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### SPLIT TENSE AND MOOD INFLECTION IN WAMBAYA\*

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#### 1. Introduction

In this paper, I discuss a phenomenon in the Northern Australian language Wambaya in which functional information, in this case tense and imperative mood, is simultaneously marked on two different heads in the one clause. I will argue that this split inflection challenges the assumption of movement-based frameworks that each piece of functional information present in the clause corresponds to a single phrasal head in phrase structure. Rather, I claim that it strongly supports a unification-based model of grammar in which words enter the syntax fully inflected and each word corresponds to only one node in constituent structure. To substantiate this claim, I will show how Wambaya tense and mood split inflection can be accounted for easily and straightforwardly within the framework of Lexical-Functional Grammar.

#### 2. The Data

Wambaya is syntactically similar to the better known Australian language Warlpiri and has many of the characteristics that are usually associated in the literature with non-configurationality (e.g. Hale 1983, Speas 1990) such as free word order, extensive null anaphora, discontinuous constituents, and lack of evidence for a VP constituent. Like many languages with some or all of these properties, Wambaya has an extensive case marking system and subject and object pronominal agreement.

All finite clauses in Wambaya contain a second position auxiliary which itself contains bound pronouns registering the subject and object arguments of the clause, as well as morphemes marking such things as tense, mood, aspect and direction. The auxiliary is obligatory in every finite verbal clause; only in non-finite clauses and in clauses with nominal predicates does the auxiliary not appear. The auxiliary has no morphological head, but is created by a slot and filler template, the basic structure of which is shown in (1):

(1) Subj (Obj) Tense/Mood (/Aspect/Directional)<sup>1</sup>

Both the subject marker and a tense/mood affix are obligatorily present in the auxiliary at all times. The tense/mood suffix may minimally be either a suffix encoding only tense, or one encoding only mood. However, it is also possible to have suffixes which combine tense information with either aspect, directional or other mood information. Object markers are only present when the clause is transitive, and then only when the object is first or second person (third person object is not registered in the auxiliary, see Nordlinger 1993b).

Tense marking on the auxiliary differs according to its morphological structure, as exemplified in (2). Thus, when there is an object marker in the auxiliary, the tense distinction is future/non-future (a), and when there is no object in the auxiliary the

tense distinction is past/nonpast with non-singular subjects (b) or past/present/future with singular subjects (c).

(2)				
a.	ngu-ny-u	1:sg:A-2:O-Fut	wurlu-ny-u	3:du:A-2:O-Fut
	ngi-ny-a	1:sg:A-2:O-nFut	wurlu-ny-a	3:du:A-2:O-nFut
b.	girr-a	2:pl:A/S-Pst	wurl-a	3:du:A/S-Pst
	girri-Ø	2:pl:A/S-nPst	wurlu-Ø	3:du:A/S-nPst
c.	ng-a	1:sg:A/S-Pst	gin-a	3:sg:masc:A-Pst
	ng-u	1:sg:A/S-Fut	gun-u	3:sg:masc:A-Fut
	ngi-Ø	1:sg:A/S-Pres	gini-Ø	3:sg:masc:A-Pres

This is represented in table form in (3). Since some of the tense morphemes are homophonous, I have distinguished them with subscripts.

## (3) Tense distinctions in the auxiliary

	Past	Present	Future
With Obj	-	$a_2$	-u
Without Obj sg. subj	-a <sub>1</sub>	-Ø <sub>1</sub>	-u
Without Obj non-sg. subj	-a <sub>1</sub>	-ø	2

Due to the fact that the auxiliary contributes no predicate information, it must always be accompanied by a verb, although the two are not required to be contiguous in the clause. (4) and (5) provide examples of some more complex Wambaya sentences in which the verb and the auxiliary are separated even by the subject (4).<sup>2</sup>

- (4) Durraji-ni g-a nagarna bard-bi be.frightened-SIM:SS 3:sg:S-Pst that:sg:NOM run-nFut wirrilgarra. cockatiel(NOM)

  The cockatiel ran away frightened.
- (5) Ilanji nyu-ng-u ngangi jiyaj-ba! cooked(ACC) 2:sg:A-1:O-Fut 2:sg:POSS(ACC) give-Fut You will give me that cooked (meat) of yours!

However, since there is quite extensive null anaphora in Wambaya, the clause need not contain any noun phrases at all. Thus the minimal (and quite typical) sentence consists of simply a verb followed by the auxiliary. For simplicity, I will use only these minimal sentences in this paper.

So, we have seen that the auxiliary in Wambaya carries tense marking which differs according to the morphological structure of the auxiliary, as shown in (3). Now, the verb in Wambaya also carries tense marking, in which case the distinction is simply future tense versus non-future tense. Thus, tense is marked twice in all

Wambaya clauses in which tense appears. Some typical Wambaya examples, which illustrate this split inflection are as follows:

- (6) Ngaj-ba ngu-ny-u. see-Fut 1:sg:A-2:O-Fut I will see you.
- (7) Ngaj-bi ngi-ny-a. see-nFut 1:sg:A-2:O-nFut I saw/see you.
- (8) Bard-bi irr-a. run-nFut 3:pl:S-Pst They ran.
- (9) Bard-bi irri-Ø. run-nFut 3:pl:S-nPst They are running.
- (10) Bard-ba irri-Ø. run-Fut 3:pl:S-nPst They will run.
- (11) Gulug-bi ng-a. sleep-nFut 1:sg:S-Pst I slept.
- (12) Gulug-bi ngi-Ø. sleep-nFut 1:sg:S-Pres I am sleeping.
- (13) Gulug-ba ng-u. sleep-Fut 1:sg:S-Fut I will sleep.

In (14) we see that the verb can appear in the non-future/unmarked form even when the auxiliary is marked with future tense. Speakers say that (14) is simply a paraphrase of (6), and thus there is no (substantial) difference in meaning according as whether or not the verb is inflected with the future tense suffix.

(14) Ngaj-bi ngu-ny-u see-nFut 1:sg:A-2:O-Fut I will see you.

Thus, as shown in these examples, not only is tense marked on two places in the Wambaya clause, but the system of tense marking is not necessarily the same: each instantiation of tense may have a different value. The table in (15) reflects the possible combinations we have seen so far - I will add to it shortly.

(15) Interaction between tense marking on verb and auxiliary.

AUXILIARY		VERB	CLAUSE
-Ø <sub>1</sub>	Present	Non-future	<u>Present</u>
-u	Future	Future/Non-future	<u>Future</u>
<b>-a</b> <sub>2</sub>	Non-future	Non-future	Present/Past
-a <sub>1</sub>	Past	Non-future	<u>Past</u>
$-\vec{\boldsymbol{\varrho}}_2$	Non-past	Non-future	Present
$-\boldsymbol{\phi}_{2}^{-}$	Non-past	Future/Non-future	<u>Future</u>

Now, the situation as reflected in (15) becomes even more complicated once we consider imperative sentences. Imperative mood, in Wambaya, is part of the same system as tense marking. Thus, it is expressed using some of the same tense markers that we saw in examples (6) to (13). In this respect it contrasts with other mood categories in Wambaya such as 'irrealis' and 'hypothetical' which are marked with distinct morphemes on the auxiliary, as shown in (16) and (17).

- (16) Guyala gunu-ny-**udi** ngaj-**bi**. NEG 3:sg:masc:A-2:O-**IRR:Pres** see-**nFut** He isn't looking at you.
- (17) Nawu-Ø ngiyi-ny-agba narunguji-ni. step.on-nFut 3:sg:fem:A-2:O-HYP car-ERG A car might run you over. [Lit. A car might step on you.]

In imperative clauses, the verb is marked with the future tense suffix while the auxiliary carries the non-future suffix with auxiliaries containing objects, and the non-past form with other auxiliaries.<sup>3</sup>

- (18) Jiyaj-ba girri-ng-a<sub>2</sub> manganyma! give-Fut 2:pl:A-1:O-nFut food(ACC)

  Give (pl) me some food!
- (19) Jiyaj-ba girri-Ø<sub>2</sub> manganyma! give-Fut 2:pl:A-nPst food(ACC) Give (pl) him/her some food!

(18) is particularly interesting since two seemingly incompatible suffixes - future and non-future - are combined to signal imperative mood. This example shows more clearly than any others we have seen, that the two tense markers cannot have the same source; one cannot simply be a copy of the other, as would have to be assumed in a movement framework. Rather, they are generated separately and then interact and constrain each other via unification, in a way that I will outline shortly.

Thus, in addition to there being split inflection of tense in Wambaya, these tense markers can also be used in imperative mood, and the functional information is split between the auxiliary and the verb in these constructions also. By adding this information to (15), we can get a more complete idea of the types of interaction between the marking on the verb and on the auxiliary. The table in (20) contains

the basic facts of Wambaya tense and imperative mood inflection that any theoretical account needs to be able to explain.

(20) Interaction between tense marking on auxiliary and verb (impossible combinations are starred)

AUX	ILIARY	VERB	CLAUSE
-Ø <sub>1</sub>	Present	Non-future	<u>Present</u>
		Future	*
-u	Future	Non-future	<u>Future</u>
		Future	<u>Future</u>
<b>-a</b> <sub>2</sub>	Non-future	Non-future	Present/Past
		Future	<u>Imperative</u>
- <b>a</b> 1	Past	Non-future	<u>Past</u>
		Future	*
-Ø <sub>2</sub>	Non-past	Non-future	Present/Future
		Future	Future/Imperative

#### 3. The Account

I believe that these complex and unusual facts can be accounted for intuitively and straightforwardly in a unification based framework such as Lexical-Functional Grammar (LFG). LFG separates c-(onstituent) structure from f-(unctional) structure and therefore allows the same type of information to appear in two different positions in the c-structure, but to constrain each other by being unified at f-structure. Thus, there can be two instantiations of the same type of information in c-structure without the assumption that they are from the same syntactic place of origin.

The unification of related information is ensured by the mapping rules which link elements of c-structure to elements of f-structure. In particular, the unification of the information contained in the auxiliary in Wambaya with that in the verb is effected by the assumption that both the verb and the auxiliary are co-heads of the sentence (each annotated with  $\uparrow = \downarrow$ ) and that therefore, their f-structures will be identified with each other and unified.<sup>4</sup>

Partial sublexical entries for the various suffixes discussed above are given in (21), followed by discussion of these entries. I am using the label TM to refer to the category which includes tense and imperative marking. This is distinct from the MOOD system, to which irrealis mood belongs. Only the features relevant to this discussion are included in these sublexical entries. The ways in which these sublexical entries can account for the tense and mood inflection facts given in (20) are demonstrated with some example structures in (22) to (25).

(21) Partial lexical entries for (some) Wambaya tense and mood suffixes.

Verbal suffixes:

a. 
$$-\emptyset$$
, -bi: ( $\uparrow$  TM)  
b. -ba: ( $\uparrow$  TM) = FUT v IMP

Auxiliary suffixes:

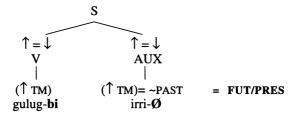
cØ:	$(\uparrow TM) = PRES$
da:	$(\uparrow TM) = PAST$
eu:	$(\uparrow TM) = FUT$
fa:	$(\uparrow TM) = \sim FUT^5$
gØ:	$(\uparrow TM) = \sim PAST$
hudi, -uji:	$(\uparrow TM) = PRES$
	$(\uparrow MOOD) = IRR$

Thus, the fact that the non-future tense form of the verb appears to function more like a general, unmarked form is captured by the fact that its lexical entry requires the presence of a TM value, yet does not provide that value itself. And, the multiple functions of the future tense form of the verb are captured by the disjunction, FUT or IMP in its lexical entry. The auxiliary suffixes have lexical entries corresponding exactly to the earlier descriptions of their functions (as in (3)).

Given these sublexical entries for the tense and mood suffixes, the facts of Wambaya tense and mood inflection follow, as is demonstrated by the example sentences in (22-25). Only the features relevant to this discussion are included in the lexical entries in these examples.

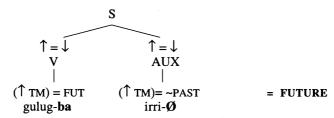
Since Wambaya is a non-configurational language, the issue of its constituent structure is a non-straightforward one, and I will not go into the details of it in this paper. Instead, for the purposes of this discussion, and in order to focus more clearly on the issue at hand, I will use a simplified constituent structure here. I have provided a brief outline of the constituent structure I actually assume for Wambaya, including an account of the second position of the auxiliary, in an appendix at the end of this paper (for a more detailed discussion of this issue see Nordlinger 1995).

(22) Gulug-bi irri-Ø.
sleep-nFut 3:pl:S-nPst
They're sleeping/ they will sleep.



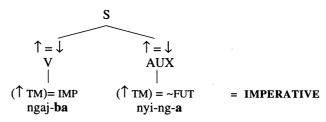
In (22), the verbal lexical entry requires the presence of a TM value, yet does not provide one itself. This value is provided by the unification of the verbal lexical entry with the auxiliary's lexical entry which gives the clause as a whole the TM value ~PAST, thereby reflecting the ambiguity of this utterance between present tense and future tense readings.

(23) Gulug-ba irri-Ø. sleep-Fut 3:pl:S-nPst
They will sleep.



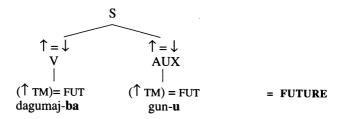
In (23) the combination of the TM values of the auxiliary and of the verb yield the TM value of FUT for the clause. Note that the fact that the subject is third person prevents the interpretation of the verbal inflection as imperative here. If the subject was second person the sentence would be potentially ambiguous between a future tense indicative and an imperative meaning.

(24) Ngaj-ba nyi-ng-a! see-Fut 2:sg:A-1:O-nFut Look at me!



In (24), the verb provides the information that the clause is imperative, while the auxiliary simply constrains the clause to not having future tense. Although the auxiliary inflection does not appear to contribute any information to the clause, its presence is very important as it blocks unification of this auxiliary suffix with the verbal suffix that has future meaning. This ensures that the only time this auxiliary suffix can co-occur with the verbal suffix -ba is when the clause is imperative and therefore serves to signal the fact that, in this clause, the suffix -ba is marking imperative not future tense.

(25) Dagumaj-ba gun-u. hit-Fut 3:sg:masc:A-Fut He will hit him/her/it.



In (25) the presence of the FUT value on the auxiliary suffix means that the verbal suffix -ba in this example must be marking future tense and not imperative since if it were imperative, the two TM markers would not be able to unify. Note that the present and past tense auxiliary suffixes (given in (21c) and (21d) respectively) are similarly blocked from co-occurring with the imperative verbal suffix. Furthermore, their TM values block them from co-occurring with the future tense form of the verbal suffix also.

Thus, in this way, this account can explain all of the possible combinations and their meanings given in (20). Furthermore, it can do it in a simple and straightforward manner, without needing to postulate any additional process or mechanism of information flow. This is in contrast to a movement based account of split inflection such as Mitchell's (1991) analysis of split inflection in Finnish. In order to capture the phenomenon of split inflection in Finnish, Mitchell postulates an extra mechanism for information flow, in addition to movement, in which a functional feature is generated in a unique head position in phrase structure and then is 'percolated' or 'spread' onto another node, where it is 'spelled out'. In this type of analysis, the 'future' tense information in a sentence such as (25) would be generated in the auxiliary position (i.e. INFL) and would then percolate down onto the verb where it is also realized. So, in this type of analysis, the tense information is generated only once - thereby corresponding to only one phrasal head in phrase structure - and then spreads to the other parts of the clause in which it also appears in surface structure.

One serious problem with this approach is that it is not clear how it could cope with cases in which the two tense inflections are compatible, yet different, such as in example (23). In this example, the value of the tense marker on the verb is 'future' while that of the auxiliary tense suffix is 'non-past'. Although these two values are semantically compatible, as shown by the fact that they can unify in the LFG analysis, their difference means that one could not simply be a copy of the other. There is no way that a 'non-past' feature on the auxiliary could percolate and in doing so become a 'future' tense feature on the verb.

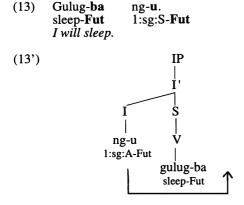
This movement-based analysis has a further disadvantage with respect to the LFG analysis presented here in that it must appeal to an additional 'percolation' mechanism by which information flows throughout the structure; a mechanism which is not required by anything else in the framework. Furthermore, this mechanism, in allowing for functional information to spread and appear multiply marked in the clause, seems to undermine the basic premise which the framework strives to maintain: that each functional feature corresponds to a unique position in phrase structure.

#### 4. Conclusion

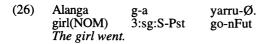
In this paper I have argued that the tense and mood inflection facts in Wambaya provide strong support for a model of grammar which adopts the principle of lexical integrity and uses unification as the primary method of information flow. I have presented an analysis of the Wambaya data within the framework of LFG and shown how we can make use of the split between c-structure and f-structure to unify tense information that is represented separately in phrasal structure. Furthermore, I have argued that this analysis is preferable to a movement-based analysis since it can account for all the data without the need to postulate an additional and otherwise unnecessary mechanism to do so, and because it can capture intuitions and generalisations about the tense and mood marking system in Wambaya in a simple and straightforward way.

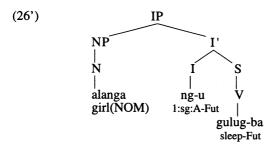
# APPENDIX Wambaya Constituent Structure

Following ideas in Simpson (1991), Kroeger (1993), Austin and Bresnan (to appear) and Halpern (1992) I assume the following constituent structure for Wambaya simple sentences. The basic Wambaya sentence is made up of an IP with an optional SPEC position. The auxiliary is in INFL and the non-projective, exocentric category S is generated as a sister to INFL. The constituents of S are NP and V and order within S is free. The auxiliary is an enclitic, phonologically dependent on the preceding word. Thus, when SPEC, IP is not filled (in which case the auxiliary is the first constituent in the clause), a phonological rule of prosodic inversion (Halpern 1992) causes the auxiliary to follow the first constituent of S. The structure of a sentence such as (13) - repeated here - is therefore as shown in (13'). Prosodic inversion is indicated with an arrow.



When SPEC, IP is filled, meaning that the auxiliary is not in initial position in the clause, prosodic inversion does not occur; the auxiliary attaches prosodically to the final constituent of the maximal projection in SPEC, IP.





<sup>\*</sup> I am greatly indebted to my Wambaya consultants, Molly Nurlanyma Grueman, Minnie Niyamarrama Nimara and Mavis Bangarinya Hogan, for the countless hours spent teaching me their language. I would also like to thank Joan Bresnan, Peter Sells, Will Leben, María-Eugenia Niño and Ian Green for valuable discussions, suggestions and comments on earlier versions of this paper. Naturally, I am solely responsible for any remaining flaws or inadequacies.

(ii) Jiyaj-ba manganyma! give-Fut food(ACC)
Give (sg) him/her some food!

<sup>&</sup>lt;sup>1</sup> The marking of aspect and direction is not relevant to the present discussion and so will not be covered here.

<sup>&</sup>lt;sup>2</sup> The abbreviations that I use here and elsewhere in this paper, are as follows:

<sup>1, 2, 3 &#</sup>x27;first, second, third person', A 'transitive subject', ACC 'accusative', ERG 'ergative', Fut 'future', HYP 'hypothetical', IMP 'imperative', IRR 'irrealis', masc 'masculine', nFut 'nonfuture', NOM 'nominative', nPst 'non-past', O 'direct object', pl 'plural', POSS 'possessive', Pres 'present', Pst 'past', S 'intransitive subject', sg 'singular', SIM:SS 'simultaneous event, same subject'. Detailed explanations of the function of the different morphemes can be found in Nordlinger (1993a).

<sup>3</sup> There is no auxiliary in an imperative clause with a singular subject and no object. An example is:

<sup>&</sup>lt;sup>4</sup> This is due to the universal principle of structure-function association such that the complements of functional categories are f-structure co-heads. Thus, in a configurational language such as English, the VP is a co-head with I. Since V is the head of VP, this means that the f-structure of the V will ultimately be identified with that of I. Since there is no VP in Wambaya, I co-heads the sentence with V, rather than VP.

<sup>&</sup>lt;sup>5</sup> Note that here, and in (g) the TM values are given with the negation marker (~) before the value instead of before the attribute-value pair (i.e. (↑ TM) = ~FUT rather than ~(↑ TM) = FUT). This is to make the distinction between the latter type of equation, which does not necessarily provide a tense value, but merely restricts the possible tense values that it can unify with, and the equation in these sublexical entries, which provides a tense value (and therefore satisfies the requirement of the non-future verbal inflection), but provides only the information that this value is not FUT.

<sup>&</sup>lt;sup>6</sup> See Niño (1994) for arguments against this analysis of Finnish.

<sup>&</sup>lt;sup>7</sup> See Nordlinger (1995) for a more detailed discussion of Wambaya sentence structure.

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