

# Empirical Issues in Formal Syntax and Semantics 2

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## Nominal Tense and Tense Theory\*

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On the basis of evidence from Somali, a nominal-tensed language, this paper argues that the grammar of tense in both nominals and clauses can be derived from the same set of syntactic and semantic primitives.

### 1 Introduction

Recent investigation of the temporal interpretation of noun phrases has questioned the quantificational approach to tense inherited from tense logic (Montague 1974) on the basis of the fact that tense does not affect the interpretation of any element in its scope. Enç (1981, 1987) argues that the temporal interpretation of NPs is largely independent of the tense in the sentence: most NPs are temporally determined only by the context of utterance. This generalization is proven to be incorrect by Musan (1995), who argues for a stage semantics account of why noun phrases can be temporally (in)dependent.

The present paper argues that it is possible to retain the benefits of a quantificational approach to tense theory while avoiding the associated difficulties by positing that the temporal interpretation of noun phrases is syntactically construed as an operator-variable chain. The argument is based on data from Somali, a Cushitic (Afroasiatic) language, in which [ $\pm$  past] tense morphemes attached to the definite determiner provide morphosyntactic evidence for the presence of DP-internal tenses. Using an extensional version of the T(ense)-chains proposed by Guéron & Hoekstra (1994), I show that there is a strict parallelism between the syntax and semantics of nominal and verbal tense. Finally, I extend the discussion to the crosslinguistic consequences of this analysis: parametric variation in temporal systems arises from whether grammatical tense involves the verb predicate (e.g. Romance languages), the noun predicate (Salish languages)

or both (Somali). Languages also vary in which inflectional feature is involved in the expression of nominal (or verbal) 'finiteness'.

#### 1.1 Evidence for nominal tense

In order to justify the possibly surprising assumption that noun phrases can have a temporal structure at all, I first spell out some widely held assumptions. a) Semantically, all instances of bare noun phrases are predicates (Williams 1981; Higginbotham 1985), therefore are time sensitive (Enç 1981, Musan 1995). Temporal modification such as *former* (former president of France, etc.) is a direct argument for an *e*-position in nominals (Higginbotham 1985, 1987). b) Time reference is a universal property of language; tense, a morphosyntactic notion, can be parametrized.

The joint effect of these assumptions is that the central question raised by the variation displayed in Somali is no longer how noun phrases can bear temporal morphology, but why tense hardly ever shows up in the nominal system.

**1.1.1 Morphosyntactic evidence:** Among the languages exhibiting tense affixes on nominals<sup>1</sup>, Somali has the following distinctive properties: nominal tense is a property of any DP (common noun phrase), stage-level or individual-level nouns. Tense morphology affixes to D, i.e. the definite article *-k*-(masculine) *-t*-(feminine)<sup>2</sup>, encoding a [ $\pm$  past] opposition (1)<sup>3</sup>. Near/far demonstrative enclitics (2) are in complementary distribution with tense morphemes, but may not be used as grammatical location in time. Tense and Case morphology do not have the same distribution: tense in complex nominal expressions must appear on the head Noun, unlike the [ $\pm$  nominative] Case, which shows up on the rightmost constituent (3):

<sup>1</sup> Nootka, Kwakiult (Wakashan; cf. Sapir 1921, Boas 1947), St'at'imcets, Halkomelem (Salishan; cf. Demirdache 1996, Burton 1997), Kayardild, Jingulu (Australian; cf. Evans 1996, Pensalfini 1997) are also reported to explicitly encode temporal information on noun phrases.

<sup>2</sup> The *-k/-t* gender agreement morphology undergoes complex rules of sandhi when attached to the noun. In the examples below, *-hii*, *-gii*, *-ii* and *-dii*, *-shii* are to be understood as allophonic variants of *-kii* and *-tii*, respectively.

<sup>3</sup> The relevant opposition has to be understood as *-i/-ii*, paralleling the [ $\pm$  past] tense opposition *-aa/-ay-* in the verbal system. Only Case suffixes then show up in the present tense. See Lecarme (1996) for a more detailed discussion.

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- (1)  $-k/t - \left\{ \begin{array}{c|c|c} & [-\text{past}] & [+past] \\ \hline [+nom] & -u & -ii \\ \hline [-nom] & -a & -fi \end{array} \right.$
- (2)  $-k/t - \left\{ \begin{array}{c|c} -\acute{a}n \text{ 'this'} & -\acute{a}as \text{ 'that'} \\ \hline -\acute{e}er \text{ 'that (far away)'} & -\acute{o}o \text{ 'that (very far away)'} \end{array} \right.$
- (3) arrimí-híi      Gúddi-ga      Sare ee Tawrád-du  
 affairs-detM[+past] Committee-detM upper and Revolution-detF[+nom]  
 The affairs of the Supreme Council of the Revolution

Nominal tense morphemes are not a subset of the tense forms that appear on Verbs. This is not a case of tense agreement either: nominal tense need not agree or even be compatible with the tense of the main (i.e. verbal) predicate. In the following set of examples, the time of the nominal subject predicate can coincide with the time of the main predicate. This leads to a simultaneous reading of the subject NP:

- (4) a. dhibaata-da      Khalij-ku      welí way taagán      tahay  
 problem-detF Gulf-detM[+nom] still F+3S permanent is  
 The Crisis of the Gulf still persists
- b. dhibaata-dii      Khalij-ku      wáy dhammaatay  
 problem-detF[+past] Gulf-detM[+nom] F+3S ended[+past]  
 The Crisis of the Gulf ended

Yet, the time of the noun predicate and the time of the main (verbal) predicate need not coincide: in (5a), *ardáyda* “the students” have a specific present time interpretation, that is, are understood in a context that refers to the time of the utterance, independent of the [+past] tense on the Verb. In (5b), the [+past] tense morpheme somehow locates *ardáydii* “the students” in the past, i.e. before the time of utterance:

- (5) a. ardáy-da      baan kasin  
 students-detF[-past] F+neg understood[+past]  
 su’áash-aa-dii  
 question-detF+Poss2S[+past]  
 The students (who are present/I am telling you about) did not understand your question
- b. ardáy-dii      wáy joogaan  
 students-detF[+past] F+3P are-present[-past]  
 The students (e.g. students I told you about) are present

Relative clauses headed by a complex DP may show a more intricate version of the same situation: in both (6a) and (6b), the tense of the relative clause coincides with the tense of its antecedent, i.e. the genitive DP, while the tense of the head Noun coincides with the tense of the matrix clause.

But the tense of a relative clause need not coincide with the tense of its definite head (6c):

- (6) a. wakiillá-dii      kooxá-ha      [<sub>cp</sub>Xámar kú dagaalamaya]  
 representatives-detF[+past] factions-detM Mogadiscio (loc) are-fighting  
 (ayaa kú kulmay...)  
 (held[+past] a meeting...)  
 The representatives of the factions who are fighting in Mogadiscio (held a meeting...)
- b. búug-ga      árdáy-gíi      [<sub>cp</sub>shálay yimid]  
 book-detM student-detM[+past] yesterday came[+past]  
 (wúxuu dól saarán yahay mífiska)  
 (is on the table)  
 The book of the student who came yesterday (is on the table)
- c. nín-ka      cáan-ka      ah [<sub>cp</sub>ee qoráy búug-gani]      (waa  
 man-detM fame-detM be and wrote book-detM+Dem[+nom] (F  
 Shákisbír)  
 Shakespeare)  
 The famous man who wrote this book (is Shakespeare)

Noun phrases, then, clearly have their own temporal restrictions, not defined for the whole sentence. Since the tense of a DP can be deictically interpreted, in relation to the time of utterance, the Somali facts provide morphological evidence for Enç’s claim that the temporal interpretation of noun phrases is ‘free’, that is, cannot depend on a tense operator taking its scope over the clause: what is needed is the possibility for both nominal / verbal tenses to be independently evaluated with respect to the utterance time.

## 1.2 The temporal interpretation of noun phrases

1.2.1 Enç’s (1987) approach: The main empirical problem facing the quantificational approach to tense theory crucially involves the temporal interpretation of nominals. This issue has been taken up most extensively in Enç (1987), who argues that under the propositional operator approach, (7) is assigned the meaning (8):

- (7) every fugitive is now in jail  
 (8) every x who is now a fugitive is presently in jail.  
 (9)  $\forall x ((P(\text{fugitive}(x))) \rightarrow \text{in-jail}(x))$

Since (7) is an assertion about *past* fugitives who are *presently* in jail, the correct truth conditions are (9), where the past tense operator P is restricted to the DP, and does not include the main (i.e. verbal) predicate<sup>4</sup>.

On the referential approach to tense advocated by Enç (relying on Heim's (1982) classical version of Discourse Representation Theory), no quantification is involved in the interpretation of tense: tenses behave rather like pronouns (Partee 1973), and are defined by specific ordering of R(eference)-time, E(vent)-time and time of utterance (Reichenbach 1947). On this view, the temporal interpretation of noun phrases is only determined by the discourse context.

To see how this proposal can handle the Somali facts, let us consider purely non-verbal contexts such as nominal sentences<sup>5</sup> (10) and book titles (11). In (10), a [+past] nominal tense can be used *deictically* (distance in space/time), *referentially* / *specifically* (the speaker has a specific individual or time interval in mind), or *anaphorically* (linked to the domain of discourse):

- (10) a. búug-gii wáa kan  
book-detM[+past] F DetM-dem  
Here is the book (distant but in sight / I have in mind / I told you about)
- b. nimán-kii waa macallimín  
men-detM[+past] F teachers  
The men (over there / I have in mind / I told you about) are teachers
- c. wíl-kii áawey?  
boy-detM[+past] where-is-he  
Where is the boy (not in sight / I have in mind / I told you about)?

Book titles in (11) take the form of a genitive construction in which a [+past] tense morpheme must appear on the head noun:

- (11) a. Xéeb-tii Geerí-da  
beach-detF[+past] death-detF  
The Beach of Death
- b. Garbaddúub-kii Guméysi-ga  
shackle-detM[+past] colonialism-detM  
The Shackles of Colonialism

- (12)  $\text{the}_{x,t}[\text{beach}(x,t) \ \& \ R_t(\text{death}, x)]$

I take the the genitive modifier in (11) to be interpreted with the addition of a contextually or pragmatically determined R-relation (cf. Partee 1983). I explicitly suggest that in the representation (12), the genitive complement provides a free time variable  $t_R$  whose value is the time interval that

is salient in the context. Thus, the genitive DP has the effect of a temporal modifier on the head noun. In the logical representation, the past tense and the free time variable are intersectively interpreted in the restrictive clause of the determiner.

Consider next the presuppositional uses underlying the tense oppositions seen in (13): a [+past] tense is appropriate only if the speaker believes the exhibition (*bandhíg-gii*) to be closed at the time of the utterance, while [-past] presupposes that it is still running. Likewise, the opposition *sáfarkay-ga/-gii* 'my journey' depends on whether the journey is still in progress (or simply intended), or already achieved at the time of utterance:

- (13) a. bandhíg-ga/-gii máad daawatay?  
exhibition-detM[-past]/detM[+past] Q+2S saw[+past]  
Have you seen the exhibition? (still running/closed at the time of the utterance)
- b. búug-ganu sáfarkay-ga/-gii buu  
book-detM-dem[+nom] journey-detM+Poss1S[-past]/[+past] F+3MS  
tilmáamayaa  
relates[-past]  
This book relates my journey (intended or in progress / achieved)

Clearly, in many examples, a [+past] nominal tense must be linked to contextual restrictions that are not provided by the discourse. I conclude that an alternative to Enç's classical DRT framework is needed to account for the the context-dependency of Somali noun phrases.

1.2.2 Musan's (1995) approach: Questioning Enç's generalization, Musan argues that there are NPs that obligatorily get a temporally dependent interpretation. Typically, *there*-constructions (*there was a professor sick*) trigger a cardinal reading of the NP; the NP can have here only a temporally dependent reading, and the predication times of *sick* and *professor* clearly have to intersect. According to Musan, the distribution of temporally (in)dependent noun phrases is correlated largely with the distinction between weak (or cardinal) and strong (or presuppositional) noun phrases: cardinal noun phrases can only receive temporally dependent readings; presuppositional noun phrases can receive temporally independent readings. The freedom of temporal interpretation in (14) is explained as a consequence of determiner quantification being analyzed as quantification over stages of individuals: in (14b), the temporal adverb of quantification only modifies a temporal part (or slice) of the individual host of the 'professor' predicate; on this analysis, the main's predicate time is 'anchored'

<sup>4</sup> See Giorgi & Pianesi (1997) for a more detailed discussion.

<sup>5</sup> I take the so-called focus marker *waa* in (10) to instantiate here a non-verbal copula in the C position. For a detailed analysis, the reader is referred to Lecarme (in press).

in the stage given by the restrictive material:

- (14) a. *in the fifties, most often all professors... played badminton*  
 b. For most times  $t$  [ $t$  in the past & in the fifties] [all  $x$  such that [ $x$  is *now* a professor]]... [played badminton at  $t$ ].

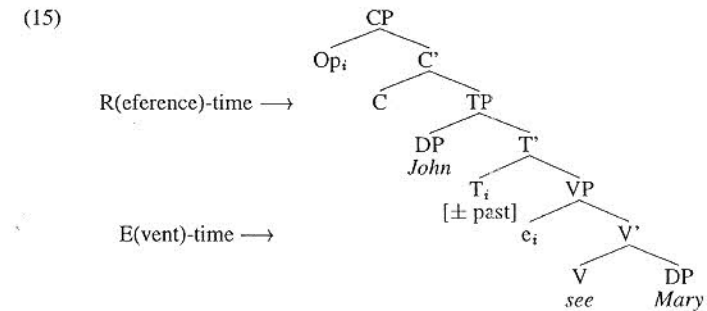
In other words, on a stage semantics account, the temporal dimension of noun phrases is built internally, as part of the quantification mechanism. Although this analysis is a significant move toward a more explicit account of nominal /verbal tense interactions, it does not provide any further insight into the main empirical problem, namely the temporal structure of noun phrases. We must conclude that nominal tense, a universally available option of natural language, cannot be explained in the way that Musan suggests.

## 2 A uniform structure for temporal interpretation

### 2.1 The temporal structure of noun phrases

In this section, I explicitly provide the syntactic structure which accounts for the temporal properties of noun phrases. Specifically, I assume that the parallelism between the syntax and semantics of nominal tense and verbal tense can be captured by extending the proposals in Guéron & Hoekstra (1988, 1994).

The central tenet is that temporal interpretation is syntactically construed as a T-chain  $Op_i, T_i, V(e_i)$ . As depicted in (15), a verbal predicate contains an accessible variable, which has no quantificational force of its own, but can be bound by a discourse operator (Op). This relationship is mediated by the R(eference)-time, which in the unmarked case corresponds to the Speech time (S). Op in Spec,CP determines the value of C, which contains the R(eference)-time. Tense morphemes in T are pronominal variables with 2 values:  $[\pm \text{past}]$ . Tenses then tell us whether the time of an event E is before / after / simultaneous with a given R-time. If  $R = S$ , tense locates the seeing event in (15) before the “now” of the utterance:



Both quantificational and referential properties of tense are thus captured in a T-chain: tense is the syntactic identifier of the non-overt argument position of the VP predicate (morphosyntactic part). Interpretable features of tense are located within some discourse domain via an operator (deictic part).

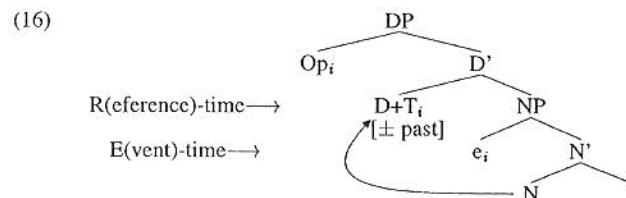
In the syntactic literature, the quantificational / referential properties of nominals have been implemented in various ways: nouns are argued to have a ‘referential’ argument (Williams 1981), or to contain an open position in their  $\theta$ -grid, which is identified (saturated) by the determiner (Higginbotham 1985, 1987). Alternatively, D is assumed to bind the variable supplied by the noun (Abney 87, Stowell 1989, Longobardi 1994). On Longobardi’s account, D has a  $[\pm \text{ref}]$  feature connected to the referential properties of the whole DP. Under the present analysis, there can be no  $[\pm \text{ref}]$  feature, and no category that performs solely the task of referring. Rather, there are certain privileged terms that specify domains of discourse: nouns refer when they are used, that is, when the individual they host is temporally anchored in a speech situation. Assuming that both C and D are points of contact between the ‘inside’ of the grammar and the external systems of language use, a noun phrase is ‘anchored’ through the determiner position.

Following Guéron & Hoekstra (1988, 1994), Campbell (1994), I assume that the predicative basis of both nouns and verbs is integrated into a referential domain by means of an operator-variable chain. More specifically, I propose that Somali noun phrases that are specific in reference have the internal structure (16), in which a tense operator in Spec,DP binds the variable  $e$ -position<sup>6</sup>. This accounts for the context-dependency of Somali

<sup>6</sup> I take the  $[\pm \text{past}]$  morpheme here to be syncretic with the definite determiner morpheme, in Spec-head agreement with a deictic operator binding the variable  $e$ -position.



determiners: DPs are temporally restricted by the context, a local process.



From a more abstract point of view, nominal T-chains are grammatically costless, assuming that a chain is independently created by N-to-D movement in the syntax, either overtly or covertly. No structural relations are invoked other than those legible at the interface, i.e. argument structures and quantifier-variable relations. T-chains can include Mood, Aspect and other modifying elements, thus elegantly account for the fact that nominal aspect, a temporal notion, also contributes to temporal interpretation (Zhang 1997). Finally, assuming that T-chains are universal interpretive devices, variation in the systems of temporal interpretation is morphosyntactic in nature: nominal 'finiteness' can be obtained through the specification of other inflectional features, (e.g. number), or a deictic feature.

## 2.2 Evidence from DP-internal syntax.

**2.2.1 Temporal NP-modifiers:** Temporal modification provides evidence for a time position in nominals. It is through the so-called 'Davidsonian' argument that temporal and adverbial modification is realized. Both contribute to locate the time variable associated with the noun. I will assume here, following Higginbotham (1994), Chierchia (1995), that a nominal predicate does not simply take objects as arguments but pairs consisting of an object and an eventuality.

Overt temporal modifiers in Somali must occur with a matching tense morpheme. The tense and the temporal modifier must be compatible, or agrammaticality would result (17a,b). On the present approach, the 'Davidsonian' variable is locally bound by *Op*, who takes tense and the temporal adverb as its restrictors. The past tense and the temporal adverb are intersectively interpreted.

While both D and T specifications are normally expressed by a single, syncretic head and thus project only a single maximal projection, DP is obligatorily split when enclitic possessive pronouns or other material are realized.

- (17) a. *sánnad-ka/\*-kii* dambe  
 year-detM next  
 next year  
 b. *sánnad-kii/\*-ka hore*  
 year-detM[+past] before  
 last year

A nominal T-chain, like a verbal T-chain, provides two distinct positions for temporal modifiers: temporal modifiers can fix either the e-time, or the R-time, or ambiguously both. Temporal adjectives such as *hore* 'former, ex-' are purely nominal modifiers and unambiguously fix the e-time (predication time): thus, 'former students' in (18b) has a narrower temporal interpretation than 'the individuals who were my students', and excludes that the individuals still be my students at the time of utterance:

- (18) a. *ardáy-d-ay-da* dhammáan-t-ood  
 students-detF+Poss1S[-past] entirety-detF+poss3P  
 (waa ilá soo xariiran)  
 (are in contact with me)  
 All my students (are in contact with me)  
 b. *ardáyday-dii hore* dhammáan-t-ood  
 students-detF+Poss1S[+past] before entirety-detF+Poss3P  
 (waa ilá soo xariiran)  
 (are in contact with me)  
 All my ex-students (are in contact with me)

Definite temporal modifiers such as *shálay* 'yesterday', *usbúucii hore* 'last week' are 'higher' temporal modifiers, and can provide 'topic times' to both nominal / verbal predicates: as represented in (20), the time of *e* must be interpreted with respect to the contextually determined R-time:

- (19) a. *qabqabashá-dii shálay*  
 arrests-detF[+past] yesterday  
 Yesterday's arrests  
 b. *qabqabashá-dii usbúuc-ii hore*  
 arrests-detF[+past] week-detM[+past] before  
 Last week's arrests

- (20)  $the_{x,t}[\text{arrests}(x,t) \ \& \ R_t(\text{last week}, t)]$

Semantically, tense morphemes and temporal adverbs are both restrictive material that contribute to the temporal location of the variable provided by the noun predicate. Syntactically, nominal tense is the licenser of the temporal modifier. I will assume that interpretable tense features of time adjectives and adverbs are made legible at the syntax-LF interface by entering in a T-chain, and are licensed through a feature-matching process.

2.2.2 Definiteness / tense agreement: Adjectives must agree with the noun in gender and tense<sup>7</sup>. Tense on the adjective is contingent on the presence of tense on D, hence adjectival tense only appears when the noun is definite. Both types of tense morphology must appear simultaneously:

- (21) a. ardayád-da wanaagsan  
student(f)-detF good  
The good student(f)  
b. ardayád-dii wanaagsanayd  
student(f)-detF[+past] good[+past](f)  
The good student(f)  
c. ardayád-dii wan-wanaagsanaa  
students-detF[+past] pl-good[+past]  
The good students

Inflected adjectives cannot be understood as 'reduced relative clauses', since relative clauses are not temporally dependent on the head noun, and can have indefinite 'heads' (22a). This clearly suggests that inflected adjectives in nominals have no inherent tense value: adjectival tense morphology is a concord phenomenon:

- (22) a. dhibaatooyin adag/\*adkaa [<sub>cp</sub>oo ká taagnaa Soomáaliya]  
problems difficult[-past]/\*[+past] and (abl) arose Somalia  
Serious problems that arose in Somalia  
b. dhibaatooyin-ka adag [<sub>cp</sub>ee ká taagaan Soomáaliya]  
problems-detM difficult and (abl) arise Somalia  
The serious problems that arise in Somalia  
c. dhibaatooyin-kii adkaa [<sub>cp</sub>ee ká taagnaa  
problems-detM[+past] difficult[+past] and (abl) arose[+past]  
Soomáaliya]  
Somalia  
The serious problems that arose in Somalia

Predicative Nouns in modifier position must take a (semantically empty) definite article if (and only if) the head Noun is overtly definite (23a-b). Tense agreement on the copula element is both contingent on the tense and definiteness of the head noun (23c). Predicative nouns, then, are not

'reduced relative clauses' either: the tense specification of a relative clause is independent of the (in)definite value of its antecedent (23d):

- (23) a. ardayád soomaalí ah  
student(f) Somali be  
A Somali student(f)  
b. ardayád-da soomaalí-da ah  
student(f)-detF Somali-detF be  
The Somali student(f)  
c. ardayád-dii soomaalí-da ahayd  
student-detF[+past] Somali-detF be[+past]  
The Somali student(f) (who phoned you)  
d. ardayád soomaalí ah/\*ahayd [<sub>cp</sub>oo telefóon kúu soo  
student(f) Somali is/\*was and telephone you-to (spat.deict.)  
dirty]  
sent(fs)[+past]  
A Somali student who phoned you

Definiteness and tense agreement are strong grammatical processes, occurring with any kind of nominal predicate, even proper names (24). Idioms provide a further piece of evidence that definiteness and tense agreement are semantically empty: in fact, the paradigm illustrated in (25) can hardly be explained if such conclusion is not assumed:

- (24) dúq-ii Waasugé abaa (buu kú xusuustay)  
old-detM[+past] Waasuge be[+past] (F+3MS of reminded)  
(He reminded of) the old Waasuge  
(25) a. dád fará badan  
people fingers many  
Many people (lit: people 'many fingers' = numerous people)  
b. dád-ka fará-ha badan  
people-detM fingers-detM many  
The numerous people  
c. dád-kii fara-ha badnaa  
people-detM[+past] fingers-detM many[+past]  
The numerous people (≠ the people who were/had many fingers)

Summarizing, the tense domain of the head Noun includes its modifiers, but excludes the relative clause. It must be noted that definiteness agreement has a larger scope than tense agreement, and extends to all subject relative clauses. As the contrast between (26a) and (26b) clearly shows, the object NP in a relative clause headed by an overtly definite NP antecedent must bear a (semantically vacuous) definite article:

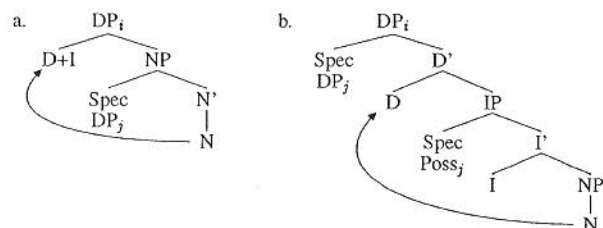
<sup>7</sup> Number on adjectives is marked through a morphological process of reduplication: cf. (20c). Because of their inflectional characteristics, adjectives have been called *hybrid verbs* and are classed on a par with the Verb 'to be' (root *-ah-*), a highly irregular verb with which they share the same morphological tense endings. Adjectives in modifier position are traditionally glossed as subject relative clauses. There is a descriptive claim here that I think is mistaken because of the considerations discussed in this section.

- (26) a. (wúxuu ahaa) nín gaaban/\*gaabnaa [cp oo ookiyaaló qabay]  
 expl+3MS was man small[-past]/\*[+past] and spectacles had[+past]  
 (It was) a small man with spectacles
- b. nín-kii gaabnaa [cp oo ookiyaaló-ha/\*ookiyaaló  
 man-detM[+past] small[+past] and spectacles-detM/spectacles  
 qabay]  
 had[+past]  
 (it was) the small man with (the) spectacles

This last fact suggests that syntactic definiteness and tense agreement are determined by independent mechanisms.

2.2.3 Genitives: There is normally only one tense marked per DP: tense on a dependent element in the noun phrase is obligatorily null, either semantically or morphologically. In genitive constructions, there is a syntactic rule that serves to delete the [+past] tense morpheme on a locally dependent DP. This is seen in both of the two Somali genitive strategies. The first one is a variant of the construct state (CS) found in the Semitic languages, in that it involves adjacency of two DPs without preposition or Case, and Definiteness Agreement is obligatory. But it differs in other respects: as can be seen in (27), the head of the Somali 'CS' must be overtly definite. Tense morphology only occurs on the (underlined> head noun, i.e. head initially in the 'CS'; in prenominal genitive constructions, tense morphemes must follow the genitive clitic associated with the prenominal genitive in Spec,DP (27b):

- (27) a. dhibaata-d-ii Khalij-ku (wáy dhammaatay)  
 problem-detF[+past] Gulf-detM[+nom] F-3FS ended[+past]  
 The Crisis of the Gulf (ended)
- b. Khalij-ka dhibaata-d-iis-ii (wáy dhammaatay)  
 Gulf-detM problem-detF+Poss3M[+past] F+3FS ended[+past]  
 The Gulf Crisis (ended)



When there are two DPs, there are two tenses: in fact, the distribution of tense morphemes in (28) determines whether the second NP is included or not in the first one:

- (28) a. ardáy-dii iyo macállin-k-ood-ii (wáy baxeen)  
 students-detM[+past] and teacher-detM+Poss3P[+past] (F+3P left)  
 The students and their teacher (they left)
- b. ardáy-da macállin-k-ood-ii wúu baxay  
 students-detF teacher-detM+Poss3P[+past] (F+3MS left)  
 The students' teacher (he left)

There is, therefore, evidence that nominal tense takes scope over the whole DP, and that local dependencies must be somehow expressed in the syntax.

2.2.4 Definites / Indefinites: In this section, I provide evidence that tense plays a crucial role in the licensing of genitive complements. As is seen in (29) and (30), restrictive modification in Somali (including relatives and possessives) is construed as overt asymmetric coordination. There are two different conjunctions, depending on whether the noun is definite or indefinite. I assume that both conjunctions *oo* and *ee* inherit their feature specifications from the D+I complex: *ee* is [+def], [ $\pm$  past] and plays the same role as articles introducing adjectival/PP modifiers and relative clauses in various languages (Ancient and Modern Greek, Albanian, Hebrew, Arabic...), consonant with Cinque's (1994, 1995) view that apparent iteration of modifiers is actually an instance of asyndetic coordination:

- (29) a. búug-ga Máryan  
 book-detM Mary  
 Mary's book
- b. búug-ga yar ee Máryan  
 book-detM small and Maryan  
 The small book of Maryan
- c. búug-gii yaraa ee Máryan  
 book-detM[+past] small[+past] and Maryan  
 The small book of Maryan

Indefinite noun phrases have no overt tense, then cannot license a DP complement (30a,b): as is seen in (30c), the genitive R-relation must be made explicit in a relative clause:

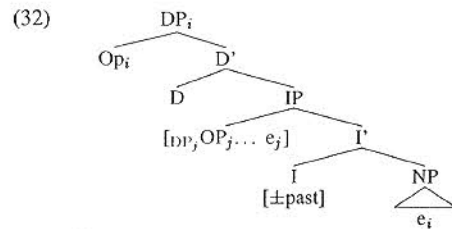
- (30) a. búug arday-ceed /\*Máryan  
 book student-adj /\*Mary  
 A student's book (= a textbook)
- b. \*búug yar oo/ee Máryan  
 book small and Maryan  
 A small book of Maryan
- c. búug yar [cp oo Máryan léedahay]  
 book small and Maryan has(it)  
 A small book of Maryan (lit: a small book and Mary possesses it)



On the basis of this evidence, I suggest that tense is the syntactic licenser of the genitive DP<sup>8</sup>. More specifically, I suggest that in the semantic representation (31), the contextually relevant relation of 'belonging to x' (or whatever it is) supplies a free time variable (*book Mary was fond of, book she is looking for...*) that must be interpreted in association with the definite determiner:

- (31) the<sub>x,t</sub> [book (x,t) & small (x,t) & R<sub>t</sub> (x,Mary)]

According to (31), genitive modification relates the individual referred to by the NP to another NP *and* a temporal location. The genitive relation is interpreted at the LF interface by matching tense (and person) features in the Spec of a 'finite' DP:



### 2.3 Reference and Specificity

**2.3.1 Relational Nouns:** Nominal tense is sensitive to the referential properties of nominal expressions. Relational Nouns such as kinship terms, body-part Nouns, part-whole expressions, which lack autonomous reference, are not compatible with [+past] tense features, even in the syntactic contexts where they are normally required. I understand the oppositions in (33) as syntactically reflecting the fact that the semantic interpretation of certain nominal expressions does not vary in function of the time of evaluation of the sentence (in terms of truth value): kinship relations and inalienable possession are atemporal (or inherently restricted) relations:

- (33) a. Cáli baa hooyádiis-(\*ii) jécel  
 Ali F mother-detF+poss3M-(\*[+past]) loves  
 Ali loves his mother

<sup>8</sup> The Somali facts recall the specificity requirement in French genitive constructions: as Milner (1982) observed, the head noun of a genitive in French must carry a definite article: *le fils du/d'un voisin* are canonical genitives, while *??? un fils du/d'un voisin* are marginal or excluded, unless they have a partitive reading, i.e. are restrictive, or 'strong'.

- b. gacánta/(\*-ii) ayaan cúnuggii ká qabtay  
 hand-detF[\*+past] F+1S child-detM[+past] (abl) took[+past]  
 I took the child by the hand  
 c. inántii yarayd iyo waláalked/(\*-ii)  
 girl-detF[+past] small[+past] and brother-detM+Poss2FS[\*+past]  
 The small girl and her brother

I suggest, then, that the value of the relational variable associated with relational nouns is temporally restricted ([+past]). Assuming so, genitive constructions can be treated as syntactically uniform: we need not postulate that relational nouns are inherently transitive, which is problematic as most relational nouns are only optionally so, as Partee (1983) observed.

**2.3.2 Nonreferential definites:** In Somali, there are syntactically definite DPs that do not refer, or have a non-referential reading: *áw-(ga)* 'father/because', *láf-(ta)* 'soul/self', *wel-(ga)* 'life/never', *hóos-(ta)* 'bottom/under', etc. Such nominals cannot bear tense features, and only allow a prenominal genitive construction. 'CS' genitives in (34) would obligatorily trigger a referential, specific reading of the head noun, and are therefore excluded on semantic grounds:

- (34) a. af-soomáali-ga láf-t-iis-a/(\*-ii)  
 language-Somali-detM bone-detF+Poss3MS  
 The Somali language in itself  
 (??? láf-ta af-soomáali-ga, lit. 'the bone of the Somali language')  
 b. qabiilnimá-da áw-g-ceed/(\*-ii) (ayaan ú baaqday)  
 tribalism-detF because-detM+Poss3FS(\*[+past]) (F+1S prep. cancelled)  
 Because of the tribalism, (I cancelled)  
 (??? áw-ga qabiilnimá-da, lit. 'the father of the tribalism')

I conclude that nonreferential definites are temporally inert, that is, they supply no time variable. Thus, a genitive DP can only be licenced in Spec,DP, via an agreeing genitive clitic (+person feature) in Spec,IP. The generalization which emerges here is clear: syntactically definite noun phrases in Somali are *not* obligatorily specific. Noun phrases with overt tense markers are *unambiguously specific*.

**2.3.3 Quantified expressions, partitives:** Nominal quantifiers like *kállí* (m) 'whole, entirety', partitives nouns like *qáar* (m) 'part' are categorially nouns, then project a DP and allow both a 'CS' and a prenominal genitive construction, but they cannot bear tense features. Tense then shows up on the genitive DP:

- (35) a. *kúlli* *ardáy-dii* (*wáy gudbeen*)  
 whole(m) students-detF (F+3P succeeded)  
 All the students (succeeded)
- b. *ardáy-dii* *kúlli-g-ood(\*-ii)* (*wáy gudbeen*)  
 students-detF[+past] whole-detM+Poss3P(\*[+past]) (F+3P succeeded)  
 All the students (succeeded)
- c. *qáar macállimíin-tii* *ká mid ah* (*baa la xeray*)  
 part professors-detF[+past] one from among (F one put-in-jail)  
 Some of the professors (have been put in jail)
- d. *macállimíintii* *qaar-k-óod(\*-ii)* (*baa la xeray*)  
 professors-detF[+past] part-detM+Poss3P(\*[+past]) (F one put-in-jail)  
 Some of the professors (have been put in jail)

On Enç's account, there are good reasons why the genitive complement, not the head noun, should bear tense features: universal quantifiers in natural language quantify over contextually given sets of individuals. In a partitive noun phrase, the genitive complement refers to the 'familiar' set from which the partitive phrase takes its reference. Such examples, then, provide further evidence that nominal tense is linked to the notion of specificity, as formally defined by Enç (1991).

### 3 Some implications

#### 3.1 Nominal tense and specificity

Specificity, in Enç's terms, involves the subset relation: an NP is specific iff its referent is a subset of a referent which is already in the domain of discourse, i.e. 'D-linked' (Pesetsky 1987), or stands in some recoverable relation to a 'familiar' object (Heim 1982). But as is well-known, the notion of familiarity, or the subset relation, are neither necessary nor sufficient conditions for NPs to be interpreted as specific: there are NPs that must be interpreted as specific even if their referents have not been introduced in the domain of discourse previously, and even if they are not 'familiar' in the Heimian sense (cf. Abbott 1995 and others). On the syntactic side, much recent work has shown that specificity effects are morphologically encoded (Case-marking phenomena in Turkish (Enç 1991), prepositional accusatives in Romanian (Dobrovie-Sorin 1993), etc.), and also seem to require particular positions in the linear order: specific noun phrases tend to be located 'outside' the VP (scrambling / object shift in Germanic (de Hoop 1992), etc.).

I suggest, then, that tense is the relevant feature underlying the interpretive effects that are subsumed under the notion of specificity. Assuming

that DPs understood as specific are operator phrases, a noun phrase is specific iff it is outside the scope of a verbal T-operator, that is, if its time variable is bound DP-internally. The prohibition that specific noun phrases occur in presentational contexts (VP-internally) immediately follows: the time variable of presuppositional NPs, understood as specific, is bound by a covert operator taking DP in its scope. The time variable of cardinal NPs is unselectively bound by the main predicate's T-chain. On this view, DR effects in English *there*-constructions are syntactically triggered specificity effects.

#### 3.2 Number and Tense

I have implicitly assumed that only Verbs and Nouns project a 'referential' functional domain required for interpretive reasons at the semantic interface. Let us then suppose that inflectional features that are [interpretable] in the sense of Chomsky (1995), as number in nouns, are made legible by entering into an operator-variable chain  $Op_i \dots INFL_i \dots N/V(e_i)$  which captures both the referential and combinatorial properties of the elements involved. Languages vary in which feature is directly used in the computation of the chain. One standard and shared assumption is that nominal inflectional specifications are included in a functional category AGR/Num analogous to INFL (AGR/Tense) in the clausal system (Szabolcsi 1981; Ritter 1988, 1991). As nouns inflect for number in many languages, Op in (36) is either singular or plural, quantifying over a variable of the same value. Consistent with the hypothesis that agreement is a Spec-head relation, the number inflection of the noun predicate reflects the number of the variable in Spec,NP, and the determiner shows agreement for this feature of its specifier:

- (36) [<sub>DP</sub>  $Op_i$  the [<sub>NP</sub>  $e_i$  student(s)]]

In Somali, plural formation is a derivational process operating in the morphological component, a quite well-known property of other inflectional processes in Afroasiatic<sup>9</sup>. Given the 'derivational' nature of nominal num-

<sup>9</sup> We can observe that most of the nouns take the opposite gender in the plural, the so-called 'polarity of gender' phenomenon:

*árday* (m) 'student' → *ardáy* (f) 'students' → *ardáy-da* (f) 'the students'  
*náag* (f) 'woman' + *-ó* → *naag-ó* (m) 'women'  
*aabbé* (m) 'father' + *-yáal* → *aabbayáal* (f) 'fathers'  
*hooyó* (f) 'mother' + *-oyin* → *hooyó-óyin* (m) 'mothers'

I refer the reader to Lecarme (1998) for a more detailed discussion.

ber, the [pl] feature plays virtually no role in the syntactic computation, and cannot enter in a chain relation: hence, Somali marks no number distinction in its determiners, which only reflect the gender of the (either singular or plural) noun stem. As inflectional properties which would make D-chains legible at the interfaces are lacking, tense morphology supplies the functional domain of nouns with a legible feature.

### 3.3 Salish languages (Demirdache 1996)

Salish language seem to illustrate the option where there is no morphosyntactic tense in the verbal system, and only DPs build T-chains, via the spatio-temporal specification of their determiners. In the absence of adverbial or aspectual markers, nouns together with their determiners can themselves *determine* the temporal interpretation of the clause. According to Demirdache (1996), DPs in St'at'imcets (Lilloet Salish) are *not* temporally free in that their temporal interpretation systematically coincides with the temporal interpretation of the (stative) verb<sup>10</sup>: in (37a), the *present* determiner **ti** locates both the predication time of the (stative) predicate and the predication time of the noun in the present (i.e., excludes that a past president be now a fool). In (37b), the *past* determiner **ni** restricts the predication time of both the noun and the matrix predicate (i.e., cannot be used to assert that a past president is a fool now):

- (37) a. sécsec [**ti** kel7áqsten-s-a **ti** United-States-a]  
 silly DET chief-3.SG.POSS-DET DET US-DET  
 The chief of the United States is a fool  
 (✓ Clinton is a fool, \*Carter is a fool.)
- b. sécsec [**ni** kel7áqsten-s-a **ti** US-a]  
 silly DET<sup>'absent'</sup> chief-3.SG.POSS-DET DET US-DET  
 The (**present**, not visible) chief of the US is a fool  
 The (**past**, not visible) president **was** a fool  
 \*The (**past**, not visible) president is a fool  
 (✓ Clinton is a fool, ✓ Reagan was a fool, \*Reagan is a fool.)

On Demirdache's account (based on a stage semantics), the time of being a fool shifts in the past in (37b), because it must coincide with the past time of being a president (he was a fool when he was a president): thus, the **ni** determiner can have the effect of a past time temporal adverb on the temporal interpretation of the matrix (stative) predicate. On the same approach,

nominals such as *president* are *not* temporally 'free' in that their temporal interpretation systematically coincides with the temporal interpretation of the (stative) Verb.

On the present approach, one might try stipulating the opposite, namely, that in such examples as (37), the stative Verb is temporally dependent. Assuming that Salish languages have only nominal T-chains, the DP-tense operators can determine the temporal interpretation of the clause in the absence of any other interpretable temporal restriction. The observed temporal 'dependency' of nominals then follows. A further consequence of this analysis is that the temporal properties of noun phrases can be accounted for without resorting to a clausal analysis of DPs. If this view is correct, the issue is relevant to the long-standing debate concerning the lack of Noun / Verb distinction in these languages.

### Conclusion

In this paper, I provided evidence that Somali noun phrases have a temporal structure, and tried to see how the grammar of tense in both nominals and clauses can be derived in a restrictive theory of the syntax of temporal relations. My main point has been that the quantificational approach to tense can be maintained if we suppose that 'presuppositional' noun phrases, understood as specific, can introduce (possibly null) tense operators. Using an extensional version of the T(ense)-chains proposed by Guéron & Hoekstra, I have tried to provide an account of the distribution between temporally dependent / independent noun phrases, and of the morphosyntactic variation in the systems of temporal interpretation that so far seemed hard to explain crosslinguistically in an unitary fashion. If this is correct, the internal temporal properties of DPs can be accounted for without resorting to stage quantification and/or a clausal analysis of noun phrases. My proposal, however, retains the structural parallelism between noun phrases and sentences originally captured in earlier analyses, and gives further evidence that the same notions and concepts can be used in the analysis of both nominal and verbal reference.

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<sup>10</sup> According to Demirdache (1996, 1997), eventive verbs in St'at'imcets are temporally 'free'.

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