Nonconfigurational tense in Wambaya

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Wambaya is a nonconfigurational language of Northern Australia. Like its better known neighbour Warlpiri, Wambaya exhibits all of the characterstics typically associated with nonconfigurationality (Hale 1983, Speas 1990): lack of evidence for a VP constituent, extensive null anaphora, pragmatically-determined word order, and discontinuous constituents (see Nordlinger 1995).[1] In addition, however, Wambaya also has nonconfigurational tense marking, in which (possibly non-indentical) tense markers appear in two places in the clause and combine to determine the tense value for the clause as a whole. In this paper we provide an analysis for this complex and unusual tense marking system, in which tense values are treated as composites of three more primitive features. Furthermore we show that, while the Wambaya tense marking facts pose serious challenges to a movement-based framework, they validate a prediction inherent in the architecture of a unification-based framework that makes use of the principle of lexical integrity and thus, can be given an intuitive and revealing account within LFG.

1 Wambaya syntactic structure

Examples demonstrating the nonconfigurational nature of Wambaya syntactic structure are given in (1) through (6) below. Null anaphora can be seen in (1) and (2); discontinuous constituents are shown in (3), and the 'free' word order possibilities are exemplified in (4), in which all possible permutations of the constituents are possible (although some may be more pragmatically marked than others) as long as the auxiliary remains in second position. The contrast between (5) and (6) shows that, while the auxiliary can follow a NP constituent (5), it cannot follow the main verb and its object (6). This suggests that the verb and its object do not form a constituent in Wambaya since, if they did, we would need to explain why it is that the VP constituent cannot appear before the auxiliary, while other constituents can.[2]

[1] The data contained in this paper is based on fieldwork conducted by Rachel Nordlinger. She would like to express her gratitude to the Wambaya community for teaching her their language, especially to Molly Grueman, Mavis Hogan and Minnie Nimara. We are also grateful to María-Eugenia Niño, Peter Sells and Jane Simpson for valuable comments on earlier versions of this paper. Of course, none of these people are to be held responsible for remaining errors and inadequacies.

[2] In order to focus most clearly on the issue under discussion, the examples in this paper have been kept as simple as possible. Examples are either naturally-occurring, or were constructed and checked in elicitation sessions in order to determine the structure of the paradigms. For more detailed information about Wambaya see Nordlinger (in press). The following abbreviations are used: A 'transitive subject', ACC 'accusative case', AWY 'direction away', DU 'dual', ERG 'ergative/locative case', F 'feminine', FUT 'future tense', HAB 'habitual aspect', HYP 'hypothetical', IMP 'imperative', IRR 'irrealis mood', M 'masculine', NEG 'negative', NFUT 'non-future tense', NPST 'non-past tense', O 'transitive object', PL 'plural', PRES 'present tense', PROG 'progressive aspect', PST 'past tense', S 'intransitive subject', SG 'singular', TH 'thematic consonant', TWD 'direction towards', UNM 'unmarked inflection'.

(1) *Gaj-bi gi-Ø-n.*
eat-UNM 3SG-PRES-PROG
'She's eating.'

(2) *Ngaj-ba gunu-ny-u.*
see-UNCERTAIN 3SG.M.A-2.O-FUT
'He will see you.'

(3) *Nganki ngiy-a lurrgbanyi wardangarringa-ni.*
this.SG.II.ERG 3SG.F.A-PST grab(UNM) moon-ERG
'The moon grabbed (her).'

(4) *Dawu gin-a alaji janyi-ni.*
bite(UNM) 3SG.M.A-PST boy(ACC) dog-ERG
'The dog bit the boy.'

Alaji gin-a dawu janyi-ni.

Alaji gin-a janyi-ni dawu.

Dawu gin-a janyi-ni alaji.

Janyi-ni gin-a alaji dawu.

Janyi-ni gin-a dawu alaji.

(5) *Naniyawulu nagawulu baraj-bulu wurlu-Ø-n duwa.*
that.DU.II.NOM female.DU.II.NOM old.person-DU(NOM) 3DU.S-NP-PROG get.up(UNM)
'The two old women are getting up.'

(6) **Daguma janji ng-a ngawurniji.*
hit(UNM) dog(ACC) 1SG.A-PST 1SG(ERG)
'I hit the dog.'

The structure of nonconfigurational languages such as Warlpiri and Wambaya has been the source of much debate in the recent literature, leading to two opposing models of nonconfigurationality: one in which the core arguments of nonconfigurational languages are considered to be bound pronominal clitics (or null pronominals licensed by these) with all free nominals being adjuncts (e.g. Jelinek 1984, Speas 1990, Baker 1990, 1996); and the other which makes use of a 'dual structure' grammatical architecture in which functional and constituency representations are kept distinct (Simpson 1983, 1991, Kroeger 1993, Austin and Bresnan 1996). We will not review the details of the debate here, but will assume the latter approach to be preferable on the basis of the arguments made against the 'pronominal arguments' approach for Warlpiri in Simpson 1991 and Austin and Bresnan 1996, and for Wambaya in Nordlinger 1993a.

The constituent structure that we assume for Wambaya is outlined in Nordlinger 1995 and is similar to that which has been proposed for Warlpiri (e.g. Simpson 1991, Kroeger 1993, Austin and Bresnan 1996). In this structure a non-projective, nonconfigurational constituent S is generated as a sister to I(NFL). I is the locus of the second position auxiliary, while the main verb always appears in V (within S). The order of constituents within S is completely free and all constituents are optional. Since S is exocentric, its head may be either a verbal predicator (as in (1) through (5)), or a nominal predicator (as in (9) below). The [SPEC,IP] position is optional and can be filled only by a maximal projection (cf. Kroeger 1993); thus, in Wambaya, it is limited to NPs and subordinate clauses (since there is no VP, as discussed above). The structure of a simple sentence is given in 7 (we return to the discussion of auxiliary placement below). The annotations shown in (7) reflect general (endocentric) principles of structure-function association (Kroeger 1993, King 1995, Bresnan 1996):[3]

(7)

IP
- $(\uparrow \text{ FOC}) = \downarrow$ XP
- $\uparrow = \downarrow$ I′
  - $\uparrow = \downarrow$ I
  - $\uparrow = \downarrow$ S
    - C^{+}

Where C = $\underset{\uparrow = \downarrow^{4}}{X^{0}}$, $\underset{(\uparrow \text{ (GF)}) = \downarrow}{NP}$

Since S is a nonconfigurational category, the assignment of grammatical functions to NPs within S is not determined by annotations in the phrase structure rules (as it is in a configurational language such as English, for example), but by case principles (e.g. Simpson 1991) whereby lexical predicators select for the case features of their arguments.[5] Thus, although grammatical functions are freely assigned to NPs within S by the phrase structure rules (by virtue of the equation $(\uparrow \text{ GF}) = \downarrow$ in the structure above), the general principles of functional uniqueness, completeness and coherence will ensure that the correct NPs in the c-structure are associated with the correct grammatical functions in the corresponding f-structure. For example, a transitive verb such as *dawu* in (4) will require that its subject have ergative case, and its object accusative case, thus projecting a skeletal nucleus such as the following:

(8) $\begin{bmatrix} \text{PRED} & \text{'bite}\langle \ldots \rangle\text{'} \\ \text{SUBJ} & [\text{CASE} \quad \text{ERG}] \\ \text{OBJ} & [\text{CASE} \quad \text{ACC}] \end{bmatrix}$

The only f-structures for the sentence that satisfy completeness and coherence will be those in which an accusative NP (*alaji* in (4)) is identified with the OBJ grammatical function and an ergative NP (*janyini* in (4)) is identified with the SUBJ grammatical function. In a situation in which [SPEC,IP] is filled with a NP (as in (5)), the NP is identified both with the FOC function in the f-structure (by virtue of its position) and with the grammatical function determined by

[3]The phrase in the [SPEC,IP] position is represented here as having a focus function. While this appears to be a reasonable characterization of its function, the discourse function of this initial position in Wambaya has not yet been studied in any detail and this may, therefore, turn out to be a simplification of the facts.

[4]There may also be a small class of X^0 elements that have an adjunct function, such as adverbs.

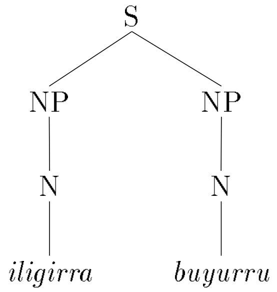
[5]In the majority of cases this is predictable from the argument structure of the verb.

its case marking (i.e. SUBJ in (5)). (See Simpson 1991 and Austin and Bresnan 1996 for further discussion).

Evidence for the existence of S as a constituent separate from the auxiliary comes from (at least) two sources: clauses with nominal predicates, and coordination. Firstly, clauses with nominal predicates, such as 9, can never contain an auxiliary and, thus, can only be of category S:

(9) *Iligirra* *buyurru.*
river(NOM) dry(NOM)
'The river is dry.'

(10)



Secondly, it is possible to coordinate either IPs (eg. (11a), (12a)) or S's (e.g. (11b), (12b)). In the latter case there is no auxiliary in the coordinated clause(s).

(11) a. *Bard-bi wurl-a, yagu wurl-a alaji gulug-barda.*
run-UNM 3.DU.S-PST leave(UNM) 3.DU.A-PST boy(ACC) sleep-INF
'They ran away (and) they left the little boy sleeping.'

b. *Bard-bi wurl-a, yagu alaji gulug-barda.*
run-UNM 3DU.S-PST leave(UNM) boy(ACC) sleep-INF
'They ran away (and they) left the little boy sleeping.'

(12) a. *Manjungu ngirr-a angbardi, nguya ngirr-a jamba,*
shade(ACC) 1PL.EXC.A-PST build(UNM) dig(UNM) 1PL.EXC.A-PST ground(ACC)

wugbardi ngirr-a mayinanji.
cook(UNM) 1PL.EXC.A-PST goanna(ACC)
'We built a shade, (and) we dug (a hole in) the ground (and) we cooked the goanna.'

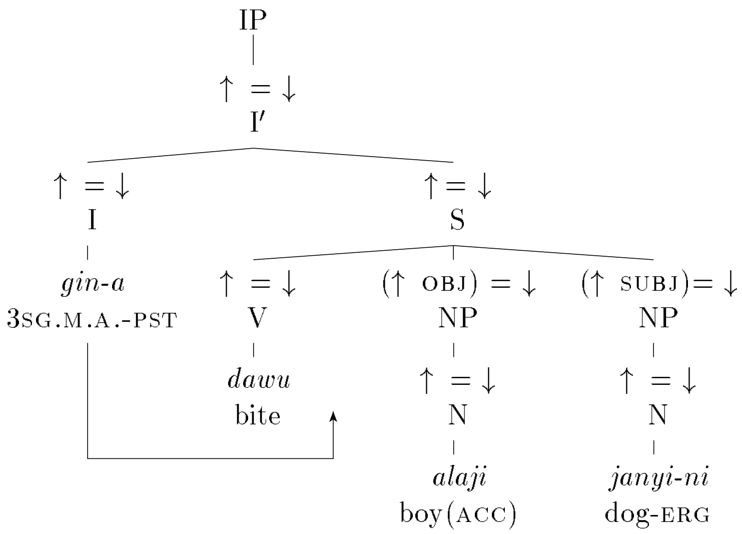
b. *Manjungu ngirr-a angbardi, nguya jamba,*
shade(ACC) 1PL.EXC.A-PST build(UNM) dig(UNM) ground(ACC)

wugbardi mayinanji.
cook(UNM) goanna(ACC)
'We built a shade, (and we) dug (a hole in) the ground (and we) cooked the goanna.'

The auxiliary is base-generated in the I position. However, since it is actually an enclitic (despite the convention of writing it as a separate word), its placement is prosodically conditioned; it needs to follow another word to which it can cliticize. When there is a constituent in the [SPEC,IP] position the auxiliary in I can encliticize to the final member of the NP (as in (5) above). However, if there is no constituent in [SPEC,IP], meaning that the auxiliary is the first constituent in the clause, it undergoes 'prosodic inversion' (Halpern 1995) and is attached prosodically to the end of the first phonological word to its right (i.e. in this structure, the (first member of the) first constituent of S). (See Simpson (1991), Austin and Bresnan (1996) for discussion of the same phenomenon in Warlpiri).

The structure of (4) above is given in (13). The arrow indicates the direction of prosodic inversion.

(13)



This analysis of Wambaya phrase structure can easily deal with all (standard) Wambaya sentences such as those given in (1) through (12). Furthermore, it also accounts for the non-configurational characteristics of Wambaya discussed above: free word order and the absence of a VP is possible since S has a flat structure, with no ordering restrictions within it. Discontinuous constituents are possible as each nominal element is treated as a separate NP constituent (there is no syntactic distinction between nouns and modifiers in Wambaya; all fall into the class of nominals) and can therefore appear separately in the phrase structure. In addition, since there is no fixed position in the configuration for any particular grammatical function, there is nothing that rules out the appearance of multiple phrases all bearing the same grammatical function (as long as the information they carry is unifiable). The fact that these multiple phrases are one constituent semantically is captured by associating them with each other at functional structure. Null anaphora is similarly not problematic as this model chooses not to embrace the projection principle and there is therefore no requirement that all arguments be present at c-structure. Instead, null pronominals are admitted into the f-structure by lexical predicators and are linked to arguments in the predicator's argument structure.

According to standard LFG principles of structure-function association (e.g. Bresnan 1996), both the auxiliary in I and the main verb in V are co-heads of the clause. Thus, their respective f-structures will be unified with each other, and with the f-structure of the clause as a whole. This fact, along with the Lexical Integrity Principle which ensures that each word is inserted fully inflected into the syntax, allows in principle for a situation in which both the auxiliary and the verb are inflected with the same inflectional feature. For example, there is nothing in the syntax which rules out multiple instantiations of tense marking: one tense marker on the verb, and the other on the auxiliary. This is in direct contrast to a framework in which inflectional morphemes or features are considered to be functional heads in the syntax (e.g. Pollock 1989, Chomsky 1993). The prediction made by this type of model is that, since each type of inflectional information (e.g. tense, mood) corresponds to a single phrasal node (e.g. TenseP, MoodP), then there should not be more than one morphological instantiation of each inflectional category in a single clause (see Niño 1995 for fuller discussion). In fact, as predicted by the LFG framework, but not by those in the Chomskian tradition, the multiple inflection of functional information is found in many (unrelated) languages arouund the world (see Niño 1995), including Wambaya.[6] As we will now show, Wambaya is particularly interesting in this respect since, not only is tense marked in two places in the clause, but each instantiation marks different information, the combination of the two providing the value for the clause as a whole.

2 The Wambaya tense system

The large majority of the tense/aspect/mood information in Wambaya is marked on the auxiliary. The TAM marker on the auxiliary may minimally be either a suffix encoding only tense, or one encoding only mood, or it may be one of many suffixes which combine tense information with either aspect, directional or other mood information. The auxiliary also contains bound pronouns cross-referencing the subject and object arguments of the clause;[7] it has no (synchronic) morphological head/base, but simply is a cluster of clitics and suffixes.

The auxiliary maximally makes a three way tense distinction, distinguishing past, present and future tenses:

(14)	*ng-a*	1SG.A/S-PST	*gin-a*	3SG.M.A-PST
	ng-u	1SG.A/S-FUT	*gun-u*	3SG.M.A-FUT
	ngi-Ø	1SG.A/S-PRES	*gini-Ø*	3SG.M.A-PRES

However, not all auxiliaries distinguish all categories. For example, simple auxiliares with plural subjects, directional suffixes and the habitual aspect suffixes make only a two-way distinction, between past tense and non-past tense:

[6] Of course, it is possible to find a way of dealing with multiple inflection in a movement-based framework using additional mechanisms such as as feature copying or percolation (e.g. Mitchell 1991) or abstract movement (e.g. Zwart 1993). However, these mechanisms undermine the empirical basis for hypothesizing an underlying one-to-one correspondence between inflectional features and functional heads in the first place.

[7] Object markers are only present when the clause is transitive, and when the object is first or second person (third person object is not cross-referenced in the auxiliary, see Nordlinger 1993b). Furthermore, object bound pronouns cross-reference person only, not number. When the object is not singular, the object bound pronoun must be accompanied by a free object pronoun providing the number information for the object. When there is no free object pronoun in the clause, the bound pronoun in the auxiliary is interpreted as singular.

(15)	*ngurr-a*	1PL.INC.A/S-PST	*irr-a*	3PL.A/S-PST
	ngurru-Ø	1PL.INC.A/S-NPST	*irri-Ø*	3PL.A/S-NPST
	ng-any	1SG.A/S-PST.AWY	*ng-amany*	1SG.A/S-PST.TWD
	ng-uba	1SG.A/S-NPST.AWY	*ng-ulama*	1SG.A/S-NPST.TWD
	ng-ala	1SG.A/S-HAB.NPST	*ng-aji*	1SG.A/S-HAB.PST

And auxiliaries containing object bound pronouns collapse the distinction between past and present tenses:

(16)	*ngi-ny-a*	1SG.A-2.O-NFUT	*wurlu-ng-a*	3DU.A-1.O-NFUT
	ngu-ny-u	1SG.A-2.O-FUT	*wurlu-ng-u*	3DU.A-1.O-FUT

In addition to the tense marking present in the auxiliary, tense marking is also found on the main verb; however the system of marking on each element is different. Thus, rather than redundantly marking information already provided by the auxiliary, the verbal inflection works in conjunction with the auxiliary marking, the ultimate combination defining the tense category for the clause as a whole.

Verbs in Wambaya have two forms: the *-ba* form, which occurs in positive future tense clauses and in imperative clauses, and the unmarked form (also the citation form) which occurs in all other contexts. Regular verbs belong to one of two phonologically determined verb classes which differ slightly in the forms of their unmarked inflections and in the nature of the stem to which the *-ba* suffix attaches. Class One verbs, those which have vowel-final roots, add a thematic consonant *-j-* before the *-ba* inflection, and take a *-Ø* inflection in the unmarked form. Class Two verbs, which have consonant final roots, have no thematic consonant before the *-ba* suffix and take the unmarked inflection *-bi*. Examples of each type of verb are:

(17)	**Class One**:		
	Root: *daguma-*	*daguma-Ø*	hit-UNM
		daguma-j-ba	hit-TH-*ba*
	Root: *dawu-*	*dawu-Ø*	bite-UNM
		dawu-j-ba	bite-TH-*ba*
	Class Two:		
	Root: *ngaj-*	*ngaj-bi*	see-UNM
		ngaj-ba	see-*ba*
	Root: *gulug-*	*gulug-bi*	sleep-UNM
		gulug-ba	sleep-*ba*

The *-ba* inflection, appearing as it does only in positive future tense clauses and clauses with imperative mood, has been shown to encode a *part* of the information that makes up the category of future tense (see Nordlinger 1996 for full discussion). As demonstrated by Dahl (1985:108), the semantics of future tense prototypically includes at least the features of 'future time reference' and 'intention/prediction'; the verbal inflection *-ba* marks information of the latter type. In particular, it carries the information that the speaker is uncertain as to whether the (as yet unrealized) event will actually occur, yet predicts it to be likely to occur.[8] Hence, *-ba* does not occur in past and present tense clauses since these events are either already occurring, or have already occurred and their status, therefore, is not 'uncertain'. Nor can it occur in negative future tense clauses, in which the speaker asserts that the event is specifically *unlikely* to occur, or in past and present tense irrealis clauses, in which the speaker is concerned with the fact that an expected event did not or is not occurring and not with whether or not it is likely to still occur in the future.[9] In the absence of a better term, we gloss this suffix as UNCERTAIN.[10]

Thus, by combining the auxiliaries discussed above with the verbal morphology we see that the information pertaining to tense in Wambaya is marked simultaneously on the auxiliary and on the verb, although the same information is not marked in both places. Examples demonstrating the interaction between the marking on the verb and on the auxiliary include the following:

(18) *Ngaj-bi nyi-ng-a.*
see-UNM 2SG.A-1.O-NFUT
'You saw/see me.' **Past/Present tense**

(19) *Ngaj-ba nyu-ng-u*
see-UNCERTAIN 2SG.A-1.O-FUT
'You will see me.' **Future tense**

(20) *Ngaj-bi irr-a.*
see-UNM 3PL.A-PST
'They saw (him/her).' **Past tense**

(21) *Ngaj-bi irri-Ø.*
see-UNM 3PL.A-NPST
'They see (him/her).' **Present tense**

(22) *Ngaj-ba irri-Ø.*
see-UNCERTAIN 3PL.A-NPST
'They will see (him/her).' **Future tense**

As shown most clearly by the contrast between 21 and and 22, the verbal inflection is not simply a copy of the tense marking on the auxiliary, but can actually function to distinguish

[8] On the basis of this description, it may seem that this suffix is simply a marker of irrealis mood. However, as argued in detail in Nordlinger (1995, 1996), this is not the case. For example, it is not found in irrealis present tense or past tense clauses, nor is it found in negative future tense clauses; all contexts in which we would expect to find it if it really was a general irrealis marker. Rather, its distribution shows it to be quite clearly associated specifically with future events, therefore indicating that it should be treated as a part of the tense system.

[9] Thus, the verbal inflection marks information of the category STATUS (Foley and Van Valin 1984, Stirling 1993). However, in Wambaya this information is a part of the tense system, rather than belonging to a distinct inflectional category.

[10] In Nordlinger 1996 this suffix was glossed LIKELY. This does not reflect a change in the analysis of the function of the suffix, but merely a change in the term used to refer to its unusual meaning.

tense categories that are not marked in the auxiliary. The auxiliary *irri* makes only a two-way distinction between past tense and non-past tense, but in conjunction with the verbal inflection, the three-way contrast between past, present and future tenses is maintained: when the non-past auxiliary is combined with the unmarked verbal inflection as in 21, the clause as interpreted as having present tense; when the verb is inflected with *-ba* as in 22, the clause has future tense.

Interestingly, imperative mood belongs to the same system as tense in Wambaya; it can be expressed using a subset of the same set of inflections that are used to express the basic tense categories. Thus, in all imperative clauses the verb is inflected with the 'uncertain' suffix and the auxiliary can have one of a number of forms. It can either contain one of a few specifically imperative forms as in 24 and 26, or have non-future or non-past tense marking, as in 27 and 25 respectively. According to speakers, the pairs 24 and 25 and 26 and 27 are simply variants with the same meaning. As shown in 23, there is no auxiliary in imperative clauses with singular subjects and no (cross-referenced) objects.

(23) *Jiya-j-ba* *manganyma*!
give-TH-UNCERTAIN tucker(ACC)
'Give (sg) him/her some food!'

(24) *Jiya-j-ba* *girr* *manganyma*!
give-TH-UNCERTAIN 2PL.IMP tucker(ACC)
'Give (pl) him/her some food!'

(25) *Jiya-j-ba* *girri-Ø* *manganyma*!
give-TH-UNCERTAIN 2PL.A-NPST tucker(ACC)
'Give (pl) him/her some food!'

(26) *Jiya-j-ba* *nyi-ng-Ø* *manganyma*!
give-TH-UNCERTAIN 2SG.A-1.O-IMP tucker(ACC)
'Give (sg) me some food!'

(27) *Jiya-j-ba* *nyi-ng-a* *manganyma*!
give-TH-UNCERTAIN 2SG.A-1.O-NFUT tucker(ACC)
'Give (sg) me some food!'

Now, consider 27 in contrast to the corresponding future tense clause given in 28:

(28) *Jiya-j-ba* *nyu-ng-u* *manganyma.*
give-TH-UNCERTAIN 2SG.A-1.O-FUT tucker(ACC)
'You (sg) will give me some food.'

These sentences differ only in the form of the auxiliary: the imperative clause is identifiable as imperative simply by virtue of the fact that the verb is inflected with *-ba* but there is *non*-future tense marking in the auxiliary. Thus, in 27 there is no morpheme in the clause which identifies it as having imperative mood; rather, it is the *combination* of the 'uncertain' verbal suffix with a non-future tense auxiliary that results in the imperative meaning for the clause. Intuitively, under the account to be presented here, the imperative is neither past nor future tense, and the speaker is uncertain about the outcome, although expects it.

The possible interaction between the tense marking on the auxiliary and on the verb is laid out in the following table (impossible combinations are starred; example numbers for each combination are given in parentheses):

(29)

	Auxiliary	**Verb**	**Clause**
-*Ø*	Present	Unmarked	Present tense (1)
		UNCERTAIN	*
-*u*	Future	Unmarked	Immediate future tense (35)
		UNCERTAIN	Future tense (19)
-*a*	Non-future	Unmarked	Present/Past tense (18)
		UNCERTAIN	Imperative (27)
-*a*	Past	Unmarked	Past tense (3)
		UNCERTAIN	*
-*Ø*	Non-past	Unmarked	Present (21)
		UNCERTAIN	Future/Imperative ((22), (25))
-*Ø*	Imperative	Unmarked	*
		UNCERTAIN	Imperative (26)

This complex, nonconfigurational tense system can be neatly captured by an analysis in which the categories of tense and imperative mood in Wambaya are treated as composites of three primitive binary features: [+/− PAST], [+/− FUTURE] and [+/− UNCERTAIN] as follows:[11]

(30) a. PAST: $\begin{bmatrix} + & \text{PAST} \\ - & \text{FUTURE} \\ - & \text{UNCERTAIN} \end{bmatrix}$

b. PRESENT: $\begin{bmatrix} - & \text{PAST} \\ - & \text{FUTURE} \\ - & \text{UNCERTAIN} \end{bmatrix}$

c. FUTURE: $\begin{bmatrix} - & \text{PAST} \\ + & \text{FUTURE} \\ + & \text{UNCERTAIN} \end{bmatrix}$

d. IMPERATIVE: $\begin{bmatrix} - & \text{PAST} \\ - & \text{FUTURE} \\ + & \text{UNCERTAIN} \end{bmatrix}$

The different auxiliary and verb inflections encode various combinations of these features, as shown in 31:

[11] Possibly these are place holders for more complex semantic notions.

(31) a. -Ø: $\begin{bmatrix} - & \textsc{past} \\ - & \textsc{future} \end{bmatrix}$ (= Present)

b. -*u*: $\begin{bmatrix} - & \textsc{past} \\ + & \textsc{future} \end{bmatrix}$ (= Future)

c. -*a*: $\begin{bmatrix} - & \textsc{future} \end{bmatrix}$ (= Non-future)

d. -*a*: $\begin{bmatrix} + & \textsc{past} \\ - & \textsc{future} \end{bmatrix}$ (= Past)

e. -Ø: $\begin{bmatrix} - & \textsc{past} \end{bmatrix}$ (= Non-past)

f. -Ø: $\begin{bmatrix} - & \textsc{past} \\ - & \textsc{future} \\ + & \textsc{uncertain} \end{bmatrix}$ (= Imperative)

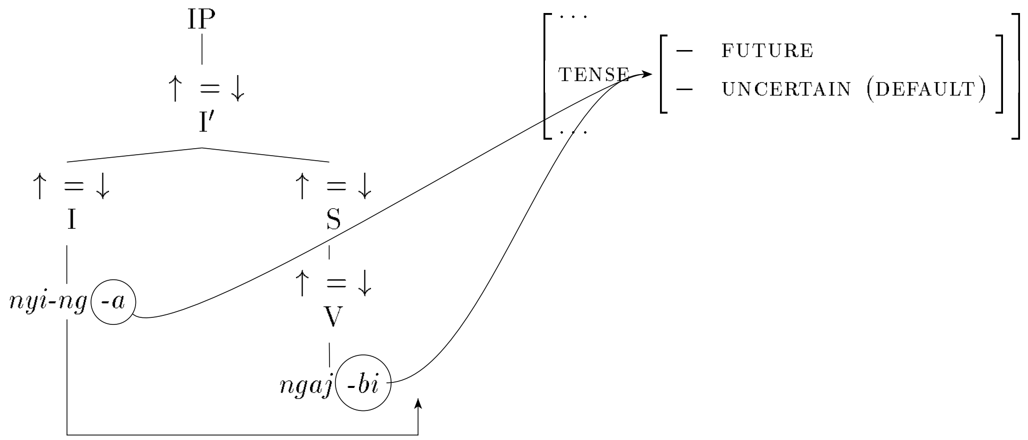
g. -*ba*: $\begin{bmatrix} + & \textsc{uncertain} \end{bmatrix}$

h. -*bi*, -Ø: nothing

Thus, due to the general principles of structure-function association mentioned above, the different clause values given in 30 are arrived at by combining the information provided by the auxiliary suffix with that provided by the verbal suffix, with the added assumption that unspecified UNCERTAIN features are given the unmarked (i.e. negative) value by default. Consider the following examples:

(32) a. *Ngaj-bi nyi-ng-a.*
see-UNM 2SG.A-1.O-[−FUTURE]
'You saw/see me.' = **Past/Present tense**

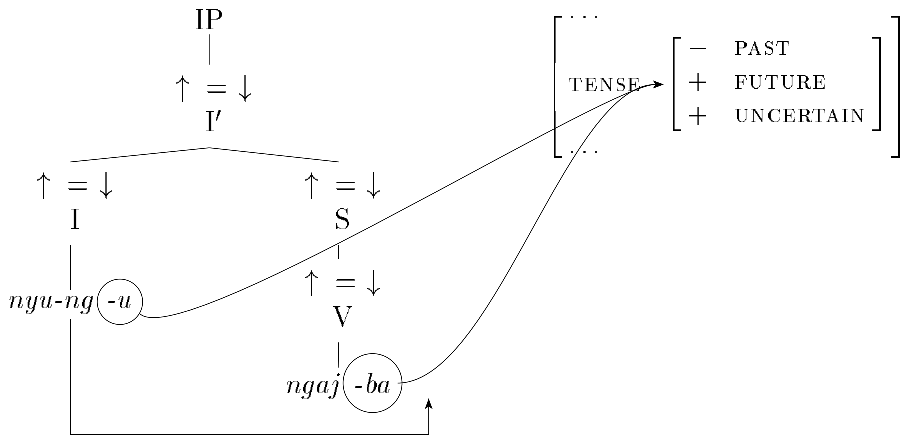
b.



In 32, the auxiliary contributes the information [−FUTURE] and the clause then receives [−UNCERTAIN] by default. Since Past and Present tense are the only two categories compatible with both [−FUTURE] and [−UNCERTAIN], these are the two possible interpretations for the clause.

(33) a. *Ngaj-ba* *nyu-ng-u.*
see-[+UNCERTAIN] 2SG.A-1.O-$\begin{bmatrix} - & \text{PAST} \\ + & \text{FUTURE} \end{bmatrix}$
'You will see me.' = **Future tense**

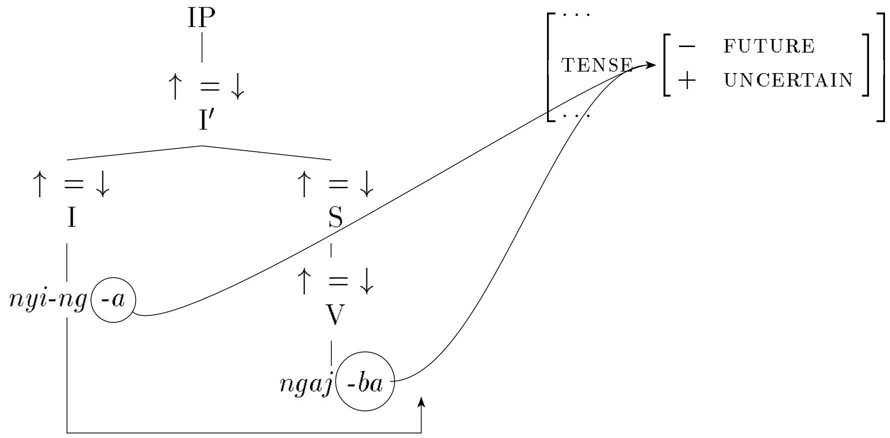
b.



In 33 the combination of the auxiliary suffix and the verbal suffix fully specfies the category of Future tense, and thus this is the only possible interpretation for the clause.

(34) a. *Ngaj-ba* *nyi-ng-a!*
see-[+UNCERTAIN] 2SG.A-1.O-[−FUTURE]
'Look at me!' = **Imperative**

b.



Finally, in the interesting imperative case 34, the combination of [−FUTURE] from the auxiliary and [+UNCERTAIN] from the verb yields imperative as the only possibility.

Further support for this analysis comes from the fact that it provides a simple account of immediate future tense examples, such as 35. In these examples, the future tense suffix in the auxiliary co-occurs with an unmarked verb, giving the clause a meaning of immediate or definite future tense, similar to 'be going to' or 'be about to' in English.

(35) *Daguma-Ø gunu-ny-u ninki!*
hit-UNM 3SG.M.A-2.O-FUT this.SG.M.ERG
'He's going to hit you!'

These examples follow from the analysis given here, since, in addition to the four categories given in (30), the system defines a fifth, given in 36:

(36)

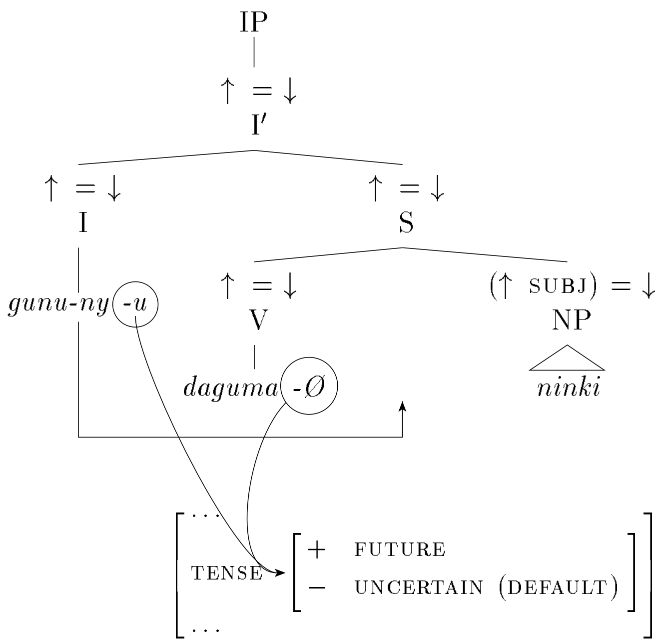
$$\text{IMMEDIATE FUTURE:} \quad \begin{bmatrix} - & \text{PAST} \\ + & \text{FUTURE} \\ - & \text{UNCERTAIN} \end{bmatrix}$$

Thus, these clauses are different from standard future tense clauses in that they share the feature [−UNCERTAIN] with the past and present tenses. This seems to accurately reflect the difference between these two types of future tense clauses: in immediate future tense clauses the speaker makes the assertion that the event is more certain; closer to being realised, than in standard future tense clauses.

The structure of (35) is given in 37:

(37) a. *Daguma-Ø gunu-ny-u ninki!*
hit-UNM 3SG.M.A-2.O-[+FUTURE] this.SG.M.ERG
'He's going to hit you!' = **Immed. Future tense**

b.



In this way then, this analysis can account for all of the possible combinations given in (29). Furthermore, it simply and straightforwardly captures the intuition that tense and imperative information in Wambaya is the result of the combination of information carried by the auxiliary and the verb. As can be seen in the above discussion, the combinatorial nature of the Wambaya system argues strongly for a model of grammar such as LFG which makes use of unification and the principle of lexical integrity. Also crucial to capturing this nonconfigurational tense system is the fact that I and V are co-heads and thus their f-structures are both identified with the clause as a whole, allowing for a situation in which they each provide partial information about the same inflectional category. This fact follows from the principle that c-structure sisters to functional categories are f-structure co-heads (Bresnan 1996).

In contrast, the Wambaya data does not follow so easily in a framework in which inflectional information is considered to correspond to a single phrase structure position (as in Pollock 1989, Chomsky 1993). That tense appears on two discontinuous elements in situ requires, at the outset, the postulation of an additional mechanism to enable information generated in a single head position to be realised in two different places. While such mechanisms have been proposed in the literature (for example, abstract movement (e.g. Zwart 1993), feature copying or percolation (e.g. Mitchell 1991)), the Wambaya data poses the additional problem that each tense marker encodes partial information nonidentical with the other, thus making these analyses difficult to motivate. Furthermore, as mentioned above, these sorts of analyses all undermine the empirical basis for the hypothesis that motivated the 'exploded IP' model in the first place, namely that there is an (underlying) one-to-one correspondence between inflectional features and functional heads in the syntax (Niño 1995, Nordlinger 1995).

3 Conclusion

In this paper we have provided an analysis of the nonconfigurational tense system of Wambaya that treats the tense/imperative categories as composites of three primitive features. The various auxiliary and verbal inflections encode different combinations of these features which then unify to determine the category of the clause. This approach can not only account for the complex interaction between the auxiliary and verb suffixes, but provides a straightforward and intuitive analysis of the combinatorial nature of the Wambaya tense system as a whole. As we have shown, such 'split inflection' as evidenced by this tense system, while potentially problematic for movement-based and feature copying frameworks, follows in a natural and principled way from unification under lexical integrity and structure-function correspondence as in LFG.

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