THE SYNTAX AND SEMANTICS OF TENSED NOMINALS

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Abstract

Sadler and Nordlinger (2001) provides a descriptive overview of the phenomenon of *independent* nominal tense, whereby tense marking on a nominal temporally situates the nominal itself, independent of the tense of the proposition. In this paper we build on this descriptive work by exploring the lines along which an LFG analysis might be developed of the syntax and semantics of different types of nominally-scoped tense marking attested in a range of languages. While the analysis of independent nominal tense is relatively straightforward in LFG, it interacts in interesting ways with the encoding of possession, and with the use of nominals as predicates of verbless clauses, having implications for the f-structure analyses of these aspects of linguistic structure.

1 Introduction

Pretheoretically, we may distinguish two different functional types of nominal tense marking:[1]

(i) *Independent* nominal tense, where a dependent nominal is temporally located independently of the tense of the proposition, and

(ii) *propositional* nominal tense, where the tense marking on the nominal encodes the tense for the whole proposition, and the nominal may be either a dependent of the clause or the clausal predicate in a verbless construction (see Nordlinger and Sadler 2000 and in press for discussion and analysis).

Sadler and Nordlinger (2001) provides a descriptive overview of the phenomenon of *independent* nominal tense. In this paper we build on this descriptive work by exploring the lines along which an LFG analysis might be developed of the syntax and semantics of different types of nominally-scoped tense marking attested in a range of languages. While the analysis of independent nominal tense is relatively straightforward in LFG, it interacts in interesting ways with the encoding of possession, and with the use of nominals as predicates of verbless clauses, having implications for the f-structure analyses of these aspects of linguistic structure.

This paper is structured as follows. In section 2 we briefly recap our analysis of *propositional* nominal tense, since this will inform our account of the *independent* type and our treatment of nominal predicates later in the paper. In 3 we propose an analysis of independent nominal tense which captures the similarites between this and propositional tense marking – both on nouns and verbs. Then in section 4 we discuss the more complex interaction between independent nominal tense and possession. Finally, in section 5 we turn to the interaction between these two types of nominal tense, considering languages which allow 'tense stacking', whereby a single nominal can be inflected with both independent and propositional tense simultaneously.

[1]Both of these subtypes can be found on non-nominal elements such as determiners or adjectives but we are not concerned with those cases in the present paper. Our analysis extends to cover them without further modification.

2 Propositional nominal tense

2.1 Nominal predicates

Propositional tense (and aspect or mood) marking on nominal predicates arises in languages that allow nominals to take the same TAM markers as verbs when functioning as clausal predicates. Languages with this type of nominal TAM inflection include Abaza (O'Herin 1995, cited in Baker 2003:51), Mwotlap (François 2003), Tundra Nenets (Salminen 1997), Turkish (Lehmann and Moravcsik 2000:742), Tzutujil (Daley 1985, cited in Baker 2003:51), Bininj Gun-wok (Evans in press), amongst others. We discuss this phenomenon in relation to Bininj Gun-wok.

In Bininj Gun-wok (non-Pama-Nyungan, Australia) predicate nominals (including those in 'adjective' function) are inflected for a subset of the regular verbal TAM markers: the past imperfective (which in this context simply marks past tense) and the irrealis mood marker (Evans in press). Consider the following examples:[2]

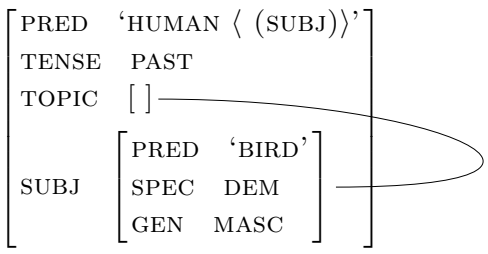
(1) *Mayh na-mekke nakka bininj-ni.*
bird MASC-DEM MASC.DEM human-PAST
'Those birds, they were human then,' (Evans in press:680, 13.27b)

(2) *Na-mak-ni.*
MASC-good-PAST
'He was a good man.' (ibid:682, 13.37c)

(3) *Yawkyawk bokenh na-wu bene-berd-djenj-ni yimankek*
young.girl two MASC-REL 3.DU-tail-fish-PAST CTRFAC
kun-dad-niwirrinj.
NEUT-leg-IRR
'There were two young girls who had tails like fish, they didn't have legs.' [lit. 'there were no legs'] (ibid:437, 8.96)

There is limited discussion in the LFG literature of the analysis of verbless sentences such as these (although see Rosén (1996) and the discussion of adjectival predicates in Butt et. al. (1998:113-5)). In LFG terms, one of the primary issues is whether the nominal's f-structure is identified with the clausal f-structure, or whether the predicate nominal has a grammatical function in the f-structure licensed by some 'dummy' clausal PRED (see Rosén (1996)). In Bininj Gun-wok, there is no empirical evidence for a verbal head for these constructions, thus we propose that the nominal in these constructions is the clausal predicate itself. This analysis is supported by the fact that the nominal is inflected with the propositional tense/mood marking which is otherwise found on verbs, but not on nominals which are arguments or adjuncts of other (verbal) heads. Thus, we represent (1) as (4):

[2] CTRFAC = counterfactual, IRR = irrealis, MASC-DEM = masculine demonstrative, MASC-REL = masculine relative pronoun.

(4)


The f-descriptions associated with the tense-inflected nominal are given in (5). We assume that the option for a nominal to behave predicatively and subcategorize for a subject is effected via a lexical rule (or its equivalent).

(5) *bininj-ni*:
($\uparrow$ PRED) = 'HUMAN < ($\uparrow$ SUBJ) >'
($\uparrow$ TENSE) = PAST

2.2 Dependent nominals

In some languages dependent (argument or adjunct) nominals can also carry propositional tense. We will illustrate this phenomenon here with examples from Sirionó, a Tupí-Guaraní language from Bolivia (Firestone 1965:24-38). Other languages with this type of nominal tense/aspect/mood marking include Chamicuro (Arawak) (Parker 1999), Kayardild (non-Pama-Nyungan) (Evans 1995), Gurnu (Pama-Nyungan) (Wurm and Hercus 1976), Pitta Pitta (Pama-Nyungan) (Blake 1979), Supyire (Niger-Congo) (Carlson 1994). A full LFG analysis of this phenomenon can be found in Nordlinger and Sadler (in press).

In Sirionó, propositional TAM affixes expressing tense and aspect can appear either on the verb, or on a dependent nominal, or be distributed over both. The example (6) shows the tense and aspect markers on the verb; (7 and 8) show tense and aspect (respectively) on a nominal dependent (here the subject); and (9) shows the aspect marker appearing simultaneously on both the verb and a nominal argument.

(6) *Áe ií osó-ke-rv.*
he water go-PAST-PERF
'He went to the water.'

(7) *Ési-ke óso ñá ií-ra.*
woman-PST go near water-to(LOC)
'The woman went near the water.'

(8) *Ɇɣgvtɣ́ɨ́-rv ɓáe ɓɣkiacáɋ.*
tapir-PERF thing steal.not
'The tapir did not steal from others.'

(9) *Áe osó-ke-rv ií-rv.*
he go-PAST-PERF water-PERF
'He went to the water.'

These tense/aspect markers are also used with nominal predicates, as in Bininj Gun-wok (but recall that Bininj Gun-wok, unlike Sirionó, limits nominal TAM affixation to predicate nominals):

(10) *Ñéḓa-he-rae.*
road-REFL-FUT
'It will be a road'

(11) *Kiɓáe-rv.*
man-PERF
'It was a man'

Thus, in Sirionó a TAM-inflected nominal such as *kiɓáe-rv* 'man-PERF' is syntactically systematically ambiguous: it may be the predicate of the clause or be a dependent of a verb-headed clause. In either case the TAM is propositional (referring to the clause as a whole). To account for these different uses, we take it that the lexical descriptions associated with the morphological TAM features are as follows, using constructive morphology (Nordlinger 1998).

(12) Past: (((GF) ↑) TENSE) = PAST
Perf: (((GF) ↑) ASPECT) = PERF
Fut: (((GF) ↑) TENSE) = FUT

When attached to a (nominal or verbal) predicate the morphological feature simply specifies TAM information (e.g. (↑ TENSE) = PAST); when attached to a dependent nominal, it also constructs a grammatical function (e.g. ((GF ↑) TENSE) = PAST). General principles of completeness and coherence will ensure that these are the only grammatical possibilities.

The following simplified f-structures illustrate these two possibilities:

(13) a. *Kiɓáe-rv.*
man-PERF
'It was a man'

b. $\begin{bmatrix} \text{PRED} & \text{'MAN } \langle(\text{SUBJ})\rangle\text{'} \\ \text{ASPECT} & \text{PERF} \\ \text{SUBJ} & \begin{bmatrix} \text{PRED} & \text{'PRO'} \end{bmatrix} \end{bmatrix}$

(14) a. *Ési-ke óso ñá ií-ra.*
woman-PST go near water-to(LOC)
'The woman went near the water.'

b. F-structure for *ési-ke* 'woman-PST':
$\begin{bmatrix} \text{TENSE} & \text{PAST} \\ \text{GF} & \begin{bmatrix} \text{PRED} & \text{'WOMAN'} \end{bmatrix} \end{bmatrix}$

3 Independent nominal tense

In many languages argument and adjunct nominals may be inflected for tense independently of the tense of the proposition, which is separately expressed. In such

languages, it is clear therefore that the domain of tense marking is not always that of the clause. In this section we exemplify this phenomenon using the Arawak language Tariana (Aihkenvald 2003); other languages with this type of nominal tense marking include Halkomelem (Salish) (Galloway 1983), Iate (Macro-Jê) (Lapenda 1968), Kwakw'ala (Northern Wakashan) (Anderson 1985), Nambiquara (Lowe 1999), Potawatomi (Central Algonquian) (Hockett 1958:238), Somali (Cushitic) (Lecarme 1996, 1999).

Consider the following examples from Tariana (taken from Aikhenvald 2003). Examples (15) and (16) exemplify the use of the past tense marker on the nominal stems *eta-* 'eagle' and *panisaru-* 'abandoned village' respectively. Examples (17) and (18) show the nominal stems *unyane-* 'flood' and *kaɾe-* 'wind' inflected with the nominal future tense marker.[3]

(15) *thepi* *di-maɾe-pidana* *eta-miki-ɾi-nuku.*
to.water 3SG.NF-throw.CAUS=REM.P.REP eagle-PST-NF-TOP
'He threw the remains of the eagle (lit. the 'ex-eagle', what used to be the eagle) into water.'

(16) *pi-ɾuku* *pi-uka* *hĩ* *panisaru-miki-ɾi-naku*
2SG-come.down 2SG-arrive DEM:ANIM abandoned.village-PST-NF-TOP
piɾa *pi-katha-nha.*
2SG.order 2SG-vomit-IMP
'When you come to an abandoned ex-village, order (him) to vomit.'

(17) *kayu-maka hĩ* *waɾipeɾe* *unyane-pena* *di-kakwa-pidana.*
SO-AFF DEM:ANIM Walipere flood-FUT 3SG.NF-plan=REM.P.REP
'Thus Walipere was planning the future flood.'

(18) *kaɾe-pena-ne* *hĩ* *kaɾe* *di-eku* *di-a.*
wind-FUT-FOC DEM:ANIM wind 3SG.NF-arrive 3SG.NF go
'The one who was going to become the wind, this wind, arrived.'

In terms of the semantics, we argue that the range of cases of overt nominal tense morphology provides strong support for the position that nominals across all languages must be viewed as being (potentially independently) temporally located and containing a temporal argument in their logical structure (Enç 1986, Hinrichs 1988, Lecarme (1996, 1999), Tonhauser 2002). We therefore take it that nominal lexemes are associated with a temporal variable as shown schematically in (19):

(19) 'flood': flood(x, t_e)

On this view, in a language with independent nominal tense, the tense morphology operates in much the same way as verbal tense morphology does with verbs, to fix the interpretation of the nominal's temporal argument in relation to speech time, as shown schematically in (20).

[3]Non-obvious abbreviations include: DEM:ANIM 'animate demonstrative', FOC 'focused subject', NF 'non-feminine', REM.P.REP 'remote past tense, reported evidentiality', TOP 'topical non-subject'.

(20) 'flood-FUT': flood(x, t_e) & $t_s < t_e$

Note that the presence of overt nominal tense morphology shows that the temporal location of nominals is not always contextually fixed (as is the usual assumption in the literature based on languages like English), but can be specified morphologically as well.

In terms of the syntax, we need first to establish that this tense distinction is an inflection which encodes a morphosyntactic TAM distinction, rather than a derivational lexeme-forming process, as with English 'ex-' ('ex-partner', 'ex-boss', etc.). In the latter case the PRED value of the tense-marked nominal may be 'FUTURE-FLOOD'; in the former case we would expect the tense value to be present in the nominal's f-structure.

There are several reasons for thinking that the role of nominal tense marking is inflectional in these languages, rather than lexeme-creating. Firstly, the process shows a very high level of productivity: in these languages nominal tense morphology can occur on virtually any noun. Derivational affixes like 'ex-' in English, on the other hand, (see also Joseph (1979) on Cree) are much more restricted in the set of nominal stems they occur with (e.g. 'ex-partner',' wife-to-be', but not ?'ex-eagle', ?'ex-pencil', ?'storm-to-be'). Secondly, and perhaps most significantly, independent nominal tense marking in these languages appears to be functionally or semantically equivalent to tense marking on verbs, providing strong motivation for the presence of a nominal TENSE feature at f-structure, on analogy with the standard treatment of verbal tense. In fact, in some languages the same affixes are used to mark independent nominal tense as are used with verbs in regular clausal tense functions (see Jarawara below). Thirdly, in many languages independent nominal tense forms portmanteaux with other inflectional categories such as number, possession and definiteness, which is quite natural if they form part of the inflectional morphology but quite unnatural otherwise. Finally, in some cases, independent nominal tense morphology participates in morphosyntactic agreement (e.g. Somali adjectives agree with nominal heads in gender and tense, see Lecarme (1996:4, 1999:343) for details). In the light of these considerations we conclude that nominal tense marking in the languages which we are concerned with is indeed an inflectional process and should be represented in the f-structure of the nominal.

We therefore propose that in languages with independent nominal tense such as Tariana, *dependent* nominal f-structures also have their own TENSE attribute, distinct from the TENSE attribute of the verbal f-structure. The f-descriptions associated with the tense markers in Tariana are given in (21). That these markers are essentially functionally equivalent to regular tense marking on verbs is captured by the fact that they contribute tense information parallel to regular verbal tense marking.[4]

[4]Note that, according to Aikhenvald's description, *miki-ɾi* actually encodes non-feminine gender, rather than specifically masculine gender. For ease of exposition however, our representation is simplified in this respect, since a full analysis of the gender system is orthogonal to the interests of this paper.

(21)

Fut (*-pena*):	(↑ TENSE) = FUT
Past+Masc+Sg (*-miki-ɾi*):	(↑ TENSE) = PAST
	(↑ NUM) = SING, (↑ GEN) = MASC
Past+Fem+Sg (*-miki-ɾu*):	(↑ TENSE) = PAST
	(↑ NUM) = SING, (↑ GEN) = FEM
Past+Pl (*-miki*):	(↑ TENSE) = PAST
	(↑ NUM) = PLUR

The (simplified) f-structure for (17) is given in (22):

(22)
$$\begin{bmatrix} \text{PRED} & \text{`PLAN } \langle (\text{SUBJ}) \ (\text{OBJ}) \rangle\text{'} \\ \text{TENSE} & \text{REMPAST} \\ \text{EVID} & \text{REP} \\ \text{OBJ} & \begin{bmatrix} \text{PRED} & \text{`FLOOD'} \\ \text{TENSE} & \text{FUT} \end{bmatrix} \\ \text{SUBJ} & \begin{bmatrix} \text{PRED} & \text{`WALIPERE'} \\ \text{PER} & 3 \\ \text{GEN} & \text{MASC} \\ \text{NUM} & \text{SING} \end{bmatrix} \end{bmatrix}$$

On the proposal that we have made here, independent nominal tense markers such as those in Tariana are identical (in terms of the f-structure information they contribute) to regular verbal tense, and propositional tense on nominal predicates in languages such as Bininj Gun-wok (section 2.1). If this is so, then we might expect to find a language in which a single set of TAM markers can have all of these functions. This is precisely what we find in Jarawara (Arawá) (Dixon, MS).[5] In the following Jarawara sentences, (23) illustrates the use of the masculine gender tense and evidentiality markers in propositional function on a verb, (24) illustrates the same markers in propositional function on a predicate nominal, and (25) illustrates the use of the feminine gender equivalents[6] to independently temporally locate the nominal itself.

(23) *jama tii ne-mata-mona*
thing(f) cut AUX-FPnm-REPm
'He was said to have cut the things' (Dixon MS:10.58)

(24) *Kimi-mata-mona-ka*
Kimi.-FPnm-REPm-DECm
'It is said to have been Kimi.' (Dixon MS:10.58)

(25) *Mee tabori-mete-mone jokana boto joro ni-kimi-ne-ke*
3nsg home(f)-FPnf-REPf real clearing(f) sit(du) AUX-TWO-CONTf-DECf

[5]Non-obvious abbreviations used in the glosses (retained from the original) are: DEC 'declarative mood', f 'feminine gender', FP 'far past', m 'masculine gender', n 'non-eyewitness', REP 'reported evidentiality'.

[6]We were not able to find equivalent tense/evidentiality examples in the source that used the masculine gender forms. Presumably this is simply as accidental gap.

'The two clearings of their reported past villages are there.' (Dixon MS:10.67)

The multifunctionality of this single set of tense/evidentiality markers follows naturally from the analysis of nominal tense outlined above. Since propositional tense markers on nominal predicates (section 2.1) and independent tense on nominal dependents (see above) are given the same formal analysis as propositional tense on verbs, it is quite natural that the same set of forms may be used in all three functions.

4 Independent nominal tense and possession

Particularly interesting issues concerning the syntax and semantics of independent nominal tense marking arise in languages in which nominal tense interacts with possession within the noun phrase. In the languages which we examine, the possessor (as well as tense marking) is encoded morphologically on the noun. The following examples are from Guaraní, a Tupi-Guaraní language (Gregores & Suárez 1967:127):

(26) *h-óga-kwé*
his-house-PST
'his former house'

(27) *h-emi-.apò-rã́*
his-work-FUT
'his future work'

Nouns such as these are actually ambiguous between two readings, corresponding to the two semantic predicates with respect to which the tense marker may logically be interpreted. The nominal in (26), for example, can mean either 'my thing which used to be a house (e.g. it has burned down)', in which the property of being a house is located in the past and the tense marker is interpreted with respect to the nominal itself; or it can mean 'the house which used to be mine (but now belongs to somebody else)', in which the possession relation is located in the past, and the tense marker is not interpreted with respect to the nominal 'house' itself. The question therefore arises as to how these two readings are to be captured.

On standard assumptions, and ignoring for the moment the matter of the f-structure representation of nominal tense, (26) would be associated with the single f-structure shown in (28).

(28) 'his-house-PST'

$$\begin{bmatrix} \text{PRED} & \text{'HOUSE } \langle(\text{POSS})\rangle\text{'} \\ \text{POSS} & \begin{bmatrix} \text{PRED} & \text{'PRO'} \\ \text{PRES} & 3 \\ \text{GEND} & \text{MASC} \\ \text{NUM} & \text{SG} \end{bmatrix} \end{bmatrix}$$

The first possibility is that the tense feature occurs in either the f-structure of the nominal or the f-structure of the possessor, that is, that the two f-structures below correspond to the two readings of the Guaraní (26).

(29) 'his-house-PST'

(a)
$$\begin{bmatrix} \text{PRED} & \text{'HOUSE } \langle(\text{POSS})\rangle\text{'} \\ \text{TENSE} & \text{PAST} \\ \text{POSS} & \begin{bmatrix} \text{PRED} & \text{'PRO'} \\ \text{PRES} & 3 \\ \text{GEND} & \text{MASC} \\ \text{NUM} & \text{SG} \end{bmatrix} \end{bmatrix}$$

(b)
$$\begin{bmatrix} \text{PRED} & \text{'HOUSE } \langle(\text{POSS})\rangle\text{'} \\ \text{POSS} & \begin{bmatrix} \text{PRED} & \text{'PRO'} \\ \text{TENSE} & \text{PAST} \\ \text{PRES} & 3 \\ \text{GEND} & \text{MASC} \\ \text{NUM} & \text{SG} \end{bmatrix} \end{bmatrix}$$

But this does not appear to be correct. If the TENSE attribute is taken to temporally locate the time of the predication indexed by the PRED value of its f-structure, then (29a) temporally locates the 'house' predication in an appropriate fashion, but (29b) would appear to temporally locate the 'PRO' predication of the possessor. That is, we might expect it to correspond to a reading in which the "he" is deceased. But crucially, this is *not* the second reading which is present in the ambiguous (26) and (27). To clarify, we can distinguish in principle between three separate readings for an NP such as *the boy 3-house*-PAST 'the boy's house', as follows:

(30) (i) the house which was formerly possessed by the boy
(ii) the thing possessed by the boy which was formerly a house
(iii) the canoe possessed by what was formerly a boy

The Guaraní examples, as far as we are aware, exhibit an ambiguity between the first pair of readings only. We have no information on how the third readng would be encoded, but since it is a logically distinct reading, it seems undesirable to adopt the f-structure shown in (29 b) for the different reading in (30 ii).

So, how is the reading in (30 ii) to be captured? The difficulty here occurs because the possessive relation is not conventionally taken to correspond to a predicate at all in f-structure, and hence there is no appropriate predicate for the TENSE feature to temporally locate. We might therefore consider an alternative in which the possessive relation *is* in fact represented by means of a predicate at f-structure. This would amount to positing an abstract possessive PRED for the POSS f-structure: the two readings of (26) would then be (31a,b).

(31) a. 'his-house-PST' temporally locating the nominal

$$\begin{bmatrix} \text{PRED} & \text{'HOUSE } \langle(\text{POSS})\rangle\text{'} \\ \text{TENSE} & \text{PAST} \\ \text{POSS} & \begin{bmatrix} \text{PRED} & \text{'POSS-RELN } \langle(\text{SUBJ})\rangle\text{'} \\ \text{SUBJ} & \begin{bmatrix} \text{NUM} & \text{SG} \\ \text{PRED} & \text{'PRO'} \\ \text{PER} & 3 \\ \text{GEN} & \text{MASC} \end{bmatrix} \end{bmatrix} \end{bmatrix}$$

b. 'his-house-PST' temporally locating the possession relation

$$\begin{bmatrix} \text{PRED} & \text{'HOUSE } \langle(\text{POSS})\rangle\text{'} \\ \text{POSS} & \begin{bmatrix} \text{PRED} & \text{'POSS-RELN } \langle(\text{SUBJ})\rangle\text{'} \\ \text{TENSE} & \text{PAST} \\ \text{SUBJ} & \begin{bmatrix} \text{NUM} & \text{SG} \\ \text{PRED} & \text{'PRO'} \\ \text{PER} & 3 \\ \text{GEN} & \text{MASC} \end{bmatrix} \end{bmatrix} \end{bmatrix}$$

On this view, the nominal tense marker would contribute the following (disjunctive) f-description:

(32) PST:
$(\uparrow (\text{POSS})\ \text{TENSE}) = \text{PAST}$

While this approach would work formally, it is potentially problematic in that it represents quite a radical departure from standard approaches to the syntax of possession.

However, recent work on the nature of possession (Barker 1997, Laczkó 2000) suggests an alternative way in which the temporal specification of possessed nominals can be accommodated without such a radical departure from standard syntactic assumptions. Building on previous work (outside the LFG framework) by Barker, Laczkó argues that possessive nouns should be analysed as a type of complex predicate, subcategorising a (standard) nominal POSS function, and corresponding to a conjunction of elementary predications in the semantics, as shown schematically in (33), where π denotes the possessive relation.

(33)

surface form:	POSS-house
semantics:	house(x) & π(x, y)
f-descr:	$(\uparrow \text{PRED}) = \text{'house-}\pi\ \langle(\uparrow \text{POSS})\rangle\text{'}$

This analysis of possession thus provides two distinct elementary predications in the semantics which are available for temporal location by nominal tense marking. Laczkó's analysis can be straightforwardly combined with the proposal in section 3, that extends the occurrence of temporal arguments beyond the domain of verbal predications. Our proposal is that both of the elementary predications in (33) should be replaced by logical forms which involve additional temporal arguments: house(x,t_e) & π(x, y,t_{e1}). On this view, (34) would be the lexical information associated with the fully inflected 'his-house-PAST'. We do not spell out the process of semantic composition here, but we assume that the past tense marker is free to situate either event variable t_e or t_{e1} with respect to speech time.

(34)

surface form:	'his-house-PAST':
semantic form	house(x, t_e) & π(x, y, t_{e1}) & [$t_e < t_s \vee t_{e1} < t_s$]
f-descr:	$(\uparrow \text{PRED}) = \text{house-}\pi\ \langle(\uparrow \text{POSS})\rangle$
	$(\uparrow \text{TENSE}) = \text{PAST} \quad (\uparrow \text{POSS}) = \downarrow \quad (\downarrow\text{PRED}) = \text{'PRO'}$
	$(\downarrow\text{GEN}) = \text{MASC} \quad (\downarrow\text{PER}) = 3 \quad (\downarrow\text{NUM}) = \text{SING}$

In summary, each elementary predication has a temporal event variable. The possessive morphology introduces a possession relation into the semantics. A nominal with possessive morphology has a PRED value which reflects the addition of a possessor argument. The tense morphology situates an event variable: in the case of Guaraní possessed nominals it can situate either the temporal event variable of the nominal, or that of the possession predication.

In terms of f-structure, the tense marking contributes a TENSE attribute to the nominal f-structure, and the possessive marking contributes a POSS attribute. Hence both of the readings of the Guaraní nominal in (26) correspond to the same f-structure (35); the ambiguity is dealt with in the semantics, rather than in the syntax.

(35)
$$\begin{bmatrix} \text{PRED} & \text{`HOUSE-}\pi\ \langle\ (\text{POSS})\rangle\text{'} \\ \text{TENSE} & \text{PAST} \\ \text{POSS} & \begin{bmatrix} \text{PRED} & \text{`PRO'} \\ \text{NUM} & \text{SG} \\ \text{PER} & 3 \\ \text{GEN} & \text{MASC} \end{bmatrix} \end{bmatrix}$$

An interestingly differently situation arises in Hixkaryana (a Carib language of Brazil), in which nominal tense is expressed with a series of portmanteau tense/possession nominal suffixes. In this case, the intepretation possible is that the tense temporally locates the possessive relation itself, rather than the property denoted by the nominal (Derbyshire 1979:99).

(36) *ɾo-kanawa-ɾɨ*
1-canoe-POSSD
'my canoe'

(37) *ɾo-kanawa-tho*
1-canoe-POSSD.PST
'the canoe that used to be mine'

We assume that nominal predications in general will always have a temporal variable, and thus Hixkaryana does not differ from Guaraní in this respect. Rather, the difference lies only in the semantic effect of the tense marking. In Guaraní, the tense marker can situate either the temporal event variable of the nominal or of the possessive relation. In Hixkaryana, on the other hand, it obligatorily situates that of the possessive relation. This is shown in (38), which provides the lexical entry and f-structure for (37). Note that the f-structure is the same as in the corresponding Guaraní; it is only the semantics that differs.

(38) a. Hixkaryana: 1-canoe-POSS.PST:
canoe(x, t_e) & π(x, y, t_{e1}) & $t_{e1} < t_s$
($\uparrow$ PRED) = canoe-π <($\uparrow$ POSS) >
($\uparrow$ TENSE) = PAST

b. F-structure of (37):

$$\begin{bmatrix} \text{PRED} & \text{`CANOE-}\pi\ \langle\ (\text{POSS})\rangle\text{'} \\ \text{TENSE} & \text{PAST} \\ \text{POSS} & \begin{bmatrix} \text{PRED} & \text{`PRO'} \\ \text{NUM} & \text{SG} \\ \text{PER} & 1 \end{bmatrix} \end{bmatrix}$$

One might wonder why there is this difference between Guaraní and Hixkaryana. We have no real answer to this question, although it is possible that it is related to the fact that the expression of tense and possession are portmanteau in Hixkaryana, so that only possessed nominals are tense-bearing. [7]

5 Tense stacking

We have distinguished two different syntactic analyses of nominal tense marking. In one case the tense marker functions identically to tense on verbs, contributing a TENSE attribute to the f-structure of the nominal (39). In the other, the tense marker provides a tense feature for the f-structure *outside* of that of the nominal to which is it attached (40).

(39) Past: (↑ TENSE) = PAST
(e.g. Bininj Gun-wok (sect. 2.1); Tariana, Jarawara (sect. 3); Guaraní, Hixkaryana (sect. 4))

(40) Past: ((GF ↑) TENSE) = PAST
(e.g. Sirionó (sect. 2.2), also Kayardild, Lardil, Pitta Pitta, Chamicuro (see Nordlinger and Sadler in press))

A obvious question is whether it is possible to have both types of nominal tense marking in a single language on a single nominal. In fact, this is found in both Tariana (41) and Guaraní (42), both languages which use a different set of affixes for independent nominal tense and propositional tense (on verbs and (predicate) nominals).

(41) *Pi-ya-dapana-miki-ɾi-naka.*
2 SG -POSS-house-PST-NF-PRES.VIS
'This is what used to be your house (I can see it).' (Aihkenvald 2003)

(42) *Che-roga-rã-ta*
1SG-house-FUT_x-FUT_y
'It will be my future house.' (Dagmar Jung, pc)

[7] Anette Frank points out that our analysis presents a third logical possibility; namely that there could be a language otherwise like Guaraní, but where the nominal tense marking can only situate the *nominal* predication and not the possession relation. That is, languages in which 'POSS-house-PAST' can only mean 'thing belonging to x which was once a house', and not 'house which used to belong to x'. This type of language essentially restricts the two readings of Guaraní in the opposite way that Hixkaryana does. We have as yet found no examples of such a language, but leave this as an open question for future research.

These examples from Tariana and Guaraní are very similar in that each one involves a nominal predicate in a type of ascriptive verbless clause. The presence of the propositional tense marker outside of the independent nominal tense marker in these examples suggests that the nominal predicate in these languages has a grammatical function in the clause, rather than serving as the predicate directly (as in Bininj Gun-wok in section 2.1 above). Otherwise, in the case of a nominal such as (41), we would have a clash of tense features in the f-structure of the nominal. If the propositional tense marker is constructive however, as in Sirionó (40), the tense markers provide information about different f-structures and such a feature clash is avoided. This is shown by the (partial) f-structure for (41) in (43):[8]

(43) a. PST-NF: $(\uparrow \text{TENSE}) = \text{PST}$

b. PRES.VIS: $((\text{GF} \uparrow) \text{TENSE}) = \text{PRES}$

c. f-structure:

$$\begin{bmatrix} \text{TENSE} & \text{PRES} \\ \text{GF} & \begin{bmatrix} \text{PRED} & \text{`HOUSE}\langle(\text{POSS})\rangle\text{'} \\ \text{TENSE} & \text{PST} \\ \text{POSS} & \begin{bmatrix} \text{NUM} & \text{SG} \\ \text{PER} & 2 \\ \text{PRED} & \text{`PRO'} \end{bmatrix} \end{bmatrix} \end{bmatrix}$$

Furthermore in Tariana, as in Sirionó, the propositional tense marker can appear on dependent nominals also, thus providing further support for the analysis above in which the propositional tense constructs a GF for the nominal to which it is attached. Aikhenvald (2003) states that the propositional tense/evidentiality marker in Tariana appears on any focused constituent in the clause, including dependent nominals:

(44) *Kayu-maka diha nawiki-nha ñamu na-nite*
so-AFF he person-PAUS evil.spirit 3 PL .say-TOP.ADV+CL:ANIM
nawiki-miki-ɾi-mha.
person-PST-NF-PRES.NONVIS
'So this man called evil spirit ñamu, they say he is the one who used to be a person (lit. he is an 'ex-person').'

(45) *Naha-se-pidana na-inu di-na iniri-nuku*
they-CONTR-REM.P.REP 3pl-kill 3pl-OBJ traira-TOP
'They killed the traira fish.'

The tense stacking examples in Tariana and Guaraní show that, in these languages, nominals predicates are the value of a GF within the clause, as shown in (43 c). We follow Butt et. al. (1999) in assuming that this GF is the syntactically

[8]For simplicity, we have only represented the tense information in the following f-descriptions, and not additional information such as gender and evidentiality. Such information can be incorporated with no impact on the analysis presented.

closed function labelled PREDLINK.[9] For present purposes we assume that a dummy clausal predicate is contributed by the propositional marker itself in these constructions. Thus, the lexical f-descriptions for the tense markers, and the full f-structure for (41) is shown in (47).[10]

(46) PST-NF: $(\uparrow \text{TENSE}) = \text{PST}$

PRES.VIS: $((\text{GF} \uparrow) \text{TENSE}) = \text{PRES}$
$((\text{GF} \uparrow) \text{PRED}) = \text{`be} \langle(\uparrow \text{SUBJ}), (\uparrow \text{PREDLINK})\rangle\text{'}$
$(((\text{GF} \uparrow) \text{SUBJ PRED}) = \text{`PRO'}$

(47)
$$\begin{bmatrix} \text{TENSE} & \text{PRES} \\ \text{PRED} & \text{`BE} \langle(\text{SUBJ})(\text{OBJ})\rangle\text{'} \\ \text{SUBJ} & \begin{bmatrix}\text{PRED} & \text{`PRO'}\end{bmatrix} \\ \text{PREDLINK} & \begin{bmatrix} \text{PRED} & \text{`HOUSE}\langle(\text{POSS})\rangle\text{'} \\ \text{TENSE} & \text{PST} \\ \text{POSS} & \begin{bmatrix}\text{NUM} & \text{SG} \\ \text{PER} & 2 \\ \text{PRED} & \text{`PRO'}\end{bmatrix}\end{bmatrix}\end{bmatrix}$$

On this analysis, the fact that the propositional tense marker in Guaraní constructs a clausal predicate when attached to nominals accounts for the absence of this marker on dependent nominals in verb-headed clauses (since there would then be two clausal PRED values). To account for the occurrence of these affixes with dependent nominals in Tariana, we assume that this part of the f-description is optional in this language.

[9] As noted by Rosén (1996), analyses of these clause types in the LFG literature differ as to whether such predicative complements correspond to open or closed functions at f-structure. Andrews (1982), for example, treats them as having the open function NCOMP, while Grimshaw (1982) takes NCOMP to be a closed function. Here we adopt the closed function view of predicative complements, and we adopt the label PREDLINK for this function (following Butt et. al. (1998)), given that NCOMP is often used as an open function label.

[10] Notice that a (potential) disadvantage of the open function (XCOMP) view is that it would involve the f-structure of the predicate nominal containing both a POSS and a SUBJ, as shown in (1).

(1)
$$\begin{bmatrix} \text{TENSE} & \text{PRES} \\ \text{PRED} & \text{`BE}\langle(\text{SUBJ})(\text{XCOMP})\rangle\text{'} \\ \text{SUBJ} & \begin{bmatrix}\text{PRED} & \text{`PRO'}\end{bmatrix} \\ \text{XCOMP} & \begin{bmatrix} \text{PRED} & \text{`HOUSE}\langle(\text{SUBJ}), (\text{POSS})\rangle\text{'} \\ \text{TENSE} & \text{PST} \\ \text{SUBJ} & [\,] \\ \text{POSS} & \begin{bmatrix}\text{NUM} & \text{SG} \\ \text{PER} & 2 \\ \text{PRED} & \text{`PRO'}\end{bmatrix}\end{bmatrix}\end{bmatrix}$$

6 Conclusion

Using a very straightforward syntactic analysis we have shown how a wide range of nominal tense data can be naturally captured in the LFG framework. Moreover, the different types of nominal tense – (i) propositional tense on nominal predicates, (ii) propositional tense on dependent nominals, (iii) independent tense on dependent nominals – are given a *unified* syntactic analysis. The differences between them arise from interactions with the language's tense system as a whole, the semantics of the tense marker itself, and the syntactic function of the nominal to which the tense marker is attached.

A mini-typology of the nominal tense possibilities discussed in this paper, the analysis provided for them and the languages in which they occur is provided in Table 1.

Table 1: Summary of Nominal TAM possibilities

	DEPENDENT NOM.	PREDICATE NOM.
A: (↑ TENSE)	Tariana, Jarawara and Guaraní (sect. 3) Hixkaryana (sect. 4)	Bininj Gun-wok (sect. 2.1), Sirionó (sect. 2.2), Jarawara (sect. 3)
B: ((GF ↑) TENSE)	Sirionó (sect. 2.2) Tariana (sect. 5)	Guaraní, and Tariana (sect. 5)

Notes:

- Bininj Gun-wok and Sirionó don't have A markers on dependents, since in these languages the semantics of tense is necessarily propositional.
- Tariana and Guaraní don't have A markers on predicates since these tense markers in these languages are semantically *not* propositional.
- Guaraní has no B markers on dependent nominals as these necessarily construct a clausal predicate in this language (this is only optional in Tariana).

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