Papua province in Indonesia. The latest official count in 1985 put the number of speakers at 100.000 (Simons and Fenning 2018; Pawley and Hammarström 2017). Speakers are usually at least bilingual, speaking Mee and Indonesian and potentially another local language. The data presented here belong to the Lake Paniai dialect.

All Mee data in this paper are the result of primary urban fieldwork, conducted by the three authors. The data were elicited with a native multilingual speaker in Leipzig, Germany from October 2016 to August 2018 and checked with a second native speaker. Our contact language was German. In elicitations, we mostly used translation tasks, and asked for acceptability and grammaticality judgments. We also used the storyboard *Miss Smith's Bad Day* (Matthewson 2014).

Verbal predicates in Mee contain an obligatory tense/aspect morpheme that is suffixed to the stem. This affix is followed by an obligatory subject agreement vowel. The verbal morphology template is illustrated in (1), (2) gives a concrete example[2].

(1) *Verbal morphology*
(object agreement) – verbal root – TAM – subject agreement – (Mood)

(2) *Okai ki okai e-doo-p-i-gaa.*
3SG DET.M 3SG 3SG.OBJ-see-PRF-3SG.M-HYP
"He might have seen him."

Mee has a number of morphemes that convey that the event expressed by the verb is situated anterior to a reference time (RT) or the utterance time (UT). As will be discussed below, Mee exhibits a graded past tense system. The relevant morphemes are: *-eteg* (REM.PST), *-emeg* (EXP.PST),

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[2]Abbreviations: ABS–absolutive, C–complementizer, CAUS–causative, DEM–demonstrative, DET–determiner, EXP.PST–experiential past, F–feminine, HAB–habitual, HYP–hypothetical, INDEF–indefinite, INTENS–intensifier, INTRANS–intransitivizer, LOC–locative, M–masculine, NEG-negation, OBJ–object agreement, PL–plural, POSS–possessive, PRF–perfect, REC.PST–recent past, REM.PST–remote past, SG–singular

-eg (REC.PST), and *-p* (PRF). Present tense is zero-marked.

In the following, we aim to (i) give an overview of the past tense system in the language, (ii) describe the properties of the perfect marked by *-p* and compare them to those of the English Present Perfect, and (iii), propose an analysis of this kind of resultative perfect. The rest of this paper is structures as follows: section 2 characterizes the anteriority markers and shows their distribution. Section 3 discusses the possible readings of the perfect in Mee, its interaction with verbal aspectual classes, the possibility of temporal adverbials, and pragmatic effects. We offer our analysis in section 4. Section 5 concludes.

2 The anteriority markers

Languages vary in how they encode temporal relations: some languages show a binary or ternary distinction, whereas so called tenseless languages such as Paraguayan Guarani lack tense morphology altogether and express temporal distinctions through adverbs and context (Tonhauser, 2011; Comrie, 1985; Bittner, 2005; Lin, 2006). Most Indoeuropean languages utilize a binary or ternary system, like the past/non-past distinction in German or the three-way distinction between past, present and future in English (Bohnemeyer, 2002; Matthewson, 2006). Other languages make more fine-grained distinctions. In these so called graded tense languages, the degree of temporal distance is encoded in addition to anteriority/posteriority, e.g. in Gĩkũyũ (Cable, 2013). The tense morphology serves to track the distance between the event described and the time of speech, providing explicit information about how far into the past or future a reported event occurs.

2.1 Graded past tense in Mee

Mee exhibits a graded past tense, distinguishing two degrees of temporal remoteness. There are three past tense morphemes, *-eg*, *-eteg* and *-emeg*. In general, *-eg* is used for more recent events and *-eteg* for more distant ones, cf. (3).

(3) *Geto ko, Robert ki pasar uwe-eg-i/ #uwe-eteg-i.*
yesterday C Robert DET.M market go-REC.PST-3SG.M/ go-REM.PST-3SG.M
"Robert went to the market yesterday."

(4) Context: Robert went to the market three days ago / last week / last month.
Robert ki pasar uwe-eteg-i/ #uwe-eg-i.
Robert DET.M market go-REM.PST-3SG.M/ go-REC.PST-3SG.M
"Robert went to the market."

The use of *-eg* is usually confined to events that occurred during the day of the utterance time or one day before. With events that are more distant, *-eteg* is used. Even though this generalization holds in most contexts, the temporal threshold for the use of *-eg* and *-eteg* is not always clear-cut, but can vary across contexts. This vagueness and context-sensitivity sometimes leads to occurrences of these morphemes in contexts where they are not expected.

The remote past marker *-eteg* alternates with *-emeg*, a remote past marker with an existential reading, signaling that the event has been experienced only once in the indefinite past (Katz, 2003;

Chen et al., 2017; Bowler, 2018). In general past contexts, *-emeg* is used; *-eteg* is infelicitous.

(5) You are discussing food preferences with your friends. Your friend Maria is notoriously picky. You ask your mutual friend Petrus: Has Maria ever eaten sushi?

a. #Maria kou sushi no-oteega me beu?
Maria DET.F sushi eat-PST or NEG
'Has Maria ever eaten Sushi?'

b. Maria kou sushi no-omeega me beu?
Maria DET.F sushi eat-PST.EX or NEG
'Has Maria ever eaten Sushi?'

Further evidence comes from the fact that *-emeg* exhibits scopal interactions with negation, unlike *-eteg*. Under negation, *-emeg* yields a 'never' reading, where negtion scopes over the existential past. Negation of *-eteg*, in contrast, negates the occurence of an event at a specific point in time, as illustrated in (6).

(6) You are discussing food preferences with your friends. Your friend Maria is notoriously picky. Your your mutual friend Petrus asks you: Has Maria ever eaten sushi?. You answer the question with "No, Maria has never eaten sushi.".

a. Beu, Maria kou sushi te-no-omega.
no Maria DET.F sushi NEG-eat-PST.EX.3SG.F
'No, Maria has never eaten sushi.'

b. #Beu, Maria kou sushi te-no-otega
no Maria DET.F sushi NEG-eat-PST.3SG.F
'No, Maria has never eaten sushi.'

The above data indicate that the past tense reading of *-emeg* is existential rather than referential, since *-emeg* is used to refer to general past contexts, as opposed to *-eteg*, which is used to refer to to specific events in the past.

2.2 *-p* is not a past tense

In addition to the three anteriority markers discussed above, Mee exhibits a third morpheme *-p* that can be used to describe past events. The *-p* morpheme has previously been described as a recent past marker in Doble (1987). However, as (7) shows, *-p* can be used to refer to an event that it anterior to a future time. It is thus not restricted to past contexts.

(7) Context: You talk about what you want to do when you are an old man.

a. Ani adama ki-**p**-a ko, ani uno umina ta-it-a.
1SG old become-PRF-1SG C 1SG sleep much do-FUT-1SG
"When I will have gotten old, I will sleep a lot."

b. *Ani adama ke-**eg**-a ko, ani uno umina ta-it-a.
1SG old become-REC.PST-1SG C 1SG sleep much do-FUT-1SG

Additionally, a past tense would be predicted to be able to combine with progressive aspect to yield

a past progressive reading. However, *-p* cannot combine with the progressive morpheme *-ete*, (8).

(8) Context: What were you doing when I called you yesterday?

a. *Ani-ki kou gaa kou buku ebate-ete-p-a.
1SG-M DET.F moment DET.F book read-PROG-PRF-1SG
"(Yesterday when you called) I was reading a book."

b. Ani-ki kou gaa kou buku ebate-ete-(e)g-a.
1SG-M DET.F moment DET.F book read-PROG-REC.PST-1SG
"(Yesterday when you called) I was reading a book."

This might, however, be attriuted to the fact that most tense and aspect morphemes in Mee are not compatible with one another in general. For example, the habitual *-ig* and the progressive *-ete* are ungrammatical in combination with the remote past morpheme *-eteg*, as in (9).

(9) a. *Ani-ki pasar uw-ig-eteg-a.
1SG-M market go-HAB-REM.PST-1SG
"I went to the market."

b. *Ani-ki noota kou bone-ete-eteg-a.
1SG-M sweet_potatoe hide-PROG-REM.PST-1SG
"I was hiding the sweet potatoe."

We are unsure how to account for the impossibility of combining TMA-suffixes and leave this topic to further research.

3 The Perfect

The perfect is a heterogeneous category. Many semantic studies have focused on the English Present Perfect (a.o. Klein (1994); Mittwoch (1995); Portner (2003)). Cross-linguistic studies like Bybee et al. (1994); Dahl and Velupillai (2011); Bertrand et al. (2017) reveal its diverse properties.

We focus on the following properties of the perfect, drawing on Bertrand et al. (2017); McCawley (1971); Comrie (1976); McCoard (1978): (i) the perfect may have an experiential reading and show certain pragmatics effects, so called *lifetime effects*; (ii) it may have a universal or continuous reading; (iii) it may have a resultative reading, and the result state may or may not be canceled; (iv) it may show a recent past interpretation; (v) there may be restrictions on its compatibility with time adverbials; and (vi) it may show interaction with different lexical aspectual classes (*Aktionsarten*).

Bertrand et al. (2017) examine these properties in a sample of 14 languages, and propose that there are three types of perfects: First, the *experiential perfect* allows the experiential reading, does not show lifetime effects, and is compatible with time adverbials. It disallows all other readings and does not show interaction with *Aktionsarten*. Second, the *resultative perfect* allows the resultative reading while an experiential interpretation is impossible. Languages that employ this strategy do not behave completely homogeneously and show substantial variation with respect to the other properties. Lastly, there is a hybrid strategy, in which both the experiential and the resultative reading are allowed, and languages vary on their behavior with respect to the other characteristics.

We will argue in the following that Mee shows a resultative strategy with its *-p* morpheme. By examining the concrete characteristics of the perfect in this underdescribed language, we aim to enrich the typology of the perfect. This contributes to an uncovering of commonalities between the members of the resultative perfect group and ultimately to a better understanding of this strategy.

In the rest of this section, we describe the readings and other properties of the perfect mentioned above with English examples and compare these to the Mee data.

3.1 Experiential reading

The experiential interpretation of a perfect sentence like (10) conveys the meaning that there is a time period prior to RT in which it is true at least once that the event occurred (based on Mittwoch 2008). The event is not necessarily ongoing at RT.

(10) Verry has been to Paniai (and he is still there).

It is possible to follow the expression in (10) with the clause in parentheses without redundancy, because it is not part of the meaning that the time period in which the event occurred overlaps with RT.

This reading is not available with *-p*. In (11) and (12), where the context encourages an experiential reading, only the remote or experiential past forms are felicitous.

(11) Context: The teacher asks the children 'Have you ever been to the forest?' Child answers:
*Ani aiko buguwa uwe-emeg-a/ *uwi-p-a.*
1SG there forest go-EXP.PST-1SG go-PRF-1SG
"I have been to the forest." from storyboard (Matthewson, 2014)

(12) (*Tika miyoka tawani wii ko*) *ani ki ani weneekane-ido-ma Ugida*
earlier last year four C 1SG DET.M 1SG.POSS little.sibling-PL-with Ugida
*dimi-ipa uwe-eteg-e/ *uwi-p-e.*
summit-LOC go-REM.PST-1PL go-PRF-1PL
"Four years ago, me and my siblings went up mount Ugida."

3.2 Universal reading

The experiential reading contrasts with the universal one, sometimes also called continuous reading. Under the universal interpretation, an event or a state induced by an event at some point prior to RT holds from that point until RT (Bertrand et al., 2017). In this case, the sentence in parentheses in (13) is infelicitous, since its is redundant.

(13) Verry has been living in Paniai (#and he is still there).

Mee *-p* yields this reading, see (14) and (15). In both examples it is clear that the state still holds at the utterance time – in both sentences from the explicit adverbial and in (14) additionally from the explicit mention in the context. Note that the predicates in both examples denote states. We will come back to this observation in section 3.4.1.

(14) Context: You moved to Paniai in 2002 and you still live there.
Ani ki (*tawani 2002 make ko*) *Paniai umi-p-a/* *#ume-eg-a.*
1SG DET.M year 2002 since C Paniai live-PRF-1SG live-REC.PST-1SG
"I have lived in Paniai since 2002."

(15) *Ani ki* (*tawani 2002 make*) *didi to-p-a.*
1SG DET.M year 2002 since ill stay-PRF-1SG
"I have been sick since 2002."

3.3 Resultative reading

Resultative reading refers to the use of the perfect where the result state of an action still holds at the reference time. Therefore, a continuation with cancellation of the result state is not felicitous, as seen in example (16). In English, this contrasts with the past tense, which can be used with such a cancellation. In the past tense the result state is thus not required to hold at the reference time.

(16) a. Sally has bought a new dress #but she gave it away. (Tallman and Stout, 2016)
b. Sally bought a new dress, but she gave it away.

In Mee, the resultative reading is obligatory for the perfect *-p*. *-p* is infelicitous when the result state ceases to hold, compare (17) and (18). In (17), the result state (=glasses being lost) still holds at the reference time. The perfect *-p* is felicitous here, as well as the remote past *-eteg*. In (18) on the other hand, only the remote past *-eteg* is felicitous. The perfect *-p* is not accepted by the speaker. The reason is a difference in the context. In (18) the result state already ceased to hold, i.e. the lost glosses have been found again. This cancellation thus blocks the use of the perfect.

(17) Context: I lost my glasses 2-3 weeks ago. They're still gone.
Ana *dou-peka kou* *iga-p-a/* *iga-ateg-a.*
1SG.POSS see-eye DET.F lose-PRF-1SG/ lose-REM.PST-1SG
"I lost my glasses."

(18) Context: I lost my glasses 2-3 weeks ago. I found them again some time later.
Ana *dou-peka kou* *#iga-p-a/* *iga-ateg-a.*
1SG.POSS see-eye DET.F lose-PRF-1SG/ lose-REM.PST-1SG
"I lost my glasses."

3.4 Further Properties

3.4.1 Interaction of the perfect with lexical aspectual classes

In languages like German or English, the perfect receives an anteriority interpretation in all lexical aspectual classes or *Aktionsarten*. However, not all languages display this behavior. Recent studies like Matthewson et al. (2015) and Tallman and Stout (2016) show that the perfect in Niuean and Chacobo can receive readings other than anteriority, depending on the lexical aspectual classes of the verb. In Niuean, stative predicates can receive an inchoative or present interpretation with the perfect, see (19) for stage level and (20) for individual level statives.

(19) *Kua ita* (*tei*) *a Malia*.
PRF angry recent ABS Mary
"Mary is angry/ Mary has become angry." (Matthewson et al. 2015:18)

Only accomplishment and achievement verbs have the anteriority reading with the perfect in Niuean. The perfect of activities can get either an in-progress or an inchoative reading (Matthewson, 2016). Mee shows a high degree of interaction between the perfect and lexical aspectual classes. Stative predicates receive a present/ action-in-progress reading. This is true for both, individual level and stage level statives, see (20).

(20) a. *Okai ko modo-ma*
3SG DET.F belly-with
to-p-a.
be.in.state-PRF-3SG.F
"She is pregnant."

b. *Okai ki emoge*
3SG DET.M angry
to-p-i.
be.in.state-PRF-3SG.M
"He is angry."

Statives can also have a change-of-state reading, as in (21). This is not the same as the inchoative reading reported for Niuean stative verbs. An inchoative interpretation indicates that the state described by the verb has just (recently) begun and lasts (at least) until the time of uttering. The change of state in (21), however, signifies that the state in question is about to cease.

(21) a. *John ki owa-apa to-p-i*.
John DET.M house-LOC be.in.state-PRF-3SG.M
"John is at home, but he might leave soon."

b. *Kou damo ko digimita to-p-a*.
DET.F door DET.F dark be.in.state-PRF-3SG.F
"The door is black now, but that is about to change."

Activities marked with the perfect *-p* receive an anteriority/recent past interpretation, see (22). Note that a state like 'be angry' can be turned into an activity with the verb *tai* 'do'.

(22) a. *John ki emoge umina ti-p-i*.
John DET.M angry very do-PRF-3SG.M
"John was very angry (a short time ago)."

b. *Mee naka totaa mana wega-p-i*.
person INDEF story voice tell-PRF-3SG.M
"Somebody told a story."

c. *Okai ki kou-ko rantang duba tumi-yawi-p-i*.
3SG DET.M DEM-DET.F container in flow-CAUS-PRF-3SG.M
"He poured it into the container."

Accomplishment and achievement predicates also exclusively receive an interpretation of anteriority, cf. (23). They are incompatible with a reading in which the action is still in progress. More specifically, they can only receive a resultative reading with the perfect.

(23) a. *Petrus ki iya tivi nako edamaki-p-i*.
Petrus DET.M new TV INDEF buy-PRF-3SG.M

"Petrus has bought a new TV."

b. *Okai ki damu-do idikima muni-yawii-p-i.*
3SG DET.M door-PL all close-INTENS-PRF-3SGM
"He closed all the doors."

Accomplishment and achievement verbs differ in the possibility of canceling the result state interpretation. In achievement predicates, the result state caused by the event has to hold at RT obligatorily, recall (18). For accomplishment verbs, however, the interpretation of event culmination can be revoked, cf.(24).

(24) a. *Miyoka tawani ko, inii ke inii-ya owaa migi-p-e...*
last year C 1PL DET.F.PL 1PL-POSS house build-PRF-1PL
"Last year we have built a house..."

b. *... kodoya ito too ko migi-doke-tai beu.*
but now until C build-INTRANS-do NEG
"... but until now, it is not finished building."
SC: Without the clause in (b), it is understood that the house is finished.

It seems that Mee shows the familiar divide between the interpretation of stative predicates and all other lexical aspectual classes: states marked with the perfect are interpreted as ongoing, while perfect-marked activities, achievements and accomplishments have an anteriority interpretation. Mee differs from languages like Niuean and Javanese in lacking the inchoative reading for states. Instead, it exhibits a change-of-state meaning. Future research should determine the exact conditions under which this reading can surface.

3.5 Occurrence with time adverbials

Specific time adverbials are infelicitous in combination with the English Present Perfect. This phenomenon is known as Klein's (1992) *Present Perfect Puzzle*, see (25). Giorgi and Pianesi (1997) and Chung (2012) already note that not all languages show this restriction.

(25) #Ilya has gone to Omsk yesterday/ last week/ two years a go.

The data in (26) demonstrate that Mee belongs to the group of languages in which the perfect may combine with specific time adverbials. In both sentences the *-p* perfect form occurs in the same sentence with a specific past time adverbial.

(26) a. *Miyoka tawan inii iya owa migi-p-e.*
last year 1PL new house build-PRF-1PL
"Last year we built (our) new house."

b. *Geto ko ani ko pasar uwi-p-a.*
yesterday C 1SG DET.F market go-PRF-1SG
"I went to the market yesterday."

3.6 Lifetime effects

The perfect has been observed to exhibit certain pragmatic effects, called *lifetime*, *repeatability*, or *current relevance* effects (see e.g. McCawley 1971; Inoue 1979; Katz 2003; Portner 2003 among many others). They rule out sentences like the ones in (27).

(27) a. #Einstein has visited Princeton.
b. #Columbus has discovered America.

The perfect seems to be only compatible with actions that are considered repeatable in the future by the speaker, and to some extent the hearer (Katz, 2003).

While the scope of this paper cannot do the decade long discussion about the pragmatic effects justice, the data below seem to indicate that these effects also obtain in Mee. The perfect is incompatible with actions that cannot be repeated, like deceasing (cf. (28)) or going to a restaurant that is not open anymore (cf. (29)).

(28) *An-ukai adamaa ko #boka-p-a/ bok-ateg-a.*
1.SG.POSS-female old.person DET.F die-PRF-3SG.F die-REM.PST-3SG.F
"My grandmother died."

(29) Context: There used to be a restaurant called *Mekong* in the city, where you ate two or three times. It is now closed. You tell me about it.
Mekong-pa ko ani ki kigi wiya to nota #no-p-a/ no-oteg-a.
Mekong-LOC DET.F 1SG DET.M times two only food eat-PRF-1SG eat-REM.PST-1SG
"I ate at Mekong twice."

This section examined some properties of the perfect that have been discussed extensively in the literature. We have shown that the perfect in Mee exhibits the universal and resultative interpretation, but lacks the experiential reading, making it a resultative perfect in Bertrand et al.'s (2017) terms. It interacts with lexical aspectual classes, giving rise to present and change-of-state readings for stative verbs. We have briefly explored the compatibility with time adverbials and indicated that Mee also shows lifetime effects. The next section develops an analysis of the perfect in Mee that makes direct reference to a result state, and collects some arguments against alternative analyses.

4 Analysis & Discussion

4.1 Previous Analyses

As noted by Nishiyama and Koenig (2010:614), previous analyses of (mainly the English) perfect have generally tried to categorize perfect readings in one of the following ways: a tripartite distinction between experiential, resultative and universal reading (e.g. Pancheva 2003); a grouping of experiential and resultative vs. universal as done in the perfect time span analysis (Iatridou et al., 2001); or a monosemous analysis of the perfect, as posited for example by a temporal precedence analysis. None of these analyses fit the Mee perfect, since it groups the universal and resultative perfect and excludes an experiential reading. We argue that this pattern can only be accounted for

in an analysis that makes explicit reference to a result state.

In this subsection, we will discuss the concrete shortcomings of three approaches to the semantic analysis of perfect if applied to the Mee data, namely a temporal precedence analyses, a perfect time span analysis and an extended now analysis.

Firstly, an analysis that simply places the reference time in the posttime of the event time, as done i.a. by Klein (1994), cannot exclude the experiential reading. An event that has once taken place before the reference time, i.e. an experiential reading, is included. This is true, even if we introduce a notion of current relevance (Inoue, 1979). As seen in example (30), repeated from (11), single events that are relevant for the current discourse and happened before the reference time do not allow the *-p* form in Mee.

(30) Context: The teacher asks the children 'Have you ever gone to the forest?' Child answers:
Ani aiko buguwa uwe-eteg-a/ #uwi-p-a.
1SG there forest go-REM.PST-1SG go-PRF-1SG
"I have gone to the forest."

In addition, an analysis based on temporal precedence naturally has problems with the universal perfect reading (Nishiyama and Koenig, 2010). If a state continues into the reference time, it is difficult to keep the assumption that the event has to precede the reference time. This is necessary for the Mee *-p* perfect, since the analysis needs to include the resultative and the universal reading.

An 'extended now' analysis (i.a. Portner 2003) additionally runs into problem, because the Mee *-p* perfect is compatible with definite time adverbials, contrary to the assumption that time adverbials define the extended now. A perfect time span analysis easily groups experiential and resultative perfect (existential quantification) vs. universal perfect (Iatridou et al., 2001). An analysis of the Mee data would thus need to introduce further distinctions between experiential reading and resultative readings to exclude the experiential reading. This would effectively lead to a tripartite distinction between the three readings (Pancheva, 2003). Such a move notably decreases the empirical content of this approach. It is thus clear that none of these analyses can derive the Mee data, because they do not easily group together the resultative and the universal perfect reading to the exclusion of the experiential reading.

4.2 Result State Analysis

The gist of our analysis is that the perfect morpheme *-p* in Mee introduces a state and relates it (i) to the event denoted by the verb via a result relation ***R(e,s)*** (cf. i.a. Bohnemeyer 2014), and (ii) to a reference time by requiring the state to hold at the reference time (cf. susection 2.2).

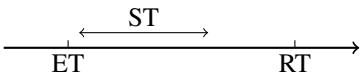
The denotation of the perfect, as given in (31), makes direct reference to the result state and thus has no difficulties in deriving the resultative reading of the perfect in Mee. It states that there is some event for which the predicate is true and for which there is a state such that the two conditions mentioned above hold. The event and the state are in a result relation ***R(e,s)*** and the reference time is included in the time interval at which the state holds (ST).

(31) *Denotation of -p*
$[\![\text{-p}]\!]^{g,c} = \lambda P.\lambda t.\exists e\ [\ P(e) = 1\ \&\ \exists s\ [\ R(e,s)\ \&\ t \subseteq ST\ ]]$

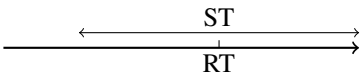
This denotation already excludes the experiential reading. If an event has taken place at least once in the past, the resulting state has most probably ceased to hold. In the universal reading, a state still holds at the reference time, even though there is no punctual event time. For the resultative reading the state caused by the event has to hold at the reference time. The temporal relation of the state time (ST) to the reference time (RT) are schematized in (32).

(32) *Schematic representation of ST in different contexts*

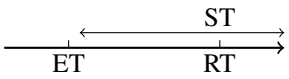
a. *Experiential reading



b. Universal reading



c. Resultative reading



The following example derivation shows how a resultative reading can be derived. The sentence in (33) is repeated from (17). The event of the speaker losing his glasses in combination with the resultative reading entails that the glasses are still lost. In the example derivation in (34), the perfect marker is combined with the event of the speaker losing his glasses. This event is then substituted in the appropriate places. The last lambda-bound variable *t* is substituted by default with UT. The sentence then asserts the existence of an event *e* of losing glasses. In addition, there is a state *s* for this event *e*, which (i) is in a result relation with the event, and (ii) is true at the utterance time. In other words, the glasses are still lost.

(33) *Resultative perfect*

Ana dou-peka kou iga-p-a.
1SG.POSS see-eye DET.F lose-PRF-1SG
"I lost my glasses (and they are still lost)."

(34) *Derivation*

a. *Combination of perfect marker with the sentence*
$\lambda P.\lambda t.\exists e$ [$P(e) = 1$ & $\exists s$ [$R(e, s)$ & $t \subseteq ST$]] (λ e. lose(e,I,glasses))

b. *Substitution*
$\lambda t.\exists e$ [$lose(e, I, glasses) = 1$ & $\exists s$ [$R(e, s)$ & $t \subseteq ST$]]

c. *Default substitution of t with UT*
$\exists e$ [$lose(I, glasses)(e) = 1$ & $\exists s$ [$R(e, s)$ & $UT \subseteq ST$]]
i.e. 'There is an event such that this event of me losing my glasses is true and there is a state such that it is a result state of me loosing my glasses and this state holds at the utterance time' = 'My glasses are still lost.'

To illustrate the exclusion of an experiential interpretation, recall the examples from section 3.1. We repeat here (11) from above as (35). In our analysis, the perfect in this context is infelicitous, because at the reference/utterance time the children are not in the forest anymore. They are in the classroom. Therefore the result state (=being in the forest) does not hold anymore.

(35) Context: The teacher asks the children 'Have you ever gone to the forest?' Child answers:

Ani aiko buguwa uwe-eteg-a/ #uwi-p-a.
1SG there forest go-REM.PST-1SG go-PRF-1SG
"I have gone to the forest."

The resultative relation of course needs some elaboration. We assume that its application is dependent on the *Aktionsart* of the predicate verb, thereby mirroring the interaction with *Aktionsart* in the data. The most straightforwardly accounted for *Aktionsart* are achievement verbs. These are lexically specified for a result state (Wunderlich, 2012). The same is true for accomplishment verbs. There are however, a multitude of possible result states here, since an accomplishment has intermediate states before its culmination. We assume that the result relation holds between any of the intermediate stages and the event as well as between the event and the culminated state. The culmination is thus only implicated, but can be canceled. States pose a more serious problem, since they arguably do not involve an event. We will hypothesize that this issue is resolved by relating the state of the verbal predicate to itself inside the resultative relation. In other words, the result relation again picks a lexically specified state, in this case the only one. The remaining *Aktionsart* are activities. These notably do not involve any lexically specified state. We have to assume that in this case – as a last resort – the result relations relates every event to a state of the event having just ended, similar to the posttime in Klein (1994). This yields the recent past reading of the perfect in Mee. The interaction of the result relation with the *Aktionsart* of the verb is summarized in (36). We leave the question about crosslinguistic variation of the result relation open for future research.

(36) *Result relation R*

Input	Output
state_i	state_i
achievement_i	result state_j
accomplishment_i	result state_j (culmination only implied)
activity_i	posttime (Klein, 1994)

These properties of the result relation explain the universal perfect reading, that is also available in Mee. Recall the example (20-a), repeated here as (37). In our analysis, the result relation yields the state itself as the state of being pregnant, i.e. the state of the predicate itself. Therefore it only requires the state of the predicate to include the reference time. In this specific example the reference time is the same as the utterance time. The following sentence is thus true if the state of being pregnant holds for the referent at the speech time.

(37) *Okai ko modo-ma to-p-a.*
3SG DET.F belly-with be.in.state-PRF-3SG.F
"She is pregnant."

4.3 Presupposition or Denotation

In the above descriptions we assumed that the meaning of the perfect in Mee is part of the denotation instead of being a presupposition, thus achieving more similarity to approaches to aspect than (pronominal) approaches to tense (Kratzer, 1998). This hypothesis can be tested by looking at examples with negation. If the denotation of the perfect were just a presupposition, one would expect the result state reading to project through the negation. For activities that would mean that the state of the activity not taking place is still required to hold at the reference time. As seen in (38), the perfect state acts more like a part of the denotation. In the example 'not having talked to him' can only mean that the speaker did not talk to Gusti at the party. The universal reading of the

negated activity is not possible, i.e. the answer with the *-p* perfect cannot mean that the speaker has not talked to him since. Therefore, the result state condition is part of the denotation and not a presupposition.

(38) Context: You were at a party last week and saw Gusti there. I ask you about him, but you can't tell me any news, since you didn't talk to him.
Ani ki okai ma mana te-ewega-p-a.
1SG DET.M 3SG with voice NEG-talk-PRF-1SG
"I did not talk to him (at the party / *since)."

4.4 Evidentiality

Kobepa (2015) – in a paper on the recent past in Mee – analyzes the difference between past tense *-g*[3] and perfect *-p* as a difference in verbal definiteness, i.e. evidentiality. *-p* is analyzed as expressing that the speaker has not witnessed the event and only infers its occurrence from the result state. Perfect is also known to influence evidentiality in other languages (see e.g. Lindstedt 2000). Similar to our account, Bowler and Ozkan (2018) and Bowler (2018) derive the evidentiality meaning as a biproduct of aspectual meaning in Turkish and Kazan Tatar. Kobepa's approach is not necessarily incompatible with our analysis. In our case, the relation between the result state and the reference time is encoded in the lexical entry, in Kobepa's account it is the inference from the result state (cf. also Nishiyama and Koenig 2010).

In this section we have thus seen that only an analysis that makes direct reference to a result state in the denotation of Mee *-p* perfect forms can derive resultative and universal perfect readings to the exclusion of an experiential perfect reading. The resultative relation between an event and a state also accounts for the fact that the reading in Mee depends on the *Aktionsart* of a predicate.

5 Conclusion

In this paper we provided a description of the perfect *-p* in Mee. This form can have a resultative reading as well as a universal reading, but it excludes experiential readings. Additionally, it can be used in contexts where the reference time is in the future. This contrasts with the past tense forms, which express that an action occured before the utterance time. As our data show these forms do not necessitate a resultative reading and even exclude a universal reading. Therefore, we analyse the perfect in Mee as making direct reference to a result state by requiring the event to be in a result relation with the event of the predicate. This result state then has to hold at the reference time. The result relation also accounts for the interaction between the *Aktionsart* and the perfect in Mee. Since only achievement and accomplishment verbs have a lexically specified result state, only these verbs can get a resultative reading. In our analysis, states and activities get a universal or recent past reading, respectively, only as a last resort, because the result state is not specified lexically.

[3] Kobepa (2015) analyzes the past morpheme as *-g*, while in our analysis, it is *-eg*.

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