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Matthew Harley
SIL Nigeria
matthew_harley@sil.org

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Nominal and verbal plurality in the Mandara and Ɓata subgroups of Central Chadic

Matthew Harley

SIL Nigeria
matthew_harley@sil.org

Abstract
This paper contrasts the strategies for marking nominal and verbal plurality in the Mandara and Ɓata subgroups of Central Chadic, and offers some thoughts on their possible origin and development. The Mandara subgroup generally uses an */-a-/* infix for verbs, and the suffix */-ak/-ax/-ah/* for nouns. The Ɓata subgroup uses an */-ə-/* infix for both nouns and verbs, as well as a suffix */-j/* (or */-n/*) for nouns. In both groups, the strategies used also depend upon the structure of the verb root. Data is provided for several languages, including little-documented languages such as Nzanyi, Bacama and Glavda. The data suggests that vowel infixes may originally have been used for both nominal and verbal plurals throughout Chadic, but the development of specific nominal plural suffixes gradually made the use of vowel infix plurals redundant in nouns. The nominal suffix */-ak/-ax/-ah/* would then have been a subsequent innovation in the verbal system for verb roots in the Mandara whose structure was incompatible with an infix strategy.

Keywords: plurality, pluractional, Central Chadic, Biu-Mandara, internal vowels

1 Introduction

One of the striking features of many Chadic languages is an */-a-/* or */-aa-/* infix which is inserted between adjacent consonants of a lexical root to form a plural of a noun or verb, sometimes in conjunction with certain suffixes (e.g. Hausa */gúlb-íí/* 'stream', */gúl-àà-b-éé/* 'streams'). This so-called 'internal *a*' is similar in some respects to the well-known vocalisation patterns of other branches of the Afroasiatic phylum, such as Semitic, Cushitic and Berber, leading some scholars (e.g. Greenberg 1955, Diakonoff 1965) to propose it as a feature of Proto-Afroasiatic. Certainly, it is generally agreed to go back as far as Proto-Chadic as a marker of verbal plurality (Frajzyngier 1977:

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52, Newman 1990: 134, Wolff 2009: 161), and possibly also of nominal plurality (Ratcliffe 1996: 302, Newman 2006: 195), although the latter function is less widespread throughout Chadic and has been challenged by Wolff (2009), who suggests that so called 'internal vowels' in nouns are a result of Semitic-like vocalisation patterns with or without various additional (morpho)phonological processes.

As Newman (1990: 38) and Wolff (2009: 161) point out, the phenomenon known as 'internal *a*' is sometimes used to refer to two distinct types of process: morphological processes (e.g. ablaut, apophony, infixation) and phonological processes (e.g. assimilation/umlaut). Infixation (a morphological process) occurs when a vowel is inserted between two adjacent underlying consonants, whereas vowel lowering (a phonological process) occurs when an underlying high or mid central vowel (*/ɨ/* or */ə/*) is lowered to */a/* as an assimilatory effect of a root-final */a/*. However, as is shown in this paper, there is good reason to suppose that many reported cases of vowel lowering are actually cases of vowel insertion, since the underlying high vowel can often be analysed as epenthetic.[1]

The Central Chadic (Biu-Mandara) languages provide a further variation of the vowel infix strategy in that for some groups, the infix is */-ə-/* rather than */-a-/*, although it is quite possible that both infixes share a common origin. Thus it is preferable to talk about vowel infix plurals rather than just 'internal *a*' plurals. This paper examines plural formations in two of the larger subgroups within Central Chadic: the Mandara (A4) subgroup, which uses an */-a-/* infix, and the Ɓata (A8) subgroup, which uses an */-ə-/* infix. In the Mandara subgroup, the vowel [ə] is typically epenthetic and non-phonemic, whereas in the Ɓata subgroup, */ə/* is typically phonemic, and the epenthetic vowel is [ɨ]. As these two subgroups come from different main branches (North and South) of the whole Central Chadic family, it is possible that they may turn out to be somewhat representative

1 Hall (2006) distinguishes two types of inserted vowels: epenthetic vowels, which are full, phonological segments and relatively phonetically stable, and intrusive or transitional vowels, which are not phonological units, tend to be optional or disappear during fast speech and are often influenced by adjacent consonants. Using her terminology, the internal vowels of Central Chadic plurals would be considered epenthetic, whilst the high/central vowels which the internal vowels replace would be considered intrusive/transitional, although most authors still use the term epenthetic with this second sense well, as I do in this paper.

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of their respective branches. It is shown that both subgroups use internal vowel strategies in conjunction with other strategies such as reduplication, suffixes and suppletives, with the particular strategy used being largely dependent on the root structure. There are, however, also some important differences between the two subgroups, the main one being that the Ɓata subgroup uses internal vowel plurals frequently for both nouns and verbs, whereas the Mandara subgroup uses it mainly for verbs, although traces of it remain in a subset of kinship terms, suggesting that it was perhaps once more widespread.

The term 'plurality' applied to nouns refers to reference to more than one entity. When applied to verbs, it encompasses various notions of multiplicity of action, including multiple participants (multiple subjects of intransitive verbs or multiple objects of transitive verbs), multiple occasions (e.g. iterative, habitual), and multiple locations (distributive), as well as variations in degree or intensity of action. Newman (1980) coined the term 'pluractional' to refer to any of these senses of verbal plurality, and there has been widespread adoption of the term, particularly in Chadic linguistics. As is shown in the case of Podoko in section 3.6, some languages have developed multiple plural verb forms, which are used to express different types of plurality.

2 The Central Chadic languages

The Central Chadic languages are geographically clustered around the Mandara mountains along the far northern border between Nigeria and Cameroon, just to the south of Lake Chad. Eberhard et al. (2020) currently list 79 Biu-Mandara languages and classify them using Newman's (1977) proposal, which splits Biu-Mandara into three main branches (A, B and C) with the A branch divided into eight subgroups. Hammarström, Forkel & Haspelmath (2019), on the other hand list 81 languages, and largely follow Gravina's (2011) more recent arrangement, given in Figure 1.

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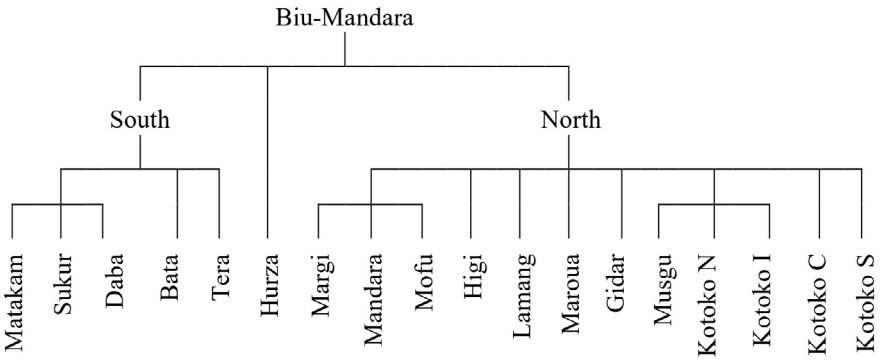

Figure 1. The internal classification of Biu-Mandara (Gravina 2011)

The Ɓata subgroup[2] comprises eleven languages: **Ɓacama [bcy]**, Ɓata [bta], Fali [fli], **Guɗe [gde]**, Gudu [gdu], **Jimi [jim]**, Ngwaba [ngw], **Nzanyi [nja]**, Tsuvan [tsh], **Sharwa [swq]**, Zizilivakan [ziz], and more or less corresponds to Newman's A8 subgroup. The Mandara subgroup contains eight languages: **Wandala/Malgwa [mfi]**, Cineni [cie], **Dghweɗe [dgh]**, **Guduf-Gava [gdf]**, **Glavda [glw]**, Gvoko [ngs], **Parkwa (Podoko) [pbi]**, Matal [mfh][3], and largely corresponds to Newman's A4 languages, minus the Lamang group, which Newman also classified as A4.[4] The Mandara languages are all quite closely related, having more than 50% internal lexical similarity, whereas the Ɓata group is less so, with Ɓata and Ɓacama having a rather low lexical similarity with the rest of the group, a likely reflection of their geographical separation to the south, which has led to a different environment for contact-induced change (Gravina 2014: 34–35).

Previous research into the languages of both subgroups is somewhat varied, with only Wandala/Malgwa (Löhr 2002), Guɗe (Hoskison 1983), Dghweɗe (Frick 1978), Parkwa (Jarvis 1989), and Glavda

2 In the Glottolog (Hammarström, Forkel & Haspelmath 2019), the Ɓata and Mandara subgroups are labelled Bataic and Mandraic. The Bataic group is listed with two further language, Bacama-Yimburu (a dialect of Ɓacama spoken in Numan), and Holma, a now extinct language. The Mandraic subgroup is listed with Wandala and Malgwa as separate languages.

3 Matal was originally classified by Newman (1977) as belonging to the A5 subgroup, but is now thought to be most closely related to Parkwa.

4 The languages printed in bold are those for which data is provided in this paper.

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(Nghagyiya 2011) having any kind of moderately detailed grammatical description. A couple of others, such as Ɓacama (Pweddon 2001) and Jimi (Djibi n.d.) have published dictionaries, but with little or no grammatical data, and most of the others have shorter unpublished wordlists or basic phonological sketches. This paper brings new data on several languages, including Ɓacama, Nzanyi, Guduf-Gava, and Glavda, so that the analysis is based on roughly half the languages from the two subgroups. Data from Ɓacama, Nzanyi and Glavda was collected between 2005 and 2020, whilst working with speakers of these languages who were students at the Theological College of Northern Nigeria in Jos. Some data was elicited by the author directly from the students, whilst some was collected by the students during their fieldwork, which is referenced at the relevant places in the paper. The students in question were: Kaduwe Ornan and Wama Gabriel (Ɓacama), Ishaya Benson (Nzanyi) and Gulla Nghagyiya (Glavda). Data from Glavda was supplemented by data from a short trilingual phrase book (Nghagyiya 2012). Data from Guduf-Gava was provided by Hak-Soo Kim (personal communication) in September 2019. In most cases, the analysis presented here, particularly with respect to morpheme breaks, is my own, and often differs from that which has been previously reported. Tones were not always marked in the sources consulted, or were marked only sporadically without explanation. In this paper they have been marked when available and relevant to the discussion. In some languages, many of the morphemes concerned, including many verb roots, are inherently toneless and receive their tone from the wider context.

3 The Mandara subgroup

I start with the Mandara subgroup because this is the group that uses an */-a-/* infix rather than an */-ə-/* infix, and the plural formatives are more phonologically transparent. Nominal and verbal plural strategies are discussed for each language in turn.

3.1 Glavda

The general strategy for forming nominal plurals in Glavda is the suffix */-ax/*[5], as shown in Table 1.

5 In Glavda, the phoneme */x/* is pronounced as a voiceless uvular fricative [χ].

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Table 1. Glavda nouns which take */-ax/* in the plural (data from Nghagyiya 2012)

Gloss	Singular		Plural	
	Surface	Underlying	Surface	Underlying
‘tree’	[uufa]	/wf-a/	[uufaχa]	/wf-ax-a/
‘goat’	[aag^{w}a]	/aag^{w}-a/	[aag^{w}aχa]	/aag^{w}-ax-a/
‘head’	[ʁəra]	/ʁr-a/	[ʁəraχa]	/ʁr-ax-a/
‘house’	[həɲa]	/hɲ-a/	[həɲaχa]	/hɲ-ax-a/
‘mother’	[baaba]	/baab-a/	[baabaχa]	/baab-ax-a/
‘bat’	[avavaga]	/avavag-a/	[avavagaχa]	/avavag-ax-a/
‘farm’	[guxa]	/g^{w}x-a/	[guχaχa]	/g^{w}x-ax-a/
‘day’	[həŋga]	/h^{ŋ}g-a/	[həŋgaχa]	/h^{ŋ}g-ax-a/

At first sight, given the surface forms (e.g. [*uufa*] / [*uufaχa*]), one might think that the plural suffix is */-xa/* ([*χa*]). However, as in many other Central Chadic languages, all citation forms in Glavda end in [*a*], which disappears in non-prepausal position, so the question is whether this final [*a*] is part of the root and is deleted before other words, or is not part of the root and is inserted prepausally. It can be shown from proper names and loan words that both processes are active in Glavda, as names which end in [*a*] have their final vowel deleted before other words, whilst names which do not end in [*a*] have a final [*a*] added prepausally, even if they end in another vowel, as shown in examples (1) and (2).

Final vowel (FV) insertion:

(1) a. *ɗaag-ar* *laadi-a*
name-POSS.1SG Ladi-FV
‘My name is Ladi’

b. *laadi* *ɗaag-ar-a*
Ladi name-POSS.1SG-FV
‘My name is Ladi’[6]

6 Incidentally, these examples also show that a final */i/* does not behave like a final */a/*, suggesting that in Glavda, */i/* is phonologically considered a vocalisation of the consonant */j/*.

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Final-vowel deletion:

(2) a. *ɗaag-ar* *dauda*
name-POSS.1SG Dauda-FV
'My name is Dauda'

b. *daud* *ɗaag-ar-a*
Dauda name-POSS.1SG-FV
'My name is Dauda'

From comparative data, it has been shown that most words in Proto-Central Chadic have been reconstructed without final vowels, with just a few words ending in a vowel, which is typically */a/* (Gravina 2014: 354). Therefore in Glavda, it seems preferable to assume that in most cases, final vowels are not part of the root. For those few nouns for which a final */a/* has been reconstructed as part of the root (e.g. */ɬa/* 'cow'), one of the adjacent vowels is deleted when the plural suffix is added. As Nghagyiya (2011: 12) notes, the plural suffix */-ax/* can be reduplicated on nouns, usually indicating sets or groups of items, as shown in example (3):

(3) a. *ɬ-ax-a*
COW-PL-FV
'cows'

b. *ɬ-ax-ax-a*
COW-PL-PL-FV
'groups of cows'

A few nouns, mostly wild animals, can take the plural prefix */jaa-/* (< [*jaχa*] 'family') instead of the suffix */-ax/*, as shown in Table 2. It is possible to analyse */jaa-/* as a separate word rather than a prefix, on the grounds that when it co-occurs with vowel-initial nouns, none of the adjacent vowels are deleted, and such sequences are not attested elsewhere within words.

Table 2. Glavda nouns which can take */jaa-/* in the plural (data from Nghagyiya 2012)

Gloss	Singular		Plural	
	Surface	Underlying	Surface	Underlying
'bird'	[ɗiika]	/ɗjk-a/	[jaa-ɗiika]	/jaa ɗjk-a/
'hare'	[viida]	/vjd-a/	[jaa-viida]	/jaa vjd-a/
'squirrel'	[ajaɣajaɣa]	/ajaɣajaɣ-a/	[jaa-ajaɣajaɣa]	/jaa ajaɣajaɣ-a/
'guinea-fowl'	[ʒabra]	/ʒabr-a/	[jaa-ʒabra]	/jaa ʒabr-a/

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‘crow’	[ɣaɣaχra]	/ɣaɣaxr-a/	[jaa-ɣaɣaχra]	/jaa ɣaɣaxr-a/
‘elephant’	[guuna]	/gwn-a/	[jaa-guuna]	/jaa guun-a/

Nouns that take */jaa-/* in the plural can all optionally take */-ax/* instead, with no difference in meaning. It is even possible to use both affixes on the same word, which typically gives the sense of sets or groups of items, just as when the */-ax/* suffix is reduplicated, as shown in example (4), taken from Nghagyiya (2011: 12–13):

(4) a. *jaa-vjd-a* (= *vjd-ax-a*)
PL-hare-FV (= hare-PL-FV)
‘hares’

b. *jaa-vjd-ax-a*
PL-hare-PL-FV
‘groups of hares’

As in many languages, a few kinship terms take irregular plurals (e.g. [*ʒra*] / [*ʒarχa*] ‘child’ / ‘children’, [*uusa*] / [*ŋɣʷasaχa*] ‘wife, woman’ / ‘wives, women’, although they usually still show traces of the */-ax/* suffix, as well as an */-a-/* infix, which becomes more apparent in the light of the Guduf-Gava data.

Some agentive nouns appear to take a */li-/* prefix in the plural, but like the */jaa-/* prefix, this likely has a nominal origin, since the corresponding singular forms use the prefix */dada-/*, derived (via shortening of the first vowel) from */daad-a/* ‘father’, as in [*dada-ɣalga*] ‘beggar’ (lit. ‘father of begging’) / [*li-ɣalga*] ‘beggars’. It is not clear which nominal */li-/* is derived from, as the plural of ‘father’ is */daad-ax-a/*, but cognate pluralisers are found in the neighbouring languages Lamang and also in Hdi (Wolff 2015, Vol. 1: 121, 389).

Plural verbs in Glavda are formed using an */-a-/* infix, inserted between adjacent root consonants, as shown in Table 3. If the root contains just a single consonant, then the nominal suffix */-ax/* is used. For tri-consonantal roots, some roots contain two */-a-/* infixes in the plural, whereas other roots just have one. A few verb roots contain the vowel */a/*, but so far, I haven’t come across any such verbs that have distinct plural forms, so it may be that these verbs are considered inherently plural.

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Table 3. Glavda plural verbs

Gloss	Root	Singular		Plural	
		Surface	Underlying	Surface	Underlying
‘bite’	C	[ʁʷ]	/ʁʷ/	[ʁʷaχ]	/ʁʷ-ax/
‘lose’		[z]	/z/	[zaχ]	/z-ax/
‘pull’	CC	[tᵊd]	/td/	[tad]	/t-a-d/
‘sell’		[vᵊl]	/vl/	[val]	/v-a-l/
‘jump’		[d͡zᵊv]	/d͡zv/	[d͡zav]	/d͡z-a-v/
‘tear’		[tᵊχ]	/tx/	[taχ]	/t-a-x/
‘cough’		[wᵊç]	/whʲ/	[wɛç]	/w-a-hʲ/
‘rub on’		[viχ]	/vʲx/	[vɛχ]	/vʲ-a-x/
‘write’	CCC	[viid]	/vjⁿd/	[veend]	/v-a-jⁿd/
‘snatch’		[pɽɗ]	/prɗ/	[parɗ]	/p-a-rɗ/
‘sit’		[t͡ʃᵊχʷᵊɾ]	/t͡ʃxʷr/	[t͡ʃaχʷar]	/t͡ʃ-a-xʷ-a-r/
‘throw’		[ɗuul]	/ɗwl/	[ɗawal]	/ɗ-a-w-a-l/

Note that the pronunciation of the */-a-/* infix is fronted when it occurs adjacent to palatalised consonants (see the words for ‘cough’ and ‘rub on’ in Table 3). The similarity in pluralisation strategy between nouns and monoconsonantal verbs shows category boundaries are sometimes blurred when it comes to plural formation, as is shown by some other Central Chadic languages.

3.2 Guduf-Gava

Guduf-Gava is closely related to Glavda and uses virtually identical plural morphemes, although not with exactly the same distribution. Hak-Soo Kim (personal communication) reports that the prefix */ja-/* and the suffix */-ax/* are interchangeable on most nouns, and they can also co-occur on the same noun, as in Glavda. His impression is that the */-ax/* suffix is used more for individual plurality, whilst */ja-/* is used more for collectives. The prefixes */dad-/* and */li-/* are again used for some agentive nouns. Plural marking is optional on the noun if there is some other indicator of plurality within the clause (e.g. a quantifier or a plural verb), suggesting that the singular form is actually unmarked for number, as is the case in some other languages of this subgroup.

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Many nouns in the Guduf dialect of Guduf-Gava[7] end in [*e*] prepausally, rather than [*a*], although this is thought to be a dialectal innovation, since */e/* is not a phoneme, and in the Gava and Chikide dialects of Guduf-Gava, most nouns end in [*a*]. Also, in the plural form, the final vowel is */a/*, rather than [*e*]. Again, this vowel is not considered to be part of the root, and it always takes a low tone, unlike other vowels, which can be either high or low. As far as I am aware, all examples given in this section are from the Guduf dialect. Examples of Guduf-Gava nominal plurals are given in Table 4:

Table 4. Guduf-Gava nominal plurals

Gloss	Singular		Plural	
	Surface	Underlying	Surface	Underlying
'man'	[wúdè]	/wd-à/	[wúdáxà]	/wd-áx-à/
'mouse'	[xəkʷè]	/xkʷ-à/	[xəkʷáxà]	/xkʷ-áx-à/
'bird'	[dʹíkè]	/dʲk-à/	[dʹíkáxà]	/dʲk-áx-à/
'eye'	[dìjè]	/dj-à/	[dìjáxà]	/dj-áx-à/
'work'	[ɬərè]	/ɬr-à/	[ɬəráxà]	/ɬr-áx-à/
'mouth'	[ɣàjà]	/ɣàj-à/	[ɣàjáxà]	/ɣàj-áx-à/
'leg'	[sígà]	/sʲg-à/	[sígáxà]	/sʲg-áx-à/

A few kinship terms use an */-a-/* infix plural strategy, as shown in Table 5. Comparing these with the corresponding Glavda kinship terms which use irregular plurals (Table 6), it can be seen that there are traces of the */-a-/* infix in Glavda as well.

Table 5. Guduf-Gava nominal plurals with an */-a-/* infix.

Gloss	Singular		Plural	
	Surface	Underlying	Surface	Underlying
'son'	[zərè]	/zr-à/	[zàrà]	/z-à-r-à/
'daughter'	[dəɣʷè]	/dɣw-à/	[dəɣàwà]	/dɣ-à-w-à/
'wife/ woman'	[nùùsè]	/nws-à/	[nəɣʷàsà]	/nɣʷ-à-s-à/

7 Guduf-Gava is reported to have three dialects: Guduf, Gava and Chikide (Hamm 2004: 12).

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Table 6. Glavda irregular nominal plurals with traces of an */-a-/* infix.

Gloss	Singular		Plural	
	Surface	Underlying	Surface	Underlying
'son'	[zra]	/zr-a/	[zarχa]	/z-a-r-x-a/
'wife/ woman'	[uusa]	/ws-a/	[ŋɣʷasaχa]	/nɣʷ-a-s-ax-a/

Thus it is possible that the */-a-/* infix in nominal plurals were once more common in both Glavda and Guduf-Gava, but now traces of it only remain in a few kinship terms.

At first sight, plural verbs in Guduf-Gava are formed in much the same way as they are in Glavda, with monoconsonantal roots taking the */-ax/* suffix, and other roots using an */-a-/* infix, as shown in Table 7. The citation form of monoconsonantal verbs usually involves a [*-gè*] or [*-gà*] suffix, although it is not currently known what determines when each suffix is used.

Table 7. Guduf-Gava plural verbs for consonantal verb roots

Gloss	Root	Singular		Plural	
		Singular	Underlying	Surface	Underlying
'go'	C	[dəgè]	/d-gà/	[dáxà]	/d-áx-à/
'give birth'		[jəgè]	/j-gà/	[jáxà]	/j-áx-à/
'shoot'		[xəgà]	/x-gà/	[xáxà]	/x-áx-à/
'blow'		[fəgà]	/f-gà/	[fáxà]	/f-áx-à/
'throw'	CC	[ɬəvà]	/ɬv-à/	[ɬàvà]	/ɬ-à-v-à/
'come back'		[gʷíjà]	/gʷj-à/	[gʷájà]	/gʷ-á-j-à/
'eat'		[zùwà]	/zw-à/	[zàwà]	/z-à-w-à/
'hold'		[xúts͡à]	/xʷts-à/	[xʷáts͡à]	/xʷ-á-ts-à/
'die'		[mts͡à]	/mts-à/	[mats͡à]	/m-á-ts-à/
'show'		[mɮà]	/mɮ-à/	[maɮà]	/m-á-ɮ-à/
'bite'	CCC	[ɣədəvà]	/ɣdv-à/	[ɣàdàvà]	/ɣ-à-d-à-v-à/
'jump'		[ɣədz͡əvà]	/ɣdz͡v-à	[ɣàdzàvà]	/ɣ-à-dz-à-v-à

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However, unlike Glavda, several Guduf-Gava verb roots contain vowels (*/a/*, */i/* or */u/*), and these are pluralised with the */-ax/* suffix, like monoconsonantal roots, as shown in Table 8:

Table 8. Guduf-Gava plural verbs for verb roots which contain a vowel

Gloss	Root	Singular		Plural	
		Singular	Underlying	Surface	Underlying
'do, make'	CVC	[mànà]	/màn-à/	[mànáxà]	/màn-áx-à/
'run'		[xʷájà]	/xʷáj-à/	[xʷájáxà]	/xʷáj-áx-à/
'ask'		[ⁿdíɗà]	/ⁿdíɗ-à/	[ⁿdíɗáxà]	/ⁿdíɗ-áx-à/
'swim'		[ɗìmà]	/ɗìm-à/	[ɗìmáxà]	/ɗìm-áx-à/
'fry'		[sùlà]	/sùl-à/	[sùláxà]	/sùl-áx-à/
'wash'		[ɣúbà]	/ɣúb-à/	[ɣúbáxà]	/ɣúb-áx-à/
'laugh'	CCVC	[ɣəɓásà]	/ɣɓás-à/	[ɣəɓásáxà]	/ɣɓás-áx-à/
'hunt'	CVCC	[ɣùvlà]	/ɣùvl-à/	[ɣùvlà]	/ɣùvl-áx-à/
'dream'	CVCVC[8]	[sùwànà]	/sùwàn-à/	[sùwànáxà]	[sùwàn-áx-à]
'sneeze'		[wùdísà]	/wùdís-à/	[wùdísáxà]	[wùdís-áx-à]

A few verbs take both an */-a-/* infix and the */-ax/* suffix ([*t͡sànà*] 'hear' and [*wúʃá*] 'twist') or have no distinct plurals ([*ᵐbákà*] 'increase' and [*ŋgʷijè*] 'be wet') or have irregular plurals ([*sàwè*] 'come'), as shown in Table 9.

Table 9. Guduf-Gava plural verbs with either irregular or no distinct plural forms

Gloss	Singular		Plural	
	Surface	Underlying	Surface	Underlying
'hear'	[t͡sànà]	/t͡sn-à/	[t͡sànáxà]	/t͡s-à-n-áx-à/
'twist'	[wúʃá]	/wʃ-à/	[wáʃáxà]	/w-à-ʃ-áx-à/
'increase'	[ᵐbákà]	/ᵐbák-à/	[ᵐbákà]	/ᵐbák-à/
'be wet'	[ᵑgʷijè]	/ᵑgʷj-à/	[ᵑgʷijè]	/ᵑgʷj-à/
'come'	[sàwè]	/sàw-à/	[sáxáɣà]	/s-áx-á-ɣà/

8 Both words listed with this structure could also be analysed as having CCVC structure, with an epenthetic schwa between the first two consonants. Kim (p.c.) does not list any verbs with an unambiguous CVCVC structure.

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3.3 Dghweɗe

There is very little data on nominal pluralisation is Dghweɗe, but from what is available (Frick 1977, 1978), it is possible to see some similarities with both Glavda and Guduf-Gava. Firstly, an */-x/* suffix is used for at least some nominal plurals, and traces of an */-a-/* infix is seen for some kinship terms, as shown in Table 10.

Table 10. Dghweɗe nominal plurals

Gloss	Singular		Plural	
	Surface	Underlying	Surface	Underlying
'elephant'	[gʷínè]	/gʷn-à/	[gʷínxà]	/gʷín-x-à/
'girl'	[dᵘgwà]	/dgw-à/	[dᵊgàwá]	/dg-à-w-á/
'wife/ woman'	[níʃè]	/ns-à/	[nᵊɣʷàsxá]	/nɣʷ-à-s-x-á/

Secondly, plural marking on nouns seems to be optional in many cases, and relatively rare in natural texts, again suggesting that the singular form is unmarked for number.

There is more data on Dghweɗe plural verbs, and again it is clear that the particular plural strategy used is dependent to a large extent upon root structure. Dghweɗe has three main ways of pluralising verbs: the suffix */-àɗ/*, the */-a-/* infix, and reduplication of the last VC segment of the verb root, as shown in Table 11.

Table 11. Dghweɗe plural verbs (data from Frick 1978)

Gloss	Root	Singular		Plural	
		Surface	Underlying	Surface	Underlying
'carry'	C	[zá]	/z-á/	[zàɗá]	/z-àɗ-á/
'put'		[bá]	/b-á]	[bàɗá]	/b-àɗ-á/
'come'		[səgàjá]	/s-g-àjá/	[sàɗəgàjá]	/s-àɗ-g-àjá/[9]
'spend'	CC	[xənná]	/xn-á/	[xànná]	/x-à-n-á/
'cook'		[təgájà]	/tg-ájà/	[tágájà]	/t-á-g-ájà/
'roll'		[lúkà]	/lkʷ-à/	[lákʷà]	/l-á-kʷ-à/
'drink'		[xútà]	/xʷt-à/	[xʷátà]	/xʷ-á-t-à/

9 Frick reports that the */-ájà/* suffix is a completive marker, and the */-g/* suffix a middle voice marker.

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‘sweep’	CVC	[ɬàɗájà]	/ɬàɗ-ájà/	[ɬàɗàɗájà]	/ɬàɗ-àɗ-ájà/
‘call’		[jáxà]	/jáx-à/	[jáxáxà]	/jáx-áx-à/
‘drown’		[sùfájà]	/sùf-ájà/	[sùfùfájà]	/sùf-ùf-ájà/

For a few monosyllabic verbs, the imperfective suffix [*-gè*] is also used to express verbal plurality, as shown in Table 12:

Table 12. Dghweɗe plural verbs using the imperfective suffix [*-ge*] (data from Frick 1978)

Gloss	Singular		Plural	
	Surface	Underlying	Surface	Underlying
‘put’	[bá]	/b-á/	[bɔ́gè]	/b-gà/
‘strike’	[t͡ʃá]	/t͡ʃ-á/	[t͡ʃɔ́gè]	/t͡ʃ-gà/
‘join’	[d͡ʒá]	d͡ʒ-á/	[d͡ʒɔ́gè]	/d͡ʒ-gà/

Thus although Dghweɗe has more variation in verb plural formation than both Glavda and Guduf-Gava, once again, it is verbs with mono-consonantal roots or roots containing a vowel that don’t take an */-a-/* infix.

3.4 Malgwa

Nominal plurals in Malgwa also resemble those in other languages of the group. The most common strategy involves the suffix */-áh/*, in which the voiceless velar fricative */x/* has been weakened (from the perspective of the languages so far discussed) to a glottal fricative. Löhr (2002: 98) analyses this plural suffix as */-hà/*, but such an analysis does not easily explain why the [*h*] is always preceded by the vowel [*á*], which replaces the last vowel of the singular form, whilst the [*à*] following [*h*] may be deleted (e.g. when followed by the genitive linker */á/*). As in Guduf-Gava all nouns end in either [*a*] or [*e*], and as [*e*] mostly appears to occur only in this position (excluding loan words and words where it is adjacent to a palatalised consonant), I consider it a product of either borrowing or a vestigial trace of a word-level palatalisation prosody, which has been reconstructed for Malgwa and its closest genetic relatives (Gravina 2014: 189). Examples of noun plurals are given in Table 13:

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Table 13. Malgwa nominal plurals (data from Löhr 2002, with morpheme breaks reanalysed)

Gloss	Singular		Plural	
	Surface	Underlying	Surface	Underlying
'mouth'	[wè]	/w-ə/	[wáhà]	/w-áh-à/
'house'	[ŋá]	/ŋ-á/	[ŋáhà]	/ŋ-áh-à/
'stone'	[kʷà]	/kʷ-à/	[kʷáhà]	/kʷ-áh-à/
'room'	[bə̀ré]	/bə̀r-ə́/	[bə̀ráhà]	/bə̀r-áh-à/
'hand'	[ʔə́rvà]	/ʔə́rv-à/	[ʔə̀rváhà]	/ʔə̀rv-áh-à/
'shop'	[kàntì] (lw.)	/kàntì/	[kàntìáhà]	/kàntì-áh-à/
'hedge-hog'	[ʔúsùsà]	/ʔúsùs-à/	[ʔùsùsáhà]	/ʔùsùs-áh-à/
'hyena'	[ʔííndàlè]	/ʔíndàl-ə/	[ʔììndàláhà]	/ʔìndàl-áh-à/
'finger'	[nágùlàndé]	/nágùlànd-ə́/	[nágùlàndáhà]	/nágùlànd-áh-à/

Malgwa also has a collective plural for people and animals, formed using the suffix */-á/*, as shown in Table 14:

Table 14. Malgwa collective plurals (data from Löhr 2002: 99–100)

Gloss	Singular	Plural	Collective
'goat'	[náwè]	[nàwáhà]	[náwá]
'horse'	[bə́lsà]	[bə̀lsáhà]	[bə́lsá]
'person'	[núúrà]	[nùùráhà] / [ʔə́mdè]	[núúrá]
'Kanuri'	[mùfákè]	[mùfàkáhà]	[mùfáká]

Many agentive nouns take the prefix */ɬə́-/* in the singular (e.g. [*ɬə́-ríjà*] 'neighbour', [*ɬə́-gáɬárà*] 'worker') and take the prefix */ʔə́mdà-/* (meaning 'people') in the plural, often alongside the plural suffix */-áh/* (e.g. [*ʔə́mdá ríjà*] / [*ʔə́mdà rìjáhà*] 'neighbours', [*ʔə́mdà gáɬárà*] 'workers').

Nominal plurals with the */-a-/* infix are restricted to a few human nouns, or nouns which are semantically associated with humans, as shown in Table 15. The noun [*múksè*] 'woman' (pl.: [*ŋwáshà*]) could also be put in this group, since the */-a-/* infix is evident here in the light of comparative data.

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Table 15. Malgwa */-a-/* infix nominal plurals

Gloss	Singular		Plural	
	Surface	Underlying	Surface	Underlying
‘man’	[ʒíílè]	/zl-ə/	[zâlà], [zàláhà]	/z-â-l-à/, /z-à-l-áh-à/
‘footprint’	[píjàsə́rà]	/pjàsə́r-à/	[pájàsə́rà]	/p-á-jàsə́rà/

As with other languages of the group, most plural verbs in Malgwa are formed using an */-a-/* infix, with monoconsonantal verbs requiring a reduplication of the consonant, as shown in Table 16:

Table 16. Malgwa verbal plurals

Gloss	Root	Singular		Plural	
		Surface	Underlying	Surface	Underlying
‘drink’	C	[ʃà]	/ʃ-à/	[ʃáʃà]	/ʃ-á-ʃ-à/
‘beat’		[dʒà]	/dʒ-à/	[dʒádʒà]	/dʒ-á-dʒ-à/
‘eat’		[zà]	/z-à/	[zázà]	/z-á-z-à/
‘put’		[fà]	/f-à/	[fáfà]	/f-á-f-à/
‘split’		[té]	/t-á/	[tátà]	/t-á-t-à/
‘kneel’	CC	[kə́ɮà]	/kɮ-à/	[káɮà]	/k-á-ɮ-à/
‘jump’		[bə́zà]	/bz-à/	[bázà]	/b-á-z-à/
‘forget’		[víjà]	/vj-à/	[vájà]	/v-á-j-à/
‘open’		[wúrà]	/wr-à/	[waɾà]	/w-á-ɾ-à/
‘cut’		[kút͡ʃà]	/kʷt͡ʃ-à/	[kʷat͡ʃà]	/kʷ-á-t͡ʃ-à/
‘tie’		[ŋúɗà]	/ŋʷɗ-à/	[ŋʷaɗà]	/ŋʷ-á-ɗ-à/

There is currently no data available as to how Malgwa pluralises verbs which contain a vowel phoneme, or contain more than two consonants.

3.5 Wandala

Nominal plurals in Wandala are formed using the suffix */-ah/*, as shown in Table 17:

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Table 17. Wandala nominal plurals (data from Frajzyngier 2012: 104)

Gloss	Singular		Plural	
	Surface	Underlying	Surface	Underlying
‘room’	[brè]	/br-/	[bràhà]	/br-àh-à/
‘elephant’	[gʷé]	/gʷ-/	[gʷáhà]	/gʷ-áh-à/
‘dog’	[krè]	/kr-/	[kràhà]	/kr-àh-à/
‘shoe’	[kímàkè]	/kímàk-/	[kímàkàhà]	/kímàk-àh-à/
‘thing’	[dùksà]	/dùksà/	[dùksáhà]	/dùks-áh-à/
‘parent’	[màlè]	/màl-/	[màlàhà]	/màl-àh-à/
‘donkey’	[zəŋʷà]	/zŋʷà/	[zəŋʷáhà]	/zŋʷ-áh-à/
‘girl’	[gʲálè]	/gʲál-/	[gʲálàhà]	/gʲál-àh-à/

The plural morpheme is reduced to */a/* when followed by certain modifiers such as determiners, quantifiers and possessive adjectives (e.g. [*gʲál-àh-à*] ‘girls’, [*gʲál-á-nà*] ‘the girls’). Traces of */-a-/* infix plural forms are again limited to a few human nouns, as shown in Table 18, which may sometimes also carry the plural suffix */-ah/*.

Table 18. Wandala */-a-/* infix nominal plurals

Gloss	Singular	Plural
‘man’	[ʒílé][10]	[zálà]
‘woman’	[mùksè][11]	[ŋwáʃà]
‘child’	[(ə́)gd͡zrè]	[(ə̀)gd͡zárà]

Frajzyngier (2012: 97–100) makes some useful observations about final vowels on nouns. He notes that the majority of nouns end in */a/*, with most of the rest ending in [*e*]. A final [*e*] on a noun is either epenthetic, inserted only before pause, or is the realisation of an underlying */i/*, as shown by comparative data and loanwords

10 The underlying form of [*ʒílé*] is likely to be */zl-/*, with the vowels [*i*] and [*e*] being realisations of epenthetic vowels. Frajzyngier (2012: 49) notes that the raising of a final [*ə*] to [*e*] can affect the quality of a preceding epenthetic [*ə*], changing it to [*i*] (e.g. [*ɬìdé*] ‘property’, [*ɬàdə́-nà*] ‘the property’). This [*i*] would then cause palatalisation of the preceding */z/*, producing the surface form [*ʒílé*].

11 Comparing this with the corresponding Glavda and Guduf-Gava forms in Tables 5 and 6, one can see how the singular surface forms in all three languages could have derived from a possible proto-form */***nɣʷs/*, which makes an */-a-/* infix more transparent in the plural.

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(e.g. [*háŋkàlè*] 'reason, intelligence' (< Hausa [*háŋkàlì*]). A final [*a*] on nouns occurs prepausally, and elsewhere indicates that "the constituent that follows, although not part of the same grammaticalized construction should nevertheless be interpreted in connection with the preceding constituent" (e.g. topicalised noun phrases). An alternative explanation is given by Wolff and Naumann (2004) who suggest a final [*e*] on nouns may have arisen from a monophthongisation of */a-y/* involving the frozen Proto-Chadic determiner */-i/* (see also Wolff 2006, 2009, 2019). Frajzyngier also notes that plural marking is optional on nouns if the noun is followed by a numeral (as in Guduf-Gava), although human nouns are more likely to be marked for plurality than non-human nouns.

For verbal plurality, Wandala, like Malgwa, uses an */-a-/* infix for most roots, although some monoconsonantal roots are not reduplicated (c.f. Table 16) and take an */-a/* suffix, as shown in Table 19. For those monoconsonantal roots which appear to have homophonic citation forms for singular and plural (e.g. [*và*] 'give (sg)' / [*và*] 'give (pl)'), evidence for the */-a/* suffix in the plural comes from the fact that the final vowel is deleted clause-internally for the singular forms, but remains in the plural.

Table 19. Wandala */-a-/* infix verbal plurals

Gloss	Root	Singular		Plural	
		Surface	Underlying	Surface	Underlying
'stand, rise'	C	[t͡sè]	/t͡s-/	[t͡sà]	/t͡s-à/
'give'		[và]	/v-/	[và]	/v-à/
'hold'		[ŋà]	/ŋ-/	[ŋà]	/ŋ-à/
'throw'		[pʷà]	/pʷ-/	[pʷà]	/pʷ-à/
'fall'	CC	[ᵐbɗà]	/ᵐbɗ-/	[ᵐbàɗ]	/ᵐb-à-ɗ-/
'sell'		[vlà]	/vl-/	[vàl]	/v-à-l-/
'jump'		[bzà]	/vz-/	[vàz]	/v-à-z-/
'return'		[pt͡sà]	/ft͡s-/	[fàt͡s]	/f-à-t͡s-/
'close'		[xəɗà][12]	/hɗ-/	[hàɗ]	/h-à-ɗ-/

12 The vowel [*ə*] in the root of this example is epenthetic, as [*xɗ*] is a disallowed word-initial consonant sequence, unlike the sequences in the other biconsonantal roots in Table 19.

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Significantly, all verb roots which contain an */a/* vowel underlyingly (e.g. */pàl/* 'pound with hammer or stone', */hàl/* 'gather') are inherently plural, although sometimes, in order to make the plurality more specific, an */-à/* suffix is used (e.g. */hàl-à/*), as in the case of monoconsonantal roots.

As with nouns, the majority of verbs end in /a/ in prepausal position, with a small number ending in */e/*. Once again, Frajzyngier (2012: 167–169) makes a perceptive observation about such verbs. He notes that all */e/*-final verbs share the semantic characterisation of separation of an entity from its source (e.g. [*t͡sè*] 'stand, rise', [*plè*] 'detach', [*fjè*] 'peel'). As in the case of nouns, since */e/* is not phonemic, it is most likely either epenthetic or the realisation of an underlying */i/*. Evidence for the latter comes from comparative data from Hdi, which has a verbal extension */-i/* which encodes separation from source.

3.6 Podoko

In Podoko, as in most other languages of the Mandara group, the bare form of the noun is unmarked for number, with plural marking only present when deemed pragmatically necessary. The main plural marker is the suffix */-aki/*, which possibly consists of two different suffixes, */-ak/* and */-i/*, as the latter can occur without the former. Some nouns (e.g. [nawə] 'goat') take just */-ak/* and */-i/*. Several nouns referring to family members (e.g. [*nəwalə*] 'man, husband' and other nouns in the middle section of Table 20) use an */-a-/* infix strategy along with the */-i/* suffix, and can optionally take the */-ak/* suffix as well. A few other nouns that belong to the domestic domain (e.g. [*dəgʷəzəmə*] 'male goat' and other nouns in the final section of Table 20) obligatorily take all three markers, as shown in Table 20. A small number of nouns require the */-ak/* suffix to be reduplicated (e.g. [*kʷəma*] 'mouse').

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Table 20. Podoko nominal plurals (data from Jarvis 1986: 81–82)

Gloss	Singular		Plural	
	Surface	Underlying	Surface	Underlying
‘goat’	[nawə]	/naw/	[nawaki]	/naw-ak-i/
‘bird’	[ɗəja]	/ɗja/	[ɗəjakaki]	/ɗj-ak-ak-i/
‘mouse’	[kʷəma]	/kʷma/	[kʷəmakaki]	/kʷm-ak-ak-i/
‘robber’	[mət͡sərə]	/mt͡sr/	[mət͡sərakaki]	/mt͡sr-ak-ak-i/
‘man’	[nəwalə]	/nwal/	[nawal(ak)i]	/n-a-w-a-l(-ak)-i/
‘woman’	[nəsə]	/ns/	[nas(ak)i]	/n-a-s(-ak)-i/
‘child’	[udzərə]	/udzr/	[udzara(ki)]	/udz-a-r(-ak)-i/
‘boy’	[zəgʷənə]	/zgʷn/	[zagʷan(ak)i]	/z-a-gʷ-a-n(-ak)-i/
‘girl’	[dəhələ]	/dhl/	[dahal(ak)i]	/d-a-h-a-l(-ak)-i/
‘older brother’	[mət͡səha]	/mt͡sha/	[mat͡sah(ak)i]	/m-a-t͡s-a-h(-ak)-i/
‘young man’	[dəhʷələ]	/dhʷl/	[dahʷal(ak)i]	/d-a-hʷ-a-l(-ak)-i/
‘male goat’	[dəgʷəzəmə]	/dgʷzm/	[dagʷazam-aki]	/d-a-gʷ-a-z-a-m-ak-i/
‘calf’	[vilki]	/ʲvlk/[13]	[vɛlikɛki]	/ʲv-a-lk-ak-i/
‘baby’	[virndi]	/ʲvrⁿd/	[vɛrindɛki]	/ʲv-a-rⁿd-ak-i/
‘blind man’	[ŋgʷəlfə]	/ᵑgʷlf/	[ŋgʷaləfaki]	/ᵑgʷ-a-lf-ak-i/
‘fiancée’	[dilgʷi]	/ʲdlgʷ/	[dɛlikʷɛki]	/ʲd-a-lkʷ-ak-i/

Another morpheme associated with the concept of plurality is */ⁿda/*, which can often be used instead of or in addition to the */-ak-i/* suffixes. When followed by a noun with unique reference, it conveys the idea of a group of associated items, which are not necessarily all homogenous (e.g. [*ⁿda ɬəwandala*] ‘the chief and his entourage’, [*ⁿda Zaza*] ‘Zaza and his family’), and as such has some similarity

13 The marking of palatalisation before the initial consonant in these examples indicates a word-level palatalisation prosody that fronts all the vowels in a word, although the full application of the prosody depends upon the particular consonants and vowels in the word (Gravina 2014: 185).

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in function to the */jaa-/* prefix (< [*jaχa*] 'family') in Glavda.[14] It is obligatory in the plural of the noun [*məndə*] 'person' (from which */ⁿda/* is plausibly derived) and it is also compatible with mass nouns, conveying the idea of groups of items (e.g. [*ⁿda dîrə*] 'several basketfuls of beans'.

Verbal plurality in Podoko is also marked in two distinct ways (by an */-a-/* infix, and with an */-aw/* suffix), which may combine on the same lexical item, but are also somewhat dependent upon root structure, as shown in Table 21. For example, monoconsonantal verbs and verbs with a */CaC/* root structure only have plurals with the */-aw/* suffix. Most other verbs use the */-aw/* suffix with or without an */-a-/* infix. A few verbs use suppletive plurals (e.g. [*kəɗ*] 'kill (sg)', [*paɬ*] 'kill (pl)', although it appears that most suppletive plurals contain the vowel */a/*.

Table 21. Podoko verbal plurals (data from Jarvis 1986)

Gloss	Root	Singular		Plural	
		Surface	Underlying	*/-a-/* infix	*/-aw/* suffix
'go'	C	[da]	/d-a/	–	/d-aw/
'sit'		[ⁿdza]	/ⁿdz-a/	–	/ⁿdz-aw/
'sell'	CC	[vəla]	/vl-a/	/v-a-l/	/v-a-l-aw/
'walk'		[wija]	/wj-a/	–	/w-a-j-aw/
'buy'		[skʷa]	/skʷ-a/	/s-a-kʷ/	–
'stir'		[uza]	/wz-a/	–	/wz-aw/, /w-a-z-aw/
'boil'		[ufa]	/wf-a/	–	/wf-aw/
'receive'		[ɮəxa]	/ɮx-a/	/ɮ-a-x/	/ɮ-a-x-aw/
'jilt'	CCC	[suɗa]	/swɗ-a/	/s-a-w-a-ɗ/	–
'drown'		[zufa]	/zwf-a/	–	/zwf-aw/
'surround'		[duɗa]	/dwɗ-a/	/d-a-w-a-ɗ/	/dwɗ-aw/
'embrace'		[hʷəmbəra]	/hʷᵐbr-a/	–	/hʷ-a-ᵐb-a-r-aw/

14 In the related language Margi there is a post-nominal modifier [*ʔʲar*] with much the same function as [*ⁿda*] in Podoko (e.g. [*Síápú ʔʲàr*] 'Siapu and his people' (Hoffmann 1963).

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‘spy’		[uɓəla]	/wɓl-a/	–	/wɓ-a-l-aw/
‘chase’		[gərəva]	/grv-a/	/g-a-r-a-v/	–
‘twist’		[tərɗa]	/trɗ-a/	/t-a-rɗ/	–
‘follow’	CaC	[ɗaba]	/ɗab-a/	–	/ɗab-aw/
‘dig’		[laxa]	/lax-a/	–	/lax-aw/
‘grill’	CCaC	[mt͡saka]	/mt͡sak-a/	/m-a-t͡sak/	–
‘cough’		[kʷəɬaxa]	/kʷɬax-a/	–	/kʷ-a-ɬax-aw/
‘chew’		[upaɗa]	/wpaɗ-a/	–	/wpaɗ-aw/
‘pack down’		[dədara]	/ddar-a/	–	/ddar-aw/

Interestingly, some verbs use each of these strategies to form two distinct plural forms, with a functional difference between them: an */-a-/* infix strategy alone is used for multiple subjects of intransitive verbs and multiple objects of transitive verbs, but both strategies are used together when the plurality or repetition of the action is highlighted (e.g. habituality).

4 The Ɓata subgroup

Much of the existing literature on internal vowel plurals in Chadic languages discusses only languages which use an */-a-/* infix or a vowel lowering or vowel lengthening strategy (Newman 1990: 37–41 (nouns), 72–76 (verbs)). The idea of an */-ə-/* infix strategy has often been overlooked because it is harder to spot. This section hopes to show that it is relatively common in both nominal and verbal plurals, at least in the languages of the Ɓata subgroup. The difficulty in noticing it stems from the fact that the pronunciation of the phonemic vowel */ə/* and the epenthetic vowel */ɨ/* are affected by neighbouring palatalised and labialised segments in ways in which an */a/* vowel is not. However, once the phonological rules of consonant-vowel interaction are properly understood, the use of the */-ə-/* infix becomes clear, and avoids the need to posit a lot of seemingly random vowel change rules. It also links pluralisation strategies across the whole of the Central Chadic family more transparently, as it is reasonable to suppose that the */-a-/* infix and the */-ə-/* infix ultimately have the same origin. One possibility is that synchronic */ə/* in the Ɓata subgroup derives historically from short **/a/* in Proto-Ɓata, and syn-

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chronic */a/* derives from Proto-Bata long */aa/*.[15] The languages of the Bata subgroup are much less well documented than those of the Mandara subgroup, but hopefully this section provides enough evidence to present a basis for the case that an */-ə-/* infix strategy is actually fairly common.

4.1 Sharwa

Sharwa, like Bacama and Nzanyi in the Bata subgroup can be analysed with two phonemic vowels */a/* and */ə/*, as well as an epenthetic */ɨ/*. The pronunciation of */ə/* and */ɨ/* is affected by neighbouring palatalised and labialised segments, as summarised in Table 22.

Table 22. Rules governing the pronunciation of [ɨ] and */ə/* in Sharwa

Vowel	/C_C/	/C_#/	/C^{w}_/ and /_w#/	/C^{j}_/ and /_j#/
Ø	[ɨ]	[ə]	[u]	[i]
/ə/	[ə]	[ə]	[o]	[e]
/a/	[a]	[a]	[a]	[a]

Limited data is available on Sharwa, but what exists shows some evidence that an */-ə-/* infix is used for some nominal and verbal plurals, as shown in Table 23 and Table 24. Many nominal plurals also take a suffix */-j/*, which is a common plural suffix on nouns in the Bata subgroup. The data is taken from Gravina (2009), who analyses the */ɨ/* as phonemic, even though he reports that it is often unrealised between consonants (and thus has zero as an allophone), and could be considered epenthetic.

Table 23. Sharwa nominal plurals

Gloss	Singular		Plural	
	Surface	Underlying	Surface	Underlying
‘flute’	[fɨdkə]	/fd-k-ə/	[fədəkə]	/f-ə-d-ə-k-ə/
‘hoe’	[t͡sɨrə]	/t͡sr-ə/	[t͡ʃərə]	/t͡s^{j}-ə-r-ə/
‘skin’	[bugɨrə]	/b^{w}gr-ə/	[bogəri]	/b^{w}-ə-g-ə-r-j/
‘rat’	[himə]	/h^{j}m-ə/	[h^{j}emi]	/h^{j}-ə-m-j/
‘terrapin’	[k^{w}akurə]	/k^{w}ak^{w}r-ə/	[k^{w}akori]	/k^{w}ak^{w}-ə-r-j/
‘bank’	[dɨglə]	/dgl-ə/	[d^{j}egəli]	/d^{j}-ə-g-ə-l-j/

15 My thanks go to an anonymous reviewer for pointing out this possible origin for the */-ə-/* infix.

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Note that in the words for 'hoe' and 'bank', one of the root consonants is palatalised in the plural, which is a common feature of plural nouns in some languages of the Ɓata subgroup. Synchronically, it is analysed as a word-level prosody which affects certain root consonants (with laminals and alveolar consonants preferred over labials), but historically, it was likely caused by a **-j* suffix, which is still common on many nouns (Gravina 2014: 318).

Table 24. Sharwa verbal plurals

Gloss	Singular		Plural	
	Surface	Underlying	Surface	Underlying
'choose'	[ɗɨr]	/ɗr/	[ɗər]	/ɗ-ə-r/
'die'	[mɨtə]	/mtə/	[mətə]	/m-ə-tə/

In Jimi, a closely related language of the Ɓata subgroup, the vowels [*ə*] and [*i*] consistently correspond to the vowels [*ɨ*] and [*ə*] in Sharwa (Gravina 2009: 14). Thus in Jimi, verbal plurals are formed by the insertion of the vowel */i/*, pronounced as a long vowel [*ii*], as in Table 25:

Table 25. Jimi verbal plurals (data from Gravina 2003: 9)

Gloss	Singular		Plural	
	Surface	Underlying	Surface	Underlying
'gather'	[ɗəmən]	/ɗm-n/	[ɗiimən]	/ɗ-i-m-n/
'buy'	[ɗərən]	/ɗr-n/	[ɗiirən]	/ɗ-i-r-n/

No data is currently available on Jimi nominal plurals, although Jimi is closely related to Guɗe, which is discussed later in this paper.

4.2 Ɓacama

Ɓacama has the same two phonemic vowels as Sharwa (*/a/* and */ə/*) and the same rules for pronunciation (Table 22), with the exception that */ə/* is pronounced as [*e*] word-finally before a pause or a major syntactic boundary. Noun roots either end in */a/* or a consonant, in which case */ə/* is affixed to the end of the root. This final */-ə/* is usually still present in the singular mid-phrase, but it is sometimes deleted in the plural, although it is currently not clear what determines this deletion since it doesn't appear to be optional. The general plural marker is the suffix */-j/*, which attaches to the end of the root, but roots that don't contain a vowel also have */ə/* inserted between

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the consonants in the plural, as shown in Table 26. Some roots also have a */-g/* suffix added in the plural between the root and the general plural suffix */-j/*. */-j/* also functions as a prenominal quantifier meaning 'some, other' (e.g. [*i mandi*] */j ma^{n}d-j/* 'some, other women', [*i d^{w}e*] */j d^{w}a-j/* 'some, other pots').

Table 26. Ɓacama nominal plurals (data from Ornan 2016)

Gloss	Singular		Plural	
	Surface	Underlying	Surface	Underlying
'calabash'	[kpa]	/kpa/	[kpe]	/kpa-j/
'stone'	[faɪa]	/faɪa/	[faɪe]	/faɪa-j/
'dog'	[sake]	/sak-ə/	[sakje]	/sak-j-ə/
'room'	[vɨne]	/vn-ə/	[vənje]	/v-ə-n-j-ə/
'basket'	[kune]	/k^{w}n-ə/	[konje]	/k^{w}-ə-n-j-ə/
'egg'	[ɗule]	/ɗ^{w}l-ə/	[ɗolje]	/ɗ^{w}-ə-l-j-ə/
'hole'	[g^{w}e]	/g^{w}-ə/	[goje]	/g^{w}-ə-j-ə/
'wine'	[vwe]	/v^{w}-ə/	[vogje]	/v^{w}-ə-g-j-ə/
'corn'	[zɨmwe]	/zm^{w}-ə/	[zəmogje]	/z-ə-m^{w}-ə-g-j-ə/

Identifying an */-ə-/* infix in the plural, along with understanding the regular phonological rules affecting the pronunciation of vowels, provides a relatively straightforward analysis which fits in nicely with comparative data. Adjectival modifiers also take an */-ə-/* infix in the plural, although those that are derived from verbs (e.g. */kltə/* 'swell, inflate') do not also take the */-j/* plural suffix, as shown in Table 27:

Table 27. Ɓacama post-nominal adjectival modifiers

Gloss	Singular		Plural	
	Surface	Underlying	Surface	Underlying
'heavy stone'	[faɪa diksɨke]	/faɪa d^{j}ksk-ə/	[faɪe deksəkje]	/faɪa-j d^{j}-ə-ks-ə-k-j-ə/
'large tree'	[kada kɨltə]	/kada kltə/	[kade kəltə]	/kada-j k-ə-ltə/

Verbal plurals are particularly interesting, since they use either an */-a-/* infix or an */-ə-/* infix depending on whether the root ends in */a/*, as shown in Table 28. A similar situation also holds in Guɗe. This suggests that */-a-/* infix and */-ə-/* infix are underlyingly the same morphological process, with */a/* and */ə/* being phonologically

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conditioned allophones of the same phoneme in this context. Monoconsonantal roots are highly irregular, although their plurals always involve the addition of an extra syllable.

Table 28. Ɓacama verbal plurals (data from Gabriel 2020)

Gloss	Root	Singular		Plural	
		Surface	Underlying	Surface	Underlying
‘lie down’	C	[bà]	/b-/	[púkà]	/pʷkə/
‘give’		[và]	/v-/	[vénà]	/vʲ-ə-n-ə/
‘lose’	CC	[kípà]	/kʲp-ə/	[képà]	/kʲ-ə-p-ə/
‘pierce’		[tɬlà]	/tl-ə/	[tàlà]	/t-ə-l-ə/
‘run’		[gíɓà]	/gʲɓ-ə/	[géɓà]	/gʲ-ə-ɓ-ə/
‘mold’	CCC	[ⁿdɨfɪɾà]	/ⁿdfɾ-ə/	[ⁿdàfəɾà]	/ⁿd-ə-f-ə-ɾ-ə/
‘fold’		[tɨfɨɗà]	/tfɗ-ə/	[tàfəɗà]	/t-ə-f-ə-ɗ-ə/
‘peel’		[ʃɨbútà]	/ʃbʷt-ə/	[ʃèbótà]	/ʃ-ə-bʷ-ə-t-ə/
‘hit’	CaCC	[zàmbɨɾà]	/zaᵐbɾ-ə/	[zàmbàɾà]	/z-ə-ᵐb-ə-ɹ-ə/
‘throw’	Ca	[ká]	/ká/	[kàlá]	/k-à-l-á/
‘sing’		[gá]	/gá/	[gə́ə́]	/gə́ə́/
‘call’		[wá]	/wá/	[wàgá]	/w-à-g-á/
‘hang’		[bá]	/bá]	[púká]	/pʷká/
‘saw’	CCa	[ɗíjá]	/ɗja/	[ɗájá]	/ɗ-a-ja/
‘sweep’		[fíjá]	/fja/	[fájá]	/f-a-ja/
‘blow’		[ʃíná]	/sʲna/	[ʃáná]	/sʲ-a-n-a/
‘drink’	CCCa	[hùɓìlá]	/hʷɓla/	[hʷàɓàlá]	/hʷ-a-ɓ-a-la/

Note from the verb */zaᵐbɹ-ə/* ‘hit’ that if a root contains an */a/*, but doesn’t end in */a/*, the */a/* in the root is replaced by */ə/* in the plural. This would constitute one of the few cases of vowel replacement.

4.3 Nzanyi

Nzanyi as the same vowel phonemes (*/a/* and */ə/*) and phonological conditioning as Sharwa, and like Sharwa and Ɓacama, a */-j/* suffix is used in nominal plurals, along with an */-ə-/* infix if the root contains adjacent consonants, as shown in Table 29. As in Ɓacama, some nouns also take a */-g/* suffix in the plural, and it is possible that this segment was originally part of the root but has been lost in the sin-

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gular, since included in such nouns are all nouns that end in [*o*] in the singular. However, it also possible that the */-gi/* suffix is a remnant of the Proto-Chadic nominal plural suffix **-aki*.

Table 29. Nzanyi plural nouns (data from Benson 2013)

Gloss	Singular		Plural	
	Surface	Underlying	Surface	Underlying
'thing'	[sə́]	/s-ə/	[ʃí]	/s-j/
'corpse'	[wó]	/w-ə/	[wògí]	/w-ə-g-j/
'man'	[múɾə́]	/mʷɾ-ə/	[móɾí]	/mʷ-ə-ɾ-j/
'whiteness'	[púɗə́]	/pʷɗ-ə/	[póɗí]	/pʷ-ə-ɗ-j/
'room'	[vìnə́]	/vʲn-ə/	[vènəgí]	/vʲ-ə-n-ə-g-j/
'granary'	[dɪ̀ɓó]	/dɓʷ-ə/	[dəɓògí]	/d-ə-ɓʷ-ə-g-j/
'leaf'	[gàsə́]	/gas-ə/	[gàʃí]	/gas-j/
'bead'	[músɪ̀ɾə́]	/mʷsɾ-ə/	[mósəɾí]	/mʷ-ə-s-ə-ɾ-j/
'thief'	[màhɨɾə́]	/mahɾ-ə/	[màhəɾí]	/mah-ə-ɾ-j/
'cutlass'	[màʔʷàt͡sə́]	/maʔʷat͡s-ə/	[màʔʷàt͡ʃí]	/maʔʷat͡s-j/

Some nouns whose polyconsonantal roots end in */a/* take an */-a-/* infix in the plural, whilst for others, the only change is a replacement of the final */a/* with the */-j/* suffix, as shown in Table 30.

Table 30. Nzanyi plural nouns for roots ending in */a/*

Gloss	Singular		Plural	
	Surface	Underlying	Surface	Underlying
'road'	[ɾɨ̀gʷá]	/ɾgʷa/	[ɾàgʷàgí]	/ɾ-a-gʷa-g-j/
'town'	[vɨ̀ɾàt͡ʃí]	/vɾa-t͡sj/	[vàɾàgí]	/v-a-ɾa-g-j/
'nail'	[úsá]	/wsa/	[úʃí]	/ws-j/
'dish'	[tásá]	/tasa/	[táʃí]	/tas-j/
'frog'	[gʷàndá]	/gʷaⁿda/	[gʷàndí]	/gʷaⁿd-j/

Plural verbs in Nzanyi are yet to be fully investigated, but preliminary findings suggest that Nzanyi uses the same strategy as Ɓacama does, except that monoconsonantal roots are reduplicated, as shown in Table 31:

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Table 31. Nzanyi plural verbs

Gloss	Singular		Plural	
	Surface	Underlying	Surface	Underlying
‘cut’	[tan]	/ta-n/[16]	[tatan]	/t-a-ta-n/
‘dig’	[tɨlə]	/tl-ə/	[tələ]	/t-ə-l-ə/
‘push’	[lɨka]	/lka/	[laka]	/l-a-ka/
‘fall’	[fuk^{j}a]	/f^{w}k^{j}a/	[f^{w}ak^{j}a]	/f^{w}-a-k^{j}a/

4.4 Guɗe

Guɗe has been left to last because it has the most complicated phonology which is far from transparent. Hoskison (1975, 1983) analyses Guɗe with four vowel phonemes */a/*, */ɨ/*, */aa/* and */ɨɨ/*. However, it is possible to consider [*ɨ*] as an epenthetic vowel, and [*ɨɨ*] as the realisation of the phoneme */ə/*. Such an analysis makes both the underlying vowel system and the morphology of nominal and verbal plurality more typologically consistent, since it has the same system as Sharwa, Ɓacama and Nzanyi, and the nominal plural suffix */-j/* is clearer to see. In many cases, it also helps to show more consistency among lexical roots across the group.

Singular nouns in Guɗe fall into two basic lexical categories: those which take a petrified */-n/* suffix, and those which do not. Those which do not can be split into two further groups: those whose final */a/* disappears before another word, and those whose final */a/* remains. Most plural nouns also take the */-n/* suffix. The main synchronic plural features are the suffixes */-n^{j}/* or */-j/*, or palatalisation of the final root consonant and sometimes other root consonants as well. A small subset of nouns take the irregular plural suffixes */-g^{j}/* or */-s^{j}ʔ^{j}/* instead. Generally, singular noun stems which end in a consonant (plus all loanwords) take the */-n^{j}/* suffix, and stems which end in */a/* replace the */a/* with the */-j/* suffix, as shown in Table 32. A few */a/*-final stems can optionally take the */-n^{j}/* suffix instead.

16 It is likely that this */-n/* suffix is a petrified Proto-Chadic determiner **n*, as posited by Schuh (1983: 158).

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Table 32. Guɗe plural nouns with */-j/* or */-nʲ/* suffixes (data from Hoskison 1983: 34–38)

Gloss	Singular		Plural	
	Surface	Underlying	Surface	Underlying
‘cow’	[la]	/la/	[liiniɨ]	/l-j-n/
‘basket’	[ɗɨva]	/ɗv-a/	[ɗɨviiniɨ]	/ɗv-j-n/
‘hoe’	[t͡sɨiɾa]	/t͡sər-a/	[t͡sɨiɾriiniɨ]	/t͡sər-j-n/
‘frog’	[gʷanda]	/gʷaⁿda/	[gʷandiiniɨ]	/gʷaⁿd-j-n/
‘Kanuri person’	[uuva]	/wv-a/	[uuviiniɨ]	/wv-j-n/
‘fire’	[guniɨ]	/gʷ-n/	[guŋiniɨ]	/gʷ-nʲ-n/
‘fence’	[t͡saniɨ]	/t͡sa-n/	[t͡saŋiniɨ]	/t͡sa-nʲ-n/
‘feather’	[bibiniɨ]	/bʲbʲ-n/	[bibiŋiniɨ]	/bʲbʲ-nʲ-n/
‘car’	[mota] (lw.)	/mota/	[motaŋiniɨ]	/mota-nʲ-n/
‘kola nut’	[goɾa] (lw.)	/goɾa/	[goraŋiniɨ]	gora-nʲ-n/

Plural nouns which don’t take either of the plural suffixes */-j/* or */-nʲ/* palatalise the final consonant of the root instead, and sometimes other consonants as well, with a preference for coronal consonants over non-coronal consonants, and labials over velars, as shown in Table 33.

Table 33. Guɗe plural nouns with a palatalised root consonant

Gloss	Singular		Plural	
	Surface	Underlying	Surface	Underlying
‘royal clansman’	[kamba]	/kaᵐba/	[kambiniɨ]	/kaᵐbʲ-n/
‘young girl’	[ɾɨmɨniɨ]	/ɾm-n/	[ɾimiɨniɨ]	/ɾʲmʲ-n/
‘civet cat’	[gudɨɾa]	/gʷdɾ-a/	[gudiɾiniɨ]	/gʷdʲɾʲ-n/
‘baboon’	[huɾɨba]	/hʷɾb-a/	[huɾɨbiniɨ]	/hʷɾbʲ-n/
‘adult man’	[lawaɾa]	/lawaɾ-a/	[lʲawaɾiniɨ]	/lʲawaɾʲ-n/
‘cripple’	[mɨdɨɾa]	/mdɾ-a/	[midiɾiniɨ]	/mʲdʲɾʲ-n/
‘princess’	[kʷatama]	/kʷatam-a/	[kʷatʲaminiɨ]	/kʷatʲamʲ-n/
‘parent-in-law’	[sɨɾɨhʷa]	/sɾhʷ-a/	[ʃiɾɨhiniɨ]	/sʲɾhʲ-n/
‘medicine’	[kuzɨka]	/kʷzk-a/	[kuʒikiniɨ]	/kʷzʲkʲ-n/
‘prince’	[ɨnʃaɾa]	/nʃaɾ-a/	[ɨnʃaɾiniɨ]	/nʃarʲ-n/

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This conditioned variation between the plural suffixes (*/-j/* and */-nʲ/*) and the palatalisation of one or more of the consonants of the root suggests that the palatalisation is a result of the incorporation of the */-j/* suffix into the root. Guɗe also uses the same palatalisation strategy in marking ventive aspect, together with an */-a/* suffix.
As usual, there are also a few kinship terms whose plurals are irregular (e.g. [*minɨ*] 'woman, wife', [*makinɨ*] 'women, wives'; [*ŋgura*] 'man, husband', [*ŋgʷiirɨnɨ*] 'men, husbands'), although they often show traces of infixed vowels.

Verbal plurals in Guɗe are more regular, using an */-a-/* infix or */-ə-/* infix depending on whether the root ends in */a/*, just as in Ɓacama and Nzanyi, as shown in Table 34. The only significant difference in Guɗe is that infixed vowels are predictably lengthened.

Table 34. Guɗe verbal plurals

Gloss	Root	Singular		Plural	
		Surface	Underlying	Surface	Underlying
'break'	C	[ɓi]	/ɓʲ/	[ɓiiɓi]	/ɓʲ-ə-ɓʲ/
'fill mouth'		[ɓu]	/ɓʷ/	[ɓuuɓu]	/ɓʷ-ə-ɓʷ/
'breathe'		[pi]	/pʲ/	[piipi]	/pʲ-ə-pʲ/
'stab'	CC	[d͡zɨɓɨ]	/d͡zɓ/	[d͡zɨɨɓɨ]	/d͡z-ə-ɓ/
'collect'		[fɨɗɨ]	/fɗ/	[fɨɨɗɨ]	/f-ə-ɗ/
'grind'		[ɨdɨ][17]	/xd/	[xɨɨdɨ]	/x-ə-d/
'die'		[ɨntɨ][18]	/mt/	[mɨɨtɨ]	/m-ə-t/
'gather'	CCC	[fɨɗɨn]	/fɗn/	[fɨɨɗɨn]	/f-ə-ɗn/
'be full'		[ɨburɨ]	/xbʷɾ/	[xɨɨburɨ]	/x-ə-bʷɾ/
'cut'	Ca	[la]	/la/	[laala]	/l-a-la/
'drive away'	CCa	[sɨba]	/sba/	[saaba]	/s-a-ba/
'fall'		[kula]	/kʷla/	[kʷaala]	/kʷ-a-la/

17 For some verbs beginning with [*ɨ*], an original, initial velar consonant has been dropped in the singular form, but remains in the plural.

18 In this case, the epenthetic [*ɨ*] has been inserted before the initial consonant rather than after it. There has then been place assimilation between the nasal and the following consonant.

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Verb roots with more than one consonant optionally have their first consonant reduplicated, in which case a second vowel infix is used (e.g. [*d͡zɨd͡zɨɨbɨ*] ‘stab (pl)’, [*kʷakʷaala*] ‘fall (pl)’).

5 Conclusion

It is often the case that looking at the morphological patterns of a group of closely related languages yields insights into the analysis of individual languages within the group, and this has certainly been the case in this paper, where new morphological analyses of plural marking in individual languages has yielded a remarkable degree of internal consistency within the groups. A number of general observations can be made regarding nominal and verbal plurality within each group as summarised here.

The Mandara subgroup typically uses an */-ax/* suffix for nominal plurals, sometimes in conjunction with an */-a-/* infix. It is certainly possible that this suffix is a reflex of the best attested and most widespread Proto-Chadic nominal plural suffix **-aki*. Indeed, Newman (1990: 19) suggests that */-ak/* could be a reflex of **-aki* in Musgu, another Central Chadic language, and so it would be easy to see how */-ax/* (or */-ah/* or */-aw/*) could also be reflexes of this, especially given that the suffix has the form */-ak/* in Podoko. If the */-a-/* infix does go back to Proto-Chadic, as tentatively suggested by Newman (2006: 195), the vestigial traces of an */-a-/* infix in a basic subset of kinship terms in several languages of the Mandara group is certainly compatible with such an idea. Podoko is interesting in that both the */-ak/* suffix and */-a-/* infix strategies have become rather mixed, with nouns taking one or the other (or both) on a seemingly random basis. Another feature of plural marking in the Mandara group is that the singular form is actually unmarked for number, or to be more precise, the unmarked number form can be used with both singular and plural reference. The marked plural form is used only when specific plural reference is deemed pragmatically necessary.

For verbal plurality, it is clear (in all cases except Podoko) that different strategies are employed depending on how many consonants the root contains, and whether the root contains a vowel. Such strict conditioning of verbal plurality strategies was first pointed out for Lamang by Wolff (1983: 107). An */-a-/* infix is the preferred strategy for vowel-less polyconsonantal roots, with the */-ax/* suffix generally

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used elsewhere. Less common strategies include partial reduplication, and an */-ad/* suffix in the case of Dghwede. Podoko is the exception in that both an */-aw/* suffix and the */-a-/* infix are used in a seemingly haphazard manner, regardless of root structure, but given the similar situation for nouns, this is hardly surprising.

It therefore seems likely that the */-ak/*, */-ax/*, */-ah/* and */-aw/* suffixes found in the Mandara subgroup are reflexes of the same PC plural marker **-aki*. Newman (1990) presents **-aki* as a PC nominal suffix and **-aw* as a tentative PC verbal suffix, but it is perhaps possible that both have the same origin, especially as he also posits **-d(i)* as a possible PC nominal suffix and **-ɗ* as a possible PC verbal suffix. Frajzyngier (1977: 37) suggests that such extensive similarities between nominal and verbal plurality can hardly be accidental, although Newman (1990: 86) essentially claims that they are, with Wolff (2009) also suggesting an alternative explanation for nominals. Given that an */-a-/* infix is much more widespread in Chadic as a marker of verbal plurality than nominal plurality, Frajzyngier (1977: 51–52) suggests that it originally started out as a marker of verbal plurality and then some languages transferred it into the nominal system. As borrowing often goes in both directions, given that the suffix **-aki* is much more widespread as marker of nominal plurality, it is at least possible that this suffix was borrowed in the opposite direction, particularly for verb roots whose structure made the */-a-/* infix strategy difficult (e.g. monoconsonantal verbs, and verbs which already contained an */a/* vowel). The Podoko data raises a further interesting question, namely whether that the PC **-aki* suffix could actually comprise two separate PC suffixes **-ak* and **-i*, as **-i* is also generally accepted as a PC nominal plural suffix (Newman 1990: 48).

The Ɓata group most widely uses a */-j/* suffix to mark nominal plurality, presumably originating from the PC nominal plural suffix **-i*. In some languages, this suffix has become incorporated into the root, surfacing as palatalisation of the final consonant and often other consonants as well. Infixed vowel plurals are also common, and it is interesting to note that, just as in the verbal plurals of the Mandara group, the internal vowel strategy for nominal plurals of the Ɓata group is somewhat dependent upon root structure. An */-ə-/* infix is the default strategy, but for roots which end in */a/*, an */-a-/* infix is preferred. If the */-ə-/* infix is an historically reduced form of */a/*, then one could say that a final */a/* blocked the weakening of an original

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medial **/a/* to */ə/*. Roots which already contain a vowel, for which an infix vowel strategy wouldn't be appropriate, the usual */-j/* suffix normally suffices. Less common plural suffixes include */-gi/* and */-n/*, which are presumably vestigial traces of the PC nominal plural suffixes **-aki* and **-n*.

For verbal plurals, vowel infix plurals are almost exclusively used, with both */-ə-/* and */-a-/* being used according to whether the root ends in */a/*, again compatible with the idea that a final */a/* blocked the weakening of medial */-a-/* to */-ə-/*. In Jimi, the reflex of pan-Ɓata */ə/* is [*i*], whilst in Guɗe, it is [*ɨɨ*]. For monoconsonantal roots, reduplication is also sometimes used, as an infix vowel strategy alone would not be feasible.

Looking at both groups, is it possible to draw any possible conclusions about pluralisation strategies in Central Chadic as a whole? Such an undertaking would certainly need to look at other subgroups as well in at least as much detail as this paper has done for the Mandara and Ɓata groups. Given that infixed vowel nominal plurals are still relatively common in the Ɓata group, with remnants of it in the Mandara group, an initial hypothesis could be that infixed vowels were originally used for marking verbal plurality (a generally undisputed claim) and at some point early in the history of Central Chadic were adapted by the nominal system for marking plurality on certain nouns, or for certain semantic distinctions or pragmatically marked situations. Then, as the use of existing nominal plural suffixes inherited from Proto-Chadic became more systematic, the use of infixes gradually became more restricted and largely disappeared, with vestigial traces of them now discernable only among certain kinship terms, which is precisely where one might expect to find remnants of archaic systems (cf. the *-en* plural suffix in English (e.g. 'children', 'brethren')). In the case of the Mandara group, the dominant nominal suffix was **/-ak/*, and in the case of the Ɓata group, the nominal suffix was mostly */-j/*, with */-n/* also found either as a petrified trace of the PC plural demonstrative determiner **/-n/* or as the distinct PC nominal plural suffix **/-n(a)/*. As noted above, there may also have been borrowing going on in the opposite direction, particularly among verbs whose roots made the use of infixes problematic. This would explain the various overlaps between nominal and verbal plurality in both groups beyond the use of vowel infixes. Hopefully, as

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further studies reveal more data on individual languages, the diachronic situation may become even clearer.

Abbreviations

1 first person, 2 second person, FV final vowel SG singular, PL plural, POSS possessive

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