NUMBER MARKING IN THE DALY LANGUAGES (AUSTRALIA)

Rachel Nordlinger

University of Melbourne

Proceedings of the LFG12 Conference

Miriam Butt and Tracy Holloway King (Editors)

2012

CSLI Publications

http://csli-publications.stanford.edu

Abstract

In this paper, presented as part of the workshop on the morphosyntax of number marking, I discuss subject and object number marking in languages of the Daly region of the Northern Territory of Australia, especially Ngan'gityemerri and Murrinh-Patha. In these languages number is frequently marked by multiple elements distributed throughout the verbal word. I argue that the interpretation of number marking needs to take into account the full morphological context in which it appears, causing difficulties for the constructed number analysis of Arka (2011) (as well as the disjunctive approach of Nordlinger (2011)).

1. Introduction

In this paper I discuss the common patterns of argument number marking across the Daly languages of northern Australia in the context of recent LFG work on constructed number systems (Sadler 2010, Arka 2011).[1] Although the basic patterns of number marking appear to lend themselves to a constructed number analysis (Arka 2011), I argue that examination of the full range of data makes such an approach problematic. Rather, the interpretation of argument number marking can only be determined within the context of the full verbal word, not by composing features from individual morphs.[2] This finding is somewhat unsurprising given the well-known nature of inflectional paradigms, in which 'words as wholes' are arranged and contrasted according to grammatical categories (Matthews 1991:187). The data from the Daly languages thus suggests that the constructed number approach may be less useful when the complex number marking interactions fall within an inflectional paradigm, as opposed to capturing the interaction of number marking across syntactic categories (as in Hopi (Corbett 2000, Sadler 2010)).

---

[1] I would like to thank Mary Dalrymple and I Wayan Arka for inviting me to present in the workshop on Number and Plurals at the LFG2012 conference, and for interesting and insightful discussion on the issues. I would also like to thank the people of Wadeye for their hospitality and support for my research, especially Carmelita Perdjert and family. My fieldwork on Murrinh-Patha has been funded by the Australian Research Council (DP0343354, DP0984419, DP110100961) and the University of Melbourne.

[2] Here and throughout the paper, I use 'morph' as a neutral term for 'piece of grammatical form', rather than morpheme, which assumes a pairing of form and function. This is in order to put aside for present purposes the theoretical debate concerning the status of morphemes in morphological theory (see, for example, Spencer (2004) for discussion of the central issues).

2. Daly languages

The Daly languages are an areal grouping of Australian languages that are traditionally spoken in the Daly River region, south-west of Darwin in Australia's Northern Territory. These languages include Western Daly languages such as Marrithiyel (Green 1989) and Marri Ngarr (Preston 2012), and the Southern Daly languages Murrinh-Patha (Blythe 2009, Nordlinger 2010, 2011, Seiss & Nordlinger 2010) and Ngan'gityemerri (Reid 1990), among many others. Although these internal subgroups have been well-established (Green 2003), the Daly languages as a whole have not been shown to form a single family, but do share a number of areal similarities, including templatic verbal structures characterized by complex predicates (McGregor 2002), multiple exponence and discontinuous dependencies (Nordlinger 2010). In this paper I will focus primarily on data from Ngan'gityemerri and Murrinh-Patha.

2. Typological overview

All Daly languages have a four-way number marking system which distinguishes singular, dual, plural and trial/paucal (depending on the language). There is no number marking on nouns (in fact, very little nominal inflectional morphology at all), so number is encoded only in (optional) pronouns and on verbal agreement morphology. In this paper, I will be focusing on verbal agreement morphology, but I provide the table of Murrinh-Patha pronominals below simply to show the full range of categories distinguished (verbal agreement morphology distinguishes these same categories).

Table 1 Murrinh-Patha pronouns

		sing	**dual**		**paucal**		**Plural**
			sib[3]	**nsib**	**sib**	**nsib**	
1	**exc**	ngay	nganku	ngankunintha (m) ngankungintha (f)	nganki	ngankuneme (m) ngankungime (f)	nganki
	inc	–	neki		nganki	nekineme (m) nekingime (f)	neki
2		nhinhi	nanku	nankunintha (m) nankungintha (f)	nanki	nankuneme (m) nankungime (f)	nanki
3		nukunu(m) nigunu (f)	piguna	penintha (m) peningintha (f)	pigunu	peneme (m) peningime (f)	pigunu

[3] Murrinh-Patha is unusual in grammatically encoding a distinction between groups of siblings ('sib') and groups who are not siblings ('nsib').

Daly languages are characterized by complex verbs consisting of discontinuous complex predicates, and multiple exponence of tense/aspect/mood and number marking throughout the verbal word. The verbal template for Murrinh-Patha is reflective of this general structure, and is provided in Table 2. The forms given in italics (slots 1 and 5) are the two parts of the complex predicate – referred to here as the classifier stem (CS) and the lexical stem (LEXS). These are (for the most part) bound morphemes that together form the verbal predicate. Of particular relevance to this paper are the number marking elements, which are given in bold. Subject number marking occurs in slot 1 (via the classifier stem), as well as slot 2 (when there is no object marker) and possibly slot 8 (when there is an object marker). Object number marking appears in slot 2 (encoded via the object bound pronoun) and slot 8. For detailed discussion of the Murrinh-Patha verbal template and the details of its morphological structure see Nordlinger (2010).

Table 2 Murrinh-Patha verbal template

1	2	3	4	5	6	7	8	9
CS.SUBJ.TAM	**SUBJ.NUM/ OBJ/**	RR	IBP	*LEXS*	TAM	ADV	**NUM**	ADV

As will be illustrated below, slot 8 can encode either subject or object number and the same elements are involved in each case. The interpretation of the number marker in slot 8 depends on the broader morphological context, namely whether or not it is semantically compatible with other elements in slots 1 and/or 2.

3. Number marking in the verb

3.1 Ngan'gityemerri

Number of both subject and object is marked in the verb, using a combination of multiple markers distributed throughout the verbal word. In Ngan'gityemerri, Reid (1990:114) states that "[i]ncreasingly marked number categories are derived by taking simpler number categories as a base and adding additional morphological marking in new verbal slots". Consider the examples in (1), which illustrate the basic system (Reid 1990: 118):[4]

[4] In the examples in (1) the first three elements in the verbal word (e.g. *nge-Ø-beny* in (1a)) constitute the classifier stem, and therefore correspond with slot 1 in Table 2. In the rest of

(1a) *ngayi* *nge-**Ø-**beny-da*
1sg 1S-**sg-**Bash.Perf-hit
I hit it. **= 1 only**

(1b) *ngagurr* *nge-**rr**-beny-da*
1pl 1S-**pl.exc**-Bash.Perf-hit
We (pl.exc) hit it. **= 4 or more**

(1c) *ngarrgu* *nge-**rr**-beny-**gu**-da*
1du 1S-**pl.exc**-Bash.Perf-**du**-hit
We (du.exc) hit it. **= 2 only**

(1d) *ngarrgu-nime* *nge-**rr**-beny-**gu**-da-**nime***
1du-tr 1S-**pl.exc**-Bash.Perf-**du**-hit-**tr**
We (tr.exc) hit it. **= 3 only**

As these examples demonstrate, the classifier stem in the Ngang'ityemerri verb shows a basic contrast between -Ø singular (as in 1a) and *-rr-* non-singular. In the absence of any further number markers in the verb, the nonsingular marker is interpreted as plural which, in this case, means 4 or more as in (1b). Dual is formed by adding the dual marker to the non-singular verb form, as in (1c), and then the trial category is built on the dual, with the addition of *–nime* 'tr(ial)', as in (1d).

The dual marker *–gu*, however, appears in the same slot in the verbal template as the object agreement markers, which take priority (Reid 1990: 128, 135). To encode a dual subject in the presence of an object pronoun, a special 'dual-subject' form of the indirect or direct object marker is used instead. The examples in (2) and (3) illustrate this with an intransitive and transitive verb respectively. In the (a) examples we see a regular dual subject, containing the dual subject marker *-gu,* and no object marker (since the object in (3a) is third person singular, and therefore unmarked). In the (b) examples we see the presence of an object marker in the second verbal slot, leading to a plural interpretation for the subject (since the dual marker is not present). Finally, in the (c) examples, the special 'dual-subject' object

---

the examples in this paper they are written as a single morph, but are separated here to make clearer their internal structure.

marker is used to express dual number for the subject, as well as the singular object information.

(2a) *werrmen'geny-**gu***
3plArrive.Perf-du
They (du) have arrived.

(2b) *werrmen'geny-**ngiti***
3plArrive.Perf-1sgIO
They (pl) came to me.

(2c) *werrmen'geny-**ngeterr***
3plArrive.Perf-duS/1sgIO
They (du) came to me.

(3a) *warriny-**gu**-pawal*
3plPoke.Perf-du-spear
They (du) speared him.

(3b) *warriny-**nyi**-pawal*
3plPoke.Perf-2sgO-spear
They (pl) speared you.

(3c) *warriny-**nyerr**-pawal*
3plPoke.Perf-duS/2sgO-spear
They (du) speared you.

Note, however, that these special 'dual-subject' object bound pronouns are only available for singular objects. When the object is non-singular, dual subjects are not specified (Reid 1990: 129), and thus the distinction between plural and dual subject number is lost. Example (4) is therefore ambiguous between an interpretation with a plural subject and one with a dual subject, as the translation indicates.[5]

[5] A trial interpretation is not possible however, as discussed below.

(4) ***warriny-ngirr-tyerr-pu***, *nyinyi tyagani derrigidi-yerim*
3plPoke.Perf-1pl.excO-mouth-ask 2sg what want-2sgHands.Pres
They (du or pl) (airline hostesses) asked each of us (pl. exc), "What would you like (to drink)?"

As shown in (1d), the trial subject form is usually built on the dual form, including the dual marker *-gu*. In the presence of an object pronoun, in which case the dual marker is absent as shown above, the trial marker combines just with the non-singular form – with no dual marker required (Reid 1990:224):

(5) *alayi warrakma kinyi* ***werrme*** *-ngi-pul-****nime****-tye*
mother three this 3**pl**Hands.PImp-1sgO-clean-**tr**-Past
These three mothers of mine used to wash me.

Interestingly, the special 'dual subject' object pronouns, as in (3d), are *not* possible here, even though the trial is generally built on a dual subject form of the verb in other constructions. So, here the plural form of the classifier can function as trial in the presence of a *singular* object as well, but only if the verb later includes the trial number marker *-nime*.

We can therefore summarize the Ngang'ityemerri number marking facts so far as follows:

SING: (i) singular classifier (+ regular object marker) (1a)

DUAL: (ii) plural classifier + dual marker (1c) OR
(iii) plural classifier + 'dual' singular object marker (2c) OR
(iv) plural classifier + non-singular object marker (4)

TRIAL: (v) plural classifier + dual marker + trial marker (1d) OR
(vi) plural classifier + regular object marker + trial marker (5)

PLURAL (vii) plural classifier (+regular object marker) (1b)

These facts appear to lend themselves nicely to a constructed number analysis (e.g. Corbett 2000, Sadler 2010, Arka 2011), in which the different number marking elements contribute different features to the overall number category. Assuming the feature combinations for the four different number categories shown in (6), the number marking facts described above can

be accounted for as shown below, assuming that [AUG –] is applied by default, in the case that the AUG feature is underspecified by the morphology.

(6) **Constructed number analysis:**

SINGULAR : $\begin{bmatrix} SG & + \\ DU & - \\ AUG & - \end{bmatrix}$

DUAL: $\begin{bmatrix} SG & - \\ DU & + \\ AUG & - \end{bmatrix}$

TRIAL: $\begin{bmatrix} SG & - \\ DU & + \\ AUG & + \end{bmatrix}$

PLURAL: $\begin{bmatrix} SG & - \\ DU & - \\ AUG & - \end{bmatrix}$

On this analysis, we can assume that the singular classifier stems (as in 1a) contribute [+ SG, –DU], and the non-singular classifier stems (as in 1b-d) contribute [–SG]. The dual marker contributes [+DU], and the trial marker contributes [+AUG]. The dual example (1c) follows straightforwardly, as shown in (7), and the trial example (1d), as shown in (8).[6]

(7) *ngarrgu* *nge-**rr**-beny-**gu**-da*
1du 1S-**pl.exc**-Bash.Perf-**du**-hit
[–SG] [+DU]
'We (du.exc) hit it.'

DUAL: $\begin{bmatrix} SG & - \\ DU & + \\ \textit{AUG} & - \end{bmatrix}$

[6] The [AUG –] feature is given in italics in (7) to show it has been applied by default.

(8) *ngarrgu-nime* *nge-**rr**-beny-**gu**-da-**nime***

1du-tr 1S-**pl.exc**-Bash.Perf-**du**-hit-**tr**

[-SG] [+DU] [+AUG]

'We (tr.exc) hit it.'

TRIAL: $\begin{bmatrix} SG & - \\ DU & + \\ AUG & + \end{bmatrix}$

The fact that the trial marker cannot co-occur with the special 'dual-subject' object markers shown in (2) and (3) is captured by assuming that these object markers also contribute the [AUG –] feature to the subject's number category, thereby making them incompatible with the trial marker (which carries [AUG +]). The analysis of (3c) is given in (9):

(9) *wa**rr**iny-**nyerr**-pawal*

3**pl**Poke.Perf-**duS**/2sgO-spear

[–SG] [+DU, –AUG]

They (du) speared you (sg) (cf. 3b)

DUAL: $\begin{bmatrix} SG & - \\ DU & + \\ AUG & - \end{bmatrix}$

Examples such as (4) and (5), however, present some difficulties. In (4) we saw that the non-singular classifier can alone mark a dual subject (ambiguously with a plural subject) *just in the case* that there is a non-singular object marker in the verb (blocking the appearance of the dual marker). The absence of the dual marker will leave the DU feature underspecified, as shown in (10), which captures the ambiguity nicely.

(10) *wa**rr**iny-ngirr-tyerr-pu,* *nyinyi* *tyagani* *derrigidi-yerim*

3**pl**Poke.Perf-1pl.excO-mouth-ask 2sg what want-2sgHands.Pres

[–SG]

'They (du or pl) (airline hostesses) asked each of us (pl), 'What would you like (to drink)?''

PLURAL/DUAL: $\begin{bmatrix} SG & - \\ DU & \\ AUG & - \end{bmatrix}$

However, the difficulty is that we need to ensure that the combination of [SG –, AUG –] (with the DU underspecified) is *only* possible in the presence of a non-singular object marker in the verb. Example (1b), for example, can never have a dual interpretation, despite the fact that it has the same feature array as (10), as shown in (11):

(11) *ngagurr* *nge-**rr**-beny-da*
1pl 1S-**pl.exc**-Bash.Perf-hit
[–SG]
'We (pl.exc) hit it.'
NOT 'We (du.exc) hit it'

*PLURAL/DUAL: $\begin{bmatrix} SG & - \\ DU & \\ AUG & - \end{bmatrix}$

A similar issue arises with the trial category in the presence of an object marker, as in (5). In this case the trial marker contributes [AUG +], but there is nothing to contribute the dual feature, leaving it underspecified:

(12) *alayi* *warrakma kinyi* *we**rr**me -ngi-pul-**nime**-tye*
mother three this 3**pl**Hands.PImp-1sgO-clean-**tr**-Past
[–SG] **[+AUG]**
'These three mothers of mine used to wash me.'

TRIAL: $\begin{bmatrix} SG & - \\ DU & \\ AUG & + \end{bmatrix}$

Once again, we are left with the difficulty of how to ensure that an underspecified dual feature is *only* possible in the trial category when there is an object marker in the verb, but that otherwise the dual marker is required to contribute [DU +], as in (1d). Thus, it appears that the subject number feature array for a Ngan'gityemerri verb cannot be constructed compositionally, but can only be determined once the morphological structure of the whole verb is taken into consideration, such as whether or not there is an object marker present.

This general point is further reinforced once we examine the first person inclusive category, which behaves differently with respect to subject number marking than was shown above. In the first person inclusive subject forms, the addition of *–nime* marks plural number (i.e. 3 or more), and not trial (Reid 1990:114):

(13a) *nayin ngi-**mbi**-bem*
1du.inc 1S-**du.inc**-Lie
'We (du.inc) are lying down.' **(= 2 only)**

(13b) *nayin-nime ngi-**mbi**-bem-**nime***
1du-pl 1S-**du.inc**-Lie-**pl**
'We (pl.inc) are lying down.' (**= 3 or more)**

Thus, when the subject is first person inclusive, the *-nime* number marker encodes plural, whereas with other subjects the *–nime* number marker *only* encodes trial number. Thus, in order to correctly interpret a verb containing the *–nime* number marker, it is necessary to know the full feature specification of the verb – i.e. whether the subject is first person inclusive, or not.

3.2 Murrinh-Patha

Number marking in the Murrinh-Patha verb raises similar issues to those presented for Ngan'gityemerri, but also adds a number of additional complexities which make a constructed number analysis (and indeed, any morpheme-based analysis) difficult to maintain.

The Murrinh-Patha verb is similar in structure to Ngan'gitymerri, but with a few key differences. Firstly, the number category corresponding to the trial in Ngan'gityemerri marks paucal number (approximately 3-10) in Murrinh-Patha. Furthermore, a grammatical distinction between sibling and non-sibling groups in the dual and paucal categories has led to skewing in the paradigm, as we shall see below.

The basic subject number facts are given in (14) (see also Nordlinger 2011):

(14a) *bamkardu*
bam-ngkardu
3**sg**S.SEE.nFut-see
'He/she saw him/her.'

(14b) ***bam-ngintha****-ngkardu*

3**sg**S.SEE.nFut-**du.f**-see

'They two (female non-siblings) saw him/her.'

(14c) ***pubamka****-ngkardu*

3**du**S.SEE.nFut-see

'They two (siblings) saw him/her.'

(14d) ***pubamka****-ngkardu-****ngime***

3**du**S.SEE.nFut-see-**pauc.f**

'They paucal (female non-siblings) saw him/her.'

(14e) *pubamkardu*

pubam-ngkardu

3**pl**S.SEE.nFut-see

'They (paucal siblings / plural) saw him/her.'

In Nordlinger (2011) (see also Dalrymple, this volume), I provided an analysis of these number marking facts that made use of disjunctive features and constraining equations to capture the patterns. The singular classifier stems, as in (14a), for example, were analysed as carrying the disjunctive features in (15):

(15) $\{(\uparrow \text{SUBJ NUM}) = \text{SG} \vee (\uparrow \text{SUBJ NUM}) =_c \text{DU}\}$

Thus, the singular classifier either provides the value SG for the number of the subject (as in (14a), or requires the value DU to be provided by some other element in the construction (as in (14b). Similarly the dual classifier stem was analysed as either providing a dual number value (as in 14c) or requiring the paucal number feature (as in 14d).

Arka (2011:22) showed that the Murrinh-Patha facts could also be viewed in terms of a constructed number approach, and provides the following analysis for the subject marking facts:[7]

[7] This table has been taken directly from Arka (2011:22).

Figure 8: the number system in Murrinh-Patha

	CONSTRUCTED NUMBER CATEGORIES	NUMBER EXPONENTS	
		CLASSIFIER STEMS	EXTRA NUMBER FORMATIVES
(i)	*singular*	*singular* [+SG]	∅ [–AUG]
(ii)	*augmented dual non-sibling*	*singular* [+SG]	*ngitha* (F)/ *nitha* (M) [+AUG]
(iii)	*dual sibling*	*dual* [+DU]	∅ [–AUG]
(iv)	*augmentedpaucal non-sibling*	*dual* [+DU]	*ngime* (F)/ *neme* (M) [+AUG]
(v)	*plural*or*paucal sibling*	*plural* [+PL]	∅ [–AUG]

This analysis has the advantage of neatly accounting for the skewing we see in the dual and paucal categories – each of these categories can be constructed in two ways. The dual category can be expressed with a dual classifier and no augment, in which case is it interpreted as dual sibling (14c); or it can be expressed as an augmented singular (combining a singular classifier and the dual number marker *-ngintha*/*-nintha*) in which case it is interpreted as dual non-sibling (as in 14b). Likewise for the paucal category, which is constructed either as a plural (paucal sibling, 14e) or as an augmented dual (paucal non-sibling, 14d).

There are a number of additional wrinkles that need to be addressed in order for this analysis to fully capture the facts in (14): for example, we need to account for the fact that the dual classifier encodes 'sibling' when it constructs dual number, but 'non-sibling' when it constructs paucal number. We also need to constrain *-ngintha*/*-nintha* to only occur with singular classifiers, and *-ngime*/*-neme* to only occur with dual classifiers (Arka 2011:16). We could do this by associating the augments with the following feature arrays, for example (represented informally):

-ngintha: [+AUG, +NSIB, $+SG_c$]
-ngime: : [+AUG, +NSIB, $+DU_c$]

However, the real difficulty comes when we consider object marking. The dual non-sibling marker *-ngintha* is used to express dual object number also. Whereas it co-occurs with a singular classifier to mark a dual non-sibling subject as we saw in (14b), when encoding *object* number it must combine with a *dual* object marker to mark a dual object as shown in (16). Example (17) shows that if a singular object marker is used instead, then the dual

marker cannot be interpreted as referring to the object; in this case it is interpreted as referring to the subject.

(16) *ma-**nanku**-rdarri-purl-nu-**ngintha***
1sgS.HANDS.Fut-**2duO**-back-wash-Fut-**du.f**
'I will wash your (dual non-sibling) backs.'

(17) ***ma**-nhi-rdarri-purl-nu-**ngintha***
1**sg**S.HANDS.Fut-2sgO-back-wash-Fut-**du.f**
'We (du.excl.nsib) will wash your (sg) back.'
NOT 'I will wash your (dual non-sibling) backs.'

Thus, whatever constraint we use to restrict the occurrence of *-ngintha* to *singular* classifier forms when expressing subject number will not adequately capture its behaviour with objects, where it must co-occur with *dual* forms only.

Furthermore, even if we resolve this particular issue, it remains problematic to treat *-ngintha* as contributing an [AUG +] feature (as in the constructed number analysis presented above) when we consider its behaviour with object marking, since in this case it co-occurs with a *dual* form, so we would expect the addition of the [AUG +] feature to result in an augmented dual interpretation, i.e. paucal. But in fact, this is not what we find – paucal objects, like subjects, require the paucal marker *–ngime/-neme* to combine with the dual object marker, as in (18):

(18) *ma-**nanku**-rdarri-purl-nu-**ngime***
1sgS.HANDS.Fut-**2duO**-back-wash-Fut-**pauc.f**
'I will wash your (paucal non-sibling) backs.'

In fact, *-ngintha* consistently marks dual number irrespective of which other verbal elements it is combining with, and *–ngime/-neme* consistently marks paucal; thus weakening the motivation for a constructed number analysis in the first place.

Furthermore, the dual marker in an example like (16) could refer to either the subject *or* the object – so this example is actually ambiguous between the following interpretations:

(19) ***ma-nanku****-rdarri-purl-nu-****ngintha***

1**sg**S.HANDS.Fut-**2duO**-back-wash-Fut-**du.f**

(i) 'I will wash your (dual non-sibling) backs.' [*-ngintha* refers to object]

(ii) 'We (du.exc.nsib) will wash your (du.sib) backs' [*-ngintha* refers to subject]

(iii) 'We (du.exc.nsib) will wash your (du.nsib) backs' [*-ngintha* refers to object and dual number for subject is unspecified]

In the latter case, we have a dual interpretation for subject, without any dual subject number marker (since *–ngintha* in this case is marking dual object number). This is problematic both for the constructed number analysis, and for the Nordlinger (2011) analysis, both of which rely on an overt morpheme to contribute the dual number feature to the subject's f-structure. Nordlinger's (2011) analysis would predict that (19) could not have the reading in (iii), since there is nothing in the structure to provide the dual number feature, so the singular classifier stem would have to be interpreted as contributing singular subject number. The constructed number analysis, would likewise fail since there would be nothing to provide the [+AUG] feature to the subject, leading to the application of the [AUG –] default:[8]

(19') ***ma****-nanku-rdarri-purl-nu-ngintha*

1**sg**S.HANDS(8).Fut-2duO-back-wash-Fut-du.f

[+SG]

SUBJECT: [+SG, *–AUG*] (should be **singular)**

Once again, we are confronted with the fact that the number features for subject and object in the Daly verb can only be properly interpreted in the context of the full morphological word. A singular classifier stem as in (19) can encode dual subject number, but *only* when the possible number marking slots are filled with object information. If there were no object marker in (19), for example, or if the *-ngintha* number marker were incompatible with the object marker (as in (17)), the singular classifier stem could not be interpreted as expressing *dual* subject number.

[8] Another possibility is that we assume the [AUG] feature remains underspecified here, which captures the ambiguity, but then we are left with the problem of how to ensure that this is only possible in the presence of an object number. This is the same issue that was discussed with regards to the examples (10)-(12) above.

3.3 Summary

We have seen that a constructed number approach to number marking in the Ngan'gityemerri and Murrinh-Patha verbs is initially appealing for capturing the basic facts, but runs into difficulties when we examine the full range of number marking facts. Issues identified in the above discussion include:

(i) The distinction between dual and plural subjects is lost in the presence of an object marker (e.g. (4));
(ii) Trial/paucal subjects *must* co-occur with dual marking, but *only* when there is no object marker present (e.g. (1d) vs (5));
(iii) Trial marking (in Ngan'gityemerri) is interpreted differently depending on whether the subject is first person inclusive, or not (e.g. 13);
(iv) The Murrinh-Patha dual number marker is constrained to occur with a singular classifier form to mark dual non-sibling *subjects* but a dual form to mark dual non-sibling *objects* (e.g. (14b) vs (16)).

While none of these issues appears particularly devastating for an analysis in and of itself, together they amount to accumulated evidence that constraints on number marking patterns in the Daly verbs are context-dependent, in that the contribution of the various number marking elements varies according to the morphological context in which the number marker appears. Thus, in order to interpret the subject or object number values for any given verb, one needs to consider the complete morphological structure of the verb in order to interpret the various number markers within it. This is extremely problematic for the morpheme-based accounts of Nordlinger (2011) and Arka (2011), which rely on individual morphemic elements to contribute number features in a consistent and independent manner.

4. Conclusion

The verbal number marking systems in Daly languages such as Ngan'gityemerri and Murrinh-Patha at first appear to lend themselves to a constructed number analysis (e.g. Sadler 2010, Arka 2011), with different parts of the verbal word contributing different (combinations of) number features and co-constructing the overall number category. However, in the above discussion we have seen that this approach breaks down when we examine the full range of empirical facts, including the interaction of number marking elements with other aspects of the morphological word. In fact, the data shows that in many cases the subject or object number value can only be determined within the context of the whole verbal word; and

cannot be deduced from simple composition of the contributions of different morphemic elements, as the constructed number approach assumes.

The difficulties arise from the fact that individual morphs do not contribute fixed, invariable feature values, but can be interpreted in different ways depending on whether or not other morphs are present in the verbal word. The singular classifier in Murrinh-Patha, for example, can alone denote a dual non-sibling subject, but *only* when there is an object marker and associated object number marker present in the verbal word, as in (20), since in this case there is no available position in the verbal word for the subject dual number marker to appear:

(20) *ma-**nanku**-rdarri-purl-nu-**ngime***
1sgS.HANDS.Fut-**2duO**-back-wash-Fut-**pauc.f**
'I will wash your (pauc.nsib) backs.' **OR**
'We (du.exc.nsib) will wash your (pauc.nsib) backs.'

In other cases, the singular classifier can only express a singular subject (unless the dual number marker is present):

(21) *ma-**nanku**-rdarri-purl-nu*
1sgS.HANDS.Fut-**2duO**-back-wash-Fut
'I will wash your (du.sib) backs.'
NOT 'We (du.exc.nsib) will wash your (du.sib) backs.'

These empirical facts are not particularly surprising, given that they form part of a (very complex) inflectional verbal paradigm. It is well-known that inflectional paradigms often challenge incremental, morpheme-based analyses, as discussed in the extensive body of work on word-and-paradigm approaches (e.g. Matthews 1972, Anderson 1992, Aronoff 1994, Stump 2001, Spencer 2004, among many others). It may be that the constructed number approach is more insightful in cases, such as Hopi, where the number categories are constructed across syntactic categories, i.e. where the interaction arises through agreement in the syntax (e.g. Sadler 2010). In the Daly languages, on the other hand, the interaction of number morphology is internal to the verb's inflectional paradigm, and is therefore subject to the properties characteristic of paradigmatic systems, in which whole words are interpreted through their place in the paradigm and their opposition to other related word-forms, rather than as incrementally-composed bundles of features.

References

Anderson, Stephen. 1992. *A-morphous morphology*. Cambridge: CUP.

Aronoff, Mark. 1994. *Morphology by itself*. Cambridge: MIT Press.

Arka, I Wayan. 2011. Constructive number systems in Marori and beyond. In Miriam Butt & Tracy H King (eds) *Proceedings of the LFG11 conference*. Stanford: CSLI Publications, 5-25.

Blythe, Joseph. 2009. *Doing referring in Murriny Patha conversation*. PhD thesis, University of Sydney.

Corbett, Greville G. 2000. *Number*. Cambridge: CUP.

Green, Ian. 1989. *Marrithiyel: a language of the Daly River region of Australia's Northern Territory*. PhD thesis, Australian National University, Canberra.

Green, Ian. 2003. The genetic status of Murrinh-patha. In Nicholas Evans (ed.) *The non-Pama-Nyungan languages of northern Australia*. Canberra: PL, 280-310.

Matthews, P. H. 1972. *Inflectional morphology*. Cambridge: CUP.

Matthews, P. H. 1991. *Morphology* [Second Edition]. Cambridge: CUP.

McGregor, William. 2002. *Verb classification in Australian languages*. Berlin: Mouton de Gruyter.

Nordlinger, Rachel & Patrick Caudal. 2012. The tense, aspect and modality system in Murrinh-Patha. *Australian Journal of Linguistics* 34(1): 73-113.

Nordlinger, Rachel. 2010. Verbal morphology in Murrinh-Patha: evidence for templates. *Morphology* 20(2): 321-341.

Nordlinger, Rachel. 2011. LFG and language documentation. *Plenary paper presented at LFG11*, Hong Kong, July 2011.

Preston, Asher. 2012. *Marri Ngarr morphosyntax and the expression of reflexivity and reciprocity*. Unpublished honours thesis, University of Melbourne.

Reid, Nicholas. 1990. *Ngan'gityemerri: a language of the Daly River region, Northern Territory of Australia*. PhD thesis, Australian National University, Canberra.

Sadler, Louisa. 2010. Indeterminacy, complex features and underspecification. *Morphology* 21(2): 379-417.

Seiss Melanie & Rachel Nordlinger. 2010. Applicativizing complex predicates: A case study from Murrinh-Patha. In Miriam Butt & Tracy H King (eds) *Proceedings of the LFG10 conference*. Stanford: CSLI Publications, 416-436.

Spencer, Andrew. 2004. Morphology – an overview of central concepts. In Louisa Sadler & Andrew Spencer (eds) *Projecting Morphology*. Stanford: CSLI Publications, 67-109.

Stump, Gregory T. 2001. *Paradigm function morphology: A theory of paradigm structure*. Cambridge: CUP.