

Constructive morphology beyond case marking

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Abstract

Nordlinger (1997, 1998) argues that in certain dependent marking non-configurational languages case morphology does not merely reflect grammatical functions but can have a role in constructing them. She shows how f-structures can be constructed from the case-marked forms of nouns, including instances of double case-marking and use of case to encode TAM properties. In this paper I extend Nordlinger's proposals beyond case-marking to cover certain constructions in Australian Aboriginal languages where it can be argued that dependent verbal and nominal morphology constructs rather more complex f-structure representations, including information about functional control. Data from Mantharta and Kanyara languages will be provided to support this analysis.

1. Introduction

- Mantharta (Jiwarli, Thiin, Warriyangka, Tharrkari) subgroup of Aboriginal languages once spoken in north-west Western Australia between Gascoyne and Ashburton Rivers – data from fieldwork 1978-1985
- Kanyara (Payungu, Thalanyji, Pinikura, Purduna) subgroup of Aboriginal languages once spoken in north-west Western Australia along coast and inland between Gascoyne and Ashburton Rivers – data from fieldwork 1978-1995
- Radically non-configurational languages (Austin & Bresnan 1996) with:
 - rich nominal (split-ergative case) morphology on all N constituents, including *Suffixaufnahme* (Austin)
 - rich verbal morphology, encoding TAM in main clauses, and clause type + cross-clausal reference relations in dependent clauses. Some dependent clauses can be marked for case, and case encoding of OBJ varies according to clause type
 - ‘free’ pragmatically conditioned word order, ‘split NP’ syntax (case is locally coded)
 - widespread zero anaphora for all persons/numbers

2. Dependent clause data

Table 1 and Table 2 set out verb inflections in Jiwarli (Mantharta) and Thalanyji (Kanyara). Dependent inflections are attached to paratactically linked dependent clauses and encode clause type (relative tense (+ aspect)) plus, for some clauses cross-clausal (non-)coreference in a switch-reference system where SUBJ=SUBJ (for SS) or SUBJ≠SUBJ (for DS) regardless of split-ergative case morphology. Case marking of objects in some dependent clauses is different from that in main clauses, with either Dative or Allative replacing the regular split-ergative Accusative/Absolutive. Some dependent verbs can take case markers after their dependent morphology – this is the same as other adjuncts in the languages (eg. locational, temporal or manner adverbial adjuncts take case markers).

2.1 Imperfective dependent clauses

Imperfective clauses describe an event which occurs at the same time as the matrix clause event (relative present tense) but not completed (imperfective aspect) and which is subsidiary or background to the matrix clause event. Imperfective clauses translate into English as adverbial clauses ('when ...', 'while ...'), and relative clauses (both restrictive and non-restrictive relatives). The subject (S or A) of an imperfective clause is generally missing, and the choice of the appropriate dependent clause inflection depends upon referential identity or non-identity of this (missing) subject with the subject (S or A) of the matrix clause. That is, these clauses evidence a proto-typical switch-reference system (see Austin 1981b, Haiman and Munro 1983). The dependent clause carries the imperfective suffix (SS or DS), the clauses are combined, and if the dependent clause is transitive its object is placed in the DATIVE case (regardless of inherent lexical content, ie. the lexical patient marking hierarchy is suspended and P function is normalised to dative).

Example (1) shows main IS coreferential with dependent IS:

- (1) *Yilyurnma warni-nha ngunha ngathi-ngu.*
 tear.nom fall-pres that.nom cry-imperfss
 'Tears are falling as he is crying.' [N9p150s5]

The next examples have main IS coreferential with dependent TS. These examples illustrate two important characteristics of Jiwarli: dative case on the dependent clause transitive object, and the freedom of word order.

- (2) *Parampu-wu ngunha kumpa-ja purra-rnu*
 acacia-dat that.nom sit-past grind-imperfss

marrkara nganaju parampu-wu pirruwa-wu.
 y.brother.nom 1sg.dat.nom acacia-dat husk-dat
 'My younger brother sat grinding acacia husks.' [T50s1]

- (3) *Minga-nyjarri-yi-rru nhurra thika-rnu kumpa-ma.*
 ant-pl-dat-now 2sg.nom eat-imperfss sit-imper
 'You eat ants!' [T35s29]

The following examples illustrate the imperfSS suffix used when the matrix clause coreferential nominal is in transitive subject function. In elicited examples the dependent verb is further inflected for ergative case, as are adverbial allative and ablative nominals, manner adverbs and the deontic modal particle (see 3.3, 3.4 above). Examples (4) and (5) show main A coreferential with dependent S (note the difference in word order of the clauses in these two examples):

- (4) *Nhurra-kara-lu thika-nma yarrukarri-ngu-ru-thu.*
 you-pl-erg eat-imper want-imperfss-erg-def
 'You eat it if you want it!' [N11p39s3]

- (5) *Panhalu-ru yukarri-ngu-ru ngatha-nha nhanya-nyja.*
 3sg-erg stand-imperfss-erg 1sg-acc see-past
 ‘He saw me as he was standing up.’ [N11p40s3]

When main A is coreferential with dependent A the dependent subject does not appear and the dependent transitive object is placed in dative case. In elicited examples ergative case is added to the dependent verb in agreement with the controlling subject. In (7) there are two dependent clauses (and hence two dative marked Ps); it is the last verb which takes ergative case because it is dependent on a transitive clause (itself an imperfSS clause). The first imperfSS verb is dependent on an intransitive clause.

- (6) *Mantharta-lu kurrpirli-nha pinya-nyja yanga-rnu-ru.*
 man-erg kangaroo-acc spear-past chase-imperfss-erg
 ‘The man speared a kangaroo as he was chasing it.’ [N11p31s2]

- (7) *Mantharta kumpa-inha wurnta-wu yinka-rnu*
 man.nom sit-pres shield-dat adze-imperfss

juma-wu nhanya-ngu-ru.
 child-dat watch-imperfss-erg
 ‘The man sits adzing a shield while watching the children.’ [N11p31s3]

Imperfective clauses which have a subject not coreferential with the matrix clause subject are marked with the imperfDS suffix. These clauses also describe ancilliary or background information. Most of the examples in the data have a missing dependent subject (S or A) which is understood as coreferential with some non-subject nominal in the matrix clause. When the dependent clause is intransitive, the imperfDS verb bears a case inflection appropriate to the grammatical function served by the coreferential nominal in its clause. The following example shows main clause P coreferential with dependent clause S (note accusative case on the imperfDS verb):

- (8) *Tharla-nma yinha julyu-nha kamu-rri-ya-nha.*
 feed-imper this.acc old man-acc hunger-inchoat-imperfDS-acc
 ‘Feed this old man who is becoming hungry!’ [T13s1]

Example (9) shows a main clause subcategorised dative coreferential with a dependent clause S:

- (9) *Juma-rti jirril-arri-a mantharta-wu*
 child-pl.nom afraid-inchoat-pres man-dat

nyirnta kumpa-iniya-wu.
 there.loc sit-imperfDS-dat
 ‘The children are afraid of the man sitting there.’ [N10p11s3]

An example where the dative marks main clause beneficiary are:

- (10) *Karla-rla-laartu pulhuwa-la-rru ngurnu-pa pulhuwa-nguli-ya-ngu.*
 fire-fact-usit cold-loc-now that.dat-spec cold-psych-imperfDS-dat
 ‘When it was cold (I) used to make a fire for them when they felt cold.’ [JIT61s38]

The same structure is seen in (11) and (12) where coreference is with the dative marked P of an imperfective same-subject clause:

- (11) *Nhaa-rrri-nyja nhurra warri kurlkayi-rnu*
 what-inchoat-past 2sg.nom not listen-imperfss

wangka-iniya-wu nganaju.
 talk-imperfDS-dat 1sg.dat
 ‘Why didn’t you listen to me talking?’ [JIT35s7]

- (12) *Kumpa-ja juru-ngka-kunti-rru nhanya-ngu mathan-ku*
 sit-past sun-loc-sembl-now look-imperfss hill kangaroo-dat

warrkalarri-ya-wu parlu-ngka yirrara.
 crawl-imperfDS-dat hill-loc top.loc
 ‘(You) could see the hill kangaroos crawling on top of the hill as if it were daytime.’ [JIT65s7]

Dative-marked possessors can also be coreferential with the subject of an imperfDS clause. This is seen in the following Thalanyji example:

- (13) *Kaparla wartirra-ku nyina-yin wangka-yitha-ku*
 dog.nom be.afraid-pres sit-pres speak-imperfDS-dat
 ‘The woman who is talking’s dog is sitting down’

Dative-marked possessors show double case-marking in Kanyara and Mantharta languages, with a second case affix following the dative in agreement with the case of the possessum, which then also appears on the dependent clause verb. The following examples show a nice minimal contrast:

- (14) *Ngatha nhaku-nha kaparla-nha wartirra-ku-nha wangka-yitha-nha*
 1sg.erg see-past dog-acc woman-dat-acc speak-imperfDS-acc
 ‘I saw the woman’s dog that is barking’

- (14a) *Ngatha nhaku-nha kaparla-nha wartirra-ku-nha wangka-yitha-ku-nha*
 1sg.erg see-past dog-acc woman-dat-acc speak-imperfDS-dat-acc
 ‘I saw the dog of the woman who is talking’

Notice that the double cases attached to possessor nouns can be identical, as in:

(15) *Kupujarri* *pirungkarri-n* *kaparla-ku* *watirra-ku-ku* *wangka-yitha-ku*
 child.pl.nom be.afraid-pres dog-dat woman-dat-dat speak-imperfDS-dat
 ‘The children are afraid of the woman’s dog that is barking’

(16) *Kupujarri* *pirungkarri-n* *kaparla-ku* *watirra-ku-ku* *wangka-yitha-ku-ku*
 child.pl.nom be.afraid-pres dog-dat woman-dat-dat speak-imperfDS-dat-dat
 ‘The children are afraid of the dog of the woman who is talking’

An instance of main clause Locative coreferential with imperfDS intransitive subject S is:

(17) *Wuru* *ngunha* *tharrpa-rninyja* *ngarti-ngka*
 stick.acc that.acc insert-past inside-loc

kajalpu-la *ngarri-ngka* *ngurta-iniya-la.*
 emu-loc ashes-loc lie-imperfDS-loc
 ‘(He) inserted the stick inside the emu lying in the ashes.’ [T40s9]

Coreference with a matrix clause Allative is seen in:

(18) *Ngurnu-malu-ru* *mantharta-nyjarri-lu* *wantha-rninyja-rni* *ngatha-nha*
 that.dat-pl-erg person-pl-erg give-past-hence 1sg-acc

pirru *kumpa-iniya-rla* *yinha* *yana-puka* *ngatha*
 meat.acc sit-imperfDS-allat this.acc go-purpDS 1sg.nom

julyu-rla *wantha-rru* *nyirnta* *kumpa-iniya-rla.*
 grey.hair-allat give-purpss here.loc sit-imperfDS-allat
 ‘Those people gave me this meat to go to give it to the old man sitting here’.
 [JBPAN9p108s1]

Non-coreference of any cross-clausal arguments is also possible with DS-marked clauses, as in:

(19) *Parru-nthu* *ngatha* *yana-nyja* *ngurta-iniya-rru* *ngunha-pa*
 again-again 1sg.nom go-past lie-imperfDS-now that.nom-spec

pipi *jiluru-la.*
 mother.nom egg-loc
 ‘I went again and the mother (emu) was lying on the eggs.’ [JIT51s13]

It is also possible for non-coreferent clauses such as this to take LOCATIVE case following the imperfDS marker when they indicate the background temporal and/or spatial location of the matrix clause event. An example is:

- (20) *Juru* *ngunha* *tharrpa-artu* *jampa* *ngunha*
 sun.nom that.nom set-usit short while that.nom

kartaju-rri-ya-la.

dark-inchoat-imperfDS-loc

‘The sun used to set and in a while it would be dark’. [T49s36]

Clause type	Coreferent NP	Dependent subject	Dependent object	Case on verb	Example
imperfSS	S	S		none	1
		A	dat	none	2, 3
	A	S		erg	4, 5
		A	dat	erg	6, 7
imperfDS	P	S		acc	8
		A	dat	acc	NONE
	dat	S		dat	9-16
		A	dat	dat	NONE
	loc	S		loc	17
		A	dat	loc	NONE
	allat	S		allat	18
		A	dat	allat	NONE
	none	S		none/loc	19, 20
		A	dat	none/loc	NONE

2.2 Perfective dependent clauses

Imperfective clauses describe an event which occurs before the matrix clause event (relative past tense) and is completed (perfective aspect) subsidiary information. The structures seen for perfSS and perfDS clauses are the same as for imperfective dependent clauses, including case agreement and dative being assigned to the dependent clause transitive object.

The following examples illustrate coreference between matrix intransitive subject S and dependent subject. In (21) the coreference is with a missing S nominal; in (22) it is with a missing A nominal. Note that the P nominal in (22) (*tharu* ‘news’) is normalised to dative case (as we saw with imperfective clauses discussed above):

- (21) *Ngunha* *pampa-nthi* *wangka-nyjalu* *pilyarnti-la*
 that.nom cannot-just tell-perfss galah-loc

yana-nyja *ngunha* *mulhara.*
 go-past that.nom ahead

‘After he couldn’t convince galah he went on ahead.’ [T36s8]

- (22) *Wirripuka* *ngunha* *ngathi-tharri-a* *kurlkayi-rninyjalu*
 many.nom that.nom cry-coll-pres hear-perfss

tharu-wu.
 news-dat

‘They are all crying after they heard bad news.’ [N9p105s1]

As with imperfective clauses, when A in the matrix clause is coreferential with the missing S or A of the perfSS clause then an ergative case marker follows the dependent verb inflection, in elicited examples, as in (23) where matrix A is coreferential with dependent A:

- (23) *Ngulu* *mantharta-lu* *nganaju-nha* *thuthu-nha* *panyi-rninyja*
 that.erg man-erg 1sgdat-acc dog-acc kick-past
- kari-ji-ngu-ru* *kari-yi* *paja-rninyjalu-ru.*
 grog-agent-mod-erg grog-dat drink-perfss-erg
- ‘That drunk man kicked my dog after drinking grog.’ [JBPAN12p49s1]

In texts, no examples of ergative case assignment to the perfSS clause have been found, rather we find instances like the following:

- (24) *Nhurra-lu* *karla-lkarringu-rni* *nganaju* *mirlimirli*
 2sg-erg send-intent-hence 1sg.dat letter.acc
- maarru-thu* *yinha-rru* *piyal-ku* *nhurra-lu* *kurlkayi-rninyjalu.*
 by and by-top this.acc-now word-dat you-erg hear-perfss
- ‘Later you’ll send me a letter after having heard these words.’ [JIT67s33]

Perfective different subject clauses generally have a missing argument (typically S or A) which is understood as coreferential with some non-subject argument in the matrix clause. The P nominal of a perfDS clause is placed in dative case and the dependent verb inflection bears a case marker appropriate to the syntactic role of the coreferential nominal in the matrix clause. An example is:

- (25) *Ngarlarri-nyja-rru* *ngatha* *yini-yi* *ngurnu-pa*
 forget-past-now 1sg.nom name-dat that.dat-spec
- kajalpu-wu* *mujiya-rninyjaparnti-yi.*
 emu-dat steal-perfDS-dat
- ‘I have forgotten the name of the one who stole the emu.’ [T40s43]

There are no examples in the corpus of main locative, allative or ablative coreferential with the subject of a dependent perfDS clause — this seems to be the result of a gap in the data rather than some structural principle.

It is possible for a perfDS clause to have an overt or understood subject and for there to be no coreference with the matrix clause. Examples are the following (notice that there is no case agreement on the dependent verb):

- (26) *Ngatha* *warri* *thika-lkurni-a* *yinha* *pirru*
 1sg.erg not eat-cont-fut this.acc meat.acc

pukapuntara-lu *kunthi* *pinya-nyjaparnti.*
 blowfly-erg maggot.acc pierce-perfDS

‘I won’t eat this meat because blowflies have laid maggots in it.’ [JBPAN11p39s1]

When the dependent clause expresses the temporal or locational circumstances of the main clause event, the perfDS clause usually bears locative case (see above regarding locative on imperfDS clauses). An example is:

(27) *Yinha* *ngurnta-ja* *jurū* *warnti-japarnti-la.*
 this.nom sleep-past sun.nom rise-perfDS-loc

‘This one went to sleep after the sun had risen.’ [N12p50s8]

2.3 Other dependent clause types

The other dependent clauses in Mantharta and Kanyara languages follow the same structural patterns as illustrated above, except that different-subject clauses do not show any case affixation on the dependent verb.

Intentive clauses do not encode switch-reference and can only be used when the subjects of the main and dependent clauses are coreferential – the object of the dependent clause takes dative case. If the main clause is transitive then an ergative case marker is optionally added to the dependent clause verb. Consider these examples:

(28) *Parlu-ngka* *kurla-rninyja* *nhanya-rarringu.*
 hill-loc climb-past look-intent

‘(They) climbed up the hill to look.’ [T38s42]

(29) *Kuwarti* *kurriya* *purra-rninyja* *patha-rrkarringu-ru* *jiriparri-yi.*
 now boomerang.acc toss-past pelt-intent-erg echidna-dat

‘Next (he) threw a boomerang to hit echidna.’ [T35s10]

Note that in (29) the dependent P *jiriparri* ‘echidna’ is normalised to dative case (as in imperfective and perfective clauses discussed above).

There are also a number of examples in the Jiwari data where ergative case agreement on the intentive dependent verb does **not** occur, even though the main clause contains a coreferential transitive subject:

(30) *Warri-nthi* *nhurra-lu* *karla-rla-rninyja-thu* *jukurtu-la* *ngurnta-irarri.*
 not-just you-erg fire-fact-past-top smoke-loc lie-intent

‘Why didn’t you make a fire to lie in the smoke?’ [JIT10s4]

For purpose same-subject clauses, if there is a dependent transitive object it is placed in allative case, not the usual main clause accusative/absolute:

(31) *Puni-a-ya ngatha ngurnta-yi-rru.*
 go-pres-exclam 1sg.nom lie-purpss-now
 ‘I am going to lie down.’ [JIT33s4]

(32) *Kaji nhurra yana-ma mana-ngku ngurlu karla-rla.*
 try 2sg.nom go-imper get-purpss that allat fire-allat
 ‘You try and go to get the fire!’ [T38s70]

When the main clause is transitive, ergative case is never added to the purpSS verb:

(33) *Kanya-ma-rni pulangkiti ngapa-ru yurlu juma-rla.*
 bring-imper-hence blanket.acc cover-purpss this allat child-allat
 ‘Bring a blanket to cover this child!’ [N5p109s7]

Purposive clauses which do not share subject coreference (purpDS clauses) can have a missing subject (S or A) coreferential with some non-subject nominal in the matrix clause; the purpDS inflection never bears a case marker appropriate to the role of that coreferential nominal (contra perfective and imperfective clauses). In the following example, main P is coreferential with dependent S:

(34) *Ngurru-nyjarri-lu yarnara-rni-laartu ngurnta-puka(*-nha) ngunha jakuparla.*
 old man-pl-erg on_back-causat-usit lie-purpDS (*-acc) that.nom doubled_up.nom
 ‘The old men used to turn (him) over on his back so he would lie curled up.’ [JIT50s4]

(35) *Ngatha pirru kanya-nyja-rni nhurra-mpa*
 1sg.erg meat.acc carry-past-hence you-dat

wantha-rrpuka(-wu) yanyja-martu-nha mantharta-nha.*
 give-purpDS(*-dat) another-pauc-acc man-acc
 ‘I brought some meat for you to give to the other men.’ [JBPAN5p116s2]

3. Theoretical analysis

The following section presents a possible theoretical analysis of the phenomena described above, especially the case agreement facts for imperfective clauses within a Lexical Functional Grammar model. We propose to adapt some concepts developed by Nordlinger (1997, 1998) to account for non-configurationality and case-marking in Australian Aboriginal languages (unrelated to the languages discussed and exemplified here).

Nordlinger (1997:2) argues:

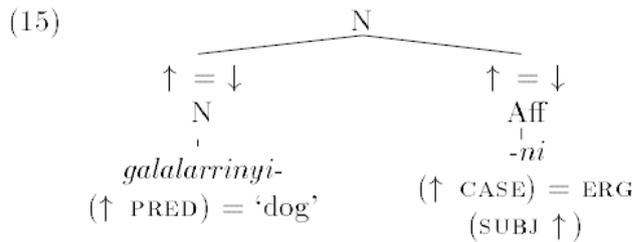
“These Australian languages have unusually extensive case marking and case concord. Intuitively, as has been suggested by many researchers working with these languages, e.g. Hale (1981, 1983), Simpson (1983, 1991), Nash 1986, Austin 1993, Evans 1995a) it is this case marking that enables their non-configurationality by directly constructing all of the information about grammatical functions removing the need for such information to also be

represented in the phrase structure. I will show that an analysis of case using inside out function application in LFG can intuitively capture this constructive property of case marking, as well as providing a straightforward account of many unusual properties of case in these Australian languages including the use of case to mark tense/aspect/mood and the complex phenomenon of case stacking.”

Her analysis of case marking makes use of the mechanism of ‘inside-out’ (IO) function application to enable case markers to carry information about the larger syntactic context in which they appear, especially information about grammatical relations. This mechanism is well established in LFG through the use of Inside Out Functional Uncertainty to model such things as anaphora and topicalization. Regular inside out function application can be informally described as follows:

Inside-out function application: (SUBJ \uparrow) – the \uparrow refers to an f-structure which is the value of a SUBJ attribute in the immediately containing f-structure. This defines a path outwards from lower f-structure (\uparrow) through the SUBJ attribute to next highest f-structure (denoted by (SUBJ \uparrow)). Her proposal is that case markers in addition to carrying a regular case feature also carry an IO designator specifying information about the grammatical function to which they belong. For example, the information contributed by the Wambaya ergative case marker is given in (1). When it is combined with a nominal stem (as in (2)) it constructs the f-structure shown in (3).

(1) *-ni*: (\uparrow CASE) = ERG
 (SUBJ \uparrow)



(16) $f_x: \left[\text{SUBJ } f': \left[\begin{array}{l} \text{PRED 'dog'} \\ \text{CASE ERG} \end{array} \right] \right]$

example (2.3). Thus, we need a principle governing how the f-structure information carried by each morphological element is to be combined to result in a unified f-structure for the whole word. For this purpose, I propose a principle of morphological composition which ensures that each additional affix takes the outer f-structure constructed by the stem to which it attaches as its innermost f-structure; if it builds additional structure, this will then be outside of that built by the stem. In formal terms this means that the IO designator of the stem (which represents the outer f-structure constructed by the stem) is embedded within the function designator (including simply \uparrow) of the affix. For present purposes this can be formalized as in (18), in which the IO designator of the stem is substituted for any \uparrow arrows in the affix (since these refer to the innermost f-structure constructed by the affix). The effect then is that the affix takes the stem's outermost f-structure as its innermost f-structure, and builds on top of it.

(18) **Principle of Morphological Composition:**

Where x is a string of attributes:

$$\begin{array}{ccc} \text{Stem} & \text{Aff} & \\ \textcircled{(\text{GF}^n \uparrow)} & ((\text{GF}^m \uparrow) x) & \implies \text{Stem} \quad \text{Aff} \\ \textcircled{(\text{GF}^n \uparrow)} & & (\text{GF}^n \uparrow) \quad ((\text{GF}^m (\text{GF}^n \uparrow))x) \end{array}$$

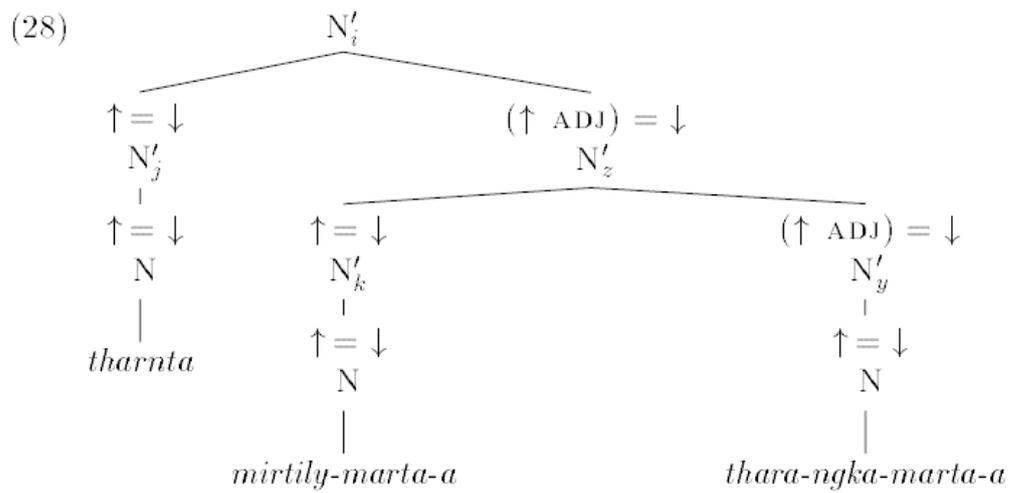
Note that this principle is formulated in such a way that it is only when the stem contains an IO designator that it has a non-vacuous effect. In the familiar cases, such as in (15) where the stem *galalarringi* constructs only a single f-structure (f' in (16)), the principle of morphological composition will apply vacuously; replacing the \uparrow arrows of the affix with the \uparrow arrows of the stem.

This account can be extended to case stacking of the sort we have seen above for double-case marked datives:

The complex phenomenon of case stacking also follows automatically from t case. Consider the example in (27) repeated from above.⁸

- (27) *Ngayu nhawu-lha tharnta-a*
 1SG.NOM saw-PST euro-ACC
mirtily-marta-a thara-ngka-marta-a.
 joey-PROP-ACC pouch-LOC-PROP-ACC
 ‘I saw the euro with a joey in its pouch.’ (Martuthunira, Dench 199

I assume that the object NP has the structure given in (28),



m

The adjunct nominal 'joey' constructs the f-structure in (32). Note that the accusative case marker in this case has embedded the structure built by the propriative case marker due to the principle of morphological composition described earlier.

$$(32) N'_k - \text{joey-PROP-ACC:}$$

$$\left[\text{OBJ} \left[\begin{array}{cc} \text{CASE} & \text{ACC} \\ \text{ADJ} & \left[\begin{array}{cc} \text{PRED} & \text{'joey'} \\ \text{CASE} & \text{PROP} \end{array} \right] \end{array} \right] \right]$$

And the most embedded nominal 'pouch', containing three case markers, constructs its context in the now familiar way. The propriative case marker embeds the structure constructed by the locative case marker, as shown in (33); and the accusative case marker then embeds all of this structure, as in (34):

$$(33) -\text{marta: } (\text{ADJ}(\text{ADJ } \uparrow))$$

$$((\text{ADJ } \uparrow) \text{ CASE}) = \text{PROP}$$

$$(34) -\text{a: } (\text{OBJ}(\text{ADJ}(\text{ADJ } \uparrow)))$$

$$((\text{ADJ}(\text{ADJ } \uparrow)) \text{ CASE}) = \text{ACC}$$

thus resulting in the f-structure given in (35) for the whole nominal. In this f-structure I have labelled the different f-structures for clarity: the locative case projects f-structures (1) and (2), the propriative case projects f-structures (2) and (3), and the accusative case projects f-structures (3) and (4):

$$(35) N'_y - \text{pouch-LOC-PROP-ACC:}$$

$$4: \left[\text{OBJ} \ 3: \left[\begin{array}{cc} \text{CASE} & \text{ACC} \\ \text{ADJ} \ 2: \left[\begin{array}{cc} \text{CASE} & \text{PROP} \\ \text{ADJ} \ 1: \left[\begin{array}{cc} \text{PRED} & \text{'pouch'} \\ \text{CASE} & \text{LOC} \end{array} \right] \end{array} \right] \end{array} \right] \right]$$

In Kayardilt, object case markers also encode tense/aspect/mood properties of the clause they appear in (Evans calls this 'modal case'). Thus, in the example:

$$(37) \text{ Ngada } \textit{yalawu-jarr yakuri-na mijil-nguni-na}.$$

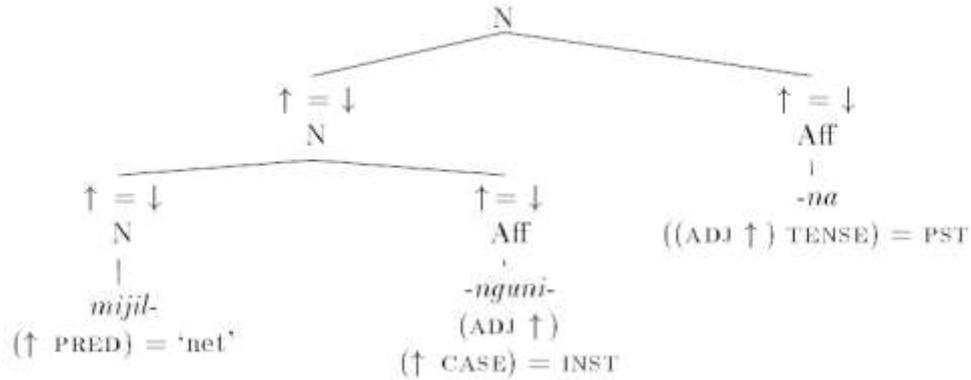
$$\text{I(NOM) catch-PST fish-M.ABL net-INST-M.ABL}$$

$$\text{'I caught fish with the net.' (Evans 1995a:108, ex. 3-30)}$$

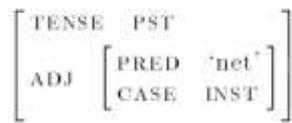
the ablative case marker *-na* constructs an f-structure in which the tense properties of its containing f-structure are specified:

When this case marker is attached to a stem that contains an IO designator, such as the instrumental phrase *mijil-nguni-na* 'net-INST-M.ABL' in (37), morphological composition will result in the TENSE value in this lexical entry being unified into the f-structure of the clause. Thus, *mijil-nguni-na* has the morphological structure in (39), constructing the f-structure in (40). In (40), the outermost f-structure is that which corresponds to the whole clause.

(39)



(40)

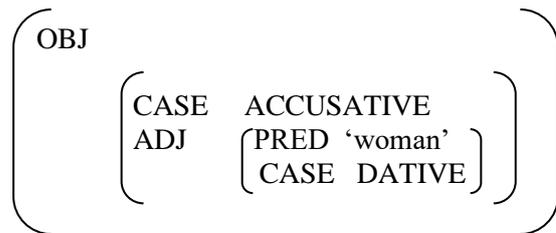


Nordlinger's account can be directly applied to most case marking in Mantharta and Kanyara languages. Thus, ergative case affixes construct SUBJ function, and accusative construct OBJ function:

- (1) *-ngku*: (SUBJ ↑)
(↑ CASE) = ERGATIVE
- (2) *-nha*: (OBJ ↑)
(↑ CASE) = ACCUSATIVE

Double case marking, as in example (14), can similarly construct two layers of f-structure:

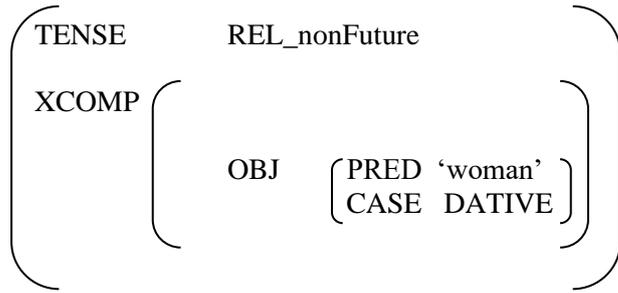
(3) *watirra-ku-nha*



For dative case, the specification is more complex as it can construct a range of functions, including COMP (of verbs of emotion etc.), ADJ (for benefactive, purpose, possessor) and also OBJ inside an XADJ (for imperfective, perfective and intentive dependent clauses). We thus need to allow dative to construct **two** layers of f-structure, not just one, as per Nordlinger's original account:

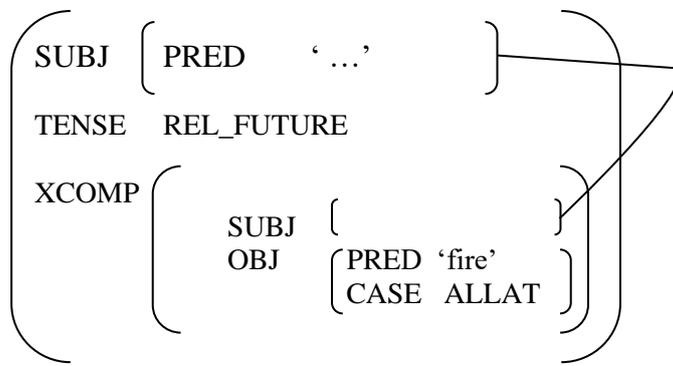
(4) *-ku*: (XCOMP OBJ ↑)

So, in examples like (14) and (29) above, the dative case-marked object would construct a partial f-structure along the following lines:



For allative, we have even more specific lexical information: it can construct an OBJ of an XCOMP of purpose whose subject is coreferential with the subject of the matrix clause (cf. examples (18), (32) and (33)):

- (5) *-kurla*: (XCOMP OBJ ↑) & ((XCOMP SUBJ = ↑SUBJ) ↑)



It seems to me that this analysis can be extended from case marking, as proposed by Nordlinger, to verb morphology in order to give a neat account of the Kanyara and Mantharta facts by having the verb morphology construct f-structures that deal with the cross-clausal coreference possibilities that we have seen in the data above. That is, rather than capturing coreference via functional control (or anaphoric control) from a higher clause down into the f-structure of a dependent clause, as is the usual LFG way to analyse interpretation of XADJ subjects, we propose that coreference is constructed *outwards* from the verb morphology by inside-out functional uncertainty, and that this engages via Nordlinger's principle of morphological composition with the case morphology that is added to the dependent-marked verb.

As an example, consider the Thalanyji imperfective morphology, which would have the following lexical entries:

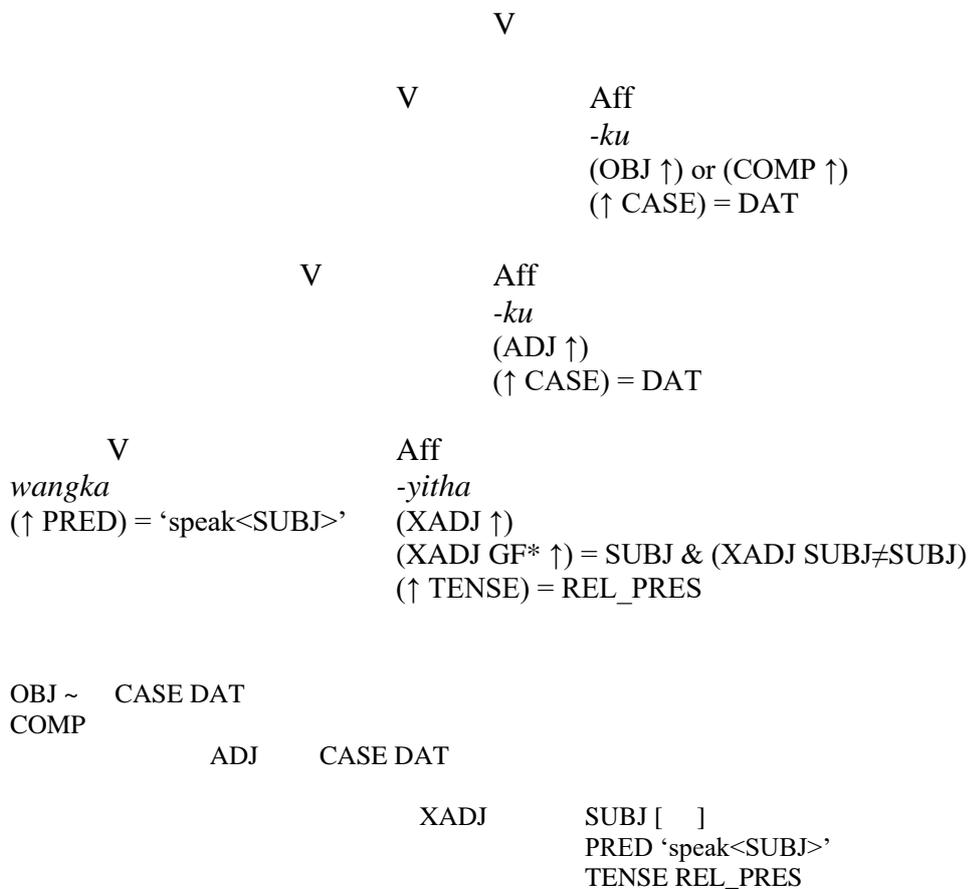
- (6) *-lkarra*: (XADJ ↑)
 (XADJ SUBJ) = SUBJ ↑
 (↑ TENSE) = REL_FUT
- (7) *-yitha*: (XADJ ↑)
 (XADJ SUBJ) = GF* ↑ & (XADJ SUBJ ≠ ↑ SUBJ)
 (↑ TENSE) = REL_PRES

The case marker that can follow these affixes will help to resolve the coreference inside-out functional uncertainty by providing information about the intervening GFs of the containing f-structures.

For the most complex examples we have double case-marking on the dependent verb. Consider *wangka-yitha-ku-ku*, as in examples X and X above. Note that dative case can construct a range of functions, including ADJ and OBJ. The only solutions that will result in a coherent f-structure are (notice that the order of f-structure functions is reversed from the order of morphology in line with Nordlinger’s Affix composition principle:

(XADJ SUBJ) = (OBJ (ADJ) ↑)
 (XADJ SUBJ) = (COMP (ADJ) ↑)

because if we assign the coreference as (ADJ (OBJ) ↑) or (ADJ (COMP) ↑) there won’t be a PRED inside the (possessive) adjunct that will assign an OBJ or COMP grammatical function.



Jiwarli and Thalanyji Verb Paradigms

Jiwarli Main clause Verb Inflections

Inflection	Conj1	Conj2	Conj3	Conj4	Conj5
Usitative	<i>-laartu</i>	<i>-rraartu</i>	<i>-artu</i>	<i>-artu</i>	<i>-artu</i>
Past	<i>-rninyja</i>	<i>-rninyja</i>	<i>-nyja</i>	<i>-nyja</i>	<i>-nyja</i>
Present	<i>-nha</i>	<i>-nha</i>	<i>-inha</i>	<i>-inha</i>	<i>-a</i>
Future	<i>-lka</i>	<i>-rrka</i>	<i>-ira</i>	<i>-ra</i>	<i>-ra</i>
Imperative	<i>-nma</i>	<i>-nma</i>	<i>-ma</i>	<i>-ma</i>	<i>-ma</i>
Irrealis	<i>-nmararni</i>	<i>-nmararni</i>	<i>-mararni</i>	<i>-mararni</i>	<i>-mararni</i>

Jiwarli Dependent clause Verb Inflections

ImperfSS	<i>-rnu</i>	<i>-rnu</i>	<i>-nhu</i>	<i>-nhu</i>	<i>-nhu</i>
ImperfDS	<i>-niya</i>	<i>-niya</i>	<i>-iniya</i>	<i>-iniya</i>	<i>-iniya</i>
PerfSS	<i>-rninyjalu</i>	<i>-rninyjalu</i>	<i>-nyjalu</i>	<i>-nyjalu</i>	<i>-nyjalu</i>
PerfDS	<i>-rninyjaparnti</i>	<i>-rninyjaparnti</i>	<i>-nyjaparnti</i>	<i>-nyjaparnti</i>	<i>-nyjaparnti</i>
PurpSS	<i>-ru</i>	<i>-rru</i>	<i>-yi</i>	<i>-ngku</i>	<i>-a</i>
PurpDS	<i>-lpuka</i>	<i>-rrpuka</i>	<i>-puka</i>	<i>-puka</i>	<i>-puka</i>
Intentive	<i>-lkarri(ngu)</i>	<i>-rrkarri(ngu)</i>	<i>-irarri(ngu)</i>	<i>-rarri(ngu)</i>	<i>-rarri(ngu)</i>
Might	<i>-lkangu</i>	<i>-rrkangu</i>	<i>-irangu</i>	<i>-rangu</i>	<i>-rangu</i>

Thalanyji Main clause Verb Inflections

Inflection	Conj1	Conj2	Conj3
Usitative	<i>-lpaja</i>	<i>-rrpaja</i>	<i>-paja</i>
Past	<i>-rna</i>	<i>-rna</i>	<i>-nha</i>
Present	<i>-lkin</i>	<i>-rrkin</i>	<i>-yin ~ -win ~ -n</i>
Future	<i>-ru</i>	<i>-rru</i>	<i>-thu</i>
Imperative	<i>-nma</i>	<i>-nma</i>	<i>-ma</i>
Irrealis	<i>-nmara</i>	<i>-nmara</i>	<i>-mara</i>

Thalanyji Dependent clause Verb Inflections

ImperfSS	<i>-lkarra</i>	<i>-rrkarra</i>	<i>-rra</i>
ImperfDS	<i>-lkiyitha</i>	<i>-rrkiyitha</i>	<i>-iyitha</i>
PerfSS	<i>-rninyja</i>	<i>-rninyja</i>	<i>-nyja</i>
PerfDS	<i>-rninyjaparnti</i>	<i>-rninyjaparnti</i>	<i>-nyjaparnti</i>
PurpSS	<i>-ru</i>	<i>-rru</i>	<i>-thu</i>
PurpDS	<i>-lpuka</i>	<i>-rrpuka</i>	<i>-puka</i>
Intentive	<i>-lkurrara</i>	<i>-rrkurrara</i>	<i>-rrara</i>
Might	<i>-lpila</i>	<i>-rrpila</i>	<i>-pila</i>