The temporal presuppositions of Somali definite determiners[1]

Rudmila-Rodica IVAN — *University of Massachusetts, Amherst*
Deniz ÖZYILDIZ — *University of Massachusetts, Amherst*

Abstract. Nominal temporal markers (NTMs) locate the time at which the property or relation denoted by a nominal holds of an entity (Enç, 1981). What distinguishes Somali from other languages with overt NTMs is that these markers are also definite determiners. We follow up on the observation that there is a contrast in the interpretation of definite determiners -KA and -KII, and propose that this contrast is a difference in the scalar implicatures triggered by each determiner. This difference is linked to an interaction between the temporal presuppositions of -KA and -KII and the lexical semantics of their NP complement. Our analysis captures the fact that these determiners do not obey common diagnostics of "nominal tense" (Tonhauser, 2007), while accounting for the data in Lecarme (1996) as well as the more recent proposal (Lecarme, 2008, 2012) that -KII and -KA track the (in)visibility of the entity denoted by the DP.

Keywords: Somali, determiners, definiteness, nominal TAM, presupposition

1. Introduction

The aim of this paper is to explain the contrast between what has been described in the literature as the "regular" definite determiner -KA (Green et al., 2015) and the "remote," "tensed" or "evidential" definite determiner -KII (Lecarme, 1996, 2008, 2012) in Somali. A comparison between Somali -KII and Guaraní *-kue*, as discussed in Tonhauser (2007), illustrates that the current take on nominal temporal markers (NTMs) cannot fully account for the Somali data. We propose that a scalar implicature based account, in line with the work of Thomas (2014) for Mbyá Guaraní, and Altshuler and Schwarzschild (2013) on cessation implicatures in English, can capture the semantic contribution of Somali -KII. Our account relies on novel data involving contexts where this contrast obtains, and ones where it does not.

The choice between -KA or -KII for Somali nominals can give rise to temporal interpretations, as well as to (in)visibility readings, by which we mean that the denotation of the DP is judged to be visible or invisible to the discourse participants. We claim that the these contrasts are due to a competition between -KA and -KII. Assuming that Somali NTMs behave like a regular tense system, similarly to Mbyá Guaraní (Thomas, 2014), we propose that -KA requires the NP predication to be true of an individual at topic time, while -KII requires it to be true at some salient time preceding topic time. Based on the *Open Interval Hypothesis* proposed by Altshuler and Schwarzschild (2013) (see also Cable 2017), whereby a present stative sentence asymmetrically entails its past tense variant, we assume that a sentence with a -KA marked nominal asymmetrically entails a sentence with its -KII marked counterpart. Thus, the use of -KII generates the implicature that the -KA alternative is false, resulting in the aforementioned

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interpretative contrasts. We speculate that contexts where the contrasts are not observed are ones where the relevant implicatures are not generated.

The paper is structured as follows. Section 2 provides background information regarding the elicitation, novel data confirming that both -KA and -KII pattern like definite determiners, and the core data regarding the relevant semantic contrasts between the two determiners. Section 3 focuses on nominal tense as discussed in the literature and on the key properties of nominal temporal markers identified by Tonhauser (2007) for Guaraní, namely precedence, change of state and existence. Section 4 discusses novel data which illustrate that two of three properties of Guaraní *-kue*, change of state and existence, do not hold of Somali -KII. In section 5, we present the core generalization and argue in favor of a competition based account for the two Somali definite determiners. Section 6 concludes.

2. Background Information

2.1. Elicitation

The data discussed in this paper was mainly collected from a primary consultant, who self reports as a native speaker of Standard Somali. The elicitations took place at the East African Cultural Center (EACC) in Springfield, Massachusetts, between September 2015 and May 2016. Four other occasional attendees of the EACC contributed on site, and a linguistically trained native speaker from Minnesota contributed by e-mail.

2.2. The definiteness of -KA and -KII

Somali has two noun classes, referred to in the literature as the masculine and the feminine (Saeed, 1993, 1999; Green et al., 2015). Masculine nouns are suffixed with morphemes whose initial segment is /k/ (phonologically realized as [k], [g] or [h] and noted K) as shown in (1a). As illustrated in (1b), for feminine nouns the initial segment of the suffix is /t/ (phonologically realized as [d], [dh], [sh] and noted T). All of the instances of the allomorphs in (1) are referred to as -KA and -KII throughout the paper.

(1) a. *aqal-ka, aqal-kii, telefoon-ga, telefoon-gii*
         house-KA house-KII telephone-KA telephone-KII
         the house, the telephone (masculine)
     b. *shimbir-ta, shimbir-tii, qorrax-da, qorrax-dii*
         bird-KA   bird-KII   sun-KA   sun-KII
         the bird, the sun (feminine)

As previously mentioned, both -KA and -KII are claimed to be definite in the literature (Saeed, 1993; Lecarme, 1996; Green et al., 2015). Our data confirms that -KA and -KII marked nominals pattern like definites; consequently, for the purposes of this paper, they will be refered to as definite determiners. For a different take on definiteness in Somali and for arguments in favor

of the existence of a null definite determiner which is taken to be responsible for the definite interpretation of the nominals suffixed with -KA and -KII, see Özyıldız and Ivan (2017).

According to Heim (1983) and Matthewson (1998), definite noun phrases refer to familiar, previously introduced discourse referents. This holds true of both -KA and -KII marked NPs, as shown in example (2). Both definite determiners allow anaphoric reference to the boy introduced in the preceding piece of discourse.

(2) ANAPHORIC REFERENCE
     Context: *A boy and a girl came. The boy laughed.*

     a. Wiil iyo gabadh baa yimid. Wiil-**kii** baa qoslay.
         boy and girl   FOC came. boy-KII FOC laughed

     b. Wiil iyo gabadh baa yimid. Wiil-**ka** ayaa qoslay.
         boy and girl   FOC came. boy-KA FOC laughed

         'A boy and a girl came. The boy laughed.'[2]   [03/19/2016]

Furthermore, both -KA and -KII can refer to unique NPs in both immediate and larger situations. In (3), where the sun is a unique entity, the use of either determiner is grammatical.

(3) REFERENCE TO UNIQUE NPs
     Context: *Axmed was working home all day. He decides to go out and sees the sun.*

     Marku baxay   wux-uu arkay qorrax{**-ka/-kii**}.
     when went out FOC=3S saw   sun-KA/-KII

     'When he went out, he saw the sun.'   [03/07/2016]

According to Schwarz (2009, 2013), in languages with multiple definite determiners, these determiners can be either *weak* or *strong*.[3] Weak definite determiners cannot be used anaphorically, only being able to refer to NPs that are unique in the context, while strong definite determiners can also have anaphoric uses as in (2). The fact that both -KA and -KII are grammatical in example (2), which tests for anaphoricity, and (3), which tests for non-anaphoric reference, suggests that the strong/weak determiner distinction is not at play in regulating the distribution of Somali definite determiners. The difference between the two seems to lie elsewhere.

2.3. Core data

Work by Lecarme (1996, 2004, 2012) argues that *-kii* is a "tensed" determiner denoting the past tense (for arguments against this analysis, see Tonhauser (2006: pp. 325–333)). The temporal analysis of -KII is motivated by data like (4) (Lecarme, 1996: ex. (10), p. 161), where -KA is ungrammatical when referencing a past year. Lecarme argues that *sannad-kii* receives a temporal past interpretation, thus rendering it ungrammatical with future-oriented adverbials.

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[2]It should be noted that different focus markers are used in the two subexamples. We speculate that this difference is due to the fact that the counterpart of (2a) with -KA, *wiilka baa*, is morphologically ill-formed.

[3]This is not the weak/strong determiner distinction from Barwise and Cooper (1988).

(4) a. sannad-**ka** *dambe*   b. sannad-**kii/*-ka** *hore*
         year-KA   next   year-KII/*-KA   before
         'next year'   'last year'

Lecarme (1996, 2012) notes that -KII can also have temporal interpretations on nouns denoting a set of individuals, such as 'student.' We replicated this effect with the NP 'president.' In a context where Barack Obama is the current president, like in (5), the DP *madaxweynaha*, which bears -KA, may only refer to Obama, and not to Bush—who was the salient former president in the context. On the other hand, *madaxweynihii*, with -KII, may only refer to Bush, and not to Obama. Both sentences in (5) were judged true with this reference scheme. They were judged false when -KII was used in (5a) and -KA, in (5b).

(5) TEMPORAL CONTRAST between -KA and -KII
     Context: *The year is 2016 and Barack Obama is the president of the United States.*

     a. Madaxweyna**ha** wux-uu ku nool yahay guriga cad.
         president-**KA**   FOC=3S at lives   house white
         'The president lives in the White House.'   ≈ **Barack Obama**
     b. Madaxweyni**hii** wux-uu ku nool yahay Texas.
         president-**KII**   FOC=3S at lives   Texas
         'The president lives in Texas'.   ≈ **George Bush**   [01/30/2016]

Lecarme (2012) also identifies a "modal" or "evidential" contrast between -KA and -KII, whereby visible entities are marked with the former and invisible entities with the latter. This effect was replicated in our elicitations. In the context of a solar eclipse, the use of -KA on the NP 'sun' implies that the sun is in plain sight, whereas the use of -KII implies that the sun is eclipsed.

(6) VISIBILITY CONTRAST between -KA and -KII
     Context: *During a solar eclipse. Answer to "What are you doing?"*

     Wax-aan fiirinayaa cadceed-**da/-dii**.
     FOC=1S watching sun-KA/-KII
     I'm watching the sun.
     a. Inference with -KA: The sun is visible.
     b. Inference with -KII: The sun is eclipsed.
     c. -KII is odd if the sun is visible; -KA is odd if the sun is eclipsed.   [01/30/2016]

The use of -KII on an NP corresponding to a temporary state, like 'rain,' gives rise to the same effect. If the rain is ongoing and visible, then only -KA is felicitous.

(7) Context: *It's raining and I'm outside.*

     Roob{**-ka**/#-kii} baan   eegayaa
     rain-KA/-#KII   FOC=1S watching
     I'm watching the rain.   [05/11/2016]

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We argue that a unified account can generate both the temporal and the invisibility readings presented in the examples above. Our proposal is laid out in Section 5. The next two sections give an overview of the properties of NTMs and argue that Tonhauser (2007)'s seminal account of Guaraní NTMs cannot be extended to Somali -KII.

3. Properties of nominal tense

The current section introduces the notion of NTMs and outlines the three properties identified by Tonhauser (2007) based on the future (*-rã*) and past (*-kue*) nominal markers of Guaraní. These three properties are *precedence*, *change of state* and *existence*.

3.1. Nominal Tense

An important first observation is that both NPs and VPs can locate the time at which a property is true of an individual. For instance, in (8), the past tense 'watched *Harry Potter*' indicates that the activity is true of x, at some interval of time, t, which is a subpart of *yesterday*. On the other hand, 'linguistics grad student' is true of x, at some time, t', which includes *yesterday*, the property of being a linguistics grad student generally spanning from 2 to 5 years.

(8)   *Yesterday*, a linguistics grad student *watched* Harry Potter.

In (8) there is an overlap between the time interval at which x is a *linguistics grad student* and the time interval during which x *watches Harry Potter*. However, NPs and VPs within the same sentence need not hold true at the same time. Consider (9) where, in a context where all of the contextually relevant individuals stop being students, the property of being a 'student' was true of the individuals in every's restrictor before utterance time, and it is false at utterance time.

(9)   Every student is now a UMass graduate.

The observation that verbal tense does not affect the temporal interpretation of noun phrases was first made by Enç (1981). She proposed that this can be captured by means of *nominal tense*. One morphological realization of nominal tense and aspect is represented by the morphemes in (10) which restrict the time interval at which the nominal they attach to is true.

(10)   *ex*-soldier, *former* friend, *future* president, wife-*to-be*

Although subtly distinct from the phenomenon illustrated in (9), the affixes and adjectives in (10) point to the core intuition: the time at which the property (*soldier, friend, president, wife*) holds true of the individual is either before (*ex-, former*), or after (*future, -to-be*) topic time. According to Wiltschko (2003), semantic nominal tense is universal; the crosslinguistic difference lies in whether nominal tense is syntactically marked. In fact, overt nominal TAM (tense and aspect morphology) is rare. Nordlinger and Sadler (2004) list twelve different languages which exhibit NTMs (Lake Miwok, Halkomelem, a.o.). Somali (Lecarme, 1996), Guaraní (Tonhauser, 2007) and Tsou (Chang, 2015) are ones that have been discussed more extensively.

3.2. Guaraní nominal TAM

Tonhauser's (2006; 2007) seminal account of nominal temporal markers in Guaraní discusses the morphemes *-kue* and *-rã*. Tonhauser argues that they are nominal *aspectual* markers and identifies three properties which NTMs might be expected to display cross-linguistically. The example below illustrates that Guaraní makes use both of a future nominal temporal marker, *-rã*, and of a past one, *-kue*. It should be noted that the example, glosses and translation below are taken from Tonhauser (2007), and that the two NTMs are not equivalent to the English adjectives *future* and *former*, the Guaraní nominal temporal markers having a wider use than their English counterparts.

(11)   Juan ha'e   pa'i-**kue/-rã.**
       Juan 3.PRON priest-KUE/-RA
       'Juan is a former/future priest.'   (Tonhauser (2007), ex. (8), page 836)

To capture the different properties of Guaraní NTMs, Tonhauser (2007) distinguishes between two main intervals: the NP time, t_{NP}, and the nominal time, t_{nom} (or possessive time, t_{poss}). The NP time represents the evaluation time of the entire NP, the time at which the phrase is interpreted. This generally picks out topic time. The other relevant interval t_{nom} (or t_{poss}) is the time at which the property (or relation) expressed by the noun phrase is true of the individual(s) in the relevant domain (or, in the case where the NP is relational, is true of the members of the relation). As previously mentioned, Tonhauser (2007) argues that nominal temporal (or aspectual) markers have three properties: *precedence*, *change of state* and *existence*, which are described in terms of the relations between t_{nom} and t_{NP}. These properties are outlined in the following subsections.

3.2.1. The precedence meaning property

Perhaps the most salient meaning property of NTMs in general and of *-kue* and *-rã* is that they encode a precedence relation: respectively a past-time oriented relation and a future-time oriented one. In (12), the use of *-kue* conveys that the time at which the property of being a *priest* holds true of the individual precedes t_{NP}, while the use of *-rã* conveys that the predicate holds true of the individual after t_{NP}, and, consequently, after topic time.

(12)   PRECEDENCE RELATIONS

a.	priest-KUE $\approx$ past priest	$t_{nom} < t_{NP}$	before TT
b.	priest-RÃ $\approx$ future priest	$t_{nom} > t_{NP}$	after TT

In the case of possessives, the precedence relation can apply either to the possessive or to the nominal itself. In (13), for instance, which is adapted from Tonhauser (2007), both the Guaraní *che-róga-kue* and the English *my former house* are ambiguous between two possible readings. One interpretation is that the possessive time is located at t_{NP} (in this case, utterance time) and the nominal time, t_{nom}, precedes t_{NP}; in this instance, the speaker is looking at the ruins of their house. The second reading is one where t_{nom} overlaps with t_{NP}, but t_{poss} is located prior to the noun phrase time; here, the speaker is looking at a building which was once their house.

(13)   Ko'agã a-hecha che-róga-**kue**.
       now   SG-see   SG-house-KUE
       'I am seeing my former house.'   (Tonhauser, 2007: ex. (12), p. 838)

All of the occurences of *-kue* discussed in this section are parallelled by similar examples with future-oriented NTM, *-rã*. However, we will henceforth only refer to examples with *-kue*, as Somali does not have a future oriented nominal temporal marker.

3.2.2. The change of state meaning property

Much like the English *former*, Guaraní *-kue* also encodes a change of state meaning, namely, the NP predication (or relation) ceases to hold true of an individual *x* before t_{NP} (or topic time).

(14)   a. *Albus is a *former* teacher and he is *still* a teacher
       b. Albus is a *former* teacher and now he's a teacher *again*

The examples in (14) (which can also be replicated for Guaraní *-kue*, see Tonhauser (2007: exx. (13/14), p. 838)) illustrate that the nominal predication, *teacher*, is true prior to t_{NP} and that it *ceases* to be true prior to t_{NP}. Furthermore, (14b) shows that neither the English *former* nor the Guaraní *-kue* encode that the property is *not* true at t_{NP}, but merely that it had stopped being true sometime before noun-phrase time. Albus can be a former teacher and a current teacher, the predication need not be false at t_{NP}.

Tonhauser (2007) points out that although both *-kue*, *former* and English past tense have the precedence meaning property, only the first two have the change of state property. The first utterance in (15) merely implicates that Hermione is no longer in the Hospital Wing at the time of utterance. The fact that *still* is felicitous in the second utterance illustrates that English past tense, unlike *former* or Guaraní *kue* does not semantically encode a change of state.

(15)   Hermione was in the Hospital Wing last week. She is *still* there today.

The observation that Guaraní *-kue* is *not* like English past tense in this instance serves as an argument for Tonhauser (2007) in favor of the view that *-kue* and *-rã* are *aspectual* nominal markers, and not tensed. We will return to this fact in section 4, where we compare Guaraní nominal TAM to Somali -KII.

3.2.3. The existence meaning property

The third property of NTMs identified by Tonhauser (2007) is that of existence, which assumes that both t_{nom} and t_{np} should fall within the time of existence of the individuals denoted by the noun phrase. This would account for the infelicity of *-kue* in the context below.

(16) Context:
       The town of San Isidro once had a priest called Jose. This man died as a priest.
       #pe   pa'i-**kue**   Jose
       that priest-KUE Jose
       'that ex-priest Jose'   (Tonhauser, 2007: ex. (21), p. 842)

It should be noted that English *former* is also not felicitous in (16). The intuition is that the property of being a *former* priest was never true of *Jose* while he was alive. The only context in which 'priest'-*kue* would be felicitous is one where *Jose* stopped being a priest while alive.[4]

3.2.4. Summary: *-kue* properties

To reiterate, Tonhauser (2007) proposes that there are three distinct properties which are true of Guaraní nominal temporal markers. These properties are summarized below.

(17) *NTM properties*
       1. PRECEDENCE: t_{nom} / t_{poss} precedes t_{NP} (topic time)
       2. CHANGE OF STATE: the property or relation ceased to be true before t_{NP}
       3. EXISTENCE: the time of the existence of *x* includes t_{nom} and t_{NP}

According to Tonhauser (2007), these three properties are individually encoded in the lexical entry of *-kue*. The lexical entry for *-kue* as applied to property NPs is given below.[5] The formal semantic analysis below, applied to the denotation of predicates, establishes that for all properties P and entities x, the property KUE(P) is true of an individual, *x*, at the noun-phrase time, t_{NP}, in a world *w* if and only if there is a time *t* that precedes the noun phrase time and *t* is the situation time of P(x) in world *w* *and* the noun phrase time is included in the lifetime of *x*.

(18) $\forall P \, \forall x \, [\, \text{KUE}(P)(x) = 1$ at t_{NP} in w iff $\exists t_{nom} \, [$
       $t_{nom} < t_{NP} \, \& \, \tau(P(x)) = t_{nom}$ in $w \, \& \, t_{NP} \subseteq \tau(x) \,] \,]$

Before moving on to the next section, it should be noted that both *existence* and *change of state* are hardwired into the lexical entry of *-kue*. For the intents and purposes of this paper, *-kue* behaves like English 'former,' but, as Tonhauser (2007) points out, this is a simplification.

4. Somali -KII vs. Guaraní *-kue*: -KII is not 'former'

This section tests whether the properties identified by Tonhauser (2007) for Guaraní *-kue* hold of Somali -KII. The data illustrate that although -KII has the precedence meaning property, it does not semantically encode the change of state or the existence properties. In this sense, -KII is different from *-kue* and English 'former.' Furthermore, we show that, unlike *-kue*, Somali -KII does behave like tense and it can give rise to temporal and invisibility implicatures.

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[4]On the other hand, *-kue* would be felicitous in the context in (16) if it applied to a possessive relation: 'our priest'-*kue* would denote a possession relation which ceased to be true.

[5]The definition of *-kue* for possessive relations is similar.

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4.1. Lack of the *existence* property

The existence property refers to the fact that Guaraní *-kue* is not felicitous in contexts like the one in (16), where the property of being a priest held true of an individual right up to the moment of their death. We attempted to replicate this finding with our Somali consultants. The expectation was that if -KII had the existence property, a sentence like (19) would be infelicitous in the context given, with -KII on the subject NP.

(19)   Context: *Uttered right after the current president's death...*

   madaxweyni-**hii**/madaxweyna#-**ha** wuu   dhintay
   president-KII/president-KA   FOC=3S.M died
   'The president died.'   [01/30/2016]

The example above illustrates that in a context where the individual picked out by the current 'president' dies *as* a president -KII is, in fact, felicitous. This is unexpected if -KII were to have the same meaning as Guaraní *-kue* and had the existence property. Furthermore, it seems that -KA is infelicitous in (19), presumably because there is no president in the context.[6] Nevertheless, the data shows that Somali -KII, unlike Guaraní, does not have the existence property.

4.2. Lack of the *change of state* property

As shown in Section 3.2.2, the property of the NP that *-kue* attaches to ceased to be true of the individual picked out by the nominal prior to the noun phrase time. In contrast, the examples in this section suggest that *-kii* does not *obligatorily* trigger a change of state inference.[7] The context and item in (20) are replicated from Tonhauser (2007: ex. (44)).

(20)   Context: *Yesterday I went to a bike shop and out of all of the bikes they had I chose one*
       for my sister. I didn't have enough money yesterday. Tomorrow I'll go back to the shop
       and buy the bike I chose.

   Baskiil-**ka** / Baskiil-**kii** bari   baan   gadanaya
   bike-KA   / bike-KII   tomorrow FOC.1S buy.FUT
   'I will buy the bike tomorrow.'   [11/04/2015]

According to Tonhauser (2007), in Guaraní the change of state interpretation in the context in (20) is necessary. For her consultants, 'bike'-*kue* may only refer to a broken bike (which renders the target sentence odd in the scenario above). In Somali, both *baskiil-ka* and *baskiil-kii* are perfectly felicitous and refer to a bike which had been previously introduced in the discourse. No change of state inference is drawn in this context. Further attempts to favor Guaraní-type change of state meanings on object denoting NPs were unsuccessful.

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[6]Our primary informant comments: "If he died, you cannot say *[k]a*."

[7]There is a subtle difference between "change of state" (predication ceased to be true before but may be true again at topic time) and "cessation" (predication ceased to be true and is still not true at topic time) inferences (Altshuler and Schwarzschild 2012, Thomas 2014).

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(21) Context: *Shards of a broken jar are set on the table.*

Dhala-day-**dii**   *(jajabkee-**dii**) miiska   ayuu saaran yahay
jar-POSS.1S-KII *(shards-KII)   table-KA FOC on   is
'The shards of my jar are on the table.'
Intended: 'My (broken/former) jar is on the table.'   [01/30/2016]

The aim of the scenario above was to get our informants to express that an object was broken solely through the use of -KII. For the purposes of this elicitation task, a broken jar was brought into the elicitation session and set in plain view, on the table between the authors and the informant. It was found that the possessive construction *dhaladaydii*, 'my jar-KII' may only refer to an intact jar. As illustrated in (21), an overt genitive construction, "the shards of the jar,"[8] must be used in order to express the broken state of the object.

The change of state inference cannot be expressed by means of -KII alone. Somali seems to express the equivalent of the English 'former NP' by using the adjective *hore* in combination with a -KII marked NP.

(22) Context: *We are talking about several students.*
      Maxamed is the one who dropped out of college / graduated.

Maxamed waa   arday-**dii**   hore.
Maxamed DECL students-KII.PL 'former'
'Maxamed is one of the former students.'   [11/04/2015]

It is unlikely, however, that the combination of -KII and *hore* is equivalent to the semantics of 'former NP,' given that our informant accepts a continuation like in (23) to the sentence in (22).

(23) *Out of the blue*
      Maxamed waa   arday-**dii**   hore ee   **wali** ardayga   ah
      Maxamed DECL students-KII.PL *hore* which **still** student-KA is
      'Maxamed is one of the previous[9] students who is still a student.'   [11/04/2015]

If anything in the semantics of -KII or of *hore* were uniformly equivalent to that of 'former,' the sentence should sound odd. This oddness is what we observe with Guaraní *kue* and English 'former.' We take this as evidence that Somali -KII does not obligatorily have the change of state property. In example (23), the behavior of Somali -KII parallels that of the English past tense in a stative sentence like (15), where a cessation inference (that Hermione is no longer in the Hospital Wing or that Maxamed is no longer a student) is triggered but is cancellable.

(15) Hermione was in the Hospital Wing last week. She is *still* there today.

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[8]Similar examples obtain for possession, where "my jar-*kii*" or "my phone-*kii*" alone cannot denote a jar/phone that *used to be* mine. Transfer of possession, in these cases, can be expressed with a relative clause. Our proposal predicts that change of state inferences should not obtain with permanent properties like 'being a jar.'

[9]The word *hore* is translated in Qoorsheel (1978) as 'ahead,' 'before,' and 'former,' among other meanings.

The data explored in this section so far point to the fact that Somali -KII does not behave like English 'former' or like Guaraní *-kue*: -KII does not encode the properties of existence and change of state identified by Tonhauser (2007). While Somali -KII may be different from Guaraní NTMs, it does encode the precedence property. The following subsection further motivates the analysis of -KII as a nominal tense marker.

4.3. The temporal contrast of Somali definite determiners

The previous subsection illustrated that -KII does not obligatorily generate a change of state inference. Nevertheless, this inference does arise in certain contexts. Example (5) is repeated below. Recall that in context, *president*-KA may only refer to the current president, Barack Obama, and the use of -KA in (5b) would lead to infelicity. Similarly, *president*-KII would not be felicitous in (5a), necessarily referring to George Bush, the salient past president, in (5b).

(5) Context: *The year is 2016 and Barack Obama is the president of the United States.*

    a. Madaxweyna**ha** wux-uu ku nool yahay guriga cad.
       president-**KA**   FOC=3S at lives   house white
       'The president lives in the White House.'   ≈ **Barack Obama**
    b. Madaxweyni**hii** wux-uu ku nool yahay Texas.
       president-**KII**   FOC=3S at lives   Texas
       'The president lives in Texas'.   ≈ **George Bush**   [01/30/2016]

Event nouns modified by -KII may also give rise to cessation implicatures. The example in (24) is replicated from Lecarme (2008: ex. (11), p. 204). The two sentences below were elicited during The Big E festival, an annual event in Springfield, MA, that takes place at the end of September. Crucially, (24a) can only be uttered if the exhibition is still running at Utterance Time, *exhibition*-KII being infelicitous in this scenario. The use of -KII is felicitous in (24b), where it is contextually given that the exhibition is closed at the time of speech; as in the case of (5), -KA is infelicitous if the speaker is aware that the festival ended.

(24) a. Context: *The Big E is ongoing at the time of speech.*

       Bandhig-**ga**   ma=ad daawatay?
       exhibition-**KA** Q=2S see.2S.PAST
       'Have you seen the exhibition?'

    b. Context: *It is mid-October and The Big E recently ended.*

       Bandhig-**gii**   ma=ad daawatay?
       exhibition-**KII** Q=2S see.2S.PAST
       'Have you seen the exhibition?'   [09/27/2015]

In (23), in section 4.2, we observed that *student*-KII does not entail a change of state, but that it gives rise to a cancellable implicature that the individual denoted by the DP is not a student at UT. However, the 'optionality' of this inference is context-dependent: compare (22) with (25), where the change of state inference is obligatorily triggered.

(25)   Context: *Axmed graduated from school and got a job at a company.*

     Arday-**gii/#-ga**   wuxuu   ka shaqayay hayad.
     student-GII/-GA FOC=3S at working   company
     'The (former) student is working at a company.'   [05/11/2016]

The choice of -KII over -KA is context dependent and it is sensitive to a temporal contrast between the two, which may give rise to a *change of state* interpretation of the target sentence. The data indicates that this is a cancellable implicature reminiscent of the use of past tense in stative sentences (see (15)).

4.4. The (in)visibility contrast of Somali definite determiners

Lecarme (2008, 2012), based on data like the one in (26), suggests that Somali definite determiners are sensitive to visibility from the perspective of the speaker: if the referent is absent from the immediate visual context, then -KII is used, whereas -KA would be inappropriate. Lecarme (2008) also notes that the contrast is not optional: the use of -KII is not felicitous if the referent is visible.

(26)   a.   Context: *The speaker's pen is in the drawer, invisible to the speaker.*

        Qalin-kay-**gii**/*-gu   meeyey?
        pen-M.POSS.1S-KII/*-KA.TOP Q.is.M.S
        'Where is my pen?'

     b.   Context: *There are multiple pens on the desk.*

        Qalin-kay-**gu**   waa   kee?
        pen-M.POSS.1S-KA.TOP DECL Q.M
        'Which one is my pen?'   (Lecarme, 2008: ex. (20), p.212)

This contrast was also replicated in our elicitations: *sun*-KII in (27b) may only refer to an 'invisible,' eclipsed sun, while *sun*-KA in (27a) necessarily refers to a visible sun.

(27)   a.   Shalay   waxa=an firinayay   cadceed-**da**
        yesterday FOC=1S look.PAST sun-KA
        'Yesterday I looked at the sun'   ≈ **visible**
     b.   Shalay   waxa=an firinayay   cadceed-**dii**
        yesterday FOC=1S look.PAST sun-KII
        'Yesterday I looked at the sun'   ≈ **eclipsed**   [01/30/2016]

However, the (in)visibility contrast is not always observed. In the scenario in (28), the sun is in plain sight, yet the use of -KII is licensed. This is unexpected under Lecarme's (2008; 2012) account. Contrary with the generalization that -KII marked NPs are invisibile entities, our data illustrates that invisibility does not always pattern with the remote definite determiner.

(28)   Context: *We are outside, taking a walk. The sun is shining.*

      Cadce-**dii/#-da** cirkay joogta
      sun-KII/#-KA   sky   be.at.PRES
      'The sun is in the sky.'[10]

Another case where -KII refers to visible entities was that of (21), where the object in question, the jar, was in the immediate context of the informant (on the table, in front of the speaker). It seems that although invisibility readings *do* arise with -KII, they are not mandatory. Our account is sensitive to the 'optionality' of the invisibility and change of state readings.

5. Generalizations and proposal

5.1. Core generalizations

Somali encodes definiteness by means of (at least) two determiners: -KA and -KII. The choice of one over the other *may* give rise to change of state or invisibility readings. There are contexts in which these contrasts obtain (such as (5) for the temporal contrast and (6) for visibility) and contexts, like (3), where the implicatures are either cancelled or not generated. For convenience, the core data referenced throughout the paper is repeated below.

(3)   Context: *Axmed was working home all day. He decides to go out and sees the sun.*

      Marku baxay   wux-uu arkay qorrax{**-ka/-kii**}.
      when   went out FOC=3S saw   sun-KA/-KII
      'When he went out, he saw the sun.'   [03/07/2016]

(5)   Context: *The year is 2016 and Barack Obama is the president of the United States.*

    a.   Madaxweyna**ha** wux-uu ku nool yahay guriga cad.
       president-**KA**   FOC=3S at lives   house white
       'The president lives in the White House.'   ≈ **Barack Obama**
    b.   Madaxweyni**hii** wux-uu ku nool yahay Texas.
       president-**KII**   FOC=3S at lives   Texas
       'The president lives in Texas'.   ≈ **George Bush**   [01/30/2016]

(6)   VISIBILITY CONTRAST between -KA and -KII
      Wax-aan fiirinayaa cadceed-**da/-dii**.
      FOC=1S watching sun-KA/-KII
      I'm watching the sun.
    a.   Inference with -KA: The sun is visible.
    b.   Inference with -KII: The sun is eclipsed.
    c.   -KII is odd if the sun is visible; -KA is odd if the sun is eclipsed.   [01/30/2016]

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[10]Surprisingly, *sun*-KA is reportedly odd in (28), but would be felicitous in a context where the sun was rising. This is a puzzle which we leave for further research.

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The data points out that the distribution of NP-KII, given in (29), is broad. It may refer to visible entities of which the NP property is true at topic time (TT), as in (3), it may refer to visible entities of which the NP property is *not true at TT*, but true at some salient time before TT, as in (5), where Bush is a former president, and, finally, as in (6), to *invisible* entities of which the NP property holds true at TT, but the entities are not visible in the topic context.

(29) DISTRIBUTION OF NP-KII
  i.   entites x that are in the topic context and NP(x)=1 at topic time,
  ii. entities x that are in the topic context and NP(x)=1 at some time preceding topic time, NP(x)=0 at topic time,
  iii. entities x that are not visible in the topic context and NP(x)=1 at topic time.

With respect to NP-KA, its distribution, given in (30), is more restricted. In all of the contexts examined in this paper, -KA marked nominals referred to *visible* entities which satisifed the NP property at topic time.

(30) DISTRIBUTION OF NP-KA
      entities x that are in the topic context and NP(x)=1 at topic time

Comparing the generalizations in (29) and (30), we observe that the range of meanings NP-KA is associated with is a proper subset of the range of meanings NP-KII is associated with. Consequently, we propose that a competition based account between the two definite determiners can capture the -KA and -KII contrasts discussed in this paper.

5.2. Proposal

The contrasts observed in the Somali nominal TAM data can be explained by a competition based account, where the change of state and invisibility readings associated with -KII are derived from scalar implicatures.[11] The first component of our proposal is Altshuler and Schwarzschild's (2013) analysis of past stative sentences like the ones below.

(31) a. We love this puzzle.
      b. We loved this puzzle.

The core observation regarding (31) is that (31b) gives rise to the (cancellable) cessation implicature that the group denoted by 'we' no longer loves the puzzle. Example (31a), on the other hand, does not give rise to a comparable inference. Altshuler and Schwarzschild (2013) argue that the cessation implicature in a stative English past tense sentence like (31b) can be derived by setting up a competition between the *past* tense and the *present* tense. This competition is

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[11]A similar account is found in Thomas (2014) for Mbyá Guaraní, where the morpheme *-kue* does not semantically encode *change of state* or *existence*, as described by Tonhauser for Paraguayan Guaraní. Thomas argues that the *cessation* inference triggered by *-kue* is a scalar implicature. The existence inference is derived from the interaction between this implicature and general interpretive properties of noun phrases. His account relies on the use of the exhaustivity operator (Fox, 2007), which, depending on the meaning of the alternatives of the proposition, following Magri (2009), negates the *contextually relevant* alternatives of the given proposition.

based on the assumption that a stative sentence in the present asymmetrically entails its past tense counterpart. Gricean pragmatic reasoning then derives the result that uttering the latter, e.g., (31b), gives rise to the inference that the former, e.g., (31a), is false.

The rationale behind this entailment pattern is this. If (31a) is true *now*, that is, if the puzzle is loved now, the puzzle was also loved a moment ago. The hypothesis that a stative in the present tense asymmetrically entails a stative in the past tense, labeled by Cable (2017) as the *Open Interval Hypothesis*, is formalized in (32).

(32)   OPEN INTERVAL HYPOTHESIS: The run-time of a state is an open interval.
        If s is a state and t is a temporal instant contained within the runtime $\tau(s)$ of s ($t \subseteq \tau(s)$), then $\exists t'$ such that $t' < t$ and t' is also contained within τ(s) (t' $\subseteq \tau$(s)).

In other words, if a tenseless stative clause is true at a moment m, it is also true at a moment that precedes m. Consequently, a present stative sentence entails both that the proposition is true at the time of utterance (by the contribution of present tense), and that it was true at some moment before utterance time (by the contribution of (32)). A past stative sentence, however, does not entail its present tense counterpart. This asymmetric entailment relation ensures that the use of a stative sentence in the past tense will give rise to the scalar implicature that its present tense counterpart is false. This, of course, unless independent factors block the implicature.[12] This account can be extended to explain the contrasts between the use of Somali -KII and -KA, if we make the assumption that a sentence with a -KA marked nominal asymmetrically entails its counterpart with a -KII marked nominal. (That is, if we assume that the former determiner patterns like the present tense, and the latter, like the past tense.) Hence, we propose that the difference between -KII and -KA resides in a temporal presupposition encoded by -KII.

Our analysis assumes that NPs are of type $< e, it >$. They denote functions from entities, to functions from times to truth values. We also extend the Open Interval Hypothesis in (32) to NP properties. The temporal interval t_{NP}, the time at which the NP is evaluated (Tonhauser, 2007; Thomas, 2014) and represented in (33a), picks out topic time. Examples (33a) and (33b) recapitulate the structural assumptions for Somali DPs and the denotation of NPs. The lexical entries in (33c) and (33d) give our proposed denotations for the determiners -KA and -KII, both functions from NP denotations ($< e, it >$) to functions from times to generalized quantifiers.

(33)   a.   [[NP D^0] t$_{NP}$]$_{DP}$ where D^0 is -KII or -KA
        b. $[\![NP]\!] = \lambda x_e \lambda t_i.P(t)(x)$
        c. $[\![KA]\!]^{w,t,g} = \lambda P_{<e,it>} \lambda t_i \lambda Q_{<e,t>} : \exists!x[x \in C \& P(t)(x)].Q(\iota x[P(t)(x)])$
        d. $[\![KII]\!]^{w,t,g} = \lambda P_{<e,it>} \lambda t_i \lambda Q_{<e,t>} : \exists t' \exists!x[t' < t \& x \in C \& P(t')(x)].$
                                                        $\exists t'[t' < t \& Q(\iota x[P(t')(x)])]$

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[12]In Altshuler and Schwarzschild (2013) and Cable (2017) the cessation implicature arises only in the absence of a *salient past topic time*.
(i)   a.   We love this puzzle.
       b.   We loved this puzzle (yesterday).
       c.   We loved this puzzle as soon as we started working on it.
A cessation implicature is generated in (ib), but not in (ic). We predict the same to be true in Somali.

According to the semantics in (33c) and (33d), both -KA and -KII introduce the familiar definiteness presupposition, that there is a unique x in the context such that the property denoted by the NP holds of x. For -KA, the property must hold at topic time. The determiner -KII, on the other hand, encodes the 'precedence property,' that there is a time t' (strictly) prior to topic time such that the property denoted by the NP holds of x at t'. Applying the *Open Interval Hypothesis*, if a proposition containing a -KA marked nominal is true at topic time, then it must also have been true at some interval preceding topic time. The fact that a proposition with a -KII marked nominal holds at topic time does not entail that its -KA marked counterpart holds at topic time. Consequently, a sentence with a -KA marked nominal asymmetrically entails its counterpart with a -KII marked one.

We propose that the cessation implicature which arises in (24b), repeated below, is derived as in (34). We predict that this reasoning can be applied to any non-permanent property (event nominals, nouns denoting temporally bounded social functions like *president* or *student*).

(24) a. Bandhig-**ga**   ma=ad daawatay?
          exhibition-**KA** Q=2S see.2S.PAST
          'Have you seen the exhibition?'   → **open at UT**
      b. Bandhig-**gii**   ma=ad daawatay?
          exhibition-**KII** Q=2S see.2S.PAST
          'Have you seen the exhibition?'   ⇝ **closed at UT**   [09/27/2015]

The pragmatic reasoning is based on computing the minimally different alternatives of a given sentence. In this case, the -KA sentence is a minimally different alternative of the -KII sentence. Given that, according to the hypothesis in (32), (24a) asymmetrically entails (24b), asserting the weaker alternative (24b) triggers the implicature that the stronger (24a) is false.

(34) PRAGMATIC REASONING FOR (24B): CESSATION IMPLICATURE
      a. The speaker asserts (24b).
      b. The utterances in (24a) and (24b) are identical with the exception of the D^0 node.
      c. exhibition-KA corresponds to the unique x which is an exhibition in context C at UT.
      d. exhibition-KII corresponds to the unique x which *was* an exhibition in context C at a time t', prior to UT.
      e. The utterance in (24a) is stronger than (24b); (24a) entails (24b) according to the *Open Interval Hypothesis*. If x is an exhibition at UT, it must have also been an exhibition at some point in time **before** UT.
      f. If the speaker uttered (24b), then the stronger alternative with -KA, that x is an exhibition at UT, is false.
      g. Therfore, x is *not* an exhibition at UT.
      h. *World knowledge*: for x to stop being an exhibition, the exhibition must have closed.

We argue that the *(in)visibility* contrast is also a derivable scalar implicature. The example in (35) is repeated from (27), where the use of -KII implies that the sun is eclipsed. We predict that the same reasoning can be applied to any noun which expresses a permanent property.[13]

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[13]Our attempts to obtain data regarding invisible non-permanent properties have been unsuccessful.

(35) a. Shalay   waxa=an firinayay   cadcee-**da**
          yesterday FOC=1S look.PAST sun-KA
          'Yesterday I looked at the sun'   → **visible**
      b. Shalay   waxa=an firinayay   cadcee-**dii**
          yesterday FOC=1S look.PAST sun-KII
          'Yesterday I looked at the sun'   ⇝ **eclipsed**   [01/30/2016]

Once again, minimally different alternatives are computed. Based on the hypothesis in (32), (35a) asymmetrically entails (35b), and the use of the weaker alternative implicates that the stronger alternative is false.

(36) PRAGMATIC REASONING FOR (35B): INVISIBILITY IMPLICATURE
      a. The speaker asserts (35b).
      b. The utterances in (35a) and (35b) are identical with the exception of the D^0 node.
      c. sun-KA corresponds to the unique x which is a sun in context C at topic time.
      d. sun-KII corresponds to the unique x which *was* a sun in context C at a time t', prior to topic time.
      e. The utterance in (35a) is stronger than the utterance in (35b); (35a) entails (35b) according to the *Open Interval Hypothesis*. If x is a sun at topic time, it must have also been a sun at some point in time **before** topic time.
      f. If the speaker uttered (35b), then the stronger alternative with -KA, that x is a sun at topic time, is false.
      g. Therefore, x is *not* a sun at topic time.
      h. *World knowledge*: the sun is permanent and unique, hence, x cannot stop being a sun.
      i. x is not a sun at *topic time* in C, but x is always a sun.
      j. The sun is invisible at topic time.

6. Concluding remarks

This paper advances the understanding of the semantics of Somali definite determiners -KA and -KII, and compares them to nominal temporal markers crosslinguistically. The comparison between Somali and Guaraní led to the conclusion that the Somali remote definite determiner -KII does not encode the *change of state* or the *existence* properties attested in Guaraní NTMs (Tonhauser, 2007). Our data point in the direction of a *temporal contrast* between the two definite determiners in Somali, and support the conclusion that the *change of state* and *invisibility* readings are, in fact, cancellable implicatures. We proposed that this contrast is semantically encoded by means of an extra temporal presupposition in the case of -KII. Assuming our proposed semantics and the *Open Interval Hypothesis* (Altshuler and Schwarzschild, 2013; Cable, 2017), -KA asymmetrically entails -KII. Under this analysis, the competition between minimally different alternatives is responsible for generating the desired implicatures.

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