Murrinhpatha number conflation:
The limits of feature markedness and *ABA

Elango Kumaran
University of Southern California

1 Introduction

This paper discusses patterns of number syncretism in Murrinhpatha (Southern Daly, Australia) verbal inflection. The language exhibits all logically possible singular/dual/plural conflation patterns. The data challenge Smith et al.'s (2019) proposal that a feature markedness difference between dual and plural yields a *ABA restriction in each language. I suggest that morphology is not restricted by feature markedness; true *ABA restrictions only arise in cases of structural containment.

Section 2 introduces previous work on *ABA restrictions, focusing on some of Smith et al.'s (2019) work on number. Section 3 discusses the Murrinhpatha data. The inflectional system includes 38 conjugation classes,[1] allowing for a great diversity of morphological patterns within the same language. All possible conflation patterns are attested (and I argue that these are cases of genuine syncretism), but some patterns are much more frequent than others, mirroring crosslinguistic data. Notably, neither of the nonsingular values (dual, plural) seems to be more marked than the other.

2 Background: *ABA and number

2.1 Universal *ABA restrictions

Crosslinguistic work on syncretism patterns has revealed universal restrictions, notably in the domains of case syncretism (Caha 2009) and adjectival suppletion (Bobaljik 2012). Syncretism of nominative and genitive cases to the exclusion of the accusative is unattested, but all other logical possibilities are attested (Caha 2009, (1)).

(1) Crosslinguistically attested and unattested NOM-ACC-GEN syncretism patterns (examples from Modern Greek, Caha 2009:6-7)

	'alpha' (AAA)	'human' (ABC)	'fighter' (ABB)	'fighters' (AAB)	not attested (ABA)
NOM	alpha-**∅**	anthrop-**os**	maxit-i-**s**	maxit-**es**	A
ACC	alpha-**∅**	anthrop-**o**	maxit-i-**∅**	maxit-**es**	B
GEN	alpha-**∅**	anthrop-**u**	maxit-i-**∅**	maxit-**on**	A

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[1] See section 3 for an explanation of what I mean by 'conjugation classes'.

Adjective roots either supplete in both the comparative and the superlative or in neither (Bobaljik 2012, (2)).

(2) Crosslinguistically attested and unattested positive-comparative-superlative suppletion patterns (Bobaljik 2012:28-29,45)

	Bulgarian (AAA)	*Latin* (ABC)	*Cherokee* (ABB)	not attested (AAB)	not attested (ABA)
'good'	**dobər**	**bon**-us	**osda**	A	A
'better'	po-**dobər**	**mel**-ior	**dajehla**	A	B
'best'	naj-**dobər**	**opt**-imus	wi-**dajehl**-ʌ̃ʔi	B	A

The banned ABA patterns in (1)-(2) are standardly explained in terms of structural containment. Caha argues that genitive case structually contains accusative case, which in turn structurally contains nominative case (3). Syncretism is assumed to require structural contiguity, yielding the ban on ABA NOM-ACC-GEN syncretism. Similarly, Bobaljik argues that the (synthetic) superlative is built on the comparative (4), and that suppletion requires structural contiguity, yielding the ban on ABA positive-comparative-superlative syncretism.[2]

(3) a. nominative = [NOM]
 b. accusative = [[NOM] ACC]
 c. genitive = [[[NOM] ACC] GEN]

(4) a. positive = [POS]
 b. comparative = [[POS] CMP]
 c. superlative = [[[POS] CMP] SUP]

2.2 Extending *ABA to tripartite number systems(?)

In singular-dual-plural number systems, some languages seem on the surface to show a morphological containment relation between dual and plural. The direction of this containment relation is not consistent: in some cases the dual is built on the plural, as in 'woman' in Manam, while in other cases the plural is built on the dual, as in 'donkey' in Hopi (Smith et al. 2019, (5)).[3]

(5) Smith et al. 2019

	Hopi 'donkey'	*Manam* 'woman'
SG	mooro	áine ŋára
DU	mooro-**t**	áine ŋára-**dí-a-ru**
PL	moo**<mo>**ro-**t**	áine ŋára-**dí**

Smith et al. hypothesize that this is a parametric difference between languages – and depending on the parameter setting, a *ABA or *AAB restriction occurs. One class of languages can have plural morphologically built on dual and nouns with a suppletive plural but a non-suppletive dual (but not the opposite). The other class

[2] As for AAB adjectival suppletion, Bobaljik proposes that it is banned for a different reason – this is not relevant here.

[3] I choose to represent Hopi reduplication as infixal; see Yu 2007:161 for discussion.

can have dual morphologically built on plural and nouns with a suppletive dual but a non-suppletive plural (but not the opposite). Languages like Hopi seem to belong to the first class (6); languages like Manam and Dehu seem to belong to the second class (7). Patterns like (6) and (7) are predicted not to coexist in any one language.

(6) Smith et al. 2019

	'donkey' – *Hopi* (PL built on DU)	'woman' – *Hopi* (AAB suppletion)
SG	mooro	**wùuti**
DU	mooro-**t**	**wùuti**-t
PL	moo**<mo>**ro-**t**	**mo**<mo>**ya**-m

(7) Smith et al. 2019

	'woman' – *Manam* (DU built on PL)	3M pronouns – *Dehu* (ABA suppletion)
SG	áine ŋára	**ang**eice
DU	áine ŋára**-dí-a-ru**	**nyido**
PL	áine ŋára**-dí**	**ang**ate

Given the standard analysis of *ABA patterns presented in 2.1., one might think that Smith et al.'s hypothesized parameter of variation would correspond to variation in syntactic containment relations, as in (8).

(8) Hypothesis 1: containment
  a. *Hopi*: [[[SG] DU] PL]
  b. *Manam / Dehu*: [[[SG] PL] DU]

However, Smith et al. argue that (8) is incorrect. Independent semantic and typological evidence favors the universal structure in (9a). Accordingly, Smith et al. propose that there is no relevant structural variation, but instead variation in whether +AUGMENTED or –AUGMENTED is the *marked* feature value. They assume that suppletion and exponence must target marked feature values, yielding a *ABA restriction in languages like Hopi and a *AAB restriction in languages like Manam and Dehu.

(9) Hypothesis 2: markedness
  a. Universal structure:
     singular = [[[ROOT] +SINGULAR] –AUGMENTED]
     dual = [[[ROOT] –SINGULAR] –AUGMENTED]
     plural = [[[ROOT] –SINGULAR] +AUGMENTED]
  b. *Hopi*: +AUGMENTED is marked
  c. *Manam / Dehu*: –AUGMENTED is marked

In the next section, I discuss Murrinpatha verbal inflection, which shows all logically possible singular-dual-plural syncretism patterns, calling into question Smith et al.'s hypothesized parameter.

3 Mixed number conflation in Murrinhpatha

3.1 Core data

Murrinhpatha is a polysynthetic non-Pama-Nyungan (Southern Daly) language of northern Australia. Verbs take a prefix called the *classifier* (e.g. Nordlinger 2015) or *finite verb stem* (e.g. Mansfield 2019), which encodes person and number of the subject along with tense/aspect/mood.

There is a large number of conjugation classes. Exactly how many there are depends on how you count: Mansfield (2019:115) counts 39 'verb stems' which fall into 34 'unique exponence patterns'; Nordlinger (2015:498) counts 38 'paradigms of classifier stems'. Different authors organize and number the classifiers differently – see Mansfield 2019:114-115 for discussion. In an attempt to avoid confusion, in this paper I will refer to the classifiers by the page number they appear on in the appendix of Mansfield's book, which contains one conjugation table per page (Mansfield 2019:237-274). There are 38 tables/pages; for each N I will refer to the morphology represented on page N as *(conjugation) class N*.

I use Murrinhpatha orthography (see e.g. Nordlinger 2015:498): <rr>=/ɾ/, <r>=/ɻ/, <rt>=/ʈ/, <rd>=/ɖ/, <rn>=/ɳ/, <rl>=/ɭ/, <th>=/t̪/, <dh>=/d̪/, <nh>=/n̪/, <y>=/j/, <ng>=/ŋ/, same as IPA otherwise.

Classifiers maximally show a three-way singular/dual/plural contrast, as in (10).

(10) constructed examples based on Mansfield 2019

a.

ngurdu-	ngkarl	-nu
1**SG**.FUT.class269-	bring.back	-FUT

'I will bring it back.'

b.

ngurdrda-	ngkarl	-nu
1**DU**.FUT.class269-	bring.back	-FUT

'We (two siblings) will bring it back.'

c.

ngurdrdu-	ngkarl	-nu
1**PL**.FUT.class269-	bring.back	-FUT

'We (three or more siblings) will bring it back.'

I have to take a paragraph here to address the fact that (10b-c) are translated as having sibling subjects. Murrinhpatha has a grammaticalized kinship system which requires a non-sibling marker in the verbal complex for non-sibling subjects. The non-sibling marker can condition mismatched number on the classifier (see e.g. Nordlinger and Mansfield 2021). The mismatch patterns are interesting but of little relevance here – see Kumaran 2023 for an Agree-based analysis and Popp 2022a,b for a postsyntactic analysis. Since the inflectional category in (10b) is used with some non-dual non-sibling subjects, some descriptive work avoids referring to it as *dual*: Mansfield (2019:141) calls it 'Paucal (broad)' and Blythe (2009:121) calls it 'daucal.' I assume that it is in fact dual, as this straightforwardly lines up with the sibling data; the non-sibling data can (and should – see Kumaran 2023) be analyzed as involving a number mismatch.

Back to what I was saying: for some person + conjugation-class + TAM combinations, the classifier shows the maximal singular/dual/plural number contrast, as in (10). For other combinations, though, the full three-way contrast is not morphologically encoded. This paper centers on the simple observation that all logically possible number conflation patterns are attested. A set of third person irrealis classifiers showing every pattern is given in (11).

(11) Unrestricted number conflation in Murrinhpatha (Mansfield 2019:237-274; class number = page number)

	class 260 (AAA)	class 237 (ABC)	class 247 (ABB)	class 262 (AAB)	class 273 (ABA)
3SG.IRR	k-**a-**	k-**i-**	k-**ama-**	k-**uy-**	k-**ungi-**
3DU.IRR	k-**a-**	k-**e-**	k-**uyema-**	k-**uy-**	k-**unge-**
3PL.IRR	k-**a-**	k-**uyu-**	k-**uyema**	k-**uyu-**	k-**ungi-**

Although no pattern is ruled out, some patterns occur very infrequently. The rates of attestation across 1st, 2nd, and 3rd person irrealis paradigms (38 conjugation classes $\times$ 3 persons = 114 paradigms) are shown in (12). As for the non-irrealis TAM values, I have not exhaustively counted, but the general trend seems similar to (12): ABC, AAA, and ABB are much more frequent than AAB and ABA. (I should note that the language makes a clusivity distinction for 1st person dual; 1st person dual inclusive is not factored into (12) in the interest of clarity. I briefly bring up clusivity again in 3.2., but I will not be providing a detailed analysis.)

(12) Number conflation, irrealis classifiers (Mansfield 2019:237-274)

SG-DU-PL conflation pattern	instances	rate
AAA	23	20.2%
ABC	21	18.4%
ABB	60	52.6%
AAB	4	3.5%
ABA	6	5.3%
total	114	100%

3.2 Verdict: there is no relevant parametric restriction

There is no strict *ABA or *AAB restriction. This indicates that dual does not contain plural or vice versa (following Smith et al. 2019, contra (8)), provided we accept the standard claim that syncretism requires structural contiguity (as discussed in section 2.1.). It also contradicts Smith et al.'s (2019) feature-markedness hypothesis (9b-c), which predicts *ABA in marked-plural languages and *AAB in marked-dual languages.

Instead, the Murrinhpatha data suggest that there is no such thing as a feature markedness parameter which sets either plural or dual as the more marked value in each language. Just as there is no crosslinguistic *ABA or *AAB restriction that universally applies to languages with tripartite number systems, I hypothesize that language-specific versions of these restrictions do not exist either.

The frequency of some patterns and rarity of others, shown in (12), parallels typological data. When two of the three number categories are conflated, conflation which preserves the singular-nonsingular contrast (ABB) is strongly preferred; conflation which straddles singular-nonsingular (AAB or ABA) is strongly dispreferred. The same strong preference for ABB over AAB/ABA is observed in Smith et al.'s (2019) survey of pronominal suppletion in SG-DU-PL languages. It is perhaps not surprising that the singular-nonsingular distinction has primacy, given what we know about the typology of number systems (viz. languages which only make a singular-nonsingular contrast are very common).

The suggestion I am trying to make here is that apparent feature markedness differences between languages may be entirely superficial: certain languages lack certain patterns not because learners have posited a parameter setting which bans those patterns, but simply due to historical accident. The Murrinhpatha classifier morphology is exceptionally large and rich (see Mansfield 2016 for discussion), which leaves room for the full range of possible patterns to occur. In smaller / less rich systems, it is very unlikely for ABA and AAB to cooccur for the simple reason that ABA and AAB patterns are each unlikely to occur.

The behavior of the first person dual inclusive (which was excluded from (12) and from the discussion so far) is another example of how the range of patterns in Murrinhpatha matches the crosslinguistic range of patterns. First person dual inclusive patterns with nonsingular in some cases (as in singular-plural languages) and with singular in others (as in minimal-augmented languages). For instance, class 247 shows the former pattern in the past and the latter pattern in the irrealis:

(13)

	class 274 – PST	class 247 – IRR
2SG	**ne-**	th-**ama-**
1SG	**me-**	ng-**ama-**
1DU.INCL	th-**ume-**	p-**ama-**
1DU.EXCL	ng-**ume-**	ng-**uyema-**
1PL	ng-**ume-**	ng-**uyema-**

Returning to SG-DU-PL conflation patterns and Smith et al.'s (2019) hypothesized parameter: I can imagine some ways one might try save Smith et al's hypothesis. One might point out that 1. Smith et al.'s hypothesis concerns number in the nominal domain, not in the verbal domain; 2. the rarity of AAB and ABA patterns is suspicious – the few AAB or ABA patterns may turn out not to be genuine AAB/ABA upon closer inspection; or 3. maybe Smith et al.'s hypothesized language types – marked-plural/unmarked-dual and marked-dual/unmarked-plural – do in fact exist, but Murrinhpatha instantiates a third type of language.

I address point 2. in a little more depth in section 3.3., but my broad response to 1., 2., and 3. is that these hypotheses are disfavored in the absence of evidence for or against them. Since ABA and AAB occur very infrequently in Smith et al.'s sample, we cannot conclude anything from the absence of a language in the sample showing both ABA and AAB – this could very easily be an accident. In the absence of evidence for strict *ABA or *AAB restrictions, the null hypothesis should be that no such restrictions exist. This is especially true given that the Murrinhpatha data demonstrate that there is no poverty-of-the-stimulus reason for Smith et al.'s parameter: AAB and ABA patterns can be learned in the same language.[4]

[4]The process of acquisition of Murrinhpatha, and of the classifier system specifically, is well documented. See Forshaw 2021.

3.3 Is this really syncretism? etc.

One response to the Murrinhpatha data might be to dismiss the ABA and/or AAB patterns as not constituting genuine evidence against a *ABA and/or *AAB restriction. It is known that some patterns that seem like e.g. ABA on the surface do not in fact violate *ABA. The intent of this subsection is to briefly argue that the Murrinhpatha data cannot be dismissed in this way.

One type of false *ABA violation occurs when additional morphology is present. Middleton (2021) and Davis (2021) identify patterns of this type in domains where universal *ABA restrictions have robustly been established crosslinguistically (pronominal suppletion and case suppletion). For instance, the plural marker in Barguzin Buryat (Mongolic) shows an ABA NOM-ACC-OBL case suppletion pattern which seems like it should be impossible, given crosslinguistic evidence for a *ABA restriction in this domain (Davis 2021). However, Davis observes that the ACC plural marker and the oblique case markers are actually portmanteaus which spell out overlapping spans of structure. This means the oblique case marker cannot cooccur with the ACC plural marker, so the NOM plural marker, which is not a portmanteau, is inserted instead in oblique contexts. The patterns Middleton (2021) describes as 'Pseudo-ABA' are similar.

All that is relevant here is that these patterns involve additional morphology. The Murrinhpatha classifiers do not. In this paper, I have intentionally only looked at classifiers as a whole, even though classifiers are generally morphologically complex. In compiling (12), I only looked at whether the entire SG classifier is identical to the entire DU classifier etc. This is important because the classifier is effectively a standalone unit: there is no outside morphology that can tamper with it in the way decribed in the previous paragraph. It is possible for SG, DU, PL classifiers to combine with the same stem (see e.g. (10)), so any differences between them cannot be due to outside morphology. Thus the conflation patterns listed in (12) are entirely contained within the classifier itself. Importantly, even if the classifier is multimorphemic, an ABB, ABA, or AAB classifier must contain a true case of ABB, ABA, or AAB syncretism respectively at the morpheme level. While AAA could for instance be decomposed into x xy xy (ABB) + yz z z (ABB) = xyz xyz xyz (AAA), and ABC could for instance be decomposed into x y y (ABB) + x x y (AAB) = xx xy yy (ABC), it is impossible to decompose ABB, ABA, or AAB into non-ABB/ABA/AAB patterns (at least using straightfoward concatenation).

Another type of 'exception that proves the rule', per Smith et al. (2019), is mixed number conflation which actually reflects a larger pattern of conflation. Smith et al. note that the Slovenian noun suppletion data in (14) seem to pose a problem for them.[5] However, dual/plural are always collapsed in the genitive in Slovenian, so Smith et al. say this is not a true ABB syncretism pattern.

(14) Smith et al. 2019

	'person.ACC' (AAB)	'person.GEN' (ABB)
SG	človeka	človeka
DU	človeka	ljudi
PL	ljudi	ljudi

[5]The details of why this is problematic are not relevant; see the discussion around Smith et al. 2019:Table 58.

The Murrinhpatha data cannot be dismissed in this way. The classifier morphology is highly irregular (Mansfield 2016, 2019) and the distribution of conflation patterns is unpredictable. For instance, there is no blanket neutralization of number contrasts in the irrealis or the past – ABC patterns are attested in both. But class 262 displays AAB conflation in the irrealis and ABB conflation in the past (15) – so even by Smith et al.'s strict criteria, we can conclude that genuine AAB syncretism and genuine ABB syncretism are attested. By the same logic, (16) shows that genuine AAA syncretism and genuine ABA syncretism are attested.

(15)

	class 262 – IRR (AAB)	class 262 – PST (ABB)
3SG	k-**uy-**	p-**ana-**
3DU	k-**uy-**	p-**uyena-**
3PL	k-**uyu-**	p-**uyena-**

(16)

	class 241 – IRR (AAA)	class 241 – PST (ABA)
3SG	k-**inhtha-**	p-**inhthanhi-**
3DU	k-**inhtha-**	p-**inhthanhe-**
3PL	k-**inhtha-**	p-**inhthanhi-**

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