NUMBER MARKEDNESS: EVIDENCE FROM GANGALIDDA[*]

Jessica Mathie
University of Toronto

I present data from Gangalidda (Australia) which shows that plural is more marked than dual in this language. This challenges the claim made in Harley and Ritter (2002) that dual is universally more marked than plural. Evidence that Harley and Ritter's claim does not hold in Gangalidda is found in the distribution of dual clitics. In clauses with two non-singular arguments, the dual clitic is able to cross-reference both dual and plural entities. Assuming a privative feature geometry, this distribution is only possible if the features of the dual clitic are a subset of those present for the plural clitic (see Mathie In prep for an analysis assuming binary features). If the dual clitic had more features, as it does in Harley and Ritter's geometry, it could not be inserted into a plural syntactic context, since it would be overspecified. I demonstrate that the Gangalidda distribution can be accounted for by the feature geometry proposed by Cowper (2005), in which plural is more marked, and I further demonstrate that Harley and Ritter's geometry is not able to straightforwardly capture the Gangalidda facts. Section 1 outlines the feature geometries proposed by Harley and Ritter (2002) and Cowper (2005). Section 2 presents the Gangalidda data, illustrating the contextual neutralization of dual and plural clitics. Section 3 gives a featural account of the Gangalidda system, supporting the geometry in Cowper (2005).
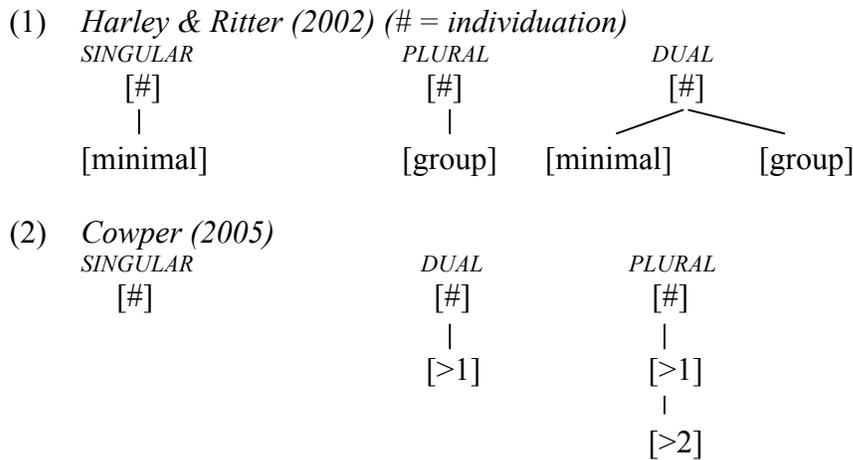
1.   Feature representations of number contrasts and syncretisms

Both geometries under discussion assume a Distributed Morphology framework (Halle & Marantz 1993, 1994). In this framework syntax manipulates abstract features, then Vocabulary Items (VIs) with feature specifications are inserted into appropriate nodes post-syntactically. A VI may be inserted into a syntactic node if its features either match or are a subset of those present in the node. That is, a VI may be underspecified with respect to a node. It cannot, however be overspecified. If a VI has more features than are present in the node it is unable to be inserted. VIs compete for insertion at a node, with the best fit winning and blocking other VIs that are less specified.

      Feature geometries are a method of representing abstract features and the subset or entailment relations among them. The two geometries I will be referring to are given (1)

---

and (2) below. These diagrams show how a three-way number system is represented in each geometry, with a contrast between singular, dual and plural.

(1) *Harley & Ritter (2002) (# = individuation)*

SINGULAR	PLURAL	DUAL
[#]	[#]	[#]
|	|	/\
[minimal]	[group]	[minimal] [group]

(2) *Cowper (2005)*

SINGULAR	DUAL	PLURAL
[#]	[#]	[#]
	|	|
	[>1]	[>1]
		|
		[>2]

The key difference between the two models is the relative markedness of dual and plural, where markedness is determined by how many nodes are required to represent the required features. In Harley and Ritter (2002), dual has more features than plural, whereas in Cowper (2005), plural has more features than dual.

Both geometries aim to capture the cross-linguistic universal that the presence of a distinctive dual in a language entails distinctive plural (Greenberg 1963, Corbett 2000). However, they achieve this by different means. In Harley and Ritter's geometry, the features required to create a distinctive dual must be independently active elsewhere in the system. Since [group] is one of those required features, it follows that [group] must also operate independently, yielding a distinctive plural. In contrast, Cowper's model can only allow for distinctive dual interpretation when there is a contrast between dual and plural; [>1] is only interpreted as dual when [>2] is also active. Otherwise [>1] is interpreted as plural, as in a simple two-way singular/plural number system. This approach captures shifting meaning of plural across languages with more number distinctions (e.g. trial and paucal).

Both geometries are also able to capture a simple syncretism between dual and plural that consistently occurs in a part of the paradigm. In this case, the syncretic VI would be specified to spell out the set of features common to both dual and plural. No other more specified VIs would be present in the language. An illustration is given in (3).

(3) 'Y' ⇔ [group] (H&R 2002)
     'Y' ⇔ [>1]   (Cowper 2005)

	SG	DU	PL
1	A	B	C
2	X	Y	

However, the models make different predictions regarding the distribution of VIs if a language has a syncretism that is restricted to a particular context. In this situation, the difference in the relative markedness of dual and plural is significant. This can be

observed in the following example, using Gangalidda subject clitics. In most contexts, distinct clitics are used to cross-reference dual and plural entities. This indicates that the VIs must be fully specified, as in (4), in order to achieve this one-to-one mapping.

(4)   *Gangalidda subject clitics*

	H&R (2002)		*Cowper (2005)*		
DUAL	*-rr* $\Leftrightarrow$	[minimal, group]	*-rr*	$\Leftrightarrow$	[>1]
PLURAL	*-l* $\Leftrightarrow$	[group]	*-l*	$\Leftrightarrow$	[>1, >2]

Any syncretism between dual and plural that occurs in a particular syntactic context must now involve the particular VI that only spells out the features common to both dual and plural, and which will therefore be underspecified for one of these categories. Harley and Ritter's model predict that plural *-l* will occur in this neutralized context, whereas Cowper's predicts that dual *-rr* will occur. In the following section I show that the prediction of Cowper's model is correct, establishing that the features of dual are a subset of the features of plural, and therefore that plural is more marked in Gangalidda.

2.   Gangalidda number system

Gangalidda, (or Ganggalida, also known as Yukulta), is a Non-Pama-Nyungan language of the Tangkic family. It was historically spoken in north-east Australia, however there are no longer any speakers. Data is taken from a masters thesis (Keen 1972) and sketch grammar (Keen 1983). I have revised the original glosses in this paper.
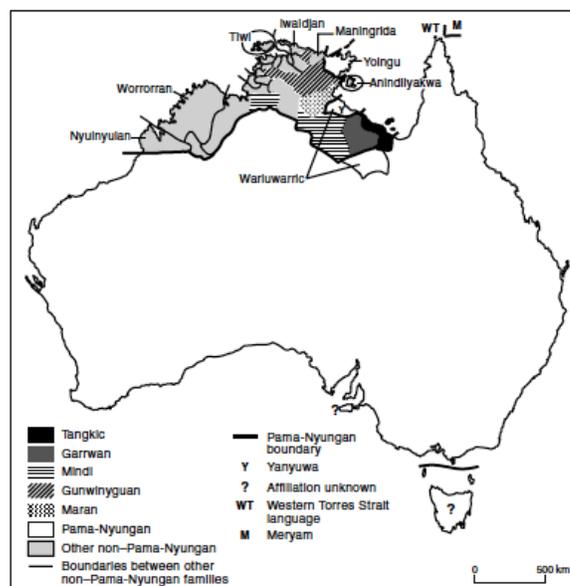

Figure 1: Major Australian language families (Evans 2005:265)

The language makes a three-way singular, dual and plural distinction in its clitics and free pronouns. The formal contrast between dual and plural is often marked by an alternation between *rr* and *l*. This can be seen most clearly in the subject forms, listed in Table 1[1].

Table 1: Subject clitic forms[2]

	Singular	Dual	Plural
3	rn, $\varnothing$	rr	l
2	(y)i (A), nyi (S)	(wu)rr	wul
1 inclusive	*	gurr	gul
1 exclusive	nga (A), ga/th (S)	ngarr	ngal

Table 2: Dative clitic forms

	Singular	Dual	Plural
3	$\varnothing$	wurruwa	wuluwa
2	ba	rrawa, wurruwa	lawa
1 inclusive	*	gurruwa	guluwa
1 exclusive	thu	ngarrawa	ngalawa

Table 3: Object clitic forms

	Singular	Dual	Plural
3	$\varnothing$	rrngu	nbu, $\varnothing$
2	$\varnothing$	rrngu	nbu
1 inclusive	*	*	*
1 exclusive	nk	*	*

2.1   Neutralisation between dual and plural

Syncretism between dual and plural clitics occurs in antipassive clauses with non-singular subjects and oblique objects. This syncretism may also occur in transitive clauses with two non-singular arguments (see (16) below), although the more common pattern for transitives is deletion of the object clitic (see Section 2.3 for discussion). In NSG>NSG[3] antipassive clauses, plural clitics do not occur. Instead, dual clitics (or non-singular clitics with forms related to dual clitics) occur, and may cross-reference NPs with a cardinal reference or two *and* more than two.

The productive antipassive construction occurs, descriptively, in certain counterfactual environments (negated present-realis clauses, present-irrealis clauses, and

---

[1] The abbreviations A, S and P follow the conventions of the Leipzig Glossing Rules (Comrie et. al. 2004): A: agent-like argument of a canonical transitive verb; S: single argument of a canonical intransitive verb; P: patient-like argument of a canonical intransitive verb.

[2] These clitic tables have been simplified. Please contact me for full details.

[3] ">" should be interpreted as "acting on"; ">>" should be interpreted as "outranks".

some desiderative clauses), and when the patient outranks the agent in animacy, according to (5). The antipassive examples in this paper occur in the latter context.

(5) *Animacy Hierarchy*
     1NSG >> 1SG/2 >> 3

In antipassive clauses the agent is treated like an intransitive subject (S), and the patient receives dative or another oblique case; I refer to this constituent as the oblique object. The schema is given in Table 4.

Table 4: Antipassive Schema

Patient (oblique object)	*Agent (S)*	*Auxiliary*
Clitic: DAT DP: DAT	Clitic: NOM DP: ABS	INTRANSITIVE PARADIGM

Case in Gangalidda is split-ergative based on nominal type. Clitics exhibit a nominative-accusative pattern, with the exception of tripartite ergative-nominative-accusative patterning for 1SG and 2SG clitics. NPs are ergative-absolutive, and free pronouns are invariant for core case.

   Distinct dual and plural clitics occur in antipassive clauses with only one non-singular clitic. This is illustrated in (6) for the subject clitics.[4]

(6) *Number contrast antipassive subjects*
     a. *3DU>2DU [2DU] (antipassive matrix clause)*
         gurri-ja-**rrawa**$_k$-**rr**$_i$-ingg-i   dathinki-yarrngga$_i$, [ngala-wurr$_k$-
         see-IND-**2DU.DAT-3DU.NOM**-PAST-IRR   that-two.ABS   ngala-2DU.NOM-

         ingg-a   thaathaa-tha]
         PAST-RLS   go.home-IND

         They would have seen you when you were coming home. (Keen
         1983:244#207)

---

[4] Clitics are bolded in example sentences. Subscript 'i' identifies any overt nouns or clitics that refer to the matrix subject, while subscript 'k' tracks the oblique object. The following abbreviations are used:

ABS	absolutive	IND	indicative	PRES	present
COM	comitative	INTERR	interrogative	RLS	realis
DAT	dative	IRR	irrealis	SG	singular
DU	dual	LOC	locative	STAT	stative
ERG	ergative	NSG	non-singular	TR	transitive
EXC	exclusive	OBL	oblique		
INC	inclusive	PL	plural		

b. *3PL>1SG.GOAL (antipassive)*
dathin-da-**thu**ₖ-**l**ᵢ-ayi   burldamurraᵢ wuu-ja   ngijin-jiₖ
that-ABS-**1SG.DAT-3PL.NOM**-PRES.IRR   three.ABS   give-IND   1SG-OBJ
'Those three will give it to me.' (Keen 1983:215#75)

As illustrated above, third person antipassive subjects with referential cardinality of two are cross-referenced by the clitic *-rr*, while those with referential cardinality of more than two are cross-referenced by *-l*. The same formal contrast is made in intransitive subjects ((7)) and transitive subjects ((8)).

(7) *Number contrast intransitive subjects*

a. *3DU*
dangka-**rr**ᵢ-ingg-a   warra, [warurrung-urlu-rrᵢ-ga-rri
man.ABS-**3DU.NOM**-PAST-RLS go   turkey-COM-3DU.NOM-TR-PRES.RLS

jani-ja]
search-IND

'Those two men have gone out looking for a plains turkey.' (Keen 1983:210#61)

b. *3PL*
burldamurraᵢ gunawunaᵢ-**l**ᵢ-ingg-a   wirdi-ja   banga-ya girdil-i
three.ABS   child-ABS-**3PL.NOM**-PAST-RLS sit-IND   turtle-LOC back-LOC⁵
'Three kids were sitting on the turtle's back.' (Keen 1972:130)

(8) *Number contrast transitive subjects*

a. *3DU>3SG*
giyarrngg-iᵢ   magu-yaᵢ-**rr**ᵢ-ga-nd-a   gaba
two-ERG   women-ERG-**3DU.NOM**-TR-PAST-RLS find
'Two women found him.' (Keen 1972:94)

b. 3PL>3SG
dangga-walath-iᵢ-**l**ᵢ-garri   ngida   dalma-tha
man-PL-ERG-**3PL.NOM**-TR-PRES.RLS wood.ABS chop-IND
'Lots of men are chopping wood.' (Keen 1983:211#68)

In NSG>NSG clauses, however, this formal contrast between dual and plural is lost. Plural clitics do not occur, and instead dual clitics cross-reference both dual and plural

---

⁵ ERG and LOC have identical forms.

arguments.[6] This can be observed in (9), in which each example differs in the number of its subject and object, yet all contain the same clitics *-rrawa-rr*.

(9)   *3NSG>2NSG*

   a.   *3DU>2DU (antipassive matrix)*
        gurri-ja-**rrawa**$_k$-**rr**$_i$-ingg-i   dathinki-yarrngga$_i$, [ngala-wurr$_k$-
        see-IND-**2DU.DAT-3DU.NOM**-PAST-IRR   that-two.ABS   when-2DU.NOM-

        ingg-a   thaathaa-tha]
        PAST-RLS   go.home-IND

        They would have seen you when you were coming home. (Keen 1983:244)

   b.   *3PL>2DU (antipassive)*
        dathinda   jardi$_i$-**rrawa**$_k$-**rr**$_i$-ayi   bala-tha   girrwan-ji$_k$
        that.ABS   lot.ABS-**2DU.DAT-3DU.NOM**-PRES.IRR   hit-IND   2DU-OBJ
        'They will hit you (two).' (Keen 1972:165)

   c.   *3DU/PL>2PL (antipassive)*
        bala-tha-**rrawa-rr**-a-yi   gilwan-ji   burldamurr-i
        hit-IND-**2DU.DAT-3DU.NOM**-PRES.IRR   2PL-OBJ   three-LOC
        Those men will hit you three. (Keen 1983:215#76)

Note that the duality or plurality of the subject and object are often indicated by numerals or free pronouns which are not syncretic in this configuration, or by an embedded clitic which is not in a neutralized context.

   Another example set is given in (10), involving 3NSG>1NSG. The same clitic forms *-gurra-rra* occur despite the varying number of the arguments.

(10)   *3NSG>1NSG*

   a.   *3DU>1DU.INC (antipassive)*
        dathin-giyarrngga$_i$-**gurra**$_k$-**rra**$_i$ yaathu-ja   ngagurruwan-ji$_k$
        that-two-**1NSG.INC.DAT-3DU.NOM**-PRES.RLS   laugh-IND   1DU.INC-DAT
        'Those two are laughing at us' (Keen 1971:165)

   b.   *3PL>1PL/DU (antipassive)*
        mutha-**gurra-rr**-ingg-a   gurri-gurri-ja   [wirrga-jarrba-ntha
        lot-**1NSG.INC.DAT-3DU.NOM**-PAST-RLS   see-REDUP-IND   dance-PRIOR-DAT

        wangarr-inaba-ntha]
        corroboree-ABL-DAT

        'A big mob watched us dancing in the corroboree.' (Evans 1995:544#12-144)

---

[6] There are no sentence examples available of the 3PL.DAT clitic, though Keen records it as *-lawa*, contrasting with 2DU.DAT *-rrawa*. indicating that dual and plural are distinguished by the regular *rr~l* alternation in non-neutralized contexts.

The 1NSG object clitic in the above examples, -*gurra*, is slightly different from the regular 1DU.INC dative clitic -*gurruwa*, though it is clearly related to this dual form and not the plural form, -*guluwa*. An example of this plural clitic occurring with a singular subject is given in (11).

(11) *3SG>1PL.INC (antipassive)*
      ngawu-**guluwa**-yingk-a   paa-tha
      dog.ABS-**1PL.IND.DAT**-PAST-RLS   bite-IND
      'The dog bit us (pl)' (Keen 1972:116)

2.2 Non-neutralized antipassive clauses

The dual/plural neutralization, though most frequently evidenced in antipassive clauses, is not a general feature of the antipassive construction. In clauses with one singular argument, distinct dual and plural clitics occur. This was shown in (11) above, and is also illustrated in (12) below.

(12) *Number contrast in antipassive oblique objects (1EXC)*
      a.   *3SG>1DU.EXC (antipassive)*
           niya$_i$-yana-**ngarrawa$_k$-rn$_i$**-ingg-a   jinka   ngarrawan-ji$_k$
           3SG-might-**1DU.EXC.DAT-3SG.NOM**-PAST-RLS   follow   1DU.EXC-OBL
           'He might follow us two.' (Keen 1983:249#240)

      b.   *3SG>1PL.EXC (antipassive)*
           walirra-**ngalawa$_k$-rn**-ingg-i   bala ngalawan-ji$_k$ burldamurr-i$_k$
           neg-**1PL.EXC.DAT-3SG.NOM**-PAST-IRR hit   1PL.EXC-OBL   three-LOC
           'He didn't hit us three.'   (Keen 1983:231#123)

2.3 Alternate NSG>NSG pattern

An alternate pattern is available for transitive clauses with two non-singular arguments, involving the deletion of the third person non-singular object clitic. In such cases a regular plural subject clitic may continue to cross-reference a plural NP. In (13) the 3DU object clitic has been deleted, while in (14) and (15) the 3PL object clitic has been deleted.

(13) *2PL>3DU*
      gilda$_i$ burldamurr-i-**wul$_i$**-garri   mari-ja   dathin-giyarrngga$_k$
      2PL   three-ERG-**2PL.NOM**-TR-PRES.RLS   hear-IND   that-two.ABS
      'You three are listening to them two.' (Keen 1972:157)

(14) *2PL>3PL*

gilda$_i$-**wul**$_i$-ga-rri   gurri-gurri dathinda   jardi$_k$
2PL-**2PL.NOM**-TR-PRES.RLS see-redup that.ABS   lot.ABS
'You lot are staring at them.' (Keen 1983:236#155b)

(15) *3PL>3PL*

janggin-ma-nggiya   dangka-ya$_i$-**l**$_i$-ga-rri   wangalga   garrmatha
some-STAT-ERG   man-ERG-**3PL.NOM**-TR-PRES.RLS boomerang.ABS carry.IND
'Some men are carrying boomerangs.' (Keen 1983:204#19)

It is also possible for both the neutralization and deletion patterns to occur in the same clause. In these clauses a dual clitic occurs instead of a plural, and a third person clitic is deleted. An example of this is (16):

(16) *3PL>3PL*

daami-ja-**rru**$_i$-ga-nd-a   mutha-ya$_i$ dangga-ya$_i$ magu-ya$_i$
ask-IND-**DU.NOM**-TR-PAST-RLS many-ERG   man-ERG   woman-ERG

[guya-wul-ga-nd-a   gapa gunya   gunawuna]
interr-2PL.NOM-TR-PAST-RLS find little.ABS child.ABS

'Many men and women asked them, "How did you find the little child?"' (Keen 1983:270#2.91)

In this example, a dual clitic *-rru* cross-references the plural subject "many men and women", while the 3PL object clitic is deleted. Arregi and Nevins (2012) refer to the deletion of an exponent as 'Obliteration', a process that deletes an entire syntactic node and all its features. Nevins (2008) observes that varieties of a language may utilise different strategies in resolving the same markedness constraint. This observation seems to hold for Gangalidda, which may resolve a ban on the occurrence of a plural clitic when adjacent to another non-singular clitic by either neutralising the plural clitic (as in antipassive clauses) or deleting the adjacent clitic (as in transitive clauses). It is possible that the deletion strategy is available in transitive clauses due to the correlation of third person objects with transitive constructions. Oblique objects in antipassive clauses are usually first or second person, and may be less-desirable targets for deletion.

3. Featural account of the Gangalidda number system

In this section I consider how well the two feature geometries under discussion are able to capture the facts described in the previous section, and correctly determine the contexts in which each clitic is inserted into a syntactic node. A summary of the facts to capture are as follows. In most configurations, the dual clitic *-rr* cross-references NPs with a cardinal reference of two, and the plural clitic *-l* spells out NPs with a cardinal reference of three or more. When there are two non-singular NPs that are cross-

referenced by adjacent clitics *-l* does not occur and instead *-rr* cross-references NPs with a cardinal reference of two or more. A formal account could either rely on an Impoverishment operation, or a restriction listed in the entry of the VI itself. I will consider each option below.

3.1 Impoverishment account

Impoverishment is a post-syntactic process that occurs prior to PF and deletes features that were present in the syntax (Bonet 1991). It captures the commonly observed phenomenon of mismatches between form and interpretation. An impoverishment rule may state an environment in which the process occurs. In order to yield a contextually-determined syncretism between dual and plural, Impoverishment must target the features that would normally distinguish the two categories, that is, [>2] (Cowper) or [minimal] (Harley and Ritter). An Impoverishment rule under Cowper's model is given in (17), and illustrated in (18). The VI entries for the dual and plural clitics are given in (19).

(17) *Impoverishment rule*
      Delete [>2] when two non-singular clitics are adjacent.

(18) SINGULAR   DUAL   PLURAL
   [#]   [#]   [#]
                              | |
                            [>1]   [>1]
                                                 |
                                               [>2]

(19) *-rr*   ⇔   [>1]
      -l   ⇔   [>1, >2]

Once [>2] has been deleted through Impoverishment, *-l* can no longer be inserted as it is overspecified. Only *-rr* is able to be inserted, and will occur when cross-referencing an NP with a referential cardinality of two, and those with a referential cardinality of more than two. This account precisely matches the Gangalidda facts. It also closely tracks the meaning of *-rr*, which has a non-singular interpretation when there is no contrast with plural, but a restricted dual interpretation when there is such a contrast.

An Impoverishment account assuming Harley and Ritter's geometry is given below. The Impoverishment rule is given in (20) and is illustrated in (21). VIs are listed in (22).

(20) *Impoverishment rule*
      Delete [minimal] when two non-singular clitics are adjacent.

(21) SINGULAR   PLURAL   DUAL
    [#]   [#]   [#]
     | | ╱   ╲
  [minimal]   [group]   [~~minimal~~]   [group]
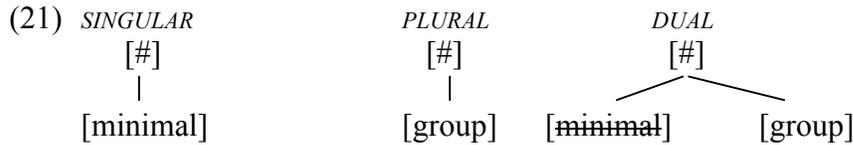
(22) *-rr*   ⇔   [minimal, group]
    -l   ⇔   [group]

This account incorrectly predicts that *-l* will be inserted once Impoverishment has occurred, since *-rr* will be overspecified and thus unable to be inserted. In order to make the model work, we are forced to posit a second homophonous VI which is specified only for the feature [group], yielding the following VI list:

(23) $-rr_1$ ⇔   [minimal, group]
    $-rr_2$ ⇔   [group]
    -l   ⇔   [group]

However, this incorrectly predicts free variation between *-rr* and *-l* in the neutralized context. This feature geometry, which represents dual as more marked than plural, is therefore not able to capture the Gangalidda facts under an Impoverishment account.

3.2   VI restriction account

A second possibility is to assume that restrictions in the entries of the VIs are responsible for the distribution of clitics. Assuming Cowper's features, this would involve a restriction in the entry for *-l*:

(24) *-rr*   ⇔   [>1]
    -l   ⇔   [>1, >2] (except when two non-singular clitics are adjacent)

In clauses where insertion of *-l* is blocked, *-rr* would be inserted instead, being underspecified for the features present at the relevant syntactic node. Again, this yields the observed distribution of clitics.

    Difficulties occur, however, if we assume Harley and Ritter's features. Even with the same restriction for *-l* as in (24), the problem remains of *-rr* being overspecified for nodes with cardinal reference of three or more. Again, a second VI with the form *-rr* must be assumed, with an added restriction in its entry, as in (25).

(25) $-rr_1$ ⇔   [minimal, group]
    $-rr_2$ ⇔   [group] (only if two non-singular clitics are adjacent)
    -l   ⇔   [group] (except if two non-singular clitics are adjacent)

It is clear that under this account Cowper's model has more explanatory power, as it requires less stipulations and avoids recourse to homophonous VIs with different feature specifications. Given that the crucial difference between the two geometries is the relative markedness of dual and plural, it is also clear that a model which represents dual as more marked than plural is not able to straightforwardly capture the Gangalidda facts.

4.   Limitation of Cowper's geometry

Despite being appropriate for Gangalidda, it does not follow that Cowper's geometry is universally applicable. Indeed, there are systems which are not easily accounted for by a model with a marked plural. Manam, discussed by Nevins (2011), is one example. Consider (26):

(26) *Manam*
    a.   áine   ŋara
          woman   that
          'that woman'

    b.   áine   ŋara-di
          woman   that-3PL
          'those women'

    c.   aine   ŋara-di-a-ru
          woman   that-3PL-EP-DU
          'those two women'

In this language, the expression of dual is achieved by the addition of a special dual suffix onto a plural stem. This pattern fits naturally with Harley and Ritter's geometry, which assumes that dual is composed of [group] and [minimal]. Assuming the VI list in (27) achieves the correct exponence of features.

(27) *-di*   ⇔   [group]
     -ru   ⇔   [minimal]

It is difficult to capture the data using Cowper's geometry, since there is no feature that uniquely occurs for dual but not plural. The VI list in (28) is posited under the model:

(28) *-di*   ⇔   [>1, >2]
     -ru   ⇔   [>1]

However, if *-di* spelled out [>1, >2], the feature set for plural, then it should not be able to occur in a sentence expressing a dual, since a node containing [>2] is lacking. It thus appears that neither Cowper's model nor Harley and Ritter's has universal applicability.

5.   Conclusion

I have demonstrated that the distribution of Gangalidda clitics requires a model of abstract features that represents the category of dual as less marked than plural. Given that such a model is not able to capture all number systems, it must be the case that the relative markedness of dual and plural varies cross-linguistically. Feature systems may therefore emerge in response to input; this requires further investigation. I have also shown that a contextually-based syncretism is a more powerful diagnostic of featural markedness than a syncretism that holds between two categories regardless of context.

References

Arregi, Karlos and Andrew Nevins. 2012. *Morphotactics: Basque auxiliaries and the structure of spellout.* New York: Springer.

Bonet, Eulàlia. 1991. Morphology after syntax: Pronominal clitics in Romance. Doctoral dissertation, MIT, Cambridge, MA.

Comrie, Bernard, Martin Haspelmath and Balthasar Bickel. 2004. *The Leipzig glossing rules: Conventions for interlinear morpheme-by-morpheme glosses.* http://www.eva.mpg.de/lingua/resources/glossing-rules.php

Corbett, Greville G. 2000. *Number*. Cambridge: Cambridge University Press.

Cowper, Elizabeth. 2004. *Markedness in morphosyntactic feature geometries*. Paper presented at Phi Workshop, McGill University, Montreal.

Cowper, Elizabeth. 2005. A note on number. *Linguistic Inquiry* 36(3):441–455.

Evans, Nicholas. 1995. *A grammar of Kayardild: With historical-comparative notes on Tangkic.* Berlin: Mouton de Gruyter.

Evans, Nicholas. 2005. Australian languages reconsidered: A review of Dixon (2002). *Oceanic Linguistics*. 44(1):242–286.

Greenberg, Joseph H. Some universals of grammar with particular reference to the order of meaningful elements. In *Universals of language*, ed. Joseph H. Greenberg, 73–113. Cambridge MA: MIT Press.

Halle, Morris and Alec Marantz. 1993. Distributed morphology and the pieces of inflection. In *The view from building 20*, eds. Kenneth L. Hale and Samual J. Keyser , 111–176. Cambridge MA: MIT Press.

Halle, Morris and Alec Marantz. 1994. Some key features of Distributed Morphology. In *MIT Working Papers in Linguistics 21: Papers on phonology and morphology,* eds. Andrew Carnie, Heidi Harley and Tony Bures, 275–288.

Harley, Heidi. 1994. Hug a tree: Deriving the morphosyntactic feature hierarchy. In *MIT Working Papers in Linguistics 21: Papers on phonology and morphology,* eds. Andrew Carnie, Heidi Harley and Tony Bures, 289–320.

Harley, Heidi & Elizabeth Ritter. 2002. Person and number in pronouns: a feature-geometric analysis. *Language* 78:482–526.

Keen, Sandra. 1972. *A description of the Yukulta language: An Australian Aboriginal language of north-west Queensland*. Masters dissertation, Monash University, Melbourne.

Keen, Sandra. 1983. Yukulta. In *Handbook of Australian Languages Vol. 3*, eds. RMW Dixon and BJ Blake, 190–304. Canberra: Australian National University Press.

Mathie, Jessica. In prep. Dual is not universally marked. Ms, University of Toronto.

Nevins, Andrew. 2008. Cross-modular parallels in the study of phon and phi. In *Phi theory: Phi-features across modules and interfaces,* eds. Daniel Harbour, David Adger and Susana Béjar, 329-367. Oxford: Oxford University Press.

Nevins, Andrew. 2011. Marked targets versus marked triggers and impoverishment of the dual. *Linguistic Inquiry* 42(3):413 – 444.

Ritter, Elizabeth. 1997. Agreement in the Arabic prefix conjugation: Evidence for a non-linear approach to person, number and gender features. In *Proceedings of the Canadian Linguistic Association*, eds. Leslie Blair, Christine Burns and Lorna Rowsell.

Ritter, Elizabeth & Heidi Harley. 1998. *Meaning in morphology: A feature-geometric analysis of person and number.* Paper presented at the 40th GLOW Colloquium, Tilburg.